

## ANALYZING TAX DEBT PAYMENT BEHAVIOR USING DECISION TREE ALGORITHM

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### ABSTRACT

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Active tax collection is crucial for securing state revenue, particularly when economic performance falls short of fiscal targets. Although the Directorate General of Taxes has intensified enforcement efforts such as issuing warning letters, distress warrants, asset confiscation, and account freezing, their effectiveness remains limited. This study examines the interplay between active tax collection, tax burdens, and taxpayer non-compliance in shaping tax debt payment behavior. Employing a decision tree algorithm, the analysis is based on taxpayer data from the Bandung Cicadas tax office. The results indicate that active tax collection is dominant in encouraging payment, with distress warrants being the most influential factor, particularly for taxpayers with lower tax burdens.

In contrast, higher tax burdens and persistent non-compliance reduce the likelihood of repayment. The study also highlights how psychological and financial considerations influence payment behavior, particularly under moderate tax burdens. These insights support the relevance of Behavioral Economics in understanding taxpayer responses to enforcement measures.

**Keywords:** Active Tax Collection, Tax Burden, Taxpayer Non-Compliance, Tax Debt Payment.

### INTRODUCTION

Active tax collection measures constitute a critical strategy to ensure the achievement of tax revenue targets, especially when revenues from current economic activities fall short (F. T. Putra & Hartini, 2023). The realization of tax revenues in 2020 reached only IDR 1,070.00 trillion, or 89.30% of the target set in the State Budget (Indonesian Audit Board, 2021), highlighting the limitations of relying solely on ongoing economic activities as the primary source of tax income. To optimize the resolution of unresolved tax receivables, the Directorate General of Taxes (DGT) has implemented various active collection actions, including issuing warning letters, delivering distress warrants, confiscation of assets, account freezing, and implementing tax detention (Nissa & Muslimin, 2022). Additionally, DGT employs a strategy to optimize collection

activities by prioritizing actions based on specific criteria, such as economically active taxpayers, tax debts nearing the statute of limitations, and taxpayers with high potential repayment capacity (Directorate General of Taxes, 2021).

In 2020, the DGT executed several active collection actions through established strategies. These included issuing 1,552,343 warning letters, 399,395 distress warrants, and 15,338 orders to conduct confiscation. Furthermore, DGT froze 9,610 bank accounts, sold 2,535 confiscated assets, imposed international travel bans on 765 taxpayers, and detained nine taxpayers. Despite these intensive efforts, the results were ineffective in increasing tax revenue. According to the 2020 Tax Receivable Realization Report, revenues from active collection activities accounted for only 26.40% of potential tax receivables (Directorate General of Taxes, 2021).

The Bandung Cicadas Primary Tax Office also observed that active collection measures performed suboptimally in supporting tax revenue targets. Based on the 2023 tax collection performance report, this office recorded an effectiveness rate of only 38.72% of its active tax collection target despite achieving the quantitative target for collection actions. This achievement indicates that active tax collection measures alone are insufficient to drive the settlement of tax debts and suggests the existence of other influencing factors affecting taxpayers' willingness to pay their debts.

According to Behavioral Economics Theory, individual decision-making is often influenced by psychological factors such as cognitive biases, risk perception, and emotions, particularly in the context of economics and tax compliance (Thaler, 2016). Individuals often perceive tax obligations as significant burdens, shaped by a psychological tendency to exaggerate potential losses compared to gains (Guerra & Harrington, 2018). Loss aversion reinforces this perception, making taxpayers more sensitive to expenditures perceived as losses than long-term benefits that are not immediately evident (Engström et al., 2015).

In taxation, enforcement actions by authorities, such as active tax collection efforts, respond to taxpayers' perceived burdens and serve as external reminders that draw attention to the consequences of non-compliance (Leets et al., 2020). These enforcement efforts create a salience effect, where the risk of non-compliance becomes more pronounced and urgent in taxpayer considerations (Hlouskova & Tsigaris, 2021). Furthermore, the tendency to repeatedly violate tax regulations, often reflected in behavioral patterns, can be explained by evaluative processes rooted in past experiences (Onu, 2016). Individuals shape their decisions based on their subjective perceptions of enforcement effectiveness and sanction risks, often influenced by their prior interactions with the tax system (Ispriyarso, 2019). This behavior indicates that the interaction between external environmental influences and internal psychological evaluations significantly shapes taxpayer behavior.

Behavioral Economics Theory strengthens the argument that active tax collection efforts are not the sole determinants of taxpayer behavior in settling tax debts. Other factors, such as the perceived tax burden and intentional non-compliance based on historical experiences, significantly influence tax payment decisions (Engström et al., 2015; Ispriyarso, 2019; Onu, 2016). These factors can weaken the effectiveness of collection actions, preventing them from fully encouraging taxpayers to settle their debts or increasing revenue from receivables.

