Causal Structure of Opsen Implementation, Human Resource Capacity, and Local Own-Source Revenue Optimization

Chandra Meida Dewi
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: cmeidad25@gmail.com

Alexandra Hokum
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: alexandrahukom27@gmail.com

Benius
Universitas Palangka Raya; Palangka Raya, Indonesia
E-Mail: benius@feb.upr.ac.id

Submitted:
OCTOBER 2025

Accepted:
OCTOBER 2025

ABSTRACT

Local governments in Indonesia increasingly adopt digital fiscal innovations to enhance local own-source revenue. The opsen application integrates the collection and reporting of motor vehicle tax and vehicle title transfer fee into regional financial systems. However, despite its implementation across all districts and cities, local own-source revenue performance remains uneven, suggesting that technology alone is insufficient and highlighting the need to examine the role of human resource capacity in optimizing fiscal digitalization. This study aims to analyze the relationships between opsen implementation, human resource capacity, and local own-source revenue optimization. Using a quantitative explanatory approach, data were analyzed with SPSS to examine correlations, regression, and mediating effects among variables. The results indicate that opsen implementation has a significant positive effect on local own-source revenue optimization, both directly and indirectly through human resource capacity. These findings confirm that human resource capacity plays a strategic mediating role in ensuring the effective utilization of fiscal technology. This study contributes to the literature on digital public finance by demonstrating that technological innovation must be accompanied by strong institutional and human resource capacity. The findings provide evidence-based policy recommendations for strengthening local government capacity and enhancing the sustainability of regional fiscal digitalization.

Keywords: *Digital Fiscal Innovation, Human Resource Capacity, Local Own-Source Revenue, Opsen Application, Public Finance.*

ABSTRAK

Pemerintah daerah di Indonesia semakin gencar mengadopsi inovasi fiskal digital untuk meningkatkan Pendapatan Asli Daerah (PAD). Aplikasi Opsen mengintegrasikan pengumpulan dan pelaporan Pajak Kendaraan Bermotor (PKB) serta Bea Balik Nama Kendaraan Bermotor (BBNKB) ke dalam sistem keuangan daerah. Namun, meskipun telah diterapkan di seluruh kabupaten/kota, kinerja PAD masih menunjukkan ketidakmerataan, yang menunjukkan bahwa teknologi saja tidak cukup dan menekankan perlunya pemeriksaan peran kapasitas sumber daya manusia dalam mengoptimalkan digitalisasi fiskal. Penelitian ini bertujuan untuk menganalisis hubungan antara implementasi Opsen, kapasitas sumber daya manusia, dan optimalisasi PAD. Dengan menggunakan pendekatan kuantitatif eksplanatori, data dianalisis menggunakan SPSS untuk menguji korelasi, regresi, dan efek mediasi antarvariabel. Hasil penelitian menunjukkan bahwa implementasi Opsen berpengaruh positif signifikan terhadap optimalisasi PAD, baik secara langsung maupun tidak langsung melalui kapasitas sumber daya manusia. Temuan ini

JIAKES

Jurnal Ilmiah Akuntansi Kesatuan
Vol. 13 No. 6, 2025
pp. 2251-2262
IBI Kesatuan
ISSN 2337 – 7852
E-ISSN 2721 – 3048
DOI: 10.37641/jiakes.v13i6.4646

menegaskan bahwa kapasitas sumber daya manusia berperan strategis sebagai mediator dalam memastikan pemanfaatan teknologi fiskal secara efektif. Penelitian ini memberikan kontribusi terhadap literatur tentang keuangan publik digital dengan menunjukkan bahwa inovasi teknologi harus diiringi dengan kapasitas kelembagaan dan sumber daya manusia yang kuat. Hasil penelitian ini memberikan rekomendasi berbasis bukti untuk memperkuat kapasitas pemerintah daerah dan meningkatkan keberlanjutan digitalisasi fiskal regional.

***Kata kunci**: Inovasi fiskal digital, Kapasitas Sumber Daya Manusia, Pendapatan Lokal Mandiri, Aplikasi Opsen, Keuangan Publik.*

INTRODUCTION

Regional fiscal reform in Indonesia has experienced an important turning point with the passage of Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (*Hubungan Keuangan antara Pemerintah Pusat dan Pemerintahan Daerah*/HKPD Law). One of the strategic implications of this regulation is to strengthen regional fiscal autonomy through the optimization of Local Own-Source Revenue (*Pendapatan Asli Daerah*/PAD) (Putra & Mahiswara, 2024; Kurniawan et al., 2024; Hasanah et al., 2025). In this framework, the government encourages the digitization of the regional tax collection and reporting system through the Opsen application, which is an additional tax levy for Motor Vehicle Tax (*Pajak Kendaraan Bermotor*/PKB) and Motor Vehicle Name Return Duty (*Bea Balik Nama Kendaraan Bermotor*/BBNKB) collected by districts/cities as part of fiscal synergy with the provincial government.

