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The Role of Internal Audit in Encouraging Good University Governance: A Study on Private Universities

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ABSTRACT

The demand for accountability and transparency in higher education governance highlights the strategic role of internal audit in strengthening institutional management, particularly in private universities. This study aims to examine the effect of internal audit effectiveness on the accountability and transparency of private universities in Palembang. A quantitative approach with an explanatory survey was applied, involving 10 private universities with active internal audit units. Primary data were collected from 50 respondents using a 5-point Likert-scale questionnaire and analyzed through linear regression using RapidMiner Studio. The findings reveal that both internal indicators (IN) and accountability activities (KA) have a positive influence on achieving good university governance (GUG), with the regression model Y = 0.336 × IN + 0.387 × KA + 1.244. The KA variable has a slightly greater impact than IN, although both are statistically significant. The Root Mean Squared Error (RMSE) value of 0.170 indicates a very low prediction error and high model accuracy. These results imply that strengthening both accountability mechanisms and internal audit practices simultaneously is essential to support accountable and transparent university governance.

Keywords: *internal audit, accountability, transparency, linear regression, good university governance*

ABSTRAK

Tuntutan terhadap akuntabilitas dan transparansi dalam tata kelola pendidikan tinggi menjadikan audit internal sebagai elemen strategis dalam memperkuat manajemen institusi, khususnya pada perguruan tinggi swasta (PTS). Penelitian ini bertujuan menguji pengaruh efektivitas audit internal terhadap akuntabilitas dan transparansi pengelolaan PTS di Kota Palembang. Pendekatan kuantitatif dengan metode survei eksplanatori digunakan dengan melibatkan 10 PTS yang memiliki unit audit internal aktif. Data primer diperoleh dari 50 responden melalui kuesioner Likert berskala 5 poin dan dianalisis menggunakan algoritma regresi linear pada RapidMiner Studio. Hasil penelitian menunjukkan bahwa variabel indikator internal (IN) dan kegiatan akuntabilitas (KA) berpengaruh positif terhadap pencapaian good university governance (GUG), dengan persamaan regresi Y = 0,336 × IN + 0,387 × KA + 1,244. Nilai koefisien menunjukkan bahwa KA memberikan pengaruh lebih besar dibandingkan IN, meskipun keduanya signifikan. Nilai Root Mean Squared Error (RMSE) sebesar 0,170 menunjukkan bahwa model memiliki tingkat kesalahan prediksi yang sangat rendah dan akurasi tinggi. Temuan ini menyarankan bahwa penguatan indikator akuntabilitas dan audit internal harus dilakukan secara simultan untuk mendukung tata kelola yang akuntabel dan transparan di lingkungan PTS.

Kata Kunci: *audit internal, akuntabilitas, transparansi, good university governance*

1. Introduction

In the modern era marked by increasing demands for transparency and public accountability, higher education institutions, especially private universities, face increasingly complex challenges (Dos Reis Fonseca et al., 2020;Sulistiani et al., 2023;Ayumiati & Jalilah, 2023) Not only as an academic institution that plays a role in producing quality human resources, universities are also required to manage resources and budgets efficiently, accountably, and in accordance with the principles of good university governance. (Lussiana & Fidiana, 2020;Yodianti & Nugraheni, 2023)

Therefore, the existence and role of internal audit in strengthening the internal monitoring system in higher education is very important (Iryani & Arsanti, 2013; Rusdi et al., 2023). Internal audit has a primary function in providing objective assurance and independent consultation to increase value and improve the organization's operations (IIA et al., 2017; Nisak & Rochayatun, 2023; Sulistiani et al., 2023). In the context of higher education, internal audits are expected to be able to ensure that operational, financial and academic processes run effectively, efficiently and in accordance with applicable regulations (Dos Reis Fonseca et al., 2020)(; Nurhaliza et al., 2023).

