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# The Impact of E-Billing Adoption and Tax Regulation Understanding on Individual Taxpayer Compliance: The Moderating Role of Tax Socialization

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**Abstract**
This study examines the relationship between e-Billing adoption, understanding of tax regulations, and individual taxpayer compliance within a regional tax administration context. Primary data were collected from 100 individual taxpayers registered as e-Billing users at KPP Pratama Samarinda Ilir and analyzed using PLS-SEM. The results show that e-Billing adoption and taxpayers' understanding of tax regulations are positively associated with taxpayer compliance. Tax socialization also demonstrates a direct association with compliance; however, its moderating role is not statistically supported. This finding suggests that tax socialization tends to operate independently, consistent with the Theory of Planned Behavior's view of social influence as a direct determinant. Given the use of cross-sectional and self-reported data from a single tax office, the findings are associative and context-specific rather than causal.

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## 1. Introduction

Tax revenue serves as a primary financial source for national development and public services, making taxpayer compliance a critical component in the effectiveness of Indonesia's tax system. However, various forms of non-compliance, such as tax avoidance and neglect, continue to hinder optimal revenue collection [1]. Although the relationship between digital tax systems and compliance has been widely documented, empirical evidence from regional tax offices in developing economies remains underrepresented. Accordingly, this study does not seek to develop new theoretical extensions of TAM or TPB, but rather to examine their empirical relevance in a specific administrative context.

At the Primary Tax Office (KPP) Pratama Samarinda Ilir, the number of registered Individual Taxpayers (WPOP) continues to increase each year, reaching 41,723 taxpayers in 2024, reflecting positive growth in the taxpayer base. Ideally, such an increase should correspond with higher tax revenue as more individuals become obligated to report and fulfill their tax responsibilities. However, the realization of tax revenue in 2024 remained below the established target, suggesting that the growth in taxpayer registration has not been matched by proportional improvements in compliance behavior. This indicates that taxpayer expansion alone is insufficient if not supported by effective administrative systems, taxpayer education, and digital service adoption. This can be seen in the following table:

**Table 1. Individual Taxpayer Compliance Ratio at KPP Pratama Samarinda Ilir for the Years 2020–2024**

| Description | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|
| Number of Individual Taxpayers | 27.277 | 28.952 | 31.074 | 36.130 | 41.723 |
| Number of Annual Income Tax Returns Submitted | 20.216 | 22.555 | 26.318 | 27.780 | 24.649 |
| Tax Return Filing Compliance Ratio | 74,11% | 77,90% | 84,69% | 76,89% | 59,08% |

Source: *E-Riset Direktorat Jenderal Pajak, 2020-2024*

The number of active individual taxpayers has increased every year, as shown in Table 1 Therefore, tax revenue should ideally rise in line with the growth in the number of individual taxpayers. This indicates that the tax revenue at KPP Pratama Samarinda Ilir is still not optimal when compared to previous years.

To address compliance issues, the Directorate General of Taxes has implemented digital transformation through the simplification of administrative procedures, including the introduction of the e-Billing system designed to facilitate faster and more accurate tax payments [2]. Additionally, understanding tax regulations plays an essential role in shaping taxpayer behavior, as greater regulatory knowledge increases awareness and compliance in fulfilling tax obligations [3]. Tax socialization also functions as a medium for bridging taxpayers with tax authorities by providing clear information on rights and obligations, while potentially enhancing the effectiveness of digital tax systems.

Tax socialization programs conducted by the DJP are designed to increase awareness and understanding of tax regulations. These programs include workshops, online dissemination, outreach activities, and media campaigns. However, prior research indicates mixed results regarding the effectiveness of tax socialization in influencing taxpayer behavior. Although many prior studies treat tax socialization as a moderating variable, little attention has been paid to whether this role is theoretically aligned with TPB. This study fills this gap by empirically examining whether tax socialization influences taxpayer compliance conditionally or functions as an independent factor. Thus, its moderating effect on the relationship between E-Billing adoption, regulatory understanding, and taxpayer compliance remains unclear.

This research seeks to empirically investigate the determinants of individual taxpayer compliance. Specifically, the study evaluates the impact of E-Billing system adoption and the depth of tax regulation understanding on compliance levels. Furthermore, it examines the potential moderating role of tax socialization in strengthening these relationships, providing a comprehensive

analysis of how technological integration and regulatory knowledge interact with external outreach to influence taxpayer behavior.

**Literature Review**

1) **Technology Acceptance Model (TAM)**
   The Technology Acceptance Model (TAM), introduced by Davis (1989), explains how individuals accept and use new technologies. TAM identifies two key determinants: Perceived Usefulness (PU)**,** the extent to which a system enhances task performance, and Perceived Ease of Use (PEOU)**,** the degree to which a system is easy to operate. These two perceptions influence users' attitudes, behavioral intentions, and ultimately, actual system usage. In this study, the use of e-Billing is treated as a reflection of taxpayers' behavioral responses, which are likely shaped by perceptions of usefulness and ease of use, although these dimensions are not directly specified in the research model. In the context of taxation, TAM is relevant for understanding taxpayers' acceptance of digital tax systems such as e-Billing.