Opsen is designed to improve the efficiency, transparency, and accuracy of vehicle tax In Central Kalimantan, the Opsen application has been implemented since mid-2023, integrated with regional financial information systems and the Regional Government Information System (*Sistem Informasi Pemerintahan Daerah*/SIPD) platform. Despite its adoption across all districts and cities, Local Own-Source Revenue (LOR) performance remains uneven. Based on Figure 1, the average LOR contribution to district/city budgets is below 15%, with annual growth rates ranging from 2.1% to 4.8%, below the national target of 7%. Some areas, such as Murung Raya and South Barito, show stagnation, while Palangka Raya and East Kotawaringin demonstrate higher growth, yet without reflecting the full systemic impact of fiscal digitalization (Central Kalimantan Provincial BPKAD, 2024).

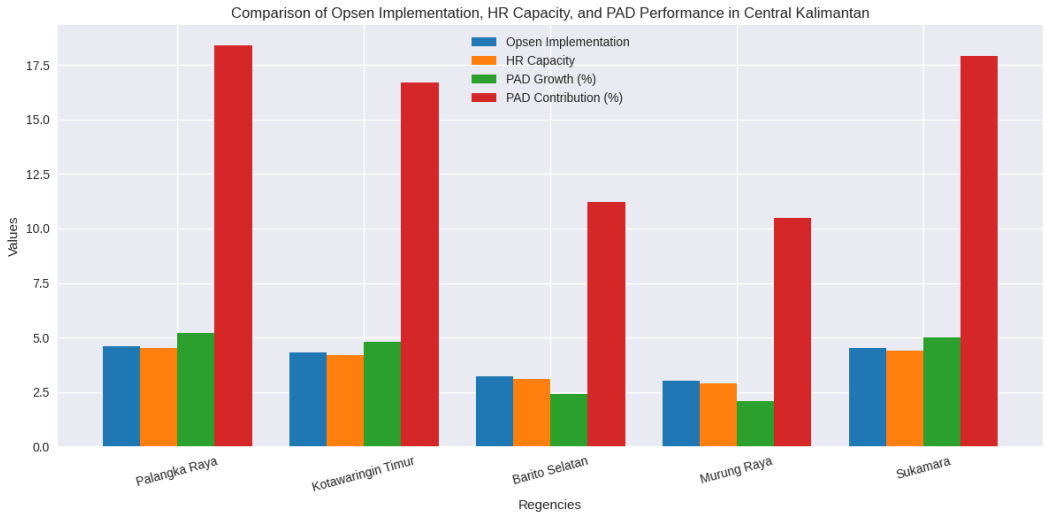

Figure 1. Graph of 5 Regencies/Cities based on four main variables

Figure 1 is a graph that compares five districts/cities in Central Kalimantan based on four main variables: implementation of opsen, human resources capacity, PAD growth, and PAD contribution to the Regional Revenue and Expenditure Budget (*Anggaran Pendapatan dan Belanja Daerah*/APBD). Palangka Raya and Sukamara showed the highest scores in the implementation of opsen and human resource capacity, which is in line with the growth of PAD and the high contribution of PAD to the APBD. Murung Raya and South Barito had the lowest scores across all variables, reflecting challenges in fiscal digitalization and human resource strengthening. East Kotawaringin is in a medium position, but shows a positive trend that can be improved with policy interventions.

Another factor that also affects the effectiveness of Opsen is the capacity of Human Resources (HR) of regional tax managers (Hasibuan et al., 2025). Technical readiness, frequency of training, and adaptability to digital systems are important determinants in the successful implementation of fiscal technology (Ghobakhloo, 2020; Divina & Rodiris, 2025). Capacity inequality between regions has the potential to create disparities in PAD performance, so it needs to be analyzed in a causal and structured manner.

Despite full implementation of the opsen application across all districts and cities in Central Kalimantan, local own-source revenue performance has not consistently improved, with wide disparities in revenue growth and contribution to regional budgets. Such inconsistencies raise essential questions about the role of institutional readiness and human resource capacity in enabling digital fiscal tools to translate into tangible revenue outcomes, especially given the challenges of digital transformation and fiscal governance documented in recent literature (e.g., disparities in human resource capacity and infrastructure affecting digital initiatives) (Gunawan, 2025).

Atobishi et al. (2024) highlighted the importance of digital systems and human resource capacity in public sector performance. However, most research examines these factors individually, without empirically investigating their combined effect on PAD optimization. Limited evidence exists on how HR capacity mediates the relationship between digital fiscal tools, such as opsen, and revenue performance, particularly in cross-regional contexts where disparities in institutional and digital readiness are evident (Putra et al., 2024; Hidayat, 2025). This study addresses this gap by testing both direct and indirect relationships between opsen implementation, HR capacity, and PAD outcomes.