This function is very crucial in realizing the principles of accountability and transparency, especially in the management of education budgets sourced from public and community funds (Ayumiati & Jalilah,

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2023);Nurlinda et al., 2021). Accountability refers to an organization's obligation to explain and be responsible for its actions, decisions, and results achieved to interested parties (Romzek & Dubnick, 1987); Nurhaliza et al., 2023). Meanwhile, transparency is the openness of information regarding organizational decisions and processes that allows external parties to carry out monitoring and assessment (Hood, 2006; Lussiana & Fidiana, 2020).

Both are important components in building public trust in higher education institutions (Rusdi et al., 2023;Dos Reis Fonseca et al., 2020). Therefore, good internal audit practices can be a key instrument in ensuring that higher education institutions manage their resources responsibly and openly (Sulistiani et al., 2023;Yodianti & Nugraheni, 2023). The internal audit function in higher education is nothing new, but its existence is increasingly emphasized along with increasing external supervision and the complexity of educational institution governance (Iryani & Arsanti, 2013;Nisak & Rochayatun, 2023).

Based on Permenristekdikti No. 62 of 2016 concerning the Higher Education Quality Assurance System, every university is required to have an internal quality assurance system (SPMI) one of the elements of which is internal audit. Internal audit in this context does not only include financial audits, but also performance, academic, and compliance audits with education quality standards (Yodianti & Nugraheni, 2023; Nurhaliza et al., 2023).

However, the implementation of internal audits in private universities, including in Palembang City, still faces various challenges (Ayumiati & Jalilah, 2023)(Nurlinda et al., 2021; Ayumiati & Jalilah, 2023). Several studies show that the implementation of internal audits in the higher education sector is not yet fully optimal (Sulistiani et al., 2023) (Rusdi et al., 2023) (Sulistiani et al., 2023; Rusdi et al., 2023). This is caused by various factors such as low competence of internal auditors, limited resources, lack of support from management, and low understanding of the importance of internal audit itself (Nisak & Rochayatun, 2023)(Nisak & Rochayatun, 2023; Nurhaliza et al., 2023).

In addition, there are quite a few internal audit units that do not have sufficient independence, so that the audit results are less objective and ineffective in encouraging change (Dos Reis Fonseca et al., 2020)(Sulistiani et al., 2023) (Fonseca et al., 2020; Sulistiani et al., 2023). Independence is a fundamental principle in the implementation of internal audits (Iryani & Arsanti, 2013)(Iryani & Arsanti, 2013)(Nisak & Rochayatun, 2023) (Iryani & Arsanti, 2021; Nisak & Rochayatun, 2023). Without independence, internal auditors will not be able to convey findings or recommendations objectively due to pressure from management or institutional leaders (Arens et al., 2017)(Yodianti & Nugraheni, 2023) (Arens, Elder, & Beasley, 2017; Yodianti & Nugraheni, 2023).

Unfortunately, in many cases, the structural position of the internal audit unit in universities is directly under the highest leadership, but is not accompanied by adequate operational autonomy (Rusdi et al., 2023) (Rusdi et al., 2023; Nurhaliza et al., 2023). This risks reducing the effectiveness of supervision and weakening the culture of institutional accountability (Sulistiani et al., 2023)(Sulistiani et al., 2023).

The development of technology and digitalization also requires internal audit to transform (Dos Reis Fonseca et al., 2020)(Ayumiati & Jalilah, 2023) (Fonseca et al., 2020; Ayumiati & Jalilah, 2023). Conventional internal audits that only focus on document review or regulatory compliance are no longer sufficient. Universities as complex organizations must have an adaptive and risk-based internal audit system (Moeller, 2016)(Rusdi et al., 2023)(Moeller, 2016; Rusdi et al., 2023).

