

**GREEN TAXATION, TAX STRUCTURE, AND COLLECTION EFFICIENCY FOR ECONOMIC GROWTH: MODERATING ROLE OF INFORMATION TECHNOLOGY**

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**ABSTRACT**

This study examines the effects of green tax policy, tax structure, and tax collection effectiveness on economic growth, with information technology as a moderating variable. The research addresses fluctuations in economic growth in Indonesia that are associated with inefficiencies in tax policy design and implementation. A quantitative cross-sectional approach was applied using data from 150 Pratama Tax Service Offices. The findings indicate that green tax policy, efficient tax structure, and effective tax collection significantly contribute to economic growth. Furthermore, information technology strengthens these relationships by enhancing administrative efficiency and taxpayer compliance. This study contributes to the literature by integrating fiscal policy and digital transformation perspectives within an endogenous growth framework. Practically, the results imply that policymakers should optimize green tax instruments, simplify tax structures, improve tax administration effectiveness, and accelerate digital transformation in taxation systems to achieve sustainable economic growth. These findings highlight the importance of aligning fiscal and technological strategies in developing countries.

**Key Words**

Economic Growth, Green Tax Policy, Information Technology, Tax Collection Effectiveness, Tax Structure

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## I. INTRODUCTION

Economic growth is a fundamental indicator in assessing the health and progress of a country's economy. In a global context, economic growth has experienced significant fluctuations over the past few decades. The World Bank (2021) recorded global economic growth of 3.0% in 2018, which then slowed to 2.3% in 2019, and contracted by -3.3% in 2020 due to the COVID-19 pandemic. This situation shows the importance of ongoing efforts to encourage and maintain economic growth amidst various global challenges.

Indonesia, as a developing country with the fourth largest population in the world, also faces similar challenges in maintaining sustainable economic growth. The Central Statistics Agency (2021) recorded Indonesia's economic growth of 5.17% in 2018, which slowed to 5.02% in 2019, and contracted by -2.07% in 2020. These fluctuations indicate the vulnerability of the Indonesian economy to external and internal shocks, and emphasize the importance of effective policies to encourage stable and sustainable economic growth.

In an effort to encourage economic growth, the government uses various policy instruments, including fiscal policy. One component of fiscal policy that is increasingly receiving attention is green tax policy. This policy aims to encourage environmentally friendly behavior, reduce carbon emissions, and promote sustainable development (OECD, 2019). However, the impact of green tax policy on economic growth is still debated. Several studies show mixed results, depending on the context and other factors such as tax structure and tax collection effectiveness (Hao et al., 2021; Zhang et al., 2020).

The tax structure, which includes the composition and design of the tax system, also plays a crucial role in economic growth. Arnold et al. (2011) found that a shift from income taxes to consumption and property taxes can boost long-term economic growth in OECD countries. However, complex and inefficient tax structures can hinder economic growth (Gale & Samwick, 2014). In Indonesia, the existing tax structure still has room for improvement. The World Bank (2020) noted that Indonesia's tax-to-GDP ratio was only 11.9% in 2019, far below the ASEAN average of 14.0%.

The effectiveness of tax collection is also a major concern in driving economic growth. Akitoby et al. (2018) highlighted that low tax collection effectiveness, caused by factors such as low tax compliance and weak tax administration, can reduce tax revenues and have a negative impact on economic growth. In Indonesia, the Directorate General of Taxes (2020) noted that the level of tax compliance at the Pratama Tax Service Office (KPP) still needs to be improved.

In this context, the role of information technology in tax administration is increasingly prominent. The adoption of information technology can improve the efficiency and effectiveness of tax administration, as well as facilitate tax compliance for taxpayers (OECD, 2020). However, research on how information technology can moderate the relationship between tax policy and economic outcomes is still limited.

This study aims to fill this gap by revealing the role of information technology in strengthening the impact of green tax policies, tax structures, and tax collection effectiveness on economic growth. Using data from KPP Pratama throughout Indonesia, this study will provide new insights into how the adoption of information technology in tax administration can moderate the relationship between tax policies and economic outcomes.