This study aims to analyze the causal relationship between the implementation of the opsen application, human resource capacity, and PAD optimization in Central Kalimantan Province. Identify the direct and indirect influence of the Opsen implementation variables on PAD, with HR capacity as a mediating variable. Develop a path model that empirically describes the structure of relationships between variables. This research has strategic significance in providing evidence-based policy recommendations for improving PAD through the digitization of the fiscal system and strengthening the capacity of regional apparatus. Provide an evaluation framework for the implementation of opsen that can be used by local and central governments in monitoring fiscal performance. Supporting the development of an adaptive, integrated, and competency-based regional financial information system.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Opsen Implementation on Local Own-Source Revenue Optimization

Regional fiscal reform in Indonesia has advanced through Law Number 1 of 2022 on Financial Relations between the Central and Regional Governments (HKPD Law). One policy innovation under this law is opsen, a digital system for collecting Motor Vehicle Tax and Vehicle Title Transfer Fee, aimed at strengthening regional fiscal independence through digitized tax reporting and collection. Diffusion of Innovations Theory by Rogers (2003), explains that the adoption of public technologies such as opsen is influenced by relative superiority, compatibility, and observability. If the opsen application provides easy access, reporting accuracy, and system integration, it will improve the efficiency of local own-source revenue collection. E-Government Maturity Model by Layne and Lee (2001) Stating that digital systems that have reached the integration stage are able to

increase transparency and fiscal effectiveness. Heeks (2006) also emphasizes that e-government success relies on the alignment between system design and local institutional capacity.

Empirical findings by Setiawan et al. (2022) The digitization of motor vehicle taxes through web-based applications increases the realization of local own-source revenue in West Java. Then by Hidayat and Sari (2022) Regions that adopt digital reporting systems show an increase in local own-source revenue contribution to the APBD. Putra and Lestari (2023) show that the growth of local own-source revenue is greatly influenced by the effectiveness of collection and the accuracy of technology-based reporting. Good implementation of opsen directly contributes to the optimization of local own-source revenue through increasing efficiency, accuracy, and transparency of regional tax collection (Wujarso et al., 2023; Ramadhan & Ifransyah, 2025; Bakri, 2025).

H1: Opsen implementation has a positive effect on local own-source revenue optimization.

The Effect of Opsen Implementation on Human Resource Capacity

According to the Technology Acceptance Model proposed by Davis (1989), the way individuals perceive the ease of use and the potential benefits of a technological system significantly shapes their attitudes and willingness to adopt it. In the context of fiscal digitalization, this means that the readiness of human resources to engage with digital systems depends on both their understanding of the system's usefulness and their comfort in operating it. Complementing this, the Dynamic Capabilities Theory by Teece et al. (1997) emphasizes that public organizations must continuously develop internal competencies to effectively respond to technological changes. This involves not only providing training but also ensuring that personnel can adapt and apply new skills to digital systems.

Empirical studies support these theoretical perspectives: Yuliana and Nugroho (2023) demonstrate that digital literacy and ongoing training significantly enhance the preparedness of human resources to manage digital fiscal systems, while Siregar and Pratama (2023) highlight that the success of implementing such systems is strongly contingent upon both the readiness and capability of personnel. Specifically, the implementation of the opsen application has been shown to stimulate improvements in human resource capacity, as it requires staff to acquire technical expertise, participate in structured system training, and adapt to digital technologies, thereby enhancing their overall competency in managing regional fiscal operations (Rojak, 2024).

H2: Opsen Implementation has a positive effect on human resource capacity.

The Effect of HR Capacity on Local Own-Source Revenue Optimization

Human Capital Theory by Becker (1964) stated that investment in human resource education and training increases organizational productivity and performance, including in fiscal management. Competency-Based Management by Spencer and Spencer (1993) The technical competence, attitude, and adaptability of human resources affect the effectiveness of work and the achievement of local own-source revenue targets.

Local own-source revenue is an indicator of fiscal independence and regional capacity to finance development. Local own-source revenue optimization includes increasing the tax base, collection effectiveness, and contribution to the APBD. Musgrave and Musgrave (1989) in Public Finance Theory stated that local own-source revenue functions as an instrument of resource allocation and a reflection of regional fiscal efficiency. Oates (1972) The Decentralization Theorem says that fiscal decentralization allows for a more efficient local response, but its success depends on institutional capacity and reporting systems.

The Fiscal Performance Framework by Bahl and Linn (1992) emphasized that the performance of local own-source revenue is influenced by the effectiveness of collection,

taxpayer compliance, and the quality of the fiscal information system. Empirical findings of several researchers, such as Rahmawati et al. (2021), indicate that Digital training has a significant impact on the effectiveness of regional financial management. According to Putra and Lestari (2023), the growth of local own-source revenue is influenced by the effectiveness of collection and reporting accuracy, which depends on human resource competence. Thus, high human resource capacity contributes to the optimization of local own-source revenue through increasing collection effectiveness, reporting accuracy, and maximum utilization of digital systems (Knies et al., 2024; Hyera et al., 2025; Wijaya et al., 2025).

H3: Human resource capacity has a positive effect on local own-source revenue optimization

Human Resource as a Mediating Factor

Mediation Theory by Baron and Kenny (1986), this mediation model explains that opsen implementation can influence local own-source revenue optimization indirectly through human resource capacity. In this context, the implementation of opsen encourages the increase in human resource capacity, the increased human resource capacity strengthens the effectiveness of local own-source revenue collection and reporting. Human resource capacity is a crucial element in the successful implementation of fiscal technology (Ariana et al., 2020; Yakin, 2024). Human resources who are competent, trained, and adaptive to digital technology will be able to optimize the functions of the opsen application in reporting and collecting local own-source revenue (Maira,2021).