Risk-based auditing allows auditors to focus their oversight on areas that are most vulnerable to system deviations or failures (Sulistiani et al., 2023)(Yodianti & Nugraheni, 2023)(Sulistiani et al., 2023; Yodianti & Nugraheni, 2023). Thus, internal audit is not only a control tool, but also a strategic partner in management decision making (Dos Reis Fonseca et al., 2020)(Fonseca et al., 2020; Nurhaliza et al., 2023).

In Indonesia, attention to strengthening internal audits in higher education institutions has increased, especially since the introduction of the Independent Learning – Independent Campus (MBKM) policy (Iryani & Arsanti, 2013) (Iryani & Arsanti, 2021; Nurlinda et al., 2021). This policy demands flexibility and innovation in the management of study programs and allocation of resources (Sulistiani et al., 2023; Yodianti & Nugraheni, 2023)(Sulistiani et al., 2023; Yodianti & Nugraheni, 2023). In this context, internal audit has a vital role to ensure that changes remain within the corridor of accountability and good governance (Rusdi et al., 2023; Nurhaliza et al., 2023).

According to the BPK RI (2022), the results of the audit of the financial reports and performance of a number of universities showed weaknesses in the management of budgets and fixed assets. These findings indicate that the internal control system has not been fully running optimally (Sulistiani et al., 2023)(Nurlinda et al., 2021; Sulistiani et al., 2023).

Previous studies have also shown that the effectiveness of internal audit has a positive relationship with the level of accountability of public sector organizations, including higher education (Febrianti & Nurkholis, 2021; Nurhaliza et al., 2023). Arena and Azzone (2009) stated that the contribution of internal audit to organizational governance is highly dependent on auditor capabilities, management involvement, and the application of modern audit approaches (Dos Reis Fonseca et al., 2020; Yodianti & Nugraheni, 2023) (Fonseca et al., 2020; Yodianti & Nugraheni, 2023).

Although the urgency of internal audit is increasingly recognized, there is still a gap between theory and practice in the field (Nisak & Rochayatun, 2023; Nurhaliza et al., 2023). Many universities do not yet have uniform internal audit implementation standards and a

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structured evaluation system (Rusdi et al., 2023; Sulistiani et al., 2023) (Rusdi et al., 2023; Sulistiani et al., 2023). This is a challenge in realizing an effective internal audit in encouraging a culture of accountability and transparency on campus (Ayumiati & Jalilah, 2023; Yodianti & Nugraheni, 2023).

Based on these conditions, this study is important to be conducted in order to evaluate and analyze the role of internal audit in strengthening accountability and transparency in private universities in Palembang City. This study aims to provide an empirical overview of the contribution of internal audit to institutional governance, identify inhibiting and supporting factors for its effectiveness, and compile strategic recommendations for improving internal supervision (Fonseca et al., 2020; Sulistiani et al., 2023).

This study is also expected to provide theoretical and practical contributions. Theoretically, it enriches the literature on governance and internal supervision in the higher education sector (Iryani & Arsanti, 2021; Nurhaliza et al., 2023). Practically, the results are expected to be strategic input for PTS management and policy makers in designing a more effective and sustainable internal audit system (Ayumiati & Jalilah, 2023; Yodianti & Nugraheni, 2023).

2. Theoretical Basis

Internal Audit

Internal audit is a systematic process carried out independently and objectively to assess and improve the effectiveness of internal control, risk management, and organizational governance (The Institute of Internal Auditors [IIA], 2017). In the context of public organizations, including universities, internal audit plays an important role in ensuring that processes, activities, and budget use are carried out efficiently and accountably (Rizqi & Supriadi, 2020).

According to Arens, Elder, and Beasley (2017), effective internal audit can detect irregularities, improve operational efficiency, and provide added value through strategic recommendations. Internal audit also plays a role in strengthening the internal control system and encouraging organizational transparency (Nurcahyani & Fitriany, 2019).

In recent developments, the internal audit approach has shifted from merely compliance checks to being more proactive and risk-based (risk-based audits), namely audits that prioritize areas that have a high risk to achieving organizational goals (Wahyuni et al., 2021). This transformation is very important in the era of digitalization and the complexity of modern organizational governance, including private universities.

