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Generation Z and tax compliance: Insights into knowledge, sanctions, and technology adoption with risk preferences as a moderating variable

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Abstract: This study aims to analyze the effect of tax knowledge, tax sanctions, and technology adoption on tax compliance based on the perceptions of Generation Z, using risk preference as a moderating variable. A quantitative research design was employed, with a sample obtained through an online questionnaire distributed to 219 respondents who are taxpayers born between 1997 and 2012. The results indicate that tax knowledge and technology adoption positively influence tax compliance. Additionally, risk preference enhances the relationship between technology adoption and tax compliance. Conversely, tax sanctions do not significantly affect tax compliance, and risk preference does not strengthen the relationship between tax knowledge or sanctions and tax compliance. These findings suggest that improving tax literacy and leveraging technology can be effective strategies for increasing compliance. The study emphasizes the importance of tax compliance among Generation Z to support the sustainable optimization of state revenue. Furthermore, this research provides valuable insights for policymakers to design more effective strategies that encourage voluntary tax compliance, ultimately contributing to fiscal stability and national development.

Keywords: *Risk preferences, Tax compliance, Tax knowledge, Tax sanctions, Technology adoption.*

1. Introduction

Tax is the primary source of state revenue, playing a vital role in supporting national development. In the first quarter of 2025, the Minister of Finance (Menkeu) stated that the state budget revenue from taxation amounted 14.7% of the predetermined target [1]. However, until 2024, Indonesia still faces challenges in improving tax compliance. According to data from the Directorate General of Taxes (DJP), the number of annual tax returns in 2024 was recorded at 16.52 million, with a formal compliance rate of 85.75% [2]. Despite exceeding the target, this achievement shows a decrease compared to the previous year, which was 86.97%. In addition, the ratio of tax revenue to Gross Domestic Product (GDP) in 2024 was only 10.08%, indicating a low contribution of taxes to the national economy. One of the reasons for this is the low level of tax compliance among taxpayers. Therefore, optimising tax revenue is one of the government's priorities, as reflected in various fiscal policies and tax adjustments that continue to be developed [3].

The productive age group, especially Generation Z (Gen Z), is also a concern in this issue. Based on data from the Badan Pusat Statistik Indonesia (BPS), the number of Gen Z in Indonesia reaches 71.5 million people or around 26.4% of the total population. However, by 2024, this group faces serious challenges in the world of work, characterized by high unemployment rates and limited job opportunities in the formal sector. This condition encourages most of Gen Z to work in the informal sector, which is generally not recorded in the tax administration system and does not contribute to state revenue. On the other hand, young workers have poor levels of tax compliance due to a lack of awareness about tax rules and regulations [4]. Many of them do not understand tax reporting

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procedures, the benefits of tax compliance, or the consequences of failing to comply with tax obligations. Informal employment and low levels of tax compliance are significant challenges [5].

More individuals of Generation Z are joining the workforce and filing taxes, therefore it's essential to know how they react to tax compliance. Research in Indonesia in 2023 shows that peer group influence, orientation towards digital tax systems, tax knowledge, and social media significantly increase Gen Z's voluntary compliance with tax obligations [6]. These characteristics are likely to influence how people behave in terms of tax compliance, particularly with perceptions of the system, penalties, and the technological conveniences offered by the government. Generation Z represents an opportunity due to their technological adaptability and the possibility of becoming the most compliant generation, provided the tax system delivers the convenience, speed, and transparency they seek [7].

In various literatures, tax compliance refers to the attitude and behaviour of performing all tax requirements freely and on time, including reporting, payment, and fulfilling other formal and regulatory obligations. A high level of compliance can ensure the country's fiscal stability, whereas low compliance can weaken the country's ability to sustain development. Internal factors, such as tax knowledge and awareness, influence compliance, as do external factors, including sanctions and access to proper technical infrastructure [8]. Tax knowledge encompasses taxpayers' understanding of tax rates, types of taxes, reporting procedures, and their tax rights and obligations. A good level of knowledge is believed to increase voluntary compliance [9, 10]. Tax penalties such as administrative fines, late payment interest, and other penalties are imposed to deter non-compliant taxpayers and encourage higher compliance [11]. The digital transformation of tax administration, including e-filing, e-invoicing, and e-billing, is being increasingly promoted to enhance reporting accuracy and ease of compliance [12].

As the youngest age group in the workforce, Generation Z is recognized for its strong technological skills and emphasis on work flexibility [13]. With a high awareness of taxation, Generation Z is believed to have the potential to become compliant taxpayers, thus contributing significantly to tax revenue [14]. In addition, the rapid development of digital technology should be utilized as a supporting tool in improving tax compliance, especially for Generation Z, who are digital natives. With easy access to technology-based tax applications, the tax administration process is expected to be simpler, more efficient, and more attractive to the younger generation.