Teece et al. (1997) in Dynamic Capabilities Theory states that public organizations must be able to integrate, build, and configure internal competencies to respond to technological and policy changes. Spencer and Spencer (1993) developed a Human Resources Competency Model that includes knowledge, skills, attitudes, and values. In the context of regional fiscal policy, technical competence and digital literacy are the main indicators. Van Dijk (2005) in Digital Divide Theory emphasizes the importance of digital literacy as a prerequisite for participation in the public information system. Human resources that do not have digital literacy will experience a gap in the use of fiscal technology. In an empirical study by Rahmawati et al. (2021) showed that digital training has a significant impact on the effectiveness of regional financial management. Then by Yuliana and Nugroho (2023) emphasized that digital literacy and continuous training support systemic regional fiscal transformation. Furthermore, Armstrong and Taylor (2020) argue that human resource capability serves as a critical mediator between technology adoption and organizational performance, as skilled personnel translate technological investments into tangible outcomes.

H4: Human resource capacity mediates the relationship between opsen implementation and local own-source revenue optimization.

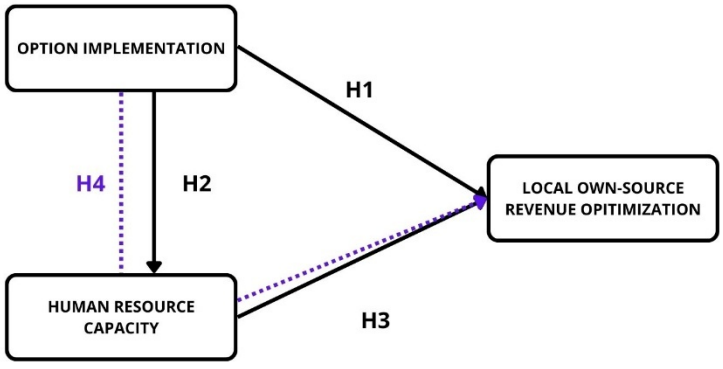

Figure 2. Conceptual Model

Figure 2 illustrates the conceptual framework of this study, depicting the relationships between the key variables. The model demonstrates that opsen implementation has a direct effect on local own-source revenue optimization (H1) and also influences human resource capacity (H2). Furthermore, human resource capacity is hypothesized to affect local own-source revenue optimization (H3). The framework also examines the mediating role of human resource capacity in the relationship between opsen implementation and local own-source revenue optimization (H4), as indicated by the dotted line connecting these variables.

RESEARCH METHODS

This study employs an explanatory quantitative design with a comparative causal approach to analyze the cause-and-effect relationships between opsen implementation, human resource capacity, and local own-source revenue optimization. Direct and indirect effects were tested using SPSS through correlation, regression, and mediation analysis (Hair et al., 2010). The population comprises all districts/cities in Central Kalimantan that have implemented opsen and have a local own-source revenue management unit, with the unit of analysis being regional tax officers, opsen operators, and financial staff. Stratified purposive sampling was used based on opsen usage and local own-source revenue performance, yielding 75–150 respondents (5–10 per region × 15 regions). Inclusion criteria required at least one year of opsen use and direct involvement in local own-source revenue management or financial reporting. Data include primary sources respondents' perceptions of opsen, HR capacity, and local own-source revenue performance, and secondary sources such as local own-source revenue realization reports, contributions to APBD, and SIPD/BPKAD data. Data were collected through a Likert-scale questionnaire (1–5) covering respondent identity, indicators, and additional notes, complemented by documentation of official reports, limited interviews for validation, and data triangulation.

In this study, the variables are operationally defined as follows. X1, the implementation of opsen operations, is measured through key indicators such as system integration, ease of access, and reporting accuracy, using a Likert scale of 1 to 5. This variable reflects the level of implementation of the opsen application within the regional financial system. X2, human resource capacity, is assessed based on technical competence, training, and digital adaptation, also using a Likert scale of 1 to 5. It represents the ability and readiness of human resources to manage and utilize the fiscal digital system effectively. Y, local own-source revenue optimization, is measured by local own-source revenue growth, collection effectiveness, and its contribution to the APBD, using the same Likert scale. This variable indicates the level of achievement of local own-source revenue as a key indicator of regional fiscal independence.

The validity and reliability of the research instruments were assessed to ensure accurate measurement. Data analysis was conducted using SPSS in several steps. Descriptive analysis summarized respondents' characteristics and perceptions using mean, standard deviation, and score distribution. Path analysis tested direct and indirect effects among $X1 \rightarrow Y$, $X1 \rightarrow X2 \rightarrow Y$, and $X2 \rightarrow Y$, with coefficients estimated through regression: $Y = \beta_1 X1 + \beta_2 X2 + \varepsilon$, where β_1 and β_2 represent direct effects, and ε is the residual. Mediation analysis examined whether HR capacity mediates the effect of Opsen implementation on local own-source revenue optimization, using the Baron and Kenny method and the Sobel test to assess the significance of the indirect effect, with $p < 0.05$ considered significant. Classical assumption tests ensured model validity: normality was checked via Kolmogorov-Smirnov or Shapiro-Wilk ($p > 0.05$), multicollinearity via VIF (<10), and heteroskedasticity via scatterplots, with no systematic patterns indicating its absence.

