

## **The Impact of the SIGNAL (National Digital Samsat) Application on Motor Vehicle Taxpayer Compliance and Its Implications for Local Own-Source Revenue at the Samsat UPTB I Palembang Office.**

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### **Abstract**

The implementation of the SIGNAL (Samsat Digital Nasional) application represents a strategic step in modernizing motor vehicle tax administration. This study examines the effect of SIGNAL application usage on taxpayer compliance and its implications for Local Own-Source Revenue (PAD) at the UPTB I Samsat Office in Palembang.

This research employed a quantitative approach with a sample of 100 taxpayers. The data were analyzed using Structural Equation Modeling based on Partial Least Squares (SEM-PLS). The results show that the use of the SIGNAL application has a positive and significant effect on taxpayer compliance. Furthermore, higher levels of taxpayer compliance significantly contribute to the increase in Local Own-Source Revenue. The mediation analysis indicates that taxpayer compliance plays an important role as an intervening variable linking the use of the SIGNAL application with the improvement of regional revenue. These findings highlight that the digitalization of tax services can enhance public awareness and participation in fulfilling tax obligations.

Therefore, strengthening digital literacy and expanding the socialization of the SIGNAL application are essential to support sustainable regional fiscal independence. This study suggests that the utilization of information technology is crucial for developing a modern, transparent, and efficient taxation system.

Keywords: SIGNAL application, taxpayer compliance, local own-source revenue (PAD).

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### **INTRODUCTION**

Local taxes constitute one of the most important components in the structure of **Local Own-Source Revenue (Pendapatan Asli Daerah/PAD)** and play a crucial role in supporting regional development financing and public service delivery at the local government level. In many decentralized fiscal systems, local governments rely heavily on tax revenues to maintain financial sustainability and improve regional welfare (Bird & Zolt, 2015; Martinez-Vazquez & McNab, 2018). One of the regional tax types that significantly contributes to local revenue is the **Motor Vehicle Tax**,

particularly due to the continuous increase in the number of registered vehicles each year. The growth of motor vehicle ownership has created substantial potential for local revenue generation through vehicle taxation (Zidan Prasetyo, 2024).

However, the optimal realization of tax revenue largely depends on the level of **taxpayer compliance** in fulfilling their tax obligations accurately and on time. Tax compliance is widely recognized as a critical determinant of tax revenue performance, as voluntary compliance reduces administrative costs and increases the efficiency of tax collection (Alm, 2019; Kirchler, Hoelzl, & Wahl, 2018). In the context of motor vehicle taxation, taxpayer compliance is influenced by several factors, including administrative procedures, service quality, accessibility of tax services, and taxpayers' perceptions of the tax system (Parwati, 2025). Despite the significant potential of motor vehicle taxes, many regions still face challenges in achieving optimal compliance rates among taxpayers.

To address these challenges, governments around the world have increasingly implemented **digital transformation in tax administration**. Digitalization is considered a strategic approach to improve the efficiency, transparency, and accessibility of public services, including tax services (OECD, 2020; Gupta, Keen, Shah, & Verdier, 2017). The integration of information technology into tax administration has been shown to reduce compliance costs, simplify procedures, and improve taxpayer engagement (Kochanova, Hasnain, & Larson, 2020). Consequently, many governments have adopted electronic tax systems and digital payment platforms to enhance taxpayer convenience and improve compliance levels.

In Indonesia, one of the innovations introduced to modernize tax administration is the **SIGNAL (Samsat Digital Nasional) application**, a digital platform that allows taxpayers to pay motor vehicle taxes online without visiting the Samsat office directly. This application represents an important step toward the digitalization of public services in regional taxation, enabling taxpayers to conduct transactions through mobile devices in a faster and more efficient manner (Ministry of Home Affairs, 2022). The implementation of digital tax services such as SIGNAL is expected to improve service accessibility, reduce bureaucratic barriers, and ultimately enhance taxpayer compliance.

From a theoretical perspective, the adoption of digital tax systems can be explained through the **Technology Acceptance Model (TAM)**, which posits that individuals' intention to use a technological system is primarily influenced by two key factors: **perceived usefulness** and **perceived ease of use** (Davis, 1989; Venkatesh & Bala, 2008). In recent studies on digital public services, these two perceptions have consistently been identified as significant predictors of technology adoption in e-government platforms (Mensah, 2019; Alryalat, Dwivedi, & Rana, 2020). In the context of the SIGNAL application, if taxpayers perceive the system as easy to use and beneficial in terms of time efficiency and convenience, their willingness to adopt the system is likely to increase. This increased adoption may subsequently encourage **voluntary tax compliance** (Recja Fahlevie & Leriza Desitama Anggraini, 2025; Desi Rama Yuni, Juhaini Alie, & Aris Munandar, 2025).