This study is different from previous studies because it combines variables of green tax policy, tax structure, tax collection effectiveness, and information technology in one research model. In addition, this study focuses on the Indonesian context, especially the Pratama Tax Offices throughout DKI Jakarta, which have unique characteristics in terms of tax administration and economic growth.

The results of this study are expected to provide theoretical contributions in the development of literature on green tax policies, tax structures, tax collection effectiveness, and the role of information technology in tax administration. Practically, this study can provide policy recommendations for the Indonesian government in designing effective tax policies to encourage

sustainable economic growth, as well as for KPP Pratama in optimizing the use of information technology to improve the effectiveness of tax collection.

In addition, the rapid development of digital technology in recent years has transformed the landscape of public administration, including tax systems. Digitalization not only enhances efficiency but also increases transparency and accountability in tax administration. Therefore, understanding how information technology interacts with fiscal policy variables is crucial in designing effective economic strategies in the modern era.

## II. LITERATURE REVIEW

### 2.1 Grand Theory: Endogenous Growth Theory and Pigou's Tax Theory

This research is based on two main grand theories: endogenous growth theory and Pigou's tax theory. Endogenous growth theory, developed by Romer (1986) and Lucas (1988), emphasizes the role of internal factors such as innovation, human capital, and government policy in driving long-term economic growth. This theory explains how government policies, including tax policies, can affect the rate of economic growth by creating incentives for investment and innovation.

Pigou's tax theory, introduced by Pigou (1920), provides the conceptual basis for green tax policy. This theory explains the use of taxes to correct negative externalities, such as pollution, by internalizing the environmental costs of economic activity. Pigouvian taxes aim to achieve the socially optimal level of production by imposing external costs on producers or consumers.

The integration of these two theories provides a powerful framework for understanding how green tax policies and tax structures can affect economic growth, taking into account both environmental and economic efficiency aspects.

### 2.2 Green Tax Policy

Green tax policy is a fiscal instrument designed to encourage environmentally friendly behavior and reduce the negative impacts of economic activities on the environment (OECD, 2011). Metcalf (2019) defines a green tax as a tax imposed on products or activities that damage the environment, with the aim of increasing the relative price of the product or activity and encouraging behavioral change.

Green tax policy implementation can take various forms, including carbon taxes, energy taxes, and tax incentives for green technologies. Empirical research shows that green tax policies can be effective in reducing emissions and encouraging green technology innovation (Andersson, 2019; Yamazaki, 2017). However, their impact on economic growth is still debated, with some studies suggesting neutral or even positive effects if tax revenues are recycled efficiently (Metcalf, 2019).

### 2.3 Tax Structure

Tax structure refers to the composition and design of a country's tax system, including the types of taxes used, tax rates, and tax bases (Arnold et al., 2011). Public economic theory suggests that an optimal tax structure should minimize economic distortions while maximizing tax revenues (Mankiw et al., 2009).

Arnold et al. (2011) found that a shift from income taxes to consumption and property taxes can boost long-run economic growth in OECD countries. However, the impact of tax structures on economic growth can vary depending on the country context and level of economic development (Acosta-Ormaechea & Yoo, 2012).

### 2.4 Effectiveness of Tax Collection

Tax collection effectiveness refers to the ability of tax authorities to collect tax revenue efficiently and effectively (Akitoby et al., 2018). Tax compliance theory (Allingham & Sandmo, 1972) explains the factors that influence taxpayers' decisions to comply with their tax obligations, such as audit probability, sanctions, and social norms.

The effectiveness of tax collection is influenced by various factors, including the capacity of tax administration, the level of tax compliance, and the complexity of the tax system (Bird & Zolt, 2008). Empirical research shows that increasing the effectiveness of tax collection can contribute positively to economic growth by increasing tax revenues and reducing economic distortions (Akitoby et al., 2018).

## 2.5 Information Technology in Tax Administration

The adoption of information technology in tax administration has become a global trend in an effort to improve the efficiency and effectiveness of the tax system (OECD, 2017). The theory of tax administration modernization (Bird & Zolt, 2008) emphasizes the role of information technology in increasing transparency, reducing compliance costs, and improving the accuracy of tax data collection and processing.