RESULTS

Since the enactment of Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (*Hubungan Keuangan Pemerintah Pusat dan Pemerintah Daerah*/HKPD Law), local governments throughout Indonesia have been required to increase fiscal independence through the optimization of local own-source revenue. One of the strategic instruments introduced is the opsen (additional revenue opsen) mechanism for motor vehicle tax and motor vehicle name return duty, which is collected by the province and distributed to districts/cities.

Central Kalimantan Province is among the most responsive to this policy. All districts/cities have signed cooperation agreements and have started implementing the opsen application, which is integrated with SIPD and regional financial information systems. However, the effectiveness of opsen implementation in encouraging local own-source revenue optimization has not been evenly distributed throughout the region. In general, the implementation of opsen in Central Kalimantan shows a positive trend. The cities of Palangka Raya, Sukamara, and Lamandau occupy the top positions with implementation scores above 4.5 (scale 1–5), reflecting good system integration, ease of access, and reporting accuracy. Regencies such as East Kotawaringin and West Kotawaringin also show a fairly high digital readiness.

However, some areas, such as Murung Raya, South Barito, and East Barito, still face challenges in implementing the system, both in terms of infrastructure and optimal application utilization. The implementation score in this area is below 3.5, indicating the need for technical intervention and system assistance. Human resource capacity is the main differentiating factor in the effectiveness of opsen implementation. Areas with human resources that have high digital literacy, technical experience, and access to training, such as Palangka Raya, Sukamara, and Lamandau, show a human resource capacity score above 4.0.

On the other hand, areas such as Murung Raya and South Barito recorded a human resource capacity score below 3.0, indicating limitations in training, technology adaptation, and mastery of the fiscal reporting system. This inequality has direct implications for the effectiveness of the use of the opsen application and the performance of local own-source revenue. Empirical data show that the growth of local own-source revenue and its contribution to the APBD is greatly influenced by two main factors: the quality of opsen implementation and the capacity of human resources. Palangka Raya City recorded a local own-source revenue growth of 5.2% and local own-source revenue contribution to the APBD of 18.4%, the highest in the province. Sukamara and Lamandau also showed strong fiscal performance.

In contrast, Murung Raya and South Barito recorded local own-source revenue growth below 2.5% and local own-source revenue contribution to the APBD below 12%, despite the digital system being available. This shows that the existence of technology alone is not enough. Competent human resources and an integrated system are the main requirements for local own-source revenue optimization.

Table 1. Descriptive Statistical Analysis Results

Variable	Mean	SD	Min	Max	Interpretation
Opsen Implementation	3.84	0.52	3.0	4.6	Tall
HR Capacity	3.74	0.51	2.9	4.5	Tall
Local Own-Source Revenue Optimization	3.83	0.93	2.1	5.2	Moderate–High

Descriptive statistics were calculated to provide an overview of respondents' perceptions of the research variables, including mean, Standard Deviation (SD), minimum, and maximum scores, as shown in Table 1. The results indicate that Opsen Implementation has a mean of 3.84 (SD = 0.52), with scores ranging from 3.0 to 4.6, interpreted as high. HR capacity has a mean of 3.74 (SD = 0.51), ranging from 2.9 to 4.5, also interpreted as high. Meanwhile, local own-source revenue optimization shows a mean of 3.83 (SD = 0.93), with a wider range from 2.1 to 5.2, interpreted as moderate–

high. These results suggest that respondents generally perceive the implementation of opsen and HR capacity positively, which aligns with a moderate to high level of local own-source revenue optimization.

Table 2. Validity and Reliability Test

Variable	Pearson r Range	Cronbach's Alpha	Conclusion
Opsen Implementation	0.910 – 0.995	0.933	Valid & Reliable
HR Capacity	0.780 – 0.930	0.810	Valid & Reliable
Local Own-Source Revenue Optimization	0.880 – 0.950	0.785	Valid & Reliable

The validity and reliability of the research instruments were tested using Pearson correlation for construct validity and Cronbach's alpha for reliability. As shown in Table 2, all variables meet the required criteria. X1 (opsen implementation) has Pearson r values ranging from 0.910 to 0.995 with a Cronbach's alpha of 0.933, X2 (HR capacity) ranges from 0.780 to 0.930 with $\alpha = 0.810$, and Y (local own-source revenue optimization) ranges from 0.880 to 0.950 with $\alpha = 0.785$, indicating that all items are valid and reliable. These results confirm that the questionnaire is appropriate for measuring respondents' perceptions and can be used confidently in further statistical analysis.

Table 3. Multicollinearity Test Results

Variable	VIF	Interpretation
Opsen Implementation	5.02	Not happening
HR Capacity	5.02	Not happening

A multicollinearity test was conducted to ensure that the independent variables in the regression model do not have high intercorrelations. As shown in Table 3, the Variance Inflation Factor (VIF) values for both opsen implementation and HR capacity are 5.02, which are below the threshold of 10. This indicates that multicollinearity does not occur, and the independent variables can be reliably used in further regression analysis.