Organizational Accountability

Accountability is a basic concept in the management of public organizations, including higher education institutions, which refers to the entity's obligation to be accountable for the use of resources and the results achieved to interested parties (Mulgan, 2000). In the context of higher education, accountability includes financial reporting, academic performance, and resource management (Susanti & Wahyuni, 2022).

According to Bovens (2007), accountability consists of three main elements: reporting, assessment, and consequences. These three aspects are the basis for building public trust and organizational legitimacy. In the research of Kusumawardani and Ghozali (2020), it was found that the implementation of good internal audits significantly increases financial and operational accountability in the education sector.

Internal audits provide assurance that organizational activities are carried out in accordance with established policies and procedures, and are able to detect and correct deviations that occur (Januarti & Fitriany, 2021). This strengthens the position of internal audit as a tool to increase managerial responsibility in institutional management.

Transparency in Higher Education Management

Transparency is defined as openness of information, decision-making processes, and public accountability in organizational management (Hood, 2006). Higher education institutions, as public and non-profit entities, have an obligation to provide clear and open information to stakeholders, such as students, parents, government, and the community.

Research by Pratolo and Sofyani (2019) shows that transparency has a positive impact on public trust in higher education institutions and the quality of governance. In this case, internal audit can function as a control mechanism that helps identify areas that need improvement and ensures that the information conveyed to the public is accurate and reliable (Fahlevi et al., 2020).

Transparency is also an important aspect in facing the digital era and openness of information, where the public can easily access various data related to the performance of educational institutions (Yuniasanti, 2022). Therefore, internal audit not only plays a role in supervision, but also in increasing the accountability of published information.

Good University Governance (GUG)

Good University Governance (GUG) is the application of good governance principles in the context of higher education. The main principles of GUG include transparency, accountability, responsibility, independence, and fairness (Fitriyah & Kurniawan, 2019). This concept is the foundation for building a professional, efficient, and quality-oriented campus management system.

In a study by Ardiansyah et al. (2022), GUG can be achieved if educational institutions have a strong internal control system, one of which is through the role of an effective internal audit. A quality internal audit is able to provide constructive feedback to campus leaders in the strategic decision-making process.

Furthermore, research by Oktavia and Siregar (2021) states that the implementation of GUG in private universities still faces challenges such as a weak internal

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audit system, lack of financial transparency, and suboptimal stakeholder involvement in the evaluation process. Therefore, strengthening internal audit is a key component in strengthening institutional governance.

Conceptual Framework

Based on a review of previous theories and research, the relationship between internal audit, accountability, and transparency in the context of higher education can be described in the following conceptual framework:

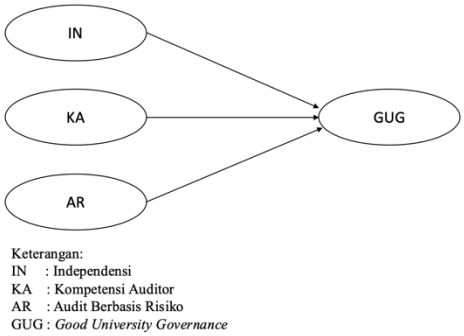


Figure 1. Conceptual Framework

3. Methodology

This study uses a quantitative approach with a survey method. The purpose of this approach is to test the relationship between the effectiveness of internal audits with accountability and transparency of private university management. This study is explanatory, because it aims to explain the influence between variables through statistical hypothesis testing.

Data

The types of data used are primary and secondary data. Primary data were obtained by distributing questionnaires to respondents. The questionnaire was compiled based on relevant indicators from the dimensions of internal audit, accountability, and transparency. Secondary data were obtained from internal documents of higher education institutions such as audit reports, financial reports, and academic performance reports.

