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INTEGRATED GOVERNANCE, RISK, AND COMPLIANCE (GRC) AND COMBINED ASSURANCE: A COMPARATIVE INSTITUTIONAL STUDY

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Abstract: The combined assurance model plays a pivotal role in integrating a company's governance, risk, and compliance (GRC) processes. More than a decade after the South African financial market initiated the model through King III Report in 2009, the Indonesian financial market strived to adopt it in 2013. However, very few companies in Indonesia have reported its implementation. We hypothesized that institutional theory could explain the phenomenon. This comparative study thus used qualitative and quantitative approaches to analyze the adoption of the combined assurance model in South African and Indonesian markets. Qualitative content analysis was employed to interrogate the annual reports of 130 companies listed on the Johannesburg Stock Exchange and the Indonesia Stock Exchange to identify professions and their activities in implementing the model. Afterwards, an estimation model was built using binary logistic regression based on the identified variables. It was found that regulative and normative pillars were the most determining factors in implementing a combined assurance model. In addition, it was found that the integrated report approach and market capitalization were associated with model implementation. These findings can be the basis for state and professions (i.e., authorities, regulators, and standard-setting bodies), especially in Indonesia, to enhance the companies' integrated GRC.

Keywords: combined assurance, corporate governance, institutional theory, risk management, internal audit

Abstrak: *Model asurans gabungan memainkan peran penting dalam mengintegrasikan proses tata kelola, risiko, dan kepatuhan (GRC) perusahaan. Lebih dari satu dekade setelah pasar keuangan Afrika Selatan memprakarsai model tersebut melalui King III Report pada tahun 2009, pasar keuangan Indonesia berusaha untuk mengadopsinya pada tahun 2013. Namun, hingga kini sangat sedikit perusahaan di Indonesia yang telah melaporkan penerapannya. Kami berhipotesis bahwa teori institusional dapat menjelaskan fenomena tersebut. Studi komparatif ini menggunakan pendekatan kualitatif dan kuantitatif untuk menganalisis adopsi model asurans gabungan di pasar Afrika Selatan dan Indonesia. Analisis isi kualitatif digunakan untuk menginterogasi laporan tahunan dari 130 perusahaan yang terdaftar di Bursa Efek Johannesburg dan Bursa Efek Indonesia untuk mengidentifikasi profesi dan kegiatan mereka dalam menerapkan model tersebut. Selanjutnya dibuat model estimasi dengan menggunakan regresi logistik biner berdasarkan variabel-variabel yang teridentifikasi. Ditemukan bahwa pilar regulatif dan normatif merupakan faktor yang paling menentukan dalam menerapkan model asurans gabungan. Selain itu, ditemukan bahwa pendekatan laporan terintegrasi dan kapitalisasi pasar terkait erat dengan implementasi model tersebut. Temuan ini dapat menjadi dasar bagi negara dan profesi (yaitu otoritas, regulator, dan badan pembuat standar), terutama di Indonesia, untuk meningkatkan GRC terintegrasi perusahaan.*

Kata kunci: *asurans gabungan, tata kelola perusahaan, teori institusional, manajemen risiko, audit internal*

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INTRODUCTION

The acronym GRC stands for governance, risk, and compliance, which is a set of organizational capabilities used to achieve the objectives concerning uncertainty and ethical conduct (Switzer et al. 2015). An organization has elements in place to ensure that the GRC activities are running properly. As a governing body, the board will establish the organizational strategic direction and oversee the strategy implementation by management (ICGN, 2015). However, the board is not involved in the organization's daily activities. They will rely for such oversight on the assurance provider inside and outside the organization. The Institute of Directors South Africa (IoD) suggested that the various assurance providers should be in coordination so that, altogether, they can ensure an effective control environment in internal decision making and reporting to external stakeholders (2009, 2016). IoD defined this coordinated assurance provision as a combined assurance model.