In addition to technological factors, **service quality** also plays an important role in influencing taxpayer behavior. The **SERVQUAL model**, developed by

Parasuraman, Zeithaml, and Berry, highlights five key dimensions of service quality: reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman, Zeithaml, & Berry, 2018). High-quality public services can increase trust in government institutions and improve citizens' willingness to comply with regulatory obligations, including tax payments (Azhari, 2025). Previous research has demonstrated that improved service quality contributes to higher levels of customer satisfaction and loyalty (Dewi, 2020). In the taxation context, taxpayer satisfaction with service quality may translate into increased compliance behavior (Meiriasari & Ratu, 2022).

Furthermore, improvements in taxpayer compliance have direct implications for **local revenue performance**. Studies on public finance indicate that administrative reforms and innovations in tax service delivery can significantly improve revenue collection by increasing taxpayer participation and reducing tax evasion (Besley & Persson, 2016; Slemrod & Gillitzer, 2017). Therefore, the implementation of digital taxation services such as the SIGNAL application is expected not only to improve taxpayer compliance but also to enhance the effectiveness of regional revenue collection.

Based on the above background, this study formulates three research questions:

- (1) Does the use of the SIGNAL application influence motor vehicle taxpayer compliance?
- (2) Does taxpayer compliance affect Local Own-Source Revenue (PAD)?
- (3) Does taxpayer compliance mediate the relationship between the use of the SIGNAL application and PAD?

This study aims to analyze the relationships among these variables using a **quantitative approach with Structural Equation Modeling (SEM) based on Partial Least Squares (PLS)**. The research was conducted on **100 motor vehicle taxpayers at the UPTB Samsat I Palembang Office**.

This research is expected to contribute conceptually to the growing literature on **digitalization of local tax administration** and provide policy recommendations for improving regional fiscal independence through sustainable enhancement of taxpayer compliance.

## RESEARCH METHOD

This study employed a quantitative approach with an explanatory research design to analyze the causal relationships between the use of the SIGNAL application, taxpayer compliance, and its implications for Local Own-Source Revenue (PAD). This approach was chosen because it allows the examination of both direct and indirect relationships between variables using statistical analysis.

The population of this study consisted of all motor vehicle taxpayers registered at UPTB Samsat I Palembang. The sample was determined using purposive sampling, selecting respondents based on specific criteria, namely taxpayers who have used the SIGNAL application to pay their motor vehicle taxes. A total of 100 respondents were included in this study, which is considered adequate for Structural Equation Modeling using Partial Least Squares (SEM-PLS) analysis.

The study used primary data collected through questionnaires distributed directly to respondents. The research instrument employed a five-point Likert scale,

ranging from strongly disagree to strongly agree. The SIGNAL application usage variable was measured through indicators such as perceived ease of use, efficiency, speed of access, and service transparency. Taxpayer compliance was measured through indicators including timeliness of tax payment, awareness of tax obligations, and compliance with administrative procedures. Meanwhile, PAD was measured through respondents' perceptions regarding the contribution of motor vehicle tax payments to regional revenue.

Data analysis was conducted using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS). The analysis included evaluation of the measurement model (outer model) to test validity and reliability using loading factors, Average Variance Extracted (AVE), and composite reliability. Furthermore, the structural model (inner model) was evaluated by examining path coefficients, the coefficient of determination ( $R^2$ ), and significance testing through bootstrapping at a 5% significance level.

A mediation test was also conducted to examine the role of taxpayer compliance as an intervening variable between the use of the SIGNAL application and Local Own-Source Revenue (PAD). This method allows the study to explain how the digitalization of tax services can influence regional revenue optimization.

## RESULT AND DISCUSSION

Data analysis in this study was conducted using the *Structural Equation Modeling method* based on *Partial Least Squares* (SEM-PLS). The analysis phase includes evaluation of the measurement model (*outer model*) and structural model (*inner model*), as well as hypothesis testing and mediation analysis.