2) **Theory of Planned Behavior (TPB)**
   The Theory of Planned Behavior (TPB), proposed by Ajzen (1991), states that intention to perform a behavior is influenced by attitude**,** subjective norms**,** and perceived behavioral control [4]**.** In taxation, TPB explains why taxpayers choose to comply or not comply with tax obligations. Understanding tax regulations shapes attitude; social and institutional influence shapes subjective norms; while confidence in performing tax tasks influences perceived behavioral control. Within the TPB framework, social influence is generally treated as a direct determinant through subjective norms, rather than as a moderating factor. Consequently, treating tax socialization as a moderator calls for empirical examination.

3) **E-Billing Adoption**
   E-Billing is a digital tax payment system that allows taxpayers to generate a billing ID and make payments electronically [5]. Supported by TAM, e-Billing adoption is influenced by perceived usefulness (efficiency, accuracy, speed) and perceived ease of use (simple procedures, accessibility). Previous research shows that e-Billing reduces complexity and helps improve taxpayer compliance.

4) **Understanding of Tax Regulations**
   Understanding tax regulations refers to taxpayers' knowledge of tax laws, obligations, reporting procedures, and payment requirements. In TPB, this understanding shapes positive attitudes and increases perceived behavioral control, enabling taxpayers to comply accurately and timely. Higher understanding generally correlates with higher compliance.

5) **Tax Socialization**
   Tax socialization consists of educational and communicative efforts by tax authorities to inform taxpayers about rights, obligations, and procedures [6]. Through TPB, socialization strengthens subjective norms and perceived behavioral control by increasing awareness and reducing confusion. Accordingly, the moderating role assigned to tax socialization in this study should be understood as exploratory rather than confirmatory.

6) **Taxpayer Compliance**
   Taxpayer compliance involves fulfilling tax obligations correctly and on time. Supported by TPB and compliance theory, compliance is influenced by knowledge, administrative simplicity, social influence, and ease of performing tasks (such as using e-Billing). Compliance can be voluntary or enforced through penalties.

## 2. Method

This study employed a quantitative research design using primary data obtained through a structured questionnaire distributed to Individual Taxpayers (WPOP) registered at KPP Pratama Samarinda Ilir. The population consisted of all active individual taxpayers, while the sample of 100 respondents was selected using purposive sampling, targeting taxpayers who had experience using the e-Billing system and had submitted their Annual Income Tax Return (SPT). The questionnaire was developed based on operational definitions and measurement indicators for each variable: e-

Billing adoption, understanding of tax regulations, tax socialization, and taxpayer compliance, all of which were measured using a five-point Likert scale. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS 4.0. The analysis involved two stages: (1) Outer Model Testing, which assessed convergent validity, discriminant validity, and construct reliability using indicator loadings, AVE, Composite Reliability, and Cronbach's Alpha; and (2) Inner Model Testing, which examined R-square values, effect sizes, path coefficients, and hypothesis significance through a bootstrapping procedure with 5,000 subsamples. PLS-SEM was selected because it is well suited for exploratory research with a predictive focus and is able to accommodate interaction effects in studies with relatively limited sample sizes. The results of this methodology provided empirical evidence regarding the influence of e-Billing adoption and tax regulation understanding on taxpayer compliance, as well as the moderating role of tax socialization.

## 3. Result and Discussion

### 3.1. Research Results

### 3.1.1. Convergent Validity

The results show that all indicators have outer loadings above 0.70, indicating that the measurement items meet the convergent validity criteria.

**Table 2. Convergent Validity Test (Outer Loadings)**

| Variabel | Instrumen | *Outer Loading* | Keterangan |
|---|---|---|---|
| E-Billing Adoption | EBL1 | 0.857 | Valid |
| | EBL2 | 0.913 | Valid |
| | EBL3 | 0.833 | Valid |
| | EBL4 | 0.890 | Valid |
| Understanding of Tax Regulations | PPP1 | 0.810 | Valid |
| | PPP2 | 0.748 | Valid |
| | PPP3 | 0.769 | Valid |
| | PPP4 | 0.725 | Valid |
| Taxpayer Compliance | KWP1 | 0,782 | Valid |
| | KWP2 | 0,802 | Valid |
| | KWP3 | 0,870 | Valid |
| | KWP4 | 0,830 | Valid |
| Tax Socialization | SLP1 | 0,800 | Valid |
| | SLP2 | 0,875 | Valid |
| | SLP3 | 0,810 | Valid |

### 3.1.2. Discriminant Validity

Cross-loading analysis confirms that each item loads higher on its intended construct, indicating strong discriminant validity.