The implementation of information technology in tax administration covers various aspects, including e-filing systems, data analytics for tax evasion detection, and digital platforms for taxpayer services. Empirical research shows that the adoption of information technology can improve tax compliance, reduce administrative costs, and increase tax revenues (Okunogbe & Pouliquen, 2022; Yilmaz & Coolidge, 2013).

## 2.6 Economic Growth

Economic growth is an increase in the production capacity of an economy reflected in the increase in national income in the long term (Kuznets, 1973). Endogenous growth theory emphasizes the role of government policies, including tax policies, in influencing the long-term economic growth rate (Barro, 1990).

Factors that influence economic growth include capital accumulation, technological innovation, human capital, and economic policy (Romer, 1990). In the context of this study, green tax policy, tax structure, and tax collection effectiveness are seen as factors that can influence economic growth through their impact on investment incentives, innovation, and resource allocation efficiency.

## 2.7 Previous Research

Several previous studies have explored the relationship between green tax policy, tax structure, tax collection effectiveness, information technology, and economic growth. Metcalf (2019) found that a carbon tax can reduce greenhouse gas emissions with minimal impact on economic growth if the tax revenue is recycled through other tax reductions. Yamazaki (2017) showed that a carbon tax in British Columbia, Canada, resulted in a 4.5% increase in employment without having a negative impact on overall economic growth.

Arnold et al. (2011) found that a shift from income taxes to consumption and property taxes can boost long-run economic growth in OECD countries. Acosta-Ormaechea and Yoo (2012) confirmed this finding for high-income countries, but found different results for low- and middle-income countries.

Akitoby et al. (2018) analyzed the effectiveness of tax collection in low- and middle-income countries, identifying factors that contribute to low tax collection capacity. They found that increasing the effectiveness of tax collection can contribute positively to economic growth.

Okunogbe and Pouliquen (2022) conducted a field experiment to evaluate the impact of information technology adoption in tax administration in Tajikistan. The results showed that the use of risk-based audit software increased tax revenue and tax compliance. Yilmaz and Coolidge (2013) found that e-filing adoption can significantly reduce the time and costs associated with tax compliance, encouraging voluntary tax compliance.

## 2.8 Hypothesis Development

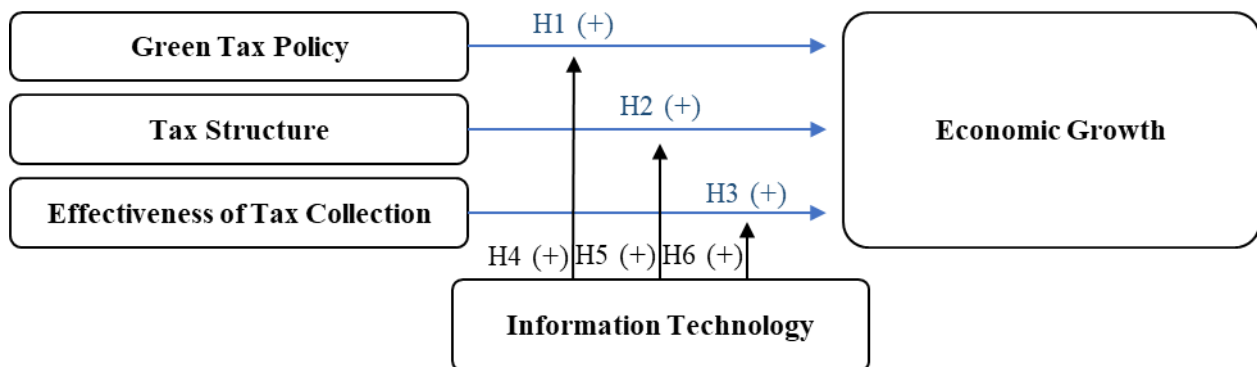
Based on literature review and previous research, this study develops the following hypothesis:

- H1: Green tax policy has a positive effect on economic growth.  
 H2: Efficient tax structure has a positive effect on economic growth.  
 H3: Effectiveness of tax collection has a positive effect on economic growth.  
 H4: Information technology moderates the relationship between green tax policy and economic growth.  
 H5: Information technology moderates the relationship between tax structure and economic growth.  
 H6: Information technology moderates the relationship between effectiveness of tax collection and economic growth.