The ineffectiveness of active tax collection efforts in improving tax settlement and revenue is consistent with findings by Nasution & Aliffioni (2018), who revealed that active tax collection at the North Bekasi Primary Tax Office did not significantly

contribute to total tax revenue, as evidenced by the low proportion of revenue from these actions relative to overall tax collections. They noted that a key factor was the inability of many taxpayers to settle their tax debts financially. These findings highlight the significant impact of the tax burden on taxpayer behavior. Caroline et al. (2023), Fitria & Supriyono (2019), and Wijaya & Yanti (2023) confirmed this finding by identifying a negative relationship between tax burden and payment or settlement.

Research by Kardianti et al. (2018) also highlights the ineffectiveness of active tax collection in increasing tax revenue, noting that higher returns did not match increased collection frequency. Widespread taxpayer negligence in settling debts and a lack of awareness of paying taxes on time contribute to this inefficiency. These conditions reflect low compliance levels among taxpayers, significantly affecting their decisions to fulfill tax obligations. This finding aligns with Ispriyarso (2019), who stated that taxpayers intending to be non-compliant tend to ignore reporting and payment obligations. Bahtiar & Qadri (2024) further emphasized that those with a history of underreporting assets are more susceptible to tax evasion.

Based on the description above, enforcement measures, perceived tax burdens, and compliance levels shaped by intention and past experiences collectively influence tax payment behavior. Most previous studies have focused on the effects of active collection on tax arrears settlement (F. A. Putra & Muslim, 2022; Sulistyorini & Latifah, 2022; Yuspitara et al., 2017), the relationship between tax burden and payment (Risa et al., 2023; Wirawan et al., 2024), and the impact of taxpayer compliance on revenue (Monica & Andi, 2019; Riyadi et al., 2021; Sulistyorini & Latifah, 2022). However, research on the influence of external factors and internal motivation on taxpayers' decisions to settle their debt remains limited.

This study addresses that gap by analyzing how the interaction between active tax collection, tax burden, and taxpayer non-compliance influences payment behavior. The analysis employs a decision tree algorithm to identify rule-based patterns that explain taxpayers' responses under varying enforcement conditions, perceived burden, and compliance level. This approach allows for a more nuanced understanding of taxpayer behavior beyond linear relationships and supports the development of adaptive, profile-based collection strategies. Based on this framework, the first hypothesis ( $H_1$ ) can be formulated as follows: Tax payment behavior is influenced by the interaction between external factors, in the form of active tax collection, and internal motivational factors, including perceived tax burdens and the level of taxpayer non-compliance.

## **RESEARCH METHODS**

This study adopts a quantitative exploratory approach through a case study design within the post-positivist paradigm, an evolution of the positivist tradition that acknowledges social phenomena' complexity and contextual nature (Musa & Aldiabat, 2024). The exploratory orientation of this research enables a flexible examination of patterns and associations among variables, emphasizing the discovery of relationships and contextual dynamics over deterministic explanations or predictive precision. Such an approach is particularly suited to contexts where the primary objective is to gain nuanced insights and generate empirical understanding rather than to establish universal generalizations, allowing the research to capture the richness of the observed phenomena within their specific settings.

Within the post-positivist perspective, reality is considered observable and measurable; however, its interpretation remains provisional due to inherent complexities and potential biases in measurement and analysis (Maksimović & Evtimov, 2023). Consequently, relationships among variables are viewed as probabilistic rather than deterministic, and findings are regarded as the most plausible approximation of reality based on empirical evidence (Kouam, 2025). This methodological orientation ensures that while the analysis employs systematic quantitative techniques for rigor and objectivity, it retains sufficient flexibility to accommodate the dynamic and context-dependent nature of the phenomena under investigation (Watson, 2015).

The study population includes all taxpayers subject to active tax collection enforcement by the Bandung Cicadas Tax Office in 2023, totaling 1,407 taxpayers, as listed in table 1. The researcher employed purposive sampling, deliberately selecting specific individuals or cases to gain critical insights that could not be obtained from other sources (Denieffe, 2020). The sample was selected based on specific criteria. These taxpayers made partial or complete payments of their tax arrears in the same year that the tax authorities applied active tax collection measures. Based on these criteria, the researcher selected a sample of 31 taxpayers since 1,376 individuals in the population had no payment history within the same year. Therefore, the researcher intended this sample to represent tax debt payment behavior, which serves as the primary focus of the research.

**Table 1. Purposive Sampling Method**

Criteria	Sample
Taxpayers for whom active tax collection action has been taken	1.407
Taxpayers who do not have a history of paying tax debts	1.376
Taxpayers who have a history of paying tax debts	31
Total amount of the sample	31

Source: Data Processed, 2025

The main variables in this study consist of the dependent variable, namely tax debt payment, and the independent variables, which include active tax collection, tax burden, and level of taxpayer non-compliance. The tax debt payment variable represents the status of tax debt settlement as a form of taxpayer commitment to fulfilling tax obligations (Ilham et al., 2018). It is classified into two categories: settled and unsettled. The active tax collection variable reflects the most recent enforcement action taken against the taxpayer, as stipulated in the Law on Tax Collection by Distress Warrants, which encompasses issuing warning letters, distress warrants, confiscating assets, and auctioning confiscated assets. The tax burden is measured based on the total nominal amount of tax assessments and tax bills borne by the taxpayer, expressed in millions of rupiah, serving as an indicator of the magnitude of tax obligations to be fulfilled (Hutuely et al., 2023). Meanwhile, taxpayer non-compliance is assessed through the number of tax collection and assessment notices, which reflect the legal enforcement response to violations of tax obligations (Siamena et al., 2017).