In contrast, the Federation of European Risk Management Associations (FERMA) and the European Confederation of Institutes of Internal Auditors (ECIIA) (2010) developed three lines of defense (TLOD) model, which divides the assurance provider into the following three lines: first, second, and third lines of defense (FERMA & ECIIA, 2010, 2011). The first line of defense consists of line management and internal control processes that are part of daily organizational operations. The risk management and compliance functions at the second line of defense supervise the first line's risk management and control processes. The third line of defense is the internal auditor, as well as the external auditor and the regulators. The combined assurance model becomes a way to integrate these three lines (Sarens et al. 2012) so that each one does not run in its respective silos.

Unfortunately, the three lines will obviously run individually on a siloed basis in the real business world. The global survey on GRC maturity conducted by the global Open Compliance and Ethics Group (OCEG) showed that only 14% of respondents who have been running the GRC process and technology integration across the organization (OCEG, 2020), increasing from the previous 3 years that were at 10% (OCEG, 2017). The global Institute of Internal Auditors also conducted a global survey in 2015. The survey asked respondents about the implementation of the TLOD and the combined assurance in their organization. The survey showed that, on a global average, 32% of respondents had adopted a combined assurance model, and 56% had implemented TLOD (Huibers, 2015). From the regional distribution of combined assurance implementation, Africa had the highest level of implementation at 51%.

The fact that the highest percentage of combined assurance applications is in Africa is quite interesting to study. We hypothesize that this high application relates to the King Report on Governance in South Africa in 2009 (King III Report). The report mentioned this model in Chapter 3, Principle 3.5 (IoD, 2009). Afterward, many regulators from various countries strived to adopt this model. The Indonesian Financial Services Authority (OJK), together with several Indonesian governance organizations, has also encouraged the model adoption by the Indonesian financial industry (OJK, 2013). However, very few companies in Indonesia have reported the implementation of this model.

This study aimed to investigate the determinants behind the implementation of combined assurance in South Africa and Indonesia, and estimate the effect of institutionalization of governance provisions on the implementation of the combined assurance model. To the best of our knowledge, this study is the first to discuss the international comparison of combined assurance implementation in the institutional approach.

METHODS

The sample in this study consists of 130 companies listed on JSE and IDX that we took purposively based on the top 65 market capitalization on the JSE100 and IDX80 indices as of June 2021. We use the report of the companies under review consisting of annual reports and integrated reports (if any) for the period 2019 or 2020, available on the company's official website

Hypotheses Development

In the globalization of the interconnected business world, the institutionalization of business practice in a region can be followed quickly by companies from other regions. A country's market institutions can influence the market institutions of other countries through interconnections of a network. The market institution which acts as a most influencing node can be a "centroid." It will be the most connected factor in the network (Von Jacobi, 2018). This centroid can be

identified as the factor or structure that best provides resources to other institutions, and it can be a powerful and relevant reference and potentially encourage isomorphism.

DiMaggio and Powell argued that isomorphism could be explained by a coercive, mimetic, and normative approach (DiMaggio & Powell, 1983) in the institutionalization process. With a coercive approach, a government of a country can make laws and regulations using its political power and legitimacy. Through a mimetic approach, a company can imitate efforts to replicate the success of other companies as a model, especially when there is uncertainty over results, while with a normative approach, professionals in different companies will have similar practices under the same professional norms and standards.

Scott (1995) explained the phenomena in the institutional pillars framework as regulative, normative, and cognitive. Regulatory pillars use laws and regulations that have the binding power to compel companies to do the same with other ones. More loosely, normative pillars use appropriateness and social obligations where companies will get inappropriate labels and social sanctions from the community. In comparison, the cognitive pillar uses prevalence to indicate that something has been taken for granted, perhaps even unconsciously. Scott further stated that there are two institutional agents, namely state and profession (Scott, 1995). The ability of the state to coercively apply the provisions of the legislation to other organizations in real terms makes it an actor. In contrast, the professions only gain control through formal knowledge. If the state exercises control through coercive processes in the form of regulation, then the profession applies more control through cognitive and normative processes in the form of ontological frameworks, principles, or guidelines.