The population in this study were all private higher education institutions (PTS) in Palembang City, totaling 10 institutions. The sampling technique used was purposive sampling, with the following criteria:

1. PTS that already have an active internal audit unit.
2. Have an internal audit report in the last two years.
3. Willing to provide data access through questionnaires and interviews if necessary.

The main respondents were internal auditors, structural officials, heads of finance, and quality assurance. The minimum target of respondents was 50 people (5 from each institution). The instrument used was a closed questionnaire based on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Analysis Method

In this study, the data analysis process was carried out using RapidMiner Studio software through the Linear Regression algorithm approach. The stages of analysis carried out are as follows:

Dataset Retrieval

The initial stage is carried out by importing the previously prepared dataset into RapidMiner through the Retrieve operator. This dataset contains respondent data that includes a number of independent variables (predictors) and one dependent variable (target) that will be analyzed to determine their effect on certain outcomes, such as student graduation rates.

Select Attributes

After the data is loaded, an attribute selection process is carried out to select only variables that are relevant and significant to the model. The Select Attributes operator is used to filter variables that will be used in the modeling process, so that unnecessary attributes are not involved in the analysis.

Determining the Role of Variables

Next, the role of each attribute in the dataset is determined. This process is important to distinguish between target variables (labels) and predictor variables. The Set Role operator is used to set one attribute as a label (variable to be predicted), while the other attribute acts as an input attribute or independent variable.

Application of Linear Regression Algorithm (Linear Regression)

This stage is the core of the analysis process, where the Linear Regression algorithm is applied to build a predictive model. This model aims to identify and quantify the relationship between independent variables and dependent variables. The result of this process is a linear regression equation that describes the contribution of each predictor variable to the target value.

Application of Model to Data

After the model is built, the next step is to apply the model to the dataset to produce predictions. The Apply Model operator is used to test how well the model can predict the value of the target variable based on input from the predictor variables.

Model Performance Evaluation

The last stage is to evaluate the performance of the model using the Performance operator. Evaluation is done by calculating model accuracy metrics, such as R-Squared, Root Mean Squared Error (RMSE), and Mean Absolute Error (MAE). These values are used to assess the extent to which the model can explain data variation and how accurate the model is in making predictions.

RMSE is one of the evaluation metrics used to measure the average error rate of the model's

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prediction results against the actual value (real value). RMSE is calculated as the square root of the average of the squares of the differences between the predicted value and the actual value.

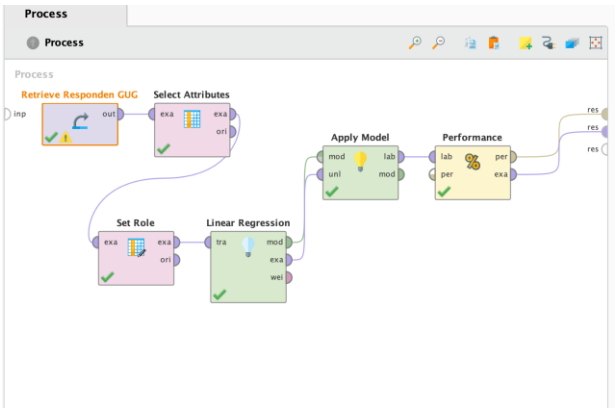
$$RMSE = \sqrt{\frac{\Sigma (y_i - \hat{y}_i)^2}{N - P}}$$