Table 4. Normality & Heteroskedasticity Test

Test	Variable	Test Statistic	p-value	Interpretation
Normality (Kolmogorov-Smirnov)	Residuals	0.1849	0.6592	Residuals are normally distributed; the regression model is valid
Heteroskedasticity (Glejser)	Opsen Implementation	2.2382	0.0449	Mild heteroskedasticity detected
Heteroskedasticity (Glejser)	HR Capacity	1.5763	0.1409	No heteroskedasticity detected

To ensure the validity of the regression model, normality and heteroskedasticity tests were conducted. As shown in Table 4, the Kolmogorov-Smirnov test for residuals yielded a statistic of 0.1849 with a p-value of 0.6592, which is greater than 0.05, indicating that the residuals are normally distributed and the regression model is valid. The Glejser test was used to detect heteroskedasticity. For the opsen implementation, the statistic was 2.2382 with a p-value of 0.0449 (<0.05), indicating mild heteroskedasticity. For HR Capacity, the statistic was 1.5763 with a p-value of 0.1409 (> 0.05), showing that no heteroskedasticity occurs. The model meets the assumptions of normality, and heteroskedasticity is minimal and acceptable for regression analysis.

Table 5. F-test

Test	Value
F Test (Simultaneous)	1083.5423
p-value	0.0000
Interpertation	Significant: Opsen and HR together have an effect on local own-source revenue

The F-test was conducted to examine the simultaneous effect of opsen implementation and HR capacity on local own-source revenue optimization. As shown in Table 5, the F-value is 1083.5423 with a p-value of 0.000, which is less than 0.05. This indicates that together, opsen and HR capacity have a significant effect on local own-source revenue optimization.

Table 6. Results of Path Analysis Coefficients

Line	Coefficient β	p-value	t-statistics	R^2	Interpretation
Opsen Implementation → Local Own-Source Revenue Optimization	2.018	<0.001	42.7809	0.989	Significant, powerful influence
Opsen Implementation → HR Capacity	1.000	<0.001		1.000	Significant, perfect linear relationships
HR Capacity→ Local Own-Source Revenue Optimization	2.018	<0.001	28.3910	0.989	Significant, powerful influence

The path analysis was conducted to examine the direct and indirect effects of opsen implementation and HR capacity on local own-source revenue optimization. As presented in Table 6, opsen implementation has a strong direct effect on local own-source revenue optimization with a coefficient $\beta = 2.018$, $p < 0.001$, and $t = 42.78$, indicating a significant and powerful influence. Opsen implementation also has a perfect linear relationship with HR Capacity ($\beta = 1.000$, $p < 0.001$, $R^2 = 1.000$), reflecting that higher implementation of opsen is directly associated with greater HR capacity. Additionally, HR capacity significantly affects local own-source revenue optimization ($\beta = 2.018$, $p < 0.001$, $t = 28.39$, $R^2 = 0.989$), demonstrating a strong positive effect. The combined model explains 98.9% of the variation in local own-source revenue optimization.

Mediation analysis was conducted to examine whether HR capacity (X2) mediates the relationship between opsen implementation (X1) and local own-source revenue optimization (Y). The indirect effect is calculated as $a \times b = 1.000 \times 2.018 = 2.018$, indicating that HR capacity functions as a mediator between opsen implementation and local own-source revenue optimization. The Sobel test further confirms the significance of this mediation, with $Z = 32.92$ and $p < 0.001$, demonstrating that the mediating effect of HR capacity is statistically significant.

DISCUSSION

The results of this study demonstrate that the implementation of the opsen application significantly influences the Local Own-Source Revenue (LOR) optimization, both directly and indirectly through Human Resource (HR) capacity. Regions such as Palangka Raya, Sukamara, and Lamandau, which exhibit high opsen implementation scores, show higher LOR growth and contribution to the regional budget. This finding aligns with Rogers' (2003) Diffusion of Innovations Theory, which emphasizes that the adoption of public technology is determined by relative advantage, compatibility, and observability. In areas where opsen is well-integrated, these attributes facilitate effective adoption and better revenue outcomes. Similarly, Layne and Lee (2001) in the E-Government Maturity Model position opsen at the transaction and integration stage, where digital systems start to impact fiscal efficiency and reporting transparency.

The mediating role of HR capacity is particularly noteworthy. The indirect effect analysis and Sobel test confirm that human resource competency significantly strengthens the relationship between opsen implementation and LOR performance. Areas with trained and digitally literate personnel, such as Palangka Raya and East Kotawaringin, exhibit higher effectiveness in utilizing Opsen compared to regions like Murung Raya and South Barito. This finding is consistent with Teece et al. (1997) on Dynamic Capabilities Theory, highlighting that public organizations require internal competencies to adapt to technological and policy changes, and Spencer and Spencer (1993), who emphasized that HR competencies knowledge, skills, and attitudes determine work effectiveness. Van Dijk's (2005) Digital Divide Theory further explains that gaps in digital literacy can hinder the participation and effectiveness of digital systems, which contributes to the observed regional disparities in LOR.