Seeing these conditions, an integrated and sustainable strategy is needed to encourage increased tax literacy, expand the tax base, and strengthen the role of the younger generation in the tax system. This study intends to analyze the effect of tax knowledge, tax sanctions, and the digitalization of the tax system on tax compliance, as perceived by Generation Z, using risk preference as a moderating variable. As risk preferences may influence the link between these factors and tax compliance, this study holds growing importance, given that Generation Z is expected to play a major role in the national tax base over the coming decade [15].

Improving tax knowledge among Gen Z will not only boost formal compliance but also encourage long-term voluntary compliance [15]. Tax authorities across various countries have begun implementing educational initiatives, including digital campaigns, social media utilization, and the incorporation of tax-related material into higher education curricula, to bridge the knowledge gap [16, 17]. Law enforcement and sanctions remain part of the government's fiscal strategy to improve compliance [18] but the effectiveness of this approach is beginning to be questioned in the context of the younger generation. Generation Z and millennials show a greater tendency to question authority and have different risk preferences and ways of thinking compared to previous generations [19]. Empirical studies show that the threat of sanctions is not always effective in encouraging compliance among this age group, especially if it is not accompanied by an increase in tax literacy and trust in tax institutions [20]. Meanwhile, changes in the tax administration system in the digital era are also a significant variable that cannot be ignored. The Directorate General of Taxes (DJP) has introduced various technological innovations, including e-Filing, Coretax DJP, and mobile-based tax applications, to improve the ease of tax reporting and payment [21]. The implementation of this technology is

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considered to foster higher voluntary compliance, but its impact among digitally literate young age groups such as Gen Z remains to be explored [22].

Since Generation Z is known to exhibit diverse risk-taking tendencies, adding risk preferences as a moderating variable in the tax compliance model will provide a more nuanced and contextual understanding [23]. This makes it possible to design tax policies that are more precisely targeted and based on taxpayer behaviour. By highlighting these factors, this study aims to provide a comprehensive understanding of Gen Z's tax compliance behavior and serve as a basis for developing targeted tax compliance improvement policies that cater to the characteristics of the younger generation, thereby supporting the sustainable optimization of state revenue.

2. Literature Review and Hypotheses Development

2.1. Prospect Theory

Prospect theory developed by Kahneman & Tversky, explains how people behave while assessing risky decisions [24]. This theory demonstrates how individual's behavior is influenced by how they view the outcome as a gain or loss. When someone is in a favorable situation, they will tend to avoid risk and be cautious. Conversely, if the individual is in a situation where they are experiencing a loss, they will be more willing to take risks. One of its implications for tax compliance is that taxpayer's risk-taking action will influence their decisions to comply with follow tax regulations. Prospect theory provides a robust theoretical foundation for understanding and explaining the relationship between the level of tax compliance and the knowledge of tax regulations, particularly in terms of moderation by attitude or preference towards risk. According to prospect theory, when taxpayers are faced with situations considered high risk, such as uncertainty in interpreting tax rules or the possibility of sanctions for noncompliance, it might affect taxpayer's desire to comply.

2.2. Attribution Theory

Attribution theory was first introduced by Heider in 1958 in his book *The Psychology of Interpersonal Relations*. Heider explained that people naturally try to understand and interpret the behavior of others by linking it to internal factors, such as personality, attitudes, or personal values, as well as external factors, including the environment, government policies, or social pressures. Individuals who tend to make high-risk decisions may behave differently from those who have a low tolerance for risk. The attribution hypothesis states that a person's behavior does not occur randomly, but is influenced by various factors, namely internal and external factors such as risk preferences, tax knowledge, tax sanctions, and the use of tax technology. This concept helps explain how a person's level of risk tolerance may shape their actions with tax compliance variables. Those who are more willing to take risks may respond differently compared to individuals with lower risk tolerance [25].

2.3. Risk Preference

Risk preference refers to a person's choice to take or avoid risk in various areas, such as financial, health, safety, recreational, ethical, and social decisions [26]. Risk preference has a strong connection to the amount of taxpayer compliance, since taxpayers choose whether to avoid or take the risk. The more taxpayers understand that the risks they face are significant and detrimental to themselves, the more compliant they will be in fulfilling their tax obligations [27].

2.4. Tax Compliance

Tax compliance refers to the behavior of taxpayers in fulfilling their tax obligations and exercising their rights in accordance with applicable tax provisions [28]. Tax compliance is influenced by an individual's understanding and knowledge of taxes [29].