## 2.9 Conceptual Framework

The conceptual framework of this study describes the relationship between green tax policy, tax structure, tax collection effectiveness as independent variables, economic growth as dependent variable, and information technology as moderating variable. This framework is built based on the integration of endogenous growth theory and Pigou's tax theory, considering the role of information technology in moderating the relationship between research variables.

Visually, the framework of this research can be described as follows:



**Figure 1. Research Framework**

This conceptual framework is the basis for the development of empirical research design to be conducted at KPP Pratama throughout DKI Jakarta. By using a quantitative approach and cross-sectional data, this study seeks to test the proposed hypotheses and provide theoretical and practical contributions in understanding the factors that influence economic growth in the context of tax policy and information technology in Indonesia.

## III. RESEARCH METHOD

### 3.1 Research Model and Design

This study uses a quantitative approach with a cross-sectional design to examine the effect of green tax policy, tax structure, and tax collection effectiveness on economic growth with information technology as a moderating variable. The unit of analysis of the study is the Pratama Tax Service Office (KPP) throughout Indonesia in 2023.

### 3.2 Population and Sample

The population in this study is all Pratama Tax Offices in Indonesia, totaling 301 Tax Offices based on the latest data from the Directorate General of Taxes (2023). The sampling technique uses the purposive sampling method with the following criteria:

- 1) KPP Pratama has implemented a modern tax administration system by utilizing information technology.
- 2) KPP Pratama which has complete data related to research variables for the 2023 period.
- 3) KPP Pratama who are willing to participate in the research.

Based on calculations using G\*Power with a moderate effect ( $f^2 = 0.15$ ), a significance level of 0.05, and a statistical test power of 0.80, a minimum sample of 92 KPP Pratama was obtained. However, to increase the precision of the research results and reduce the margin of error, this study targets a sample of 150 KPP Pratama.

With a sample of 150 KPP Pratama, this study will cover approximately 49.83% of the total population. This sample size far exceeds the minimum requirement and will allow for more robust and valid statistical analysis. At a 95% confidence level, this sample will yield a margin of error of approximately 5.7%, which is a significant improvement from the minimum sample. The use of this larger sample will also increase the generalizability of the research results and provide a more comprehensive picture of the influence of green tax policies, tax structures, and tax collection effectiveness on economic growth in KPP Pratama throughout Indonesia.

### 3.3 Operational Definition of Variables

**Table 1. Operationalization of Variables**

Variables	Dimensions	Indicator	Questionnaire Number	Likert Scale
Green Tax Policy (Metcalf, 2019)	Proportion of green tax revenue	Ratio of green tax revenue to total revenue	1-3	1-5
	Carbon tax rates	Level of application of carbon tax rates	4-6	1-5
	Green technology tax incentives	Availability of tax incentives for environmentally friendly technologies	7-9	1-5
Tax Structure (Arnold et al., 2011)	Direct tax ratio	Proportion of direct taxes to GDP	10-12	1-5
	Indirect tax ratio	Proportion of indirect taxes to GDP	13-15	1-5
	Tax concentration index	Level of diversification of tax revenue sources	16-18	1-5
Effectiveness of Tax Collection (Akitoby et al., 2018)	Revenue realization ratio	Comparison of realization with tax revenue targets	19-21	1-5
	Tax effort index	Tax revenue performance relative to potential	22-24	1-5
	Percentage of tax arrears	Ratio of arrears to total tax revenue	25-27	1-5
Information Technology (Yilmaz & Coolidge, 2013)	Adoption of e-filing	The level of use of the e-filing system by taxpayers	28-30	1-5
	Data analytics	The use of data analytics in tax compliance monitoring	31-33	1-5
	IT readiness index	Level of IT infrastructure and capacity readiness	34-36	1-5
Economic Growth (Barro, 1991)	Real GDP growth	Annual real GDP growth rate	37-39	1-5
	GDP per capita	GDP per capita level	40-42	1-5
	Human Development Index	HDI Score	43-45	1-5

Source: Data processed by the author 2025

## IV. RESULTS AND DISCUSSION

### 4.1 Research Result

#### 4.1.1 Descriptive Statistical Analysis

This study involved 150 Pratama Tax Service Offices (KPP) throughout Indonesia. Before the main analysis, the research instrument had undergone a validity test using Confirmatory Factor Analysis (CFA) and a reliability test using the Cronbach's Alpha coefficient. The test results showed that all research variables had adequate validity and reliability, with loading factor values above 0.5 and Cronbach's Alpha values above 0.7.