Institutional Agents and Institutional Pillars

The application of the combined assurance model varies across institutions in different countries (Huibers, 2015). South Africa can be viewed as a country with solid institutions in applying the combined assurance model. It can be potentially a centroid to provide a model for other countries to mimic the application of such a model. At the country level, South Africa uses the twin peaks supervisory model, where the prudential authority within the reserve bank will oversee the prudentiality of the financial sector, and the Financial Sector Conduct Authority oversees the conduct of the financial sector (Financial Sector Regulation Act 9 of 2017, 2017). Meanwhile, the Johannesburg Stock Exchange (JSE) serves as the front regulator responsible to FSCA as the lead regulator (Stock Exchanges Control Act 1 of 1985, 2001).

From a professional's point of view, South Africa also has an institute of directors that becomes an important actor in establishing the governance code, namely the King IV Report on Corporate Governance for South Africa (IoD, 2016) as the current effective code. King IV Code principle 15 points 42 shows that other critical professions as actors in corporate institutions in South Africa are professionals in risk management, compliance, internal audit, and external audit. This practice is consistent with the literature that classifies these professions as "governance cornerstones" (Boyle et al. 2012; Davies, 2009; FERMA & ECIIA, 2010, 2011; Gramling et al. 2004; Hassan et al. 2017; Trotman & Duncan, 2018). These important actors have also proven their roles in the three lines model, integrated reporting and combined assurance (L. Decaux & Sarens, 2015; FERMA & ECIIA, 2010, 2011; Hoang & Phang, 2020; Simnett et al. 2016; Wang et al. 2019; Zhou & Hoang, 2019).

The JSE requires that listed companies, in addition to complying with the coercive regulative Companies Act, also implement this King IV Code as the governance best practice for companies and other corporate bodies (JSE, 2021). The King IV Code also uses an integrated thinking framework and adapts integrated reporting (<IR>) as a financial and non-financial reporting standard (IIRC, 2021). The adoption of integrated thinking and reporting by IoD is also one of the driving factors for implementing combined assurance.

In Indonesia, the government is also acting as an institutional agent in the financial sector. The OJK will oversee and regulate the financial industry, both banks and nonbanks (Act Number 21 of 2011 Concerning Financial Services Authority, 2011). The Indonesia Stock Exchange (IDX), which acts on par with JSE, will become a capital market regulator and apply regulatory or normative institutional pillars to companies listed there. There is a striking difference in the application of combined assurance. Indonesia does not apply the pillars of the institution the way it is done in South Africa. Thus, in 2013, the OJK, together with professionals in the field of internal audit, risk management, and quality

assurance, strived to formulate the related regulation (OJK, 2013), but there has been no such combined assurance institutionalization until now. However, the OJK regulates professional institutional agents such as internal auditor, external auditor, audit committee, risk management, and compliance separately.

Based on differences in the level of combined assurance application in southern Africa, which has much stronger institutions compared to Indonesia, it can be intuitively expected that the application of combined assurance is influenced by the role of institutional agents, which are the state and related professions of governance. In addition, TLOD, integrated reporting, as well as market regulation and professional norms, supposedly significantly affect the level of application of the combined assurance model. However, empirical evidence has not been available. Based on the theories above discussion, we then formulate hypotheses as follows:

H1: The governance-related professions in both markets are consistent with the TLOD model.
H2: TLOD model adoption is positively associated with the combined assurance model implementation.
H3: The regulation and norms are positively associated with the combined assurance model implementation.
H4: The governance code is positively associated with the combined assurance model implementation.
H5: The integrated reporting adoption is positively associated with the combined assurance model implementation.