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2.5. Tax Knowledge

Tax knowledge is the process by which taxpayers understand various aspects of taxation and apply them in carrying out tax payment obligations. This knowledge encompasses regulations, procedures, rates, and other provisions outlined in tax legislation [30]. Additionally, consistency in deepening tax knowledge also plays a role in maintaining and enhancing taxpayer compliance levels [31]. tax knowledge can be interpreted as the willingness and ability of taxpayers to understand tax laws and regulations

2.6. Tax Sanction

Tax sanctions are a form of punishment for taxpayers who do not fulfill their obligations by the provisions of the applicable tax laws [32] . Tax sanctions are one of the variables that influence the high level of tax compliance, as they ensure that the provisions of tax laws and regulations (tax norms) are adhered to. In Taxation Law No. 28 of 2007, tax sanctions are categorized into two types: administrative sanctions and criminal sanctions.

2.7. Technology Adoption

Indonesia's current tax collecting system is based on self-assessment, with citizens empowered to calculate, record, and pay their taxes. In order to improve efficiency and taxpayer compliance, the Directorate General of Taxes (DJP) has adopted various electronic-based technological innovations, such as e-registration, e-billing, and e-filing. These three systems aim to simplify the tax administration process and improve taxpayer compliance with their tax obligations. This system simplifies the tax reporting process and reduces the potential for reporting delays or errors.

2.8. Hypothesis

2.8.1. The Effect of Tax Knowledge on Taxpayer Compliance

Tax knowledge is one of the internal factors of attribution theory that can affect a person's behavior and attitude[33]. Taxpayers who have a comprehensive understanding of tax regulations, as well as their rights and obligations, tend to be more motivated to fulfill their tax obligations in a disciplined manner and in accordance with applicable laws. Tax knowledge has a significant effect on taxpayer compliance and can explain its relationship with taxpayer compliance [34]. The higher the tax knowledge possessed by taxpayers, the more tax compliance guarantees will increase [35]. A good understanding in encouraging taxpayers to carry out tax reporting and payment on time. With increased knowledge of taxation, awareness of tax obligations is based not only on legal requirements but also as a form of contribution to state development, ultimately strengthening the overall level of tax compliance. Previous research conducted by Apriliyanti, et al. [36], Setiawati and Pardosi [27], Nuhlaa and Prawestri [37],Febriani, et al. [38] and Kusuma, et al. [39] show that tax understanding influences tax compliance. Based on a review of attribution theory and this previous research, the following hypothesis is formulated.

H_1: Tax Knowledge Has a Positive Effect on Tax Compliance.

2.8.2. The Effect of Tax Sanctions on Taxpayer Compliance

The attribution theory states that tax penalties are external factors that have the power to affect how taxpayers behave when fulfilling their tax duties. Tax sanctions serve as a control mechanism that deters taxpayers from breaking rules, whether intentionally or unintentionally. Tax sanctions can take different forms, including fines, interest on late payments, and legal action [40].

The government is working to prevent rule violations by threatening sanctions and ensuring that all parties fulfill their tax obligations [41]. When taxpayers fail to meet their tax responsibilities as mandated by law, the application of sanctions becomes necessary [42]. The stricter and more certain the enforcement of tax sanctions, the greater the likelihood that taxpayers will show higher compliance with their tax obligations [27]. Taxpayer compliance is directly related to their individual perception of

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the potential penalties for violating tax laws [43]. This is in line with the findings of several previous studies, such as those conducted by Alamsyah, et al. [44], Sudiarto and Junianto [45], and Setiawati and Pardosi [27] which represent that tax sanctions have a significant and positive effect on individual taxpayer compliance. These studies show that tax sanctions not only act as a law enforcement tool, but also as a strategic instrument to increase public awareness and compliance with the tax system. Based on the framework of attribution theory and previous studies described above, the following hypothesis can be developed.

H_2: Tax Sanction Has a Positive Effect on Tax Compliance.

2.8.3. The Effect of Technology Adoption on Tax Compliance

The e-tax system is a platform that helps individuals to access tax administration services online. Technological adoption in taxation seeks to optimize tax administration processes, thereby [46] promoting operational efficiency and maximizing revenue collection for the government [47].

The implementation of digital-based systems such as e-registration, e-filing, and e-billing has been shown to have a positive impact on tax compliance [48, 49]. Based on attribution theory, technological adaptation in taxation is an external cause that can influence taxpayer perceptions to make decisions about taxpayer behavior in carrying out tax obligations. This technology provides convenience in the process of reporting and paying taxes, which will increase tax compliance in taxpayers [49]. Taxpayers' attitudes and ideas regarding the electronic tax system are influenced by e-tax registration, and this has an equal impact on compliance. A positive attitude towards e-tax can boost the acceptance and use of e-tax services, thereby increasing taxpayers' voluntary compliance [50]. Improving and increasing digital service offerings must be done while compromising neither the security of these services nor the confidentiality and integrity of taxpayer data [5].