**Table 2. Categorization of Tax Burden and Level of Taxpayer Non-compliance**

Category	Variable	
	Tax Burden (total nominal amount of tax assessments and bills in millions of rupiah)	Level of Taxpayer Non-compliance (amount of the notice of tax collection and notice of tax assessment)
Low	< 4,80	< 2.00
Medium/Moderate	$4,80 \leq x \leq 103.00$	$2.00 \leq x \leq 18.00$
High	> 103.00	> 18.00

Source: Data Processed, 2025

For analytical purposes, the researchers classified the tax burden variable into three categories - low, medium, and high - and categorized the level of taxpayer non-compliance into three levels - low, moderate, and high - using this categorization method based on the quartile approach as implemented in the study by Sartana et al. (2023). These categories refer to the value distribution below Q1, between Q1 and Q3, and above Q3. Table 2 details the quartile-based categorization for the tax burden and level of taxpayer non-compliance variables.

The data used in this study are cross-sectional secondary data obtained from Bandung Cicadas Tax Office through an official request submitted via [www.eriset.pajak.go.id](http://www.eriset.pajak.go.id). The data encompass all taxpayer information subject to active tax collection actions throughout 2023, which aligns with the study's temporal focus. The use of cross-sectional data is deemed appropriate as it captures variations in taxpayer behavior at a single point in time and supports efficient data collection in terms of time and resources (Kelly et al., 2024). Upon acquisition, the data were filtered according to the predetermined sample criteria, and key variables were identified, such as tax debt settlement status, type of latest collection action, the nominal value of tax assessments or collection, and the number of notices of tax collection and notices of tax assessment they issued.

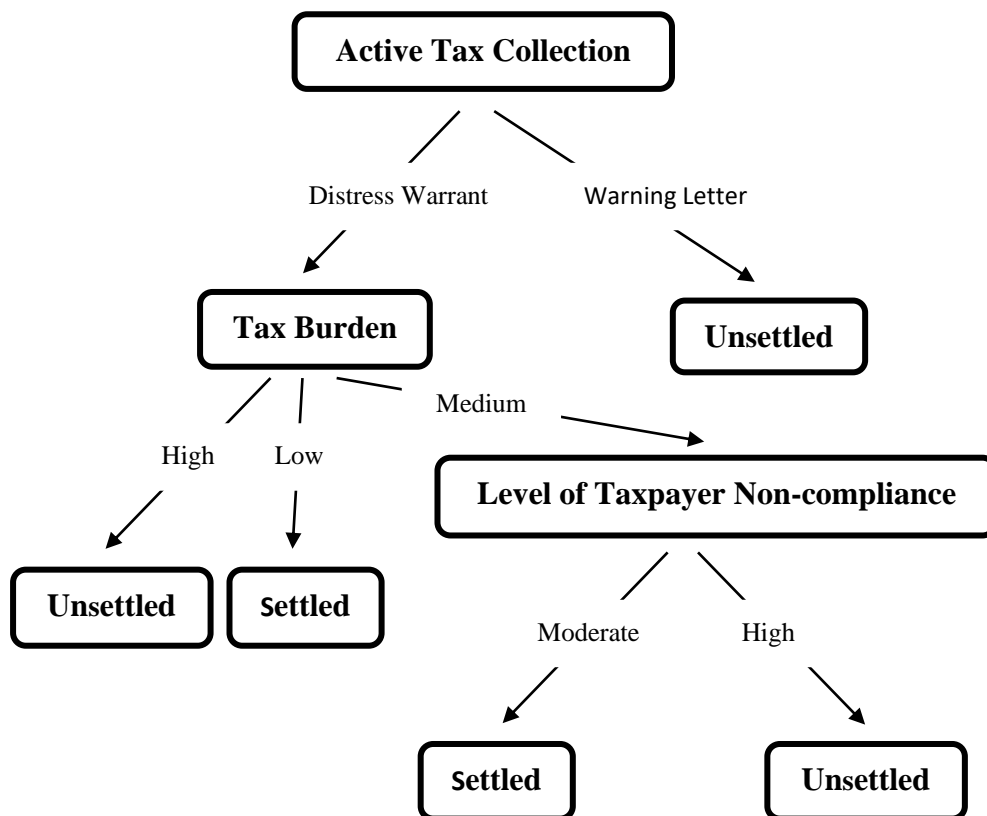
Data analysis was conducted using the decision tree algorithm via RapidMiner Studio. The selection of the decision tree method aligns with the post-positivist paradigm, which facilitates the disclosure of relational patterns among variables without explicitly defining causal relationships (Priyanka & Kumar, 2020). This method also enables the exploration of hierarchical influences among variables, allowing for systematic identification of tax debt payment behavior patterns. The analysis process began with transforming quantitative variables into categories based on quartiles, followed by labeling the target variable, namely tax debt payment status. The data were then split into training (85.00%) and testing (15.00%) sets to build the predictive model and assess its generalization performance to new data (Gavankar & Sawarkar, 2017). The decision tree model was developed by calculating entropy and information gain at each node. Model performance was evaluated using accuracy and sensitivity indicators to ensure a reliable interpretation of interactions among the key variables influencing tax debt payment behavior (Mienye et al., 2019).