Market Capitalization

Monthly and market profile reports from IDX and JSE in June 2021 showed a reasonably noticeable difference in the number of listed companies and their market capitalization. There were 294 companies listed on JSE with a market capitalization of USD 1,217 billion, while in the IDX, there were 737 companies with a market capitalization of USD 491 billion. Previous studies have proven that there was a relationship between the size of the company and the mechanism of supervision carried out by the company. Larger companies have more adequate resources to supervise than smaller companies (Beasley et al. 2005; Hoyt and Liebenberg, 2011; Pagach and Warr, 2011). Decaux and Sarens (2015) studied the association of company size with combined assurance adoption using the total asset as a proxy for company size. They obtained evidence that the two factors were not significantly associated (Loïc Decaux and Sarens, 2015). Wibowo et al. (2021) reached a bit different conclusion, using total assets and revenue as proxies of the company's size. They concluded that revenue was not significantly associated, but the total assets were significantly negatively associated, with the application of combined assurance (Wibowo et al. 2021). However, Buckby et al. (2015) used market capitalization as a company size proxy. Thus, it is interesting for us to formulate hypothesis, as follows:

H6: Market capitalization is positively associated with the combined assurance model implementation.

Coding Frame

To answer H_1, we used a qualitative method with qualitative content analysis (QCA). We examined the annual reports of all 130 companies in the sample space to build, evaluate, and interpret coding frames. We used the QCA since the research was related to rich verbal data and is less standardized, which then requires interpretation. In addition, the QCA method allows for systematic review, is flexible, and can reduce data (Schreier, 2012).

We use two-cycle coding (Miles et al. 2014). The first cycle focuses on descriptive coding and process coding to identify potential professions and activities related to a company's corporate governance process, especially in the application of combined assurance. To capture the actual conditions that emerged from the reports, we used the word frequency feature and selected the 1000 most frequent words with a minimum length of four letters. Afterward, we built a model from the composed words that appear based on the theoretical construct above mentioned.

The second cycle generalizes professional themes and relationships in the theoretical construct TLOD (FERMA & ECIIA, 2010, 2011). The professions and activities identified were the audit committees, external audits, internal audits, and risk management or compliance. We also identified whether companies used the TLOD, integrated reporting framework, and specific governance codes by coding it in "three lines of defense," "three lines of defence," "integrated reporting," "<IR>," and "governance code," or simply "code." This process simultaneously resulted in the validation of variables used in quantitative models that follows.

Definition of Variables and Model Specification

To answer H_2 through $H_{6,}$ we built a logistic regression model based on the theory, where the application of combined assurance will relate to the existence of institutions influenced by professions in the field of governance. We built a model with different sample data from testing data to form a good predictive model and minimize biases. We randomly split the 130 observations into two groups: training sets and testing sets (Kuhn & Johnson, 2013). The training dataset consists of 65% of the sample data to form a logistic regression model as a predictive model. The remaining 35% will be the testing dataset to test the model accuracy. The regression model is as follows:

$$\begin{aligned} Combined\_Assurance = {} & \beta_0 + \beta_1 TLOD + \beta_2 CA\_Reg + \\ & \beta_3 Gov\_Code + \beta_4 IR + \\ & \beta_5 Stock\_Exch + \beta_6 Aud\_Com \\ & + \beta_7 Risk\_Mgt + \beta_8 Int\_Aud + \\ & \beta_8 Ext\_Aud + \beta_{10} Market\_Cap \\ & + \varepsilon \end{aligned}$$

We will adjust this model according to the results of the empirical qualitative analysis conducted from the two-cycle coding.

Dependent variable

Combined_Assurance, in this study, is a dichotomous variable showing the application of the combined assurance model by the companies in the sample. We identify the companies' implementation of the combined assurance model with a statement in their annual reports. If there is no such statement, but there is substance to the practice of combined assurance in the report's description, we include it in the category of applying combined assurance. Combined assurance will have code 1, while no implementation will have code 0.

Independent variables

TLOD is a dichotomous variable indicating the application of a TLOD model. We identify the adoption of this model through a statement from the company in its annual report, according to which it adopted the TLOD model. The implementation of the TLOD model will have code 1, while no application will have code 0.