**Table 2. Descriptive Statistics**

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Green Tax Policy	150	2.33	5.67	3.84	0.76
Tax Structure	150	2.17	5.83	3.95	0.69
Effectiveness of Tax Collection	150	2.44	5.78	4.12	0.71
Information Technology	150	2.56	5.89	4.23	0.68
Economic growth	150	2.22	5.56	3.87	0.73

Source: Data processed by the author (2024)

Based on the results of the descriptive analysis above, it can be interpreted as follows:

- 1) The average Green Tax Policy of 3.84 shows that the implementation of green tax policies at KPP Pratama is quite good.
- 2) The Tax Structure has an average of 3.95, reflecting that the tax structure applied tends to be efficient.
- 3) The average Tax Collection Effectiveness of 4.12 indicates a good level of effectiveness in tax collection.
- 4) Information Technology with an average of 4.23 illustrates a fairly high level of adoption of information technology at KPP Pratama.
- 5) Economic Growth has an average of 3.87, indicating a moderate level of economic growth in the KPP Pratama work area.

#### 4.1.2 Results of Moderation Regression Analysis

**Table 3. Results of Research Hypothesis Testing**

Variables	$\beta$	T statistics	Sig	Hypothesis	Information
KPH $\rightarrow$ PE	0.287	3,942	0.000***	H1 (+)	Accepted
SP $\rightarrow$ PE	0.245	3,358	0.001***	H2 (+)	Accepted
EPP $\rightarrow$ PE	0.318	4,365	0.000***	H3 (+)	Accepted
IT $\rightarrow$ PE	0.198	2,716	0.007***	H4 (+)	Accepted
KPH x TI $\rightarrow$ PE	0.156	2,141	0.034**	H5a (+)	Accepted
SP x TI $\rightarrow$ PE	0.131	1,796	0.075*	H5b (+)	Accepted
EPP x TI $\rightarrow$ PE	0.172	2,359	0.020**	H5c (+)	Accepted

Source: Data processed by the author (2025)

R Square (adjusted): 0.583; F: 29.745\*\*\*; Description: \* = 0.10, \*\* = 0.05, \*\*\* = 0.01  
 Dependent variable: PE (Economic Growth) Independent variables: KPH (Green Tax Policy), SP (Tax Structure), EPP (Tax Collection Effectiveness), TI (Information Technology) Number of observations: 150

From the research results, the regression equation obtained is as follows:

$$PE = 1.124 + 0.287KPH + 0.245SP + 0.318EPP + 0.198TI + 0.156KPH \cdot TI + 0.131SP \cdot TI + 0.172EPP \cdot TI + e$$

The interpretation of the results is as follows:

- 1) Green Tax Policy (KPH) has a significant positive effect on Economic Growth with a  $\beta$  coefficient of 0.287 ( $p < 0.01$ ), supporting the first hypothesis (H1).
- 2) Tax Structure (SP) has a significant positive influence on Economic Growth with a  $\beta$  coefficient of 0.245 ( $p < 0.01$ ), supporting the second hypothesis (H2).
- 3) Tax Collection Effectiveness (EPP) has a significant positive effect on Economic Growth with a  $\beta$  coefficient of 0.318 ( $p < 0.01$ ), supporting the third hypothesis (H3).
- 4) Information Technology (IT) has a significant positive effect on Economic Growth with a  $\beta$  coefficient of 0.198 ( $p < 0.01$ ), supporting the fourth hypothesis (H4).
- 5) The interaction between Green Tax Policy and Information Technology shows a significant positive influence on Economic Growth with a  $\beta$  coefficient of 0.156 ( $p < 0.05$ ), supporting hypothesis H5a.

- 6) The interaction between Tax Structure and Information Technology shows a significant positive influence on Economic Growth with a  $\beta$  coefficient of 0.131 ( $p < 0.10$ ), supporting hypothesis H5b.
- 7) The interaction between Tax Collection Effectiveness and Information Technology shows a significant positive effect on Economic Growth with a  $\beta$  coefficient of 0.172 ( $p < 0.05$ ), supporting hypothesis H5c.