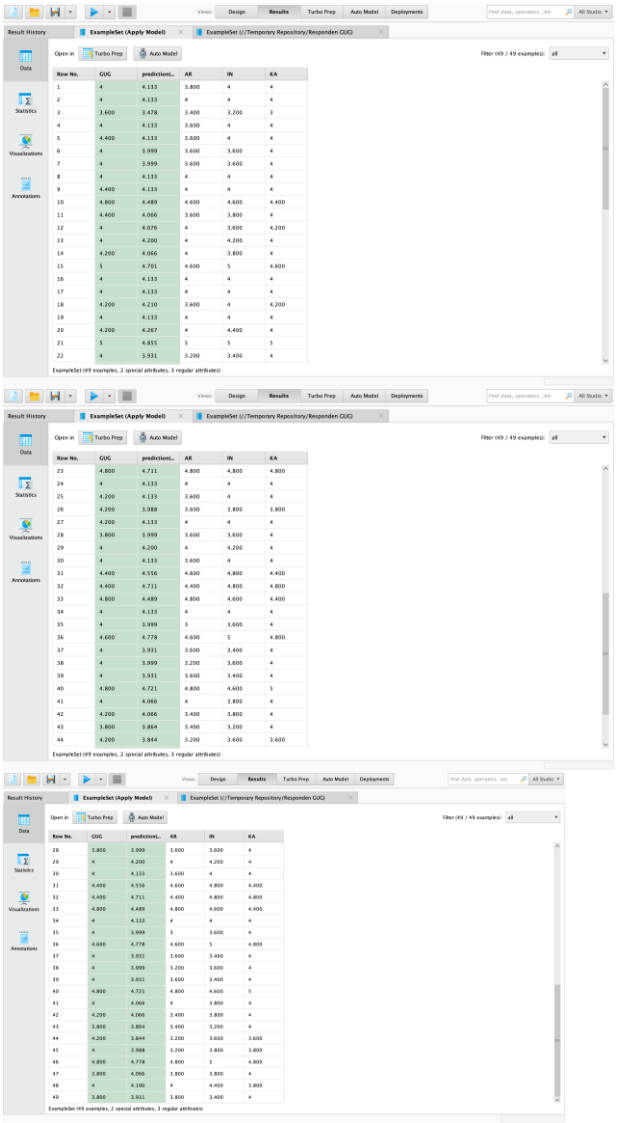
Information:

RMSE	: Root Mean Squared Error, namely the root of the mean square of the prediction error
Yi	: Actual (real) value for the i-th data
y^i	: Predicted value (estimated) for the i-th data
∑	: Total sum symbol for all data
N	: Total number of observations/data
P	: Number of parameters in the model (including intercept)

4. Results and Discussion

This section presents the results of the analysis of the influence of internal indicators (IN) and accountability activities (KA) on the implementation of good university governance (GUG) in private universities in Palembang City. The analysis was carried out using a quantitative approach through the Linear Regression algorithm in RapidMiner Studio software. The results of data processing show that both independent variables, namely IN and KA, have a positive influence on the dependent variable GUG. The regression coefficient values are 0.336 for IN and 0.387 for KA, respectively, with a constant of 1.244. The regression model formed has a Root Mean Squared Error (RMSE) value of 0.170, which indicates that the level of prediction error is relatively low, and the model has good performance in explaining the relationship between variables. The following description will describe the analysis and interpretation process of each stage in the model used.





0.336 * IN + 0.387 * KA + 1.244
Y=0,336·IN+0,387·KA+1,244

Intercept (constant) = 1.244

This means that if IN = 0 and KA = 0, then the predicted value of Y is 1.244. This is the baseline value of Y when the two independent variables have no effect.