## **RESULTS AND DISCUSSION**

This study aims to analyze the behavioral patterns of taxpayers in the context of tax debt payments, shaped by the interaction among the variables of active tax collection actions, tax burden, and the level of taxpayer non-compliance. The population in this research consists of taxpayers subject to active tax collection measures in 2023, with a sample of 31 taxpayers with a history of making tax payments following such actions. Distribution of each variable category within the research dataset revealed that the majority of taxpayers (22 taxpayers) with a history of tax debt payments had not yet settled their tax obligations. In comparison, only nine taxpayers had fully paid their debts. The most recent tax collection action variable was dominated by the issuance of a distress warrant, affecting 24 taxpayers, more than the issuance of warning letters, which involved only seven taxpayers. Regarding the tax burden variable, most taxpayers fell into the medium category, totaling 16 taxpayers, while the small and large categories comprised 8 and 7 taxpayers, respectively. Regarding the variable of taxpayer non-compliance level,

the moderate category recorded the highest number, with 15 taxpayers, whereas the low and high categories each accounted for eight taxpayers.

Based on the calculation of entropy values and information gained for each research variable in the compiled dataset, a decision tree model was constructed, as illustrated in figure 1. The results of the decision tree modeling indicate that the variable representing active tax collection actions is the primary factor influencing tax debt repayment patterns, as evidenced by its position as the root node in the decision tree. This finding suggests that collection actions have the most significant impact on settling tax debts. The significance of the type of collection action is evident from the differing outcomes between the issuance of a distress warrant and a warning letter, where the distress warrant tends to be more effective in encouraging tax debt repayment. In contrast, the warning letter demonstrates low effectiveness, with all taxpayers who received this action remaining delinquent. The rules generated from the decision tree modeling are defined as presented in table 3.



**Figure 1. Decision Tree Model**

Source: Data Processed, 2025

Based on table 3, the issuance of a distress warrant significantly influences the settlement status of tax debts, as evidenced by the correlation with the magnitude of the tax burden. Taxpayers with a high tax burden did not settle their debts (5 taxpayers did not settle, while one taxpayer settled), whereas those with a low tax burden could mainly pay off their debts (3 taxpayers settled, with one taxpayer not settled). The dominant factor for taxpayers in the medium tax burden category was non-compliance. Taxpayers with moderate non-compliance were likelier to settle their debts (4 taxpayers settled, three did not). In contrast, those with high non-compliance failed to pay their debts entirely (2 taxpayers did not settle, and zero settled). This finding suggests that taxpayer compliance significantly determines tax debt repayment even with a moderate tax burden.

Conversely, collection actions in warning letters did not encourage tax debt repayment, as all taxpayers who received this action remained delinquent (7 taxpayers not settled, zero settled).

**Table 3. Rule of the Decision Tree Model**

No	Rule	Decision	Description
1	If Active Tax Collection = Warning Letter	Unsettled	0 taxpayers settled their debts; 7 taxpayers have not yet settled their debts
2	If Active Tax Collection = Distress Warrant, Tax Burden = High	Unsettled	0 taxpayers settled their debts; 5 taxpayers have not yet settled their debts
3	If Active Tax Collection = Distress Warrant, Tax Burden = Low	Settled	3 taxpayers settled their debts; 1 taxpayer has not yet settled their debts
4	If Active Tax Collection = Distress Warrant, Tax Burden = Medium, Level of Taxpayer Non-compliance = Moderate	Settled	4 taxpayers settled their debts; 3 taxpayers have not yet settled their debts
5	If Active Tax Collection = Distress Warrant, Tax Burden = Medium, Level of Taxpayer Non-compliance = High	Unsettled	0 taxpayers settled their debts; 2 taxpayers have not yet settled their debts

Source: Data Processed, 2025

Based on the evaluation results of the decision tree model, as shown in the performance vector in table 4, the accuracy rate of 83.33% indicates that the model successfully classified 83.33% of the total data correctly. Based on the confusion matrix, the model correctly predicted 4 cases in the "Unsettled" category and 1 case in the "Settled" category. These results show no misclassifications in the "Settled" category, while most "Unsettled" cases were also accurately identified. Additional evaluation metrics revealed that the precision for the "Unsettled" category reached 80.00%, indicating that most predictions in this category accurately matched the actual data. The "Settled" category's precision reached 100.00%, indicating complete accuracy in predicting cases within this category.