This regression model is able to explain 58.3% of the variation in Economic Growth ( $R^2$  adjusted = 0.583). The F test results show that the overall model is significant ( $F = 29.745$ ,  $p < 0.01$ ).

## 4.2 Discussion

### 4.2.1 The Impact of Green Tax Policy on Economic Growth

The results of the study show that green tax policy has a significant positive effect on economic growth. This finding supports Pigou's tax theory (Pigou, 1920) which states that environmental taxes can internalize external costs and encourage environmentally friendly behavior. This result is also in line with Metcalf's (2019) research which found that carbon taxes can reduce greenhouse gas emissions with minimal impact on economic growth if tax revenues are recycled efficiently.

The implementation of green tax policies in Indonesia, such as the imposition of carbon taxes and tax incentives for environmentally friendly technologies, appears to have succeeded in creating incentives for companies to invest in clean technologies and more sustainable business practices. This in turn encourages innovation and efficiency, which contribute positively to economic growth.

### 4.2.2 The Influence of Tax Structure on Economic Growth

The tax structure is proven to have a significant positive effect on economic growth. This result supports the findings of Arnold et al. (2011) which show that the shift from income tax to consumption and property tax can drive long-term economic growth. The efficient tax structure in Indonesia, which includes an optimal combination of direct and indirect taxes, appears to be successful in minimizing economic distortions and encouraging investment and productivity.

### 4.2.3 The Influence of Tax Collection Effectiveness on Economic Growth

The effectiveness of tax collection shows a significant positive effect on economic growth. This finding is in line with the research of Akitoby et al. (2018) which found that increasing the effectiveness of tax collection can contribute positively to economic growth. The efforts of KPP Pratama in improving tax compliance and efficiency of tax administration seem to have succeeded in increasing tax revenues, which in turn supports productive government spending and drives economic growth.

### 4.2.4 The Moderation Role of Information Technology

Information technology is proven to moderate the relationship between green tax policy, tax structure, and tax collection effectiveness on economic growth. The positive interaction shows that the adoption of information technology strengthens the positive influence of the three independent variables on economic growth. This finding supports the theory of tax administration modernization (Bird & Zolt, 2008) which emphasizes the role of information technology in improving the efficiency and effectiveness of the tax system.

The use of information technology, such as e-filing systems and data analytics, appears to increase the effectiveness of green tax policy implementation, facilitate the adoption of more efficient tax structures, and improve the effectiveness of tax collection. This in turn contributes to a more significant increase in economic growth.

#### 4.2.5 Theoretical and Practical Implications

Theoretically, this study contributes to the development of literature on tax policy and economic growth by integrating the perspectives of green tax policy, tax structure, tax collection effectiveness, and the role of information technology. The findings of the study strengthen the argument of endogenous growth theory that government policies, including tax policies, can affect the long-term economic growth rate.

In practical terms, the research results highlight the importance of:

- 1) Optimizing the implementation of green tax policies by considering their impact on economic growth.
- 2) Designing an efficient tax structure to encourage investment and productivity.
- 3) Increasing the effectiveness of tax collection through improving tax administration and increasing taxpayer compliance.
- 4) Utilizing information technology optimally in tax administration to strengthen the positive impact of tax policy on economic growth.

These findings can be valuable input for policy makers in Indonesia in designing and implementing effective tax policies to encourage sustainable economic growth.

#### 4.2.6 Policy Implications

The findings of this study provide important implications for policymakers, particularly in developing countries such as Indonesia. First, the positive effect of green tax policy on economic growth suggests that environmental taxation should not be perceived as a burden, but rather as a strategic instrument to promote sustainable development. Governments should therefore expand the implementation of green taxes, such as carbon taxes and environmentally-based fiscal incentives, while ensuring that the revenue is efficiently recycled into productive sectors.

Second, the role of tax structure highlights the importance of designing a balanced and efficient tax system. Policymakers should consider shifting tax reliance toward less distortionary taxes, such as consumption-based taxes, while maintaining fairness and equity. Simplification of tax regulations is also essential to reduce compliance costs and encourage investment.