Previous research conducted by Rosyidi and Harto [51], Kibona and Goyayi [52] and Sholih, et al. [53] show that technological adaptation has a significant positive effect on tax compliance. Given this explanation, the following hypothesis can be constructed.

H_3: Technology Adoption Has a Positive Effect on Tax Compliance

2.8.4. Risk Preferences in Moderating Tax Knowledge on Gen-Z Tax Compliance

Prospect theory can offer insight into how individuals and groups adapt to uncertainty, particularly in response to changes in tax legislation. Taxpayers with high-risk preferences are more likely to comply with their tax responsibilities because they can better understand tax legislation. Uncertainty can be mitigated by being informed of tax obligations under the tax legislation. Tax regulations can be influenced by taxpayers' risk preferences, thus affecting how they interpret these regulations [54]

The findings of this study are supported by research from Elsani and Tanno [55] Wardani and Wardani and Nistiana [23], Pravasanti and Pratiwi [56], Wulandari [57], Leviana, et al. [58] and Damayanti, et al. [59]. Given this explanation, the following hypothesis can be constructed.

H_4: Risk Preferences Strengthen the Effect of Tax Knowledge on Gen-Z Tax Compliance.

2.8.5. Risk Preferences in Moderating Tax Sanctions on Gen-Z Tax Compliance

Prospect theory explains how the fear of incurring tax sanctions can influence tax compliance. When taxpayers view tax sanctions as a potential loss, tax compliance may increase as they seek to avoid the loss [60]. High-risk taxpayers typically comply with their tax obligations to avoid financial penalties in the event of a tax infringement. Taxpayers who are more risk-taking will comply with regulations if the perceived benefits outweigh the risk of fines. According to attribution theory, tax sanctions are external factors that can influence a person's behavior. Research conducted by Setiawati and Pardosi [27], Elsani and Tanno [55] and Pravasanti and Pratiwi [56] believe that risk preference affects how tax sanctions affect tax compliance. Given this explanation, the following hypothesis can be constructed.

H_5: Risk Preferences Strengthen the Effect of Tax Sanction on Gen-Z Tax Compliance.

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2.8.6. Risk Preferences in Moderating Technology Adoption on Gen-Z Tax Compliance

The adoption of technology in taxation, such as e-registration, e-filing, and e-billing is expected to minimize physical interaction between taxpayers and tax officers. Digital services are believed to simplify and expedite tax reporting, allowing taxpayers to eliminate the need for paper-based submissions, decreasing errors and processing time [61]. In addition, this service can also reduce shipping costs because you can immediately get confirmation that e-filing has been received and reduce the risk of losing tax reports. As taxpayers become more familiar with the tax system, their confidence and ease of use increase, leading to greater compliance in the long run. For taxpayers with high-risk preferences, being more flexible, willing to try, and ready to adopt technology that can make their tax obligations lighter and more manageable will increase tax compliance. Meanwhile, taxpayers with low-risk preferences tend to face more problems with tax reporting, especially when using electronic systems or tax e-systems. This is due to their characteristics, which include being more cautious, tending to avoid change, and lacking confidence in dealing with uncertainty, including in the realm of digital technology. Research from Wibowo and Jayusman [62] and Widiyaningrum [63]. e-filing implementation, tax understanding, and taxpayer risk preferences have a positive and significant effect on taxpayer compliance Given this explanation, the following hypothesis can be constructed.

H₆ Risk Preferences Strengthen the Effect of Technology Adoption on Gen-Z Tax Compliance.

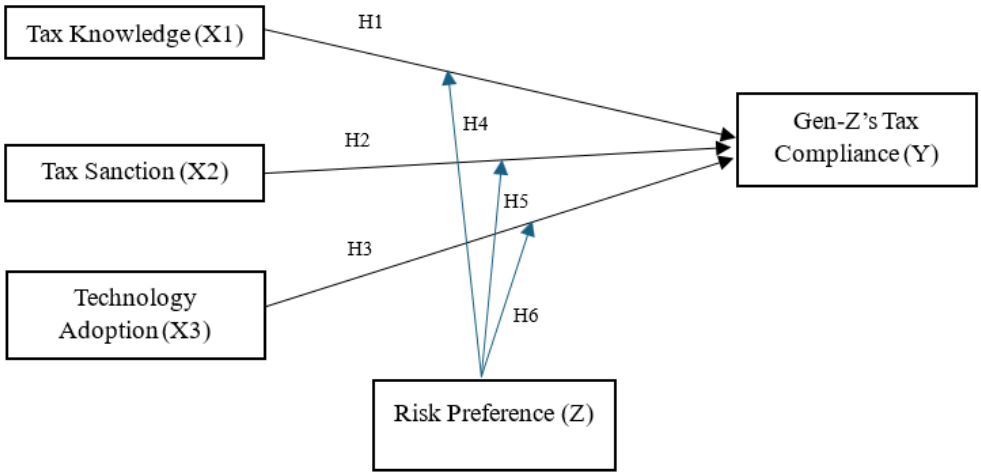


Figure 1.
Conceptual Framework.