Regarding recall, the model successfully detected all actual cases in the "Unsettled" category, achieving a recall value of 100.00%, which indicates optimal coverage. Meanwhile, recall for the "Settled" category reached 50.00%, suggesting that the model could recognize most of the key patterns in that category. The high levels of both precision and recall demonstrate the model's reliability in analyzing taxpayer behavior regarding tax debt repayment.

**Table 4. Performance Vector**

Accuracy: 83,33%

	True Unsettled	True Settled	Class Precision
Pred. Unsettled	4.00	1.00	80.00%
Pred. Settled	0	1.00	100.00%
Class Recall	100.00%	50.00%	

Source: Data Processed, 2025

The decision tree modeling identified active tax collection actions as the primary factor influencing repayment behavior, as reflected by its position as the root node in the decision tree structure. This finding aligns with Behavioral Economics theory, which posits that external enforcement, such as active collection measures, can trigger behavioral responses by heightening perceived risk. In this context, law enforcement efforts by tax authorities produce a salience effect, making the consequences of non-compliance more cognitively salient and encouraging repayment (Hlouskova & Tsigaris, 2021).

While active tax collection measures emerge as a key determinant, the decision tree reveals that only the issuance of distress warrants, not other collection forms, effectively motivated taxpayer repayments. This result is consistent with the findings of Yuspitara et al. (2017), who observed a positive correlation between the frequency of distress warrants and increased tax revenues. However, this study advances previous research by demonstrating that the effectiveness of distress warrants is not uniform but somewhat contingent upon the interaction with tax burden and the taxpayer's compliance level. This dimension is often overlooked in earlier studies that evaluated these factors in isolation.

For example, the model shows that taxpayers with low tax burdens responded positively to distress warrants and were more likely to repay their debts. In contrast, those with high tax burdens exhibited no repayment behavior even after receiving distress warrants, indicating that a heavy tax burden may override the perceived threat of enforcement. This observation reinforces prior studies by Caroline et al. (2023) and Nasution & Aliffioni (2018), which identified high tax burdens as a significant deterrent to tax compliance. Similarly, Fitria & Supriyono (2019) found that excessive perceived burdens erode taxpayers' financial capacity and willingness to comply. However, what distinguishes the current research is its emphasis on how the interaction between perceived burden and enforcement influences outcomes rather than treating each as a standalone determinant.

Further, in the medium tax burden category, the model identifies taxpayer non-compliance as the pivotal variable influencing debt settlement. Taxpayers with low or moderate non-compliance tendencies tended to repay their debts. In contrast, those with high non-compliance marked by repeated rule violations demonstrated intentional disregard for tax obligations. This result echoes Ispriyarso's (2019) and Onu's (2016) findings, highlighting the influence of prior behavior and perceived enforcement risk on compliance. However, this study contributes new insights by integrating these variables into a unified behavioral pattern, illustrating how historical compliance behavior conditions the effectiveness of enforcement in different economic contexts.

Notably, the interaction between tax burden and non-compliance also determines the effectiveness of collection actions. Taxpayers with a high tax burden and any level of non-compliance failed to repay, suggesting that enforcement loses its salience when overshadowed by a strong aversion to financial loss, a concept central to Behavioral Economics, particularly the theory of loss aversion. In contrast, among those with medium tax burdens, the compliance profile emerged as the decisive factor in whether distress warrants triggered payment. This layered interaction confirms that tax collection cannot rely on a one-size-fits-all approach but must consider behavioral segmentation.

This research further supports the findings of Kardianti et al. (2018), who argued that ineffective tax collection often stems from limited awareness and non-compliance among taxpayers. Additionally, it aligns with Hlouskova & Tsigaris (2021) and Leets et al. (2020), who underscored the significance of psychological and contextual factors in

influencing taxpayer behavior. What differentiates this study is its explicit modeling of variable interaction, offering a refined understanding of how external enforcement and internal motivations jointly shape payment behavior.

In summary, the variables of active collection actions, tax burden, and taxpayer non-compliance do not operate independently but form a dynamic and interdependent system that influences tax debt repayment decisions. This study empirically supports the hypothesis that tax payment behavior results from the interplay between external enforcement measures and internal motivational factors, including perceived tax burden and non-compliance tendencies. These findings are also consistent with the framework of behavioral economics theory, which emphasizes that individual behavior and economic decision-making are not entirely rational but are shaped by a combination of external environmental pressures and the individual's psychological condition and internal experiences. The findings of this study are also consistent with previous research (Afrida & Kusuma, 2022; Hapsari, 2023; Kartikasari & Estiningrum, 2022; Supriatiningsih & Jamil, 2021; Yulianti, 2022), which indicates that law enforcement by tax authorities as an external factor, along with the internal motivation of taxpayers, plays a significant role in shaping tax awareness and promoting compliance.