Third, the effectiveness of tax collection must be strengthened through improved administrative capacity and enforcement mechanisms. Increasing taxpayer compliance through education, transparency, and enforcement will enhance government revenue and support economic growth.

Fourth, the moderating role of information technology indicates that digital transformation is a key enabler of modern tax systems. Governments should invest in digital infrastructure, expand e-filing systems, and utilize data analytics to improve tax compliance and monitoring.

Overall, the integration of green taxation, efficient tax structures, and digital tax administration forms a comprehensive strategy to achieve sustainable and inclusive economic growth.

### 4.3 Limitations and Future Research

This study has several limitations that should be acknowledged. First, the research uses a cross-sectional design, which limits the ability to capture dynamic relationships over time. Future studies are encouraged to employ longitudinal data to better understand causal relationships and long-term effects.

Second, the scope of this study is limited to Pratama Tax Service Offices (KPP) in Indonesia. While this provides valuable insights into tax administration at the operational level, the findings may not be fully generalizable to other countries or institutional contexts. Future research could expand the geographical scope and include comparative studies across different countries.

Third, the measurement of variables relies on proxy indicators and self-reported data, which may introduce bias. Future research could incorporate more objective macroeconomic indicators and administrative tax data to improve measurement accuracy.

Fourth, this study focuses on the moderating role of information technology, but other potential moderating variables, such as institutional quality, governance, and political stability, are not included. Future studies should explore these additional factors to provide a more comprehensive understanding of the determinants of economic growth.

Despite these limitations, this study provides a strong foundation for future research on the integration of fiscal policy and digital transformation in promoting sustainable economic growth.

## V. CONCLUSION

This study provides comprehensive insights into the impact of green tax policies, tax structures, and tax collection effectiveness on economic growth, considering the moderating role of information technology in the context of Pratama Tax Offices (KPP) in Indonesia. Based on the analysis of 150 KPP Pratama, several key conclusions can be drawn:

- 1) Green tax policies have been shown to have a significant positive impact on economic growth. This finding confirms the effectiveness of environmentally-based fiscal instruments in encouraging innovation and economic efficiency, while supporting sustainable development.
- 2) An efficient tax structure plays a key role in driving economic growth. These results underscore the importance of designing a tax system that minimizes economic distortions and maximizes incentives for investment and productivity.
- 3) The effectiveness of tax collection shows a significant positive contribution to economic growth. This underlines the importance of efforts to improve tax compliance and efficiency of tax administration in supporting state revenues and economic growth.
- 4) Information technology acts as a moderator that strengthens the relationship between the three independent variables (green tax policy, tax structure, tax collection effectiveness) and economic growth. This finding confirms the strategic role of digitalization in optimizing the implementation of tax policies and increasing the effectiveness of the tax system.
- 5) The research model is able to explain 58.3% of the variation in economic growth, indicating the relevance and explanatory power of the variables studied.

The theoretical implications of this study include contributions to the literature on public economics and fiscal policy, particularly in the context of developing countries. The integration of green tax policy, tax structure, and information technology perspectives enriches the understanding of the determinants of economic growth in the digital era and the transition to a low-carbon economy. Practically, the research findings provide an empirical basis for policy makers to:

- 1) Optimizing the design and implementation of green tax policies by considering their impact on economic growth.
- 2) Undertake tax structure reforms that support economic efficiency and competitiveness.
- 3) Increasing the effectiveness of tax collection through improving the administration system and increasing taxpayer compliance.
- 4) Prioritize investment in information technology to modernize the tax system and increase the effectiveness of fiscal policy.

Although this study makes significant contributions, several limitations need to be acknowledged. The focus on KPP Pratama in Indonesia may limit the generalizability of the findings to other country contexts. Furthermore, the cross-sectional nature of the data limits causal inference. Future research could explore the temporal dynamics of the relationships studied through longitudinal studies, as well as expand the geographic scope to increase the generalizability of the findings.

In conclusion, this study confirms the central role of tax policy in promoting sustainable economic growth, with information technology as a key enabler. The findings highlight the importance of a holistic approach in designing fiscal policy that takes into account environmental aspects, economic efficiency, and technological capabilities to optimize its impact on economic growth.

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