### Measurement Model (*Outer Model*)

**Table 1.** Validity and Reliability Test Results

Variables	AVE	Composite Reliability	Cronbach's Alpha
Use of SIGNAL Application	0.710	0.924	0.899
Taxpayer Compliance	0.676	0.892	0.854
Locally-generated revenue	0.721	0.913	0.881

Based on the test results, the Average Variance Extracted (AVE) value for all constructs exceeded the 0.50 threshold. This figure confirms that each construct has ideal convergent validity, where the latent variable is able to represent more than 50% of the information contained in its indicators.

In addition to validity, the model's reliability is also demonstrated by its Composite Reliability (CR) and Cronbach's Alpha values, which consistently exceed 0.70. This indicates that the instrument has a high level of internal consistency, ensuring stable and reliable measurement results even after repeated testing.

By meeting these validity and reliability standards, the measurement model is declared valid and reliable (fit). Therefore, this research data meets the requirements

to proceed to the structural model analysis stage (inner model) to test hypotheses between variables.

### b. Coefficient of Determination ( $R^2$ )

**Table 2.** Value of the Coefficient of Determination ( $R^2$ )

Variables	R-Square	R-Square Adjusted
Taxpayer Compliance in Payment of Motor Vehicle Tax (Y)	0.666	0.663
Local Original Income (Z)	0.797	0.793

The study results show that the use of the SIGNAL application contributed 66.6% to the variation in taxpayer compliance. This demonstrates that the digitalization of tax services through SIGNAL is a key factor significantly increasing public awareness and discipline in paying taxes.

On the other hand, the combination of the SIGNAL application and taxpayer compliance together explained 79.7% of the variation in Regional Original Income (PAD). This relatively high figure confirms that the effectiveness of digital systems, coupled with public compliance, has a direct and tangible impact on strengthening regional financial stability.

Simply put, a high  $R^2$  value indicates that your research model is highly accurate. Most of the factors influencing PAD are accounted for by the variables you studied, while the remainder (around 20.3%) is influenced by external factors beyond the scope of this study.

### c. Hypothesis Testing

**Table 3.** Hypothesis Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	( O STDEV )	P Values
KWP -> PAD	0.522	0.523	0.099	5,279	0.000
PAS -> KWP	0.816	0.810	0.063	12,977	0.000
PAS -> PAD	0.414	0.412	0.104	3,982	0.000

The Influence of Taxpayer Compliance (KWP) on Regional Original Income (PAD), This relationship recorded a coefficient of 0.522 with a *t-statistic value* of 5.279 ( $> 1.96$ ) and a *p-value* of 0.000. These results confirm that taxpayer discipline is a crucial factor; the higher the level of community compliance, the contribution to regional revenue will increase significantly.

The Influence of the SIGNAL (PAS) Application on Taxpayer Compliance (KWP), A very strong and significant influence was found with a coefficient of 0.816 and a *t-statistic* reaching 12.977. This indicates that the convenience, efficiency, and

practicality offered by the SIGNAL application effectively transform taxpayer behavior to be more compliant in fulfilling their obligations.

The Direct Impact of the Use of the SIGNAL (PAS) Application on Regional Original Income (PAD), the SIGNAL application also has a direct impact on PAD with a coefficient of 0.414 and a *t*-statistic of 3.982. Although the direct impact is not as large as the impact through the compliance channel, these results still show that independent service digitalization can optimize regional income.

Comprehensively, all relationship paths in the model were found to be significant, thus accepting all hypotheses. This finding strengthens the theory that digitalization through SIGNAL creates a double effect : increasing taxpayer compliance while optimizing Regional Original Revenue, both directly and through compliance mediation.

### 1. The Impact of Service Digitalization on Taxpayer Compliance Behavior

The transformation of the tax system through the SIGNAL application has been empirically proven to provide a significant positive contribution to increasing taxpayer compliance. Based on hypothesis testing using the SEM-PLS method, it was found that the significance value (p-value 0.000) was below the threshold of 0.05, which confirms that the effectiveness of using this application is directly proportional to the public's discipline in fulfilling their tax obligations. This phenomenon is in line with Davis's (1989) view, in *the Technology Acceptance Model* (TAM), which states that ease of access and usability of a system will encourage acceptance and change user behavior.