## **CONCLUSION**

This study demonstrates that the interaction between active tax collection actions, tax burden, and taxpayer non-compliance significantly influences tax debt repayment patterns. Active collection actions - particularly the issuance of a distress warrant - proved to be the primary factor driving tax debt payments, while warning letters were relatively less effective. In addition, tax burden plays a critical role in determining the success of tax collection efforts, where taxpayers with lower tax burdens are more likely to settle their debts than those with higher burdens. The findings also indicate that non-compliance becomes a crucial factor influencing repayment decisions as the tax burden increases, with higher non-compliance significantly reducing the likelihood of debt settlement. Considering the complex interplay between tax burden and taxpayer non-compliance characteristics, these results underscore the importance of proactive and targeted collection strategies.

The findings of this study offer important practical implications for designing tax debt management strategies. The Directorate General of Taxes (DGT) can leverage data-driven approaches to identify taxpayers who require more tailored collection actions and treatment. The DGT is encouraged to enhance the effectiveness of tax collection efforts by prioritizing taxpayers with high repayment potential based on their profiles and non-compliance levels. Additionally, tax authorities aim to foster greater compliance in tax debt repayment by implementing communication strategies that raise risk awareness through consistent active tax collection actions.

However, this study is not without limitations. First, the analysis was limited to a narrow set of variables, focusing solely on active tax collection actions, tax burden, and non-compliance levels. Other potentially influential factors, such as taxpayer income levels, economic conditions, behavioral attitudes, and the duration of tax arrears, were not included in the model due to data constraints. Second, this research limited its scope to a single operational level by analyzing tax debt cases handled by the Bandung Cicadas Tax Office, which may reduce the generalizability of the findings to broader institutional contexts, such as Regional Offices or the DGT Head Office level. Taxpayer behavior and

collection effectiveness may differ significantly at other organizational levels or across regions with varying enforcement capacities and taxpayer profiles. Given these limitations, future research is encouraged to incorporate a broader range of explanatory variables and expand the unit of analysis to cover multiple tax offices to obtain a more comprehensive understanding of tax debt repayment behavior.

## REFERENCES

- Afrida, A., & Kusuma, G. S. M. (2022). The Influence of Understanding and Awareness on Individual Taxpayer Compliance with Tax Socialization as a Moderating Variable. *Balance: Jurnal Akuntansi Dan Bisnis*, 7(1), 1–10. <https://doi.org/10.32502/jab.v7i1.4564>
- Bahtiar, M., & Qadri, R. A. (2024). The Voluntary Disclosure Dilemma: Unraveling The Compliance-Evasion Causality in Tax Administration. *Educoretax*, 4(2), 249–262. <https://doi.org/10.54957/educoretax.v4i2.734>
- Caroline, E., Eprianto, I., Kuntadi, C., & Pramukty, R. (2023). The Influence of Tax Sanctions, Tax Rates and Tax Understanding on Taxpayer Compliance. *Jurnal Economina*, 2(8), 2114–2121. <https://doi.org/10.55681/economina.v2i8.722>
- Denieffe, S. (2020). Commentary: Purposive Sampling: Complex or Simple? Research Case Examples. *Journal of Research in Nursing*, 25(8), 662–663. <https://doi.org/10.1177/1744987120928156>
- Directorate General of Taxes. (2021). *Directorate General of Taxes Performance Report 2020*. <https://www.pajak.go.id/id/laporan-kinerja-tahun-2020>
- Engström, P., Nordblom, K., Ohlsson, H., & Persson, A. (2015). Tax Compliance and Loss Aversion. *American Economic Journal: Economic Policy*, 7(4), 132–164. <https://doi.org/10.1257/pol.20130134>
- Fitria, P. A., & Supriyono, E. (2019). The Influence of Understanding of Tax Regulations, Perception of Tax Rates, and Tax Fairness on Taxpayer Compliance. *ECONBANK: Journal of Economics and Banking*, 1(1), 47–54. <https://doi.org/10.35829/econbank.v1i1.7>
- Gavankar, S. S., & Sawarkar, S. D. (2017). Eager Decision Tree. *2017 2nd International Conference for Convergence in Technology (I2CT)*, 837–840. <https://doi.org/10.1109/I2CT.2017.8226246>
- Guerra, A., & Harrington, B. (2018). Attitude–Behavior Consistency in Tax Compliance: A Cross-National Comparison. *Journal of Economic Behavior & Organization*, 156, 184–205. <https://doi.org/10.1016/j.jebo.2018.10.013>
- Hapsari, I. (2023). The Effect of Tax Service Quality and Tax Sanctions on Restaurant Taxpayer Compliance with Tax Awareness Intervening. *Jurnal Akuntansi AKUNESA*, 12(1), 1–10. <https://doi.org/10.26740/akunesa.v12n1.p1-10>
- Hlouskova, J., & Tsigaris, P. (2021). Capital Income Taxation under Full loss offset Provisions of a Prospect Theory Investor. *Public Finance and Management*, 20(1), 45–87. <https://doi.org/10.1177/152397212102000103>
- Hutuely, A. D., Nirahua, S. E. M., & Tita, H. M. Y. (2023). Tax Payment Procedures Based on Tax Determinations. *TATOHI: Jurnal Ilmu Hukum*, 3(7), 731–738.