CA_Reg is a dichotomous variable indicating the existence of institutional pillars, both regulative normative and cognitive, to the practice of combined assurance. We consider JSE enforcing the King IV Code from IoD as a pillar of normative regulative professions institutions. The King IV Code is a broad corporate governance code, including regulating combined assurance. Meanwhile, IDX and authorities in Indonesia impose a corporate governance code that is not detailed and only regulates the relationship between shareholders, board of commissioners, and directors. Currently, the code does not show the existence of institutional pillars for the application of combined assurance in Indonesia. Therefore, we measure all companies listed on JSE for this variable with code 1 and those listed on IDX with code 0.

Gov_Code is a dichotomous variable indicating that the company uses specific governance codes, in addition to those required by the exchanges. Multinational companies operating across countries may use governance codes in host countries. We consider the same every governance code referred to by the companies. As long as the company's indications and statements that they are referring to a particular governance code, it will be coded 1, and otherwise will be coded 0.

IR is a dichotomous variable indicating that the company adopted the integrated reporting framework of the IIRC. We identify these adoptions through statements in annual reports or the existence of integrated reports on the company's website. Companies that adopt an integrated report framework will get code 1, while those who do not will get 0.

Stock_Exch is a nominal variable that indicates the stock exchange in which the company's shares in the sample space are traded. This comparative study only took samples for two stock exchanges, namely the JSE and IDX.

Audit_Com and *Int_Audit* are dichotomous variables that indicate the existence of an audit committee of the board of directors or board of commissioners and the existence of internal audits within the company. Audit committees and internal audits are established professions with specific names that should be easy to find in annual reports. This variable is coded 1 when the company uses the professions, and otherwise, it will be coded 0.

Risk_Mgt is a dichotomous variable indicating whether the company is formally implementing the management process. We identify the existence of risk management processes both from descriptive coding and process coding because a function or department carries out the risk management process, also called risk management. Companies that implement the risk management process will formally code 1, and otherwise, it will be coded 0.

Ext_Audit is a dichotomous variable indicating that a company uses the services of an external auditor. The company may not be uniform in naming this profession. Some companies use the term independent auditor, which will be measured the same as the external auditor in this study. Companies using the services of external auditors will code 1, and otherwise, it will be coded 0.

Finally, *Market_Cap* is a continuous variable, and it is the company's market capitalization measured in US Dollars (USD) from July 16 to July 20, 2021. The market capitalization of the companies sampled from JSE was initially measured by the South African Rand (ZAR), while constituents of IDX used Indonesian Rupiah. We converted both into USD using the exchange rate on July 20, 2021. In the calculation of the model, we convert *Market_Cap* into a natural logarithm.

Model Evaluation

We evaluated the model based on the model's goodness of fit and its performance in making predictions and classifications. It is essential to know the model's performance when it is used to predict or perform classifications (Held et al. 2016). Goodness of fit is evaluated using parameters such as pseudo R^2, the Hosmer–Lemeshow test, and the likelihood ratio test. For evaluating the predictive model performance, the study uses several statistical measures, namely accuracy, precision, sensitivity, specificity, receiver operating characteristic curve (ROC), and area under the curve (AUC) (Couronné et al. 2018).

Accuracy measures the accuracy of the model in predicting the whole prediction (yes/no). Precision is used to determine the model's ability to deliver accurate yes predictions. Sensitivity or true positive rate measures from all the yes in the sample, that is, what proportion the model predicts yes. Specificity or true negative rate measures of all the no in the sample, that is, what proportion the model predicts no. The ROC curve depicts a comparison between the false positive rate (1-specificity) and the true positive rate. An AUC value <0.50 indicates the model cannot distinguish between yes and no. The model with a 100% (perfect) predictive accuracy has an AUC of 1.00.