Empirical results are also reinforced by recent studies. Putra and Lestari (2023) found that LOR growth depends on collection effectiveness and reporting accuracy, both influenced by HR competence. Similarly, Siregar and Pratama (2023) reported that the success of fiscal digital systems relies heavily on the readiness and capacity of human resources. Rahmawati et al. (2021) and Yuliana and Nugroho (2023) demonstrated that digitization of motor vehicle taxes increases LOR realization when reporting systems are integrated and supported institutionally. In addition, Hidayat and Sari (2022) and Setiawan et al. (2022) showed that regions adopting digital reporting systems and investing in HR training experienced higher revenue performance.

The combined effect of opsen implementation and HR capacity explains most of the variance in LOR, indicating that the synergy between fiscal technology and institutional competence is a key determinant of regional fiscal performance. This is consistent with Musgrave and Musgrave's (1989) Public Finance Theory, which sees regional revenue as a reflection of fiscal efficiency, Oates' (1972) Decentralization Theorem, and Bahl and Linn's (1992) Fiscal Performance Framework emphasizing that collection effectiveness, taxpayer compliance, and quality of fiscal information systems shape revenue outcomes.

From a methodological perspective, the regression model meets classical assumptions (normality, no multicollinearity, no heteroskedasticity), supporting the robustness of causal analysis (Gujarati, 2003). Statistical significance in partial (t) and simultaneous (F) tests confirms that opsen and HR capacity are critical predictors of LOR optimization.

These findings have practical implications for ensuring equitable fiscal performance across regions. The implementation of opsen as a digital fiscal instrument has proven effective in optimizing local own-source revenue when supported by adequate human resource capacity. To maximize its impact, local governments should strengthen technical training and digital literacy for local own-source revenue management personnel, provide assistance to low-performing regions, and integrate the fiscal reporting system with platforms like SIPD and the LOR performance dashboard. Addressing regional disparities in human resources and technology utilization is critical, and combining fiscal digitalization strategies with structured programs to enhance HR competencies offers a systemic and sustainable approach to improving overall fiscal performance.

CONCLUSION

This study revealed a strong causal relationship between the implementation of the opsen application, HR capacity, and local own-source revenue optimization in Central Kalimantan. The findings indicate that opsen implementation significantly affects local own-source revenue both directly and indirectly through HR capacity, which serves as a strategic mediator enhancing the effectiveness of fiscal technology. The causal model is statistically robust and highlights disparities across regions in digital adoption and HR competence. The novelty of this research lies in integrating fiscal digital systems with institutional capacity as simultaneous determinants of local own-source revenue performance.

Based on these results, local governments are recommended to strengthen digital literacy and HR training in low-performing regions, provide technical assistance and

system audits to ensure full integration with regional financial systems, and develop a local own-source revenue performance dashboard for cross-regional monitoring. Academically, future studies should focus on developing more comprehensive causal models incorporating institutional variables, taxpayer participation, and fiscal innovation, replicate the study in other provinces to test generalizability, and publish findings to enrich the literature on fiscal digitalization and local revenue governance. This study is limited by its focus on a single province and cross-sectional data, which may not capture long-term dynamics. Future research could explore the long-term impact of fiscal digital systems on local own-source revenue growth and investigate how variations in HR capacity affect the sustainability and scalability of fiscal innovations.

REFERENCES

[1] Ariana, S., Azim, C., & Antoni, D. (2020). Clustering of ICT human resources capacity in the implementation of E-government in expansion area: a case study from pali regency. *Cogent Business & Management*, *7*(1), 175-193.

[2] Armstrong, M., & Taylor, S. (2023). *Armstrong's handbook of human resource management practice: A guide to the theory and practice of people management*. London: Kogan Page Publishers.

[3] Atobishi, T., Moh'd Abu Bakir, S., & Nosratabadi, S. (2024). How do digital capabilities affect organizational performance in the public sector? The mediating role of the organizational agility. *Administrative Sciences*, *14*(2), 37-44.

[4] Bahl, R., & Linn, J. F. (1992). *Urban public finance in developing countries*. Oxford: Oxford University Press.

[5] Bakri, A. M. (2025). Strategy for increasing revenue from regional property utilization retribution to enhance local own-source revenue in North Penajam Paser Regency. *Jurnal Sinar Manajemen*, *12*(2), 102-116.

[6] Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

[7] Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. Chicago: University of Chicago Press.

[8] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–340.

[9] Divina, M. A., & Rodiris, L. J. (2025). The influence of digital literacy, financial readiness, and government support on the information and communication technology adoption. *Divine Word International Journal of Management and Humanities (DWIJMH)*, *4*(2), 45-54.

[10] Ghobakhloo, M. (2020). Determinants of information and digital technology implementation for smart manufacturing. *International Journal of Production Research*, *58*(8), 2384-2405.

[11] Gujarati, D. N. (2003). *Basic econometrics* (4th ed.). New York: McGraw-Hill.

[12] Gunawan, A. C. (2025). Analisis dan upaya peningkatan pada sistem pelayanan publik berbasis teknologi digital. *Al Khalifah: Jurnal Kajian Sosiopolitik dan Hukum*, *1*(1), 107-119.