<https://doi.org/10.47268/tatohi.v3i7.1856>

- Ihham, I., Paramita, M. H., & Atika, N. (2018). The Effectiveness of Active Collection in Settlements of Income Tax Article 29 Arrears for Corporate Taxpayers (Case Study at The Maros Primary Tax Service Office). *Jurnal Analisa Akuntansi Dan Perpajakan*, 2(1), 124–141. <https://doi.org/10.25139/jaap.v2i1.678>
- Indonesian Audit Board. (2021). *Audit Report Number 26b/LHP/XV/05/2021 on The 2020 Central Government Financial Report*. [https://www.bpk.go.id/assets/files/lkpp/2020/lkpp\\_2020\\_1624341063.pdf](https://www.bpk.go.id/assets/files/lkpp/2020/lkpp_2020_1624341063.pdf)
- Ispriyarso, B. (2019). The Success of The Tax Amnesty Policy in Indonesia. *Administrative Law and Governance Journal*, 2(1), 47–59. <https://doi.org/10.14710/alj.v2i1.47-59>
- Kardianti, E., Hidayat, M., & Pratiwi, T. S. (2018). The Effectiveness of Tax Collection with Warning Letters and Compulsion Letters on Tax Receipts at The Kuala Tungkal Primary Tax Service Office. *Jurnal Ilmiah Ekonomi Global Masa Kini*, 8(2), 85–89. <https://doi.org/10.36982/jiegm.v8i2.306>
- Kartikasari, I. A., & Estiningrum, S. D. (2022). Internal and External Factors Affecting Land and Building Tax Payment Compliance. *Jurnal Riset Akuntansi Dan Keuangan*, 10(1), 83–92. <https://doi.org/10.17509/jrak.v10i1.36225>
- Kelly, M. M., Martin-Peters, T., & Farber, J. S. (2024). Secondary Data Analysis: Using Existing Data to Answer New Questions. *Journal of Pediatric Health Care*, 38(4), 615–618. <https://doi.org/10.1016/j.pedhc.2024.03.005>
- Kouam, A. W. F. (2025). A Systematic Literature Review of Post-Positivism and Critical Realism as Epistemological Frameworks in Educational Research. *International Journal of Changes in Education*, 2(2), 115–122. <https://doi.org/10.47852/bonviewIJCE52024338>
- Leets, L., Sprenger, A., Hartman, R., Kohn, N., Simon Thomas, J., Vu, C., Aguirre, S., & Wijesinghe, S. (2020). Effectiveness of Nudges on Small Business Tax Compliance Behavior. *Journal of Behavioral Public Administration*, 3(2), 1–12. <https://doi.org/10.30636/jbpa.32.141>
- Maksimović, J., & Evtimov, J. (2023). Positivism and Post-Positivism as The Basis of Quantitative Research in Pedagogy. *Research in Pedagogy*, 13(1), 208–218. <https://doi.org/10.5937/IstrPed2301208M>
- Mienye, I. D., Sun, Y., & Wang, Z. (2019). Prediction Performance of Improved Decision Tree-Based Algorithms: A Review. *Procedia Manufacturing*, 35, 698–703. <https://doi.org/10.1016/j.promfg.2019.06.011>
- Monica, R., & Andi, A. (2019). The Influence of Taxpayer Compliance, Tax Audits, and Tax Arrears Disbursement on Corporate Tax Revenue at The Serang Primary Tax Service Office in 2012-2016. *Jurnal Riset Akuntansi Terpadu*, 12(1), 64–82. <https://doi.org/10.35448/jrat.v12i1.5343>
- Musa, M., & Aldiabat, K. (2024). Reconsidering The Use of Post-Positivist Paradigm in Social Sciences: Is It Possible? *European Journal of Education Studies*, 11(7), 101–110. <https://doi.org/10.46827/ejes.v11i7.5393>
- Nasution, H., & Aliffioni, A. (2018). Analysis of The Effectiveness of Tax Collection Using Compulsory Writs and Confiscation to Increase Tax Revenue at The North Bekasi Primary Tax Service Office. *Jurnal Wahana Akuntansi*, 13(2), 129–142.