RESULTS

Institutional Agents Identification

We performed the first cycle coding, and the results can be seen in Tables 1 and 2. Table 1 shows professions related to corporate governance that emerged from the company's comprehensive annual report in the sample. Table 2 shows words related to the governance processes. Professions that appear in Table 1 have been grouped and sorted considering the cornerstone of corporate governance (Boyle et al. 2012; Davies, 2009; FERMA & ECIIA, 2010, 2011; Gramling et al. 2004; Hassan et al. 2017; Trotman & Duncan, 2018). When we see the governance cornerstones position vertically, there are shareholders and stakeholders at the top, and then they assign the board as a governing body. The board subsequently appoints senior management who will run the company on a day-to-day basis, assisted by TLOD. The board will establish particular committees to assist the governance process, such as audit or risk committees.

Companies listed on IDX use a dual-board system of governance, while those listed on JSE generally use a single board. This difference in the governance system causes some differences in naming the identified profession. As shown in Table 1, there is a coincidence between governing bodies and senior management at director(s). In a single board system, director is a board member that can be executive or nonexecutive, while on dual boards in Indonesia, director(s) is/are fully executive and must be excluded from the oversight role (Aluchna, 2013). The board of commissioner(s) in the dual-board system is in charge of oversight.

There was also an overlap in the word management, which can stand for senior management or operating management. A more appropriate equivalent for senior management in Indonesia, which uses dual boards, is the board of directors. However, the word management can also represent a lower level of management that performs the functions of the day-to-day business lines. Within the TLOD framework, this management represents the first line of defense responsible for implementing and

monitoring control activities as part of management functions. Other professions that emerged from the text are professions related to accounting, risk, compliance, and auditing.

Table 2 groups words related to dominant governance activities that emerged from the company's annual report in the sample. The words governance and monitoring can be grouped under the theme of overseeing, which is the primary responsibility of governing body. The words control and ensure can be grouped under the theme controlling, which becomes the main activity of line management or first line of defense in TLOD. The words evaluate, assess, measure, comply, and review are grouped under the theme reviewing, which becomes the main activity of the second line, whereas the activity of the third line relates to the words audit and assurance.

The first cycle coding findings are consistent with theory and TLOD (FERMA & ECIIA, 2010, 2011), and it can be described using the chart model in Figure 1. With evidence of emerging actors' consistency to theory in the first coding cycle, we used actors in the TLOD model as code in the second coding cycle, namely, audit committee as an extension of the board, compliance and risk management as the first and second lines, respectively, and internal and external audits as the third line. Table 3 shows some of the variables formed from the second cycle coding, and it will be further analyzed in quantitative analysis.

Univariate Analysis

Table 4 presents a comparison of variables in two sample groups based on stock exchange categories (i.e., JSE and IDX). There are significant differences between the JSE exchange group companies and IDX on *Combined_Assurance, IR, CA_Reg,* and *Market_Cap*. In contrast, there is no difference between the two sample groups on *TLOD, Gov_Code, Aud_Com, Risk_Mgt,* and *Int_Aud,* or the differences between the two sample groups are not significant.

Table 1. Word count related to professions

Word	Count	Professions
shareholders	17.476	Stakeholders
shareholder	5.445	
investor	4.282	
board	69.025	Governing bodies
president	7.765	
chairman	4.858	
commissioners	26.001	
commissioner	9.422	
committees	3.332	
committee	34.079	
directors	34.140	Senior management
director	21.105	
executive	15.395	
management	60.544	Three Lines of Defense
secretary	5.014	
employees	15.512	
employee	11.832	
accounting	14.157	
controls	2.793	
control	11.421	
risks	10.415	
risk	49.388	
compliance	9.429	
audit	40.266	
auditor	5.806	
insurance	4.175	

Table 2. Word count related to professions' activities

Word	Count	Professions' Activities
governance	26.295	Overseeing
monitoring	5.667	
control	11.421	Controlling
controlling	5.099	
controls	2.793	
ensure	7.487	
ensuring	2.767	
evaluation	4.063	Reviewing
measured	5.489	
measurement	3.500	
measures	3.450	
compliance	9.429	
review	10.934	
reviewed	4.039	
assessment	10.786	
insurance	4.175	Auditing
audit	40.266	
audited	3.044	