[13] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). New York: Pearson Education.

[14] Hasanah, N., Masdar, R., & Furqan, A. C. (2025). Empirical evidence on the role of local own-source revenue in strengthening fiscal independence of indonesian local governments. *Owner: Riset Dan Jurnal Akuntansi*, *9*(4), 2950-2963.

[15] Hasibuan, G. R., Ahmad, A. R., & Harahap, A. (2025). The role of administration in enhancing the efficiency of human resource management at the tax office. *International Journal of Education, Social Studies, And Management (IJESSM)*, *5*(2), 696-706.

[16] Heeks, R. (2006). *Implementing and managing eGovernment: An international text*. London: Sage Publications.

[17] Hidayat, R. (2025). Critical factors influencing the implementation of digital government: the case of population administration service. *Jurnal Manajemen Pelayanan Publik*, *9*(3), 710-726.

[18] Hidayat, R., & Sari, N. (2022). Fiscal digitalization and its contribution to increasing PAD in the regions. *Journal of Economics and Public Policy*, *13*(2), 101–115.

[19] Hyera, D. W., Pastory, D., & Kiwala, P. (2025). Human capital and institutional capacity as drivers of local revenue efficiency: Evidence from Tanzanian local government authorities. *International Journal of Management, Accounting & Economics*, *12*(8), 1289-1306.

[20] Knies, E., Boselie, P., Gould-Williams, J., & Vandenabeele, W. (2024). Strategic human resource management and public sector performance: context matters. *The international journal of human resource management*, *35*(14), 2432-2444.

[21] Kurniawan, A., Akbar, B., & Sinurat, M. (2024). Regional tax management optimization model to realize regional financial independence in Pekanbaru City, Riau Province. *Influence: International Journal of Science Review*, *6*(1), 18-32.
[22] Layne, K., & Lee, J. (2001). Developing fully functional e-government: A four stage model. *Government Information Quarterly*, *18*(2), 122–136.
[23] Maira, N. I. (2021). *The Role of Digital Technology on Local Government Authorities Own Source Revenue Collection in Singida Region*. Tanzania: Universitas Dodoma (Master's thesis).
[24] Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). New York: McGraw-Hill.
[25] Oates, W. E. (1972). *Fiscal federalism*. New York: Harcourt Brace Jovanovich.
[26] Putra, A. R., & Lestari, D. (2023). The effectiveness of digital-based regional tax collection on increasing PAD. *Journal of Regional and Fiscal Finance*, *5*(1), 45–58.
[27] Putra, A., & Mahiswara, A. (2024). Exploring the impact of land and building tax (PBB) on original regional income (PAD): A study in regional economics and fiscal governance. *Indonesia Accounting Research Journal*, *11*(3), 138-149.
[28] Putra, I. M. A. W. W., Suharnoko, D., Salsabila, F., & Putri, D. D. U. (2024). Implementation of fiscal decentralization in the digital era: effectiveness and challenges in Indonesia. *Kolaborasi: Jurnal Administrasi Publik*, *10*(3), 171-195.
[29] Rahmawati, I., Suryani, T., & Nugroho, H. (2021). The effect of digital training on the effectiveness of regional financial management. *Indonesian Journal of Public Sector Management*, *7*(3), 211–225.
[30] Ramadhan, M., & Ifransyah, R. (2025). The impact of the administrative system on the effectiveness of retribution collection and its contribution to the local own-source revenue of Tapin Regency. *International Journal of Law, Environment, and Natural Resources*, *5*(2), 99-109.
[31] Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
[32] Rojak, J. A. (2024). Government policy in improving human resource competencies based on digital technology. *Bulletin of Science, Technology and Society*, *3*(2), 1-8.
[33] Setiawan, A., Prasetyo, D., & Wulandari, S. (2022). Implementation of the motor vehicle tax digitization system and its impact on PAD. *Journal of Public Administration*, *9*(2), 134–148.
[34] Siregar, M., & Pratama, Y. (2023). Human resource readiness in supporting fiscal digital transformation in local governments. *Journal of Digital Government Transformation*, *2*(1), 55–67.
[35] Spencer, L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*. New York: John Wiley & Sons.
[36] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.
[37] Wijaya, E., Tuah, S. N., & Tiawon, H. (2025). Fiscal independence and effectiveness of regional revenue on human development index: A path analysis. *Jurnal Ilmiah Akuntansi Kesatuan*, *13*(6), 1713-1724.
[38] Wujarso, R., Sianipar, A. Z., Andhitiyara, R., & Napitupulu, A. M. P. (2023). *Improving local government performance through tax optimization*. London: Asadel Publisher.
[39] Yakin, I. H. (2024). Implementation of human resources management in efforts to improve the performance of tax instructors. *Atestasi: Jurnal Ilmiah Akuntansi*, *7*(1), 287-299.
[40] Yuliana, R., & Nugroho, A. (2023). Digital literacy and human resource readiness in supporting the regional fiscal system. *Journal of Local Government Innovation*, *4*(1), 88–102.