<https://doi.org/10.21009/wahana.13.023>

- Nissa, C., & Muslimin, M. (2022). Effectiveness of Active Tax Collection Implementation in Disbursing Tax Arrears. *Al-Kharaj : Jurnal Ekonomi, Keuangan & Bisnis Syariah*, 5(1), 386–396. <https://doi.org/10.47467/alkharaj.v5i1.1599>
- Onu, D. (2016). Measuring Tax Compliance Attitudes: What Surveys Can Tell Us about Tax Compliance Behaviour. In *Advances in Taxation* (Vol. 3, pp. 173–190). Emerald Group Publishing Limited. <https://doi.org/10.1108/S1058-749720160000023006>
- Priyanka, N. A., & Kumar, D. (2020). Decision Tree Classifier: A Detailed Survey. *International Journal of Information and Decision Sciences*, 12(3), 246–269. <https://doi.org/10.1504/IJIDS.2020.108141>
- Putra, F. A., & Muslim, A. I. (2022). The Impact of Tax Collection Actions with Warning Letters and Compulsory Letters on The Disbursement of Tax Arrears. *Review of Applied Accounting Research (RAAR)*, 2(2), 193–206. <https://doi.org/10.30595/raar.v2i2.14302>
- Putra, F. T., & Hartini, H. (2023). Effectiveness of Tax Collection on Tax Receivables Disbursement. *Miftah : Jurnal Ekonomi Dan Bisnis Islam*, 1(2), 63–79. <https://doi.org/10.61231/miftah.v1i2.93>
- Risa, N., Bilqis, G. D., & Susanti, N. L. (2023). The Impact of Tax Incentives, Tax Literacy, and Tax Sanctions on MSME Taxpayer Compliance. *JRAK: Jurnal Riset Akuntansi Dan Komputerisasi Akuntansi*, 14(1), 72–81. <https://doi.org/10.33558/jrak.v14i1.5842>
- Riyadi, S. P., Setiawan, B., & Alfarago, D. (2021). The Influence of Taxpayer Compliance, Tax Audits, and Tax Collection on Corporate Income Tax Revenue. *Jurnal Riset Akuntansi & Perpajakan (JRAP)*, 8(2), 57–67. <https://doi.org/10.35838/jrap.2021.008.02.16>
- Sartana, B. A., Pratiwi, H., & Ilma, D. L. (2023). The Influence of Pharmacists' Communication Skills in Banyumas on The Level of Trust and Loyalty of The Baturraden Community. *Pharmaceutical Journal of Indonesia*, 8(2), 165–170. <https://doi.org/10.21776/ub.pji.2023.008.02.8>
- Siamena, E., Sabijono, H., & Warongan, J. D. . (2017). The Influence of Tax Sanctions and Taxpayer Awareness on Individual Taxpayer Compliance in Manado. *Going Concern: Jurnal Riset Akuntansi*, 12(2), 917–927. <https://doi.org/10.32400/gc.12.2.18367.2017>
- Sulistiyorini, E., & Latifah, N. (2022). The Influence of Taxpayer Compliance, Tax Audits, and Tax Collection on Corporate Income Tax Revenue (A Case Study at The PRATAMA Pati Tax Office in 2016-2019). *Jurnal Ilmiah Fokus Ekonomi, Manajemen, Bisnis & Akuntansi (EMBA)*, 1(1), 105–112. <https://doi.org/10.34152/emba.v1i1.451>
- Supriatiningsih, S., & Jamil, F. S. (2021). The Influence of E-Filing Policy, Tax Sanctions and Taxpayer Awareness on Individual Taxpayer Compliance. *Jurnal Ilmiah Akuntansi Kesatuan*, 9(1), 199–208. <https://doi.org/10.37641/jiakes.v9i1.560>
- Thaler, R. H. (2016). Behavioral Economics: Past, Present, and Future. *American Economic Review*, 106(7), 1577–1600. <https://doi.org/10.1257/aer.106.7.1577>
- Watson, R. (2015). Quantitative Research. *Nursing Standard*, 29(31), 44–48. <https://doi.org/10.7748/ns.29.31.44.e8681>

- Wijaya, V. S., & Yanti, L. D. (2023). The Influence of Tax Knowledge, Tax Rates, Tax Payment Mechanisms and Tax Sanctions on MSME Taxpayer Compliance. *ECo-Buss*, 6(1), 206–216. <https://doi.org/10.32877/eb.v6i1.611>
- Wirawan, I. M. D. S., Budiadnyani, N. P., & Dewi, P. P. R. A. (2024). Tax Socialization as a Moderating Effect of Tax Incentives on MSME Compliance. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 8(1), 2292–2304. <https://doi.org/10.31955/mea.v8i1.3977>
- Yulianti, L. N. (2022). The Influence of Tax Socialization, Taxpayer Awareness, and Understanding of Tax Incentives on Taxpayer Compliance of MSMEs During The COVID-19 Pandemic. *MANAJEMEN (Jurnal Ilmiah Manajemen Dan Kewirausahaan)*, 2(1), 46–53. <https://doi.org/10.51903/manajemen.v2i1.127>
- Yuspitara, A., Susena, K. C., & Herlin, -. (2017). Analysis of The Effect of Tax Collection Using Compulsory Letters on Tax Revenue at The ARGAMAKMUR Primary Tax Service Office, Bengkulu Province. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis*, 5(2), 198–207. <https://doi.org/10.37676/ekombis.v5i2.389>