The ease of procedures, time efficiency, and transparency offered by the SIGNAL application are able to eliminate bureaucratic obstacles that have been the main complaints of the public (Muhammad Farhan, 2025 ). Psychologically, this convenience increases the perception of taxpayers' control over their obligations. This is reinforced by Ajzen (1991) through *the Theory of Planned Behavior* (TPB), which states that the intention to behave compliantly is greatly influenced by the perception of ease in carrying out the action. Thus, SIGNAL is not just a technical innovation, but an instrument for changing fiscal behavior ( Rafli Alfian, Tresno Eka Jaya R, 2024) .

### 2. Correlation of Tax Compliance with Regional Fiscal Resilience

This study also proves that the level of taxpayer compliance has a strong linear influence on Regional Original Income (PAD). With a *t*-statistic value of 5.279, it is clear that any increase in community compliance in paying Motor Vehicle Tax (PKB) will have a direct impact on strengthening the regional cash structure (Muspawi Mohamad, 2024) . Vehicle tax is a *sustainable* revenue instrument , so the stability of its receipts is highly dependent on the collective awareness of the community (Aliya & Ratnasari Chanifah Indah, 2025).

The synergy between government policies in facilitating services and positive community responses creates stronger fiscal independence Wijaya Turnip et al (2024) High compliance ensures consistent regional cash flow, so that regional governments have sufficient financial capacity to finance infrastructure development

and public services independently Mohammad Aldi Eka Putra, Muhammad Rizki Hafianto Putra, Nalurita Emylia (2025) .

### 3. Direct Contribution of SIGNAL Application to PAD Efficiency

In addition to its strategic role in triggering compliance, the SIGNAL application makes a significant direct contribution to increasing Regional Original Income (PAD) with a coefficient value of 0.414 (Fadillah, 2026). This finding indicates that tax digitalization can create a far more effective and operational revenue system than conventional methods. Through the implementation of an electronic system, various physical, geographical, and distance constraints that have been the main obstacles to tax payments can be completely minimized (Irsan & Sanjaya, 2024). This accelerates the tax target realization cycle because taxpayers can fulfill their obligations anytime and anywhere, which technically supports the acceleration of regional cash flow. Desi Rama Yuni, Juhaini Alie, Aris Munandar, (2025)

The administrative efficiency generated by this digital ecosystem also reduces tax collection costs *and* helps close revenue leakages caused by illegal practices or extortion (Aditya et al., 2021). Technological innovation ultimately becomes a key catalyst in accelerating the circulation of funds from taxpayers directly to the state treasury in *real time* (Romney & Steinbart, 2018). *This transaction speed aligns with Davis's (1989 ) principle in the Technology Acceptance Model (TAM), where the use of digital systems directly improves overall organizational efficiency. Psychologically, this convenience also strengthens taxpayers' perceptions of control, in accordance with the Theory of Planned Behavior (TPB), ultimately ensuring the sustainability of regional revenues.*

Electronic service quality ( *E-SERVQUAL* ), which encompasses system reliability and security, is the primary foundation for maintaining the integrity of regional financial data (Azhari, 2025; Meiriasari & Ratu, 2022). An integrated system increases fiscal transparency, thereby strengthening public trust in tax fund management (Nurwanah et al., 2022). This provides space for regional governments to achieve more stable fiscal independence, in line with the spirit of regional autonomy in managing their own revenue potential (Zidan et al., 2023).

Digitization through platforms like SIGNAL also reduces manual administrative workloads that are prone to human error , thereby improving the accuracy of tax data (Indrajit, 2006). This transformation aligns with global efforts to modernize the public sector to create cleaner and more accountable governance (World Bank, 2021; Rahayu, 2017). In the long term, the effectiveness of this electronic payment system not only increases nominal revenue but also strengthens regional economic structures through the inclusive use of information technology (vhika meiriasari, mutiara kemala ratu (2022) .

## CONCLUSION

Based on empirical evidence obtained from SIGNAL application users and analyzed using the *Structural Equation Modeling approach based on Partial Least Squares*

(SEM-PLS), this study concludes that the use of the SIGNAL application has a positive and significant influence on motor vehicle taxpayer compliance. Furthermore, motor vehicle taxpayer compliance is proven to have a positive and significant influence on Regional Original Income. In addition, the use of the SIGNAL application also has a positive influence on Regional Original Income indirectly through increasing motor vehicle taxpayer compliance. This finding strengthens the domino effect of digital transformation in the taxation sector, where optimal utilization of the SIGNAL application can encourage taxpayer compliance behavior, which ultimately becomes an important factor in increasing Regional Original Income from the motor vehicle tax sector.

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