### 3.1.3. Reliability Test

All constructs meet the required reliability criteria with Composite Reliability > 0.70 and Cronbach Alpha > 0.60.

**Table 3. Construct Reliability**

| Variabel | *Composite Reliability* | *Cronbach Alpha* | Keterangan |
|---|---|---|---|
| E-Billing Adoption (X1) | 0.901 | 0.896 | Reliabel |
| Understanding of Tax Regulations (X2) | 0.772 | 0.763 | Reliabel |
| Taxpayer Compliance (Y) | 0.843 | 0.839 | Reliabel |
| Tax Socialization (Z) | 0.814 | 0.777 | Reliabel |

### 3.1.4. R-Square

The criteria for R-Square are 0.25 for weak, 0.50 for moderate, and 0.75 for strong [7]. The R-Square value for the taxpayer compliance variable is:

**Table 4. R-Square (R²)**

| Variabel | R-Square (R²) | R-Square Adjusted |
|---|---|---|
| Taxpayer Compliance | 0,523 | 0,498 |

This indicates that the variables of e-Billing adoption, understanding of tax regulations, and tax socialization are able to explain 52.3% of the variance in taxpayer compliance.

### 3.1.5. Hypothesis Testing Results

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS 4.0. The path coefficients, T-statistics, and p-values are presented in Table 5 to illustrate the direct and moderating effects among the variables.

**Table 5. Hypotesis Testing Result**

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T statistics (\|O/STDEV\|) | Signifikansi P Values |
|---|---|---|---|---|---|
| E-Billing Adoption → Taxpayer Compliance | 0.312 | 0.305 | 0.106 | 2.944 | 0.003 |
| Understanding of Tax Regulations → Taxpayer Compliance | 0.382 | 0.385 | 0.80 | 4.759 | 0.000 |
| Tax Socialization → Taxpayer Compliance | 0.259 | 0.266 | 0.086 | 3.014 | 0.003 |
| Tax Socialization X E-Billing Adoption → Taxpayer Compliance | 0.017 | -0.001 | 0.090 | 0.189 | 0.850 |
| Tax Socialization X Understanding of Tax Regulations → Taxpayer Compliance | 0.001 | 0.023 | 0.097 | 0.010 | 0.992 |

As shown in Table 5, both e-Billing adoption and understanding of tax regulations have a positive and significant effect on taxpayer compliance. Tax socialization also demonstrates a significant direct effect; however, it does not function as a moderating variable. This is indicated by the non-significant p-values of both interaction terms. The absence of a significant moderating effect indicates that tax socialization neither amplifies nor diminishes the influence of digital tax systems or regulatory understanding. Rather, socialization seems to function as an independent factor, which is consistent with TPB's treatment of subjective norms as a direct determinant. Accordingly, Table 5 confirms that H1 and H2 are supported, while H3 and H4 are not supported due to the absence of significant moderating effects.

### 3.1.6. Limitations

This study has several limitations that should be acknowledged. First, the sample size was limited to 100 individual taxpayers registered at KPP Pratama Samarinda Ilir, which restricts the generalizability of the findings to broader populations. Second, the data were collected using self-reported questionnaires, which may be subject to response bias, including subjective judgments and socially desirable responses. Third, the cross-sectional design of this study does not allow for the observation of changes in taxpayer compliance over time. Fourth, the measurement of tax socialization may not fully capture the variety, intensity, or quality of socialization programs implemented by the tax authorities, which may explain the non-significant moderating effects. Lastly, this study only examines three main variables, whereas taxpayer compliance may also be influenced by other factors such as enforcement, income level, digital literacy, and perceived fairness, which were not included in the model.

### 4. Conclusion

This study explores how e-Billing adoption, understanding of tax regulations, and taxpayer compliance are related among individual taxpayers registered at KPP Pratama Samarinda Ilir. The results suggest that both the use of e-Billing and taxpayers' knowledge of tax regulations are

associated with relatively higher compliance levels within this particular administrative setting. The analysis also indicates that tax socialization is directly related to taxpayer compliance. Nevertheless, its role as a moderating factor in the relationship between digital tax systems, regulatory understanding, and compliance is not empirically supported. This finding implies that tax socialization tends to function independently rather than as a conditioning mechanism, which aligns with TPB's view of social influence as a direct determinant reflected in subjective norms.

These findings should be interpreted cautiously, as they are based on cross-sectional and self-reported data collected from a single regional tax office. As such, the results do not support causal inference. Despite these constraints, the study offers empirical insight into the role of digital tax administration and regulatory understanding in a local taxation context and points to the need for future studies employing broader samples and alternative research designs.

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