3. Methodology

3.1. Sampling and Data Collection

This research applies a quantitative approach, utilizing primary data collected from Generation Z Individual Taxpayers. Sampling was carried out using the inverse square root method by Kock and Hadaya [64] as suggested by Hair et al in their book entitled Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook, to determine the minimum sample size [65]. The calculation, with a power level of 80 per cent, a minimum expected path coefficient significant between 0.11 and 0.20 and a significance level of 5 percent, is displayed below.

$$n_{min} > \left(\frac{2.486}{|P_{min}|}\right)^2$$

$$n_{min} > \left(\frac{2.486}{0.2}\right)^2 = 154.505$$

$$n_{min} = 155 \text{ (rounding)}$$

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The data is collected via distributing a questionnaire via Google Forms. The items in the questionnaire have been modified from prior studies. Respondents in this study used a Likert scale to answer questions about each category, ranging from 1 (strongly disagree) to 5 (strongly agree).

The dependent variable in this study is tax compliance (Y), while the independent variables include tax knowledge (X1), tax sanctions (X2), and technology adoption (X3). In this study, risk preference (Z) serves as the moderating variable. The population of this study are individuals born between 1997 and 2012 who meet the criteria as taxpayers and have utilized digital tax technology such as e-Filing in Indonesia.

Table 1.
Measurement of Variables.

Variable	Definition	Indicator	Reference
Tax Compliance (Y)	Tax compliance is the intention of taxpayers to meet their tax responsibilities in accordance with applicable regulations.	1. Fulfill the obligation to pay taxes 2. Calculate taxes in accordance with tax provisions 3. Always pay taxes 4. There is no coercion in paying taxes 5. On time in paying taxes	Wardani and Rumiyatun [66]
Tax Knowledge (X1)	Tax knowledge includes taxpayers' understanding of tax rules, rights and obligations.	1. Tax payment procedures 2. Understand the taxes that apply to business or work 3. Knowing the tax payment deadline 4. The deadline for submitting annual tax returns 5. Calculate taxes according to tax provisions 6. Understand the obligation related to tax sanctions	Elsani and Tanno [55]
Tax Sanction (X2)	Tax sanctions are penalties imposed on taxpayers who fail to fulfill their tax obligations, either due to negligence or intentional misconduct.	1. Tax sanctions are the last resort to increase tax revenue 2. Fines or interest penalties are imposed for late tax payment and reporting 3. Tax sanctions encourage timely tax payment and reporting compliance 4. Strict sanctions serve as an educational tool for taxpayers 5. Tax sanctions apply to all tax violators	Elsani and Tanno [55]
Technology Adoption (X3)	Technology adoption in taxation includes the use of digital systems such as e-Registration, e-Filing, and e-Billing, to facilitate tax administration and compliance.	1. Use of online taxation applications 2. Convenience in using tax applications 3. Simplify the taxation process 4. Knowing about recent tax-related technology developments 5. The development of tax technology increases efficiency	Night and Bananuka [50]
Risk Preferences (Z)	Risk preference is an important concept in psychology and behavioral economics that describes the extent to which individuals are willing to take risks in decision-making, especially under conditions of uncertainty.	1. Financial Risk 2. Employment Risk 3. Social Risk 4. Health Risk	Aryobimo and Cahyonowati [67]

Data analysis and hypothesis testing were carried out using the latest SEM-PLS (Structural Equation Modeling - Partial Least Square), namely version 4.1.1.2, which was released in 2025 to determine the moderating variables used to moderate between variables X and Y. The use of SEM-PLS in this study is due to its greater efficiency in analyzing data with small samples [65].

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4. Results and Discussion

4.1. Descriptive Analysis

The population of this study consisted of taxpayers born between 1997 and 2012, resulting in a sample size of 219 respondents. Based on gender, the male respondents accounted for 29%, and the female respondents accounted for 71%. Based on the age group, 16.1% of respondents were 18-21 years old, 45.5% were 22-25 years old, and 38.4% were 26-28 years old.

4.2. Outer Model Evaluation

Table 2.
Standardised Loading for Each Item

Construct	Item	Standardised loading (before modification)	Standardised loading (after modification)
Tax Knowledge (TK)	TK1	0.726	-
	TK2	0.621	0.715
	TK3	0.678	0.748
	TK4	0.56	-
	TK5	0.705	0.787
	TK6	0.506	-
Tax Sanction (TS)	TS1	0.609	0.774
	TS2	0.654	0.702
	TS3	0.672	-
	TS4	0.628	0.703
	TS5	0.696	-
Technology Adoption (TA)	TA1	0.667	-
	TA2	0.669	0.707
	TA3	0.593	-
	TA4	0.685	0.748
	TA5	0.684	0.768
Risk preference (RP)	RP1	0.797	0.866
	RP2	0.748	0.808
	RP3	0.734	-
	RP4	0.702	-
	RP5	0.767	0.783
Tax Compliance (TC)	TC1	0.748	0.752
	TC2	0.684	0.780
	TC3	0.712	0.777
	TC4	0.451	-
	TC5	0.569	-

Based on Table 2 above, before deleting the questions, the outer loadings value < 0.7 is obtained more frequently than the outer loadings value > 0.7. Therefore, to achieve good results in measurement, some questions are deleted based on the purpose of deleting and retaining items [65].

4.3. Validity and Reability Test

In the validity test, it will be examined using the Average Variance Extracted (AVE) value, and outer loadings value. The AVE must exceed the minimum requirement of 0.50 for the explained variance to be greater than the measurement error. The item outer loadings on each construct are greater than 0.7. This supports the convergent validity of the measurement. The outer loadings and average variance extracted (AVE) values are used to check the convergent validity of the constructs. Then, the discriminant validity is next evaluated with the Fornell-Larcker test, which helps identify the value of each variable and the HTMT test, which measures the actual correlation between two constructs if they were accurately measured.

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Table 3.
Convergent Validity and Reliability Test.

Construct	Item	Loading	Composite Reability	Average Variance Extracted (AVE)
Tax Knowledge (TK)	TK2	0.715	0.794	0.563
	TK3	0.748		
	TK5	0.787		
Tax Sanction (TS)	TS1	0.774	0.771	0.529
	TS2	0.702		
	TS4	0.703		
Technology Adoption (TA)	TA2	0.707	0.785	0.550
	TA4	0.748		
	TA5	0.768		
Risk preference (RP)	RP1	0.866	0.860	0.671
	RP2	0.808		
	RP5	0.783		
Tax Compliance (TC)	TC1	0.752	0.813	0.592

As seen in Table 3, the AVE ranges from 0.529 to 0.671, indicating that it is above the critical threshold value of 0.50. The outer loadings value also produces a value above 0.7, which falls between 0.702 and 0.866. This indicates that the model has met the requirements of discriminant validity. In the reliability test, composite reliability is used as a measure of the consistency reliability of all indicators with the required criteria > 0.7 [65]. As seen in the table above, the composite reliability is between 0.771 to 0.860, which confirms that the instrument used is very accurate, consistent, and stable.

Table 4.
Discriminant Validity with Fornell-Lacker Criterion.

Fornell-Lacker Criterion					
Construct	**Risk Preference**	**Technology Adoption**	**Tax Compliance**	**Tax Knowledge**	**Tax Sanction**
Risk Preference	0.819				
Technology Adoption	0.383	0.741			
Tax Compliance	0.368	0.42	0.77		
Tax Knowledge	0.329	0.368	0.478	0.751	
Tax Sanction	0.479	0.446	0.37	0.371	0.727

According to the Fornell-Lacker criterion. individual constructs must have stronger loadings on their own constructs than on other constructs in the model. This can be defined by measuring the square root of AVE along the diagonal. which verifies that the condition is more significant than the correlation between constructs [68]. The results confirm that the reflective constructs exhibit discriminant validity. Additionally. HTMT ratio values of less than 0.85 or less than 0.90 are valid. In the table. all constructs in the model show discriminant validity based on the HTMT method.

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Table 5.
Discriminant Validity with Heterotrait-monotrait Ratio of Correlations (HTMT).

Heterotrait–Monotrait Ratio (HTMT)

Construct	Risk Preference	Technology Adoption	Tax Compliance	Tax Knowledge	Tax Sanction	Risk Preference x Technology Adoption	Risk Preference x Tax Knowledge	Risk Preference x Tax Sanction
Risk Preference								
Technology Adoption	0.545							
Tax Compliance	0.482	0.652						
Tax Knowledge	0.486	0.600	0.739					
Tax Sanction	0.713	0.768	0.604	0.639				
Risk Preference x Technology Adoption	0.255	0.664	0.407	0.228	0.469			
Risk Preference x Tax Knowledge	0.312	0.222	0.391	0.662	0.365	0.429		
Risk Preference x Tax Sanction	0.414	0.448	0.356	0.369	0.679	0.658	0.510	-

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4.4. Inner Model Evaluation

Table 6.
Collinearity Testing and Determinant Coefficient.

Item	VIF	R Square
Risk Preference	1.226	0.344
Technology Adoption	1.716	
Tax Knowledge	1.584	
Tax Sanction	1.359	
Risk Preference x Technology Adoption	1.616	
Risk Preference x Tax Knowledge	1.853	
Risk Preference x Tax Sanction	1.593	

The issue of lateral collinearity is very important to address during the initial stages of structural model assessment. This issue is assessed by looking the Variance Inflation Factor (VIF) value. A VIF value of five (5) or higher suggests a possible collinearity issue [65]. The table above does not have a value of five (5) or higher. so it does not indicate potential multicollinearity in the model.

The evaluation of the structural model continued to assess the hypotheses that had been developed. First. we evaluated the explanatory power of the model by examining the coefficient of determination (R^2) level. A high R-squared value suggests good predictive accuracy [65]. The R-squared for the dependent variable in this study was 0.344. which indicates that all variables in the analysis explained 34.4 percent of the variance in tax compliance.

4.5. Hypothesis Testing

Table 7.
Path Coefficients

	Original sample (O)	Standard Deviation (STDEV)	T Statistics	P Values	Conclusion
Tax Knowledge (X1) -> Tax Compliance (Y)	0.323	0.072	4.477	0.000	Significant
Tax Sanction (X2) -> Tax Compliance (Y)	0.087	0.085	1.013	0.155	Not Significant
Technology Adoption (X3) -> Tax Compliance (Y)	0.137	0.066	2.063	0.020	Significant
RP*TK -> Tax Compliance (Y)	-0.019	0.079	0.241	0.405	Not Significant
RP*TS -> Tax Compliance (Y)	0.052	0.070	0.740	0.230	Not Significant
RP*TA -> Tax Compliance (Y)	-0.129	0.071	1.817	0.035	Significant

Hypothesis testing is used to examine whether the variables of tax knowledge. tax sanctions. technology adoption. and risk preference can significantly explain the taxpayer compliance variable. This test has criteria. which are that if the t-statistic value is above 1.64 and the p value is below 0.05. the hypothesis is not rejected. This hypothesis was tested. and the results of the bootstrapping procedure are shown in Table 7.

- Tax knowledge has a significant positive effect on tax compliance. as evidenced by the P-value of 0.000 (<0.05). indicating that H1 is accepted.
- Tax sanctions have no significant effect on tax compliance. as evidenced by P-values of 0.155 (>0.05); this indicates that H2 is rejected.
- Technology implementation has a significant positive effect on tax compliance. as evidenced by the P-value of 0.020 (<0.05). indicating that H3 is accepted.

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- Risk preference does not significantly moderate the effect of tax knowledge on tax compliance. with a P-value of 0.405 (>0.05). Thus. H4 is rejected. meaning that risk preference does not affect tax knowledge among Generation Z taxpayers in terms of compliance.
- Risk preference does not significantly moderate the effect of tax sanctions on tax compliance. with a P-value of 0.230 (>0.05). Thus. H5 is rejected. meaning that risk preferences do not affect tax sanctions on generation Z taxpayer compliance.
- Risk preference significantly moderates the effect of technology adoption on tax compliance. with P-values of 0.035 (<0.05). Thus. H6 is accepted. indicating that risk preference influences whether individuals will be more tax compliant after using technology.

5. Discussion

In this study. H1 is accepted. This means that tax knowledge has a significant effect on tax compliance. Tax knowledge is one of the important factors that encourages individuals or businesses to fulfill tax obligations. Taxpayers who have good tax knowledge will more easily understand tax provisions. reporting procedures. and correct payment procedures. Good tax knowledge helps taxpayers avoid mistakes when reporting or paying taxes. In this study. most Generation Z individuals who have become taxpayers demonstrate a good understanding of taxation provisions. which provides them with the confidence to carry out their responsibilities without confusion. thereby increasing taxpayer compliance. The results of this test align with attribution theory. which posits that both internal and external factors can influence individual behavior. In this case. tax knowledge is an internal factor that affects the compliance of Gen Z taxpayers. This research aligns with the findings of Dini, et al. [69]. Santoso, et al. [33] and Muttaqin [70]. which suggest that higher tax knowledge will lead to increased taxpayer compliance.

H2 is rejected. which means tax sanctions cannot affect tax compliance in Generation Z and compel them to fulfill their tax obligations. The stricter or heavier the tax sanctions imposed on taxpayers. the lower the level of compliance will be. The results of this test align with attribution theory. which posits that individual behavior can be influenced by both internal and external factors. According to attribution theory. tax sanctions are external causes that can influence taxpayer compliance in terms of tax payment. However. in reality. this study does not support attribution theory. This is because whether or not a person is obedient in paying taxes depends on self-awareness. so that the sanctions set have no effect. This research is in line with Manuel and Jonnardi [71]. Tuli, et al. [72] and Dini, et al. [69]. saying tax sanctions do not have a significant effect on individual taxpayers.

H3 is accepted. indicating that the adoption of tax technology increases the compliance of Generation Z taxpayers in Indonesia. Digital systems. such as e-registration. e-filing. and e-billing. enable efficient tax reporting and paying taxes. eliminating time and place restrictions. The tech-savvy Generation Z greatly benefits from this ease of access. This aligns with attribution theory. as e-filing. an external technological innovation. motivates taxpayers by providing comfort and speed of reporting. thereby increasing timely compliance. This research aligns with Mandasari [73]. which states that the use of technology affects taxpayer compliance.

H4 is rejected. so, in this finding. risk preference does not strengthen the effect of tax knowledge on tax compliance in generation Z. This suggests that although prospect theory states that risk preference can influence decisions. in this context. tax knowledge appears to have a greater role in motivating tax compliance. regardless of how generation Z perceives the risks or losses associated with tax avoidance. In other words. better knowledge about taxes may be more effective in increasing tax compliance than the perceived risk that taxpayers hold. While prospect theory suggests that risk preferences may interact with tax knowledge to moderate compliance. this study reveals that for Generation Z. tax knowledge is a more dominant factor than risk factors in determining their compliance. An individual's high level of tax knowledge does not always guarantee compliance with tax obligations. especially when they are faced with a situation involving a high level of risk. This research is in line with Setiawati and Pardosi [27].

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which states that risk preference does not moderate the relationship between tax knowledge and taxpayer compliance.

H5 is rejected. meaning that the level of risk preference possessed by taxpayers. especially Generation Z. does not strengthen the effect of tax sanctions on their level of compliance. One possible cause is the application of administrative and criminal sanctions. which are still considered light and have not caused a deterrent effect. Additionally. Generation Z often has a limited understanding of taxation risks. which leads them to prefer not to comply with their tax obligations. This has an impact on the low level of tax compliance among this generation. despite the imposition of sanctions. Although tax sanctions can cause losses for non-compliant taxpayers and generally increase compliance levels. the existence of risk preferences can actually reduce the effectiveness of these sanctions in encouraging compliance. In terms of Prospect Theory. Generation Z does not perceive the potential losses from non-compliance as significant. which discourages behavioral changes towards tax compliance. This research aligns with Putri, et al. [74]. who suggest that risk preference plays a role in mitigating the effect of tax sanctions on taxpayer compliance.

H6 is accepted. indicating that risk preference plays a significant role in the relationship between tax technology adoption and tax compliance. Individuals tend to focus on the convenience provided by digital tax systems such as e-registration. e-filing. and e-billing. However. they also consider the potential risks associated with non-compliance. which motivates them to maintain or improve their tax compliance. Therefore. risk preference influences how tax technology adoption affects compliance behavior. balancing between ease of use and awareness of tax risks.

6. Conclusion

The study's results indicate that tax knowledge has a positive effect on tax compliance. This suggests that taxpayers with adequate knowledge will be better able to utilize the tax system effectively and tend to be more tax-compliant. Additionally. the adoption of technology also has a positive effect on tax compliance. Technological advances not only simplify the compliance process but also build trust in the tax system. especially when users perceive these tools as reliable. secure. and easy to use. Meanwhile. tax penalties have a negative effect on tax compliance. Furthermore. risk preference as a moderating variable weakens the relationship between tax knowledge and tax penalties on tax compliance among Generation Z in Indonesia. but can strengthen the relationship between technology adoption and tax compliance among Generation Z in Indonesia.

Overall. these findings suggest that a more effective approach to enhancing tax compliance among Generation Z is through comprehensive education and taxation. as well as the improvement of digital systems that are easy to use for various groups. rather than focusing solely on the enforcement of sanctions. This study also provides empirical support for attribution theory and prospect theory in the context of tax compliance. demonstrating that the influence of these theories is contextual. varying according to generational characteristics and dominant internal factors. Building tax compliance should not only rely on fear of punishment. but rather on developing a system where taxpayers are informed and supported by technology. Therefore. strategies to improve tax compliance must be comprehensive and sustainable. involving collaboration between the government and the community. High compliance will create a broader and more sustainable tax base. ultimately strengthening the state's capacity to finance public needs and achieve national development goals.

Although the regression model used in this study is statistically significant. the coefficient of determination (R^2) value of 34.4% indicates that the independent variables only account for 34.4% of the variation in Gen Z taxpayer behavior. This implies that 65.6% of the behavior is influenced by other factors not included in the current model. limiting the explanatory power of the findings.

To enhance the understanding of tax behavior among Generation Z. future research is encouraged to incorporate additional variables that may play a critical role. Specifically. factors such as tax awareness and tax service quality could offer valuable insights into how Gen Z perceives and complies with tax

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obligations. Including these elements may help build a more comprehensive and accurate model of Gen Z taxpayer behavior.

Data Availability Statement:

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Transparency:

The authors confirm that the manuscript is an honest. accurate. and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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