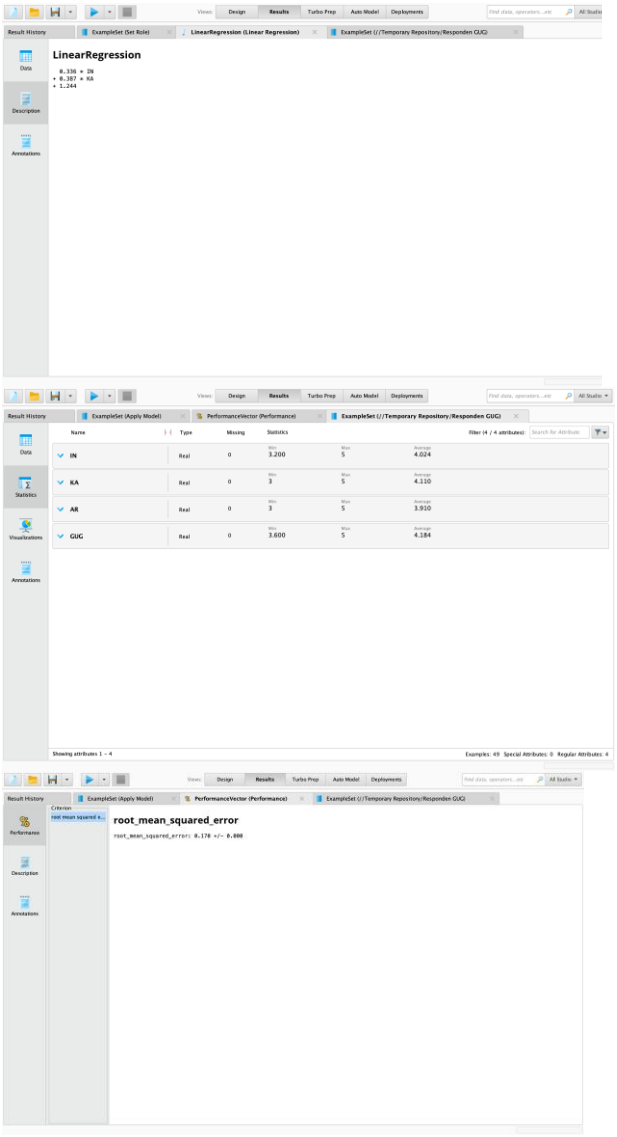
The coefficient of IN = 0.336 means that every 1 unit increase in the IN variable will increase the value of Y by 0.336, assuming the KA variable remains constant.

The coefficient of KA = 0.387 means that every 1 unit increase in the KA variable will increase the value of Y by 0.387, assuming the IN variable remains constant.

KA (0.387) has a slightly larger effect than IN (0.336) on the Y variable.

This model suggests that increasing both IN and KA variables will improve the GUG results, but increasing KA has a greater impact than IN (based on the coefficient value).

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**root_mean_squared_error: 0.170 +/- 0.000*

The RMSE value of 0.170 indicates that the average deviation or error of the model prediction against the actual value is only 0.170 units (in the same units as the target variable). The smaller the RMSE value, the better the model performance. A value of 0 means no error at all. In the context of this study, a value of 0.170 is considered low, indicating that the linear regression model built has very good prediction accuracy.

5. Conclusion

The linear regression model built in this study shows that the IN and KA variables have a positive influence on the Y variable (GUG). The resulting regression equation is:

$$Y=0{,}336 \cdot IN+0{,}387 \cdot KA+1{,}244$$

The interpretation of this model is as follows:

- Intercept (constant) of 1.244 indicates that if there is no influence from the IN and KA variables (both are zero), then the baseline value of the Y variable is 1.244.
- The IN coefficient (0.336) indicates that every 1 unit increase in the IN variable will increase the Y value by 0.336, assuming KA remains constant.
- The KA coefficient (0.387) indicates that every 1 unit increase in the KA variable will increase the Y value by 0.387, assuming IN remains constant.
- In other words, the KA variable has a slightly greater influence on Y than IN, although both contribute positively to the increase in Y.

Model Performance

- The Root Mean Squared Error (RMSE) value of 0.170 indicates that the model has a very low level of prediction error. This means that the model can predict the Y value with a very good level of accuracy.
- The small RMSE value indicates that this model is suitable and feasible to be used in explaining the relationship between IN and KA variables to GUG.

Implications

These results indicate that strategies to improve both IN (internal indicators) and KA (accountability activities) variables can simultaneously improve the results of the GUG variable. A greater focus on strengthening KA will have a more significant impact on improving GUG, although the contribution of IN also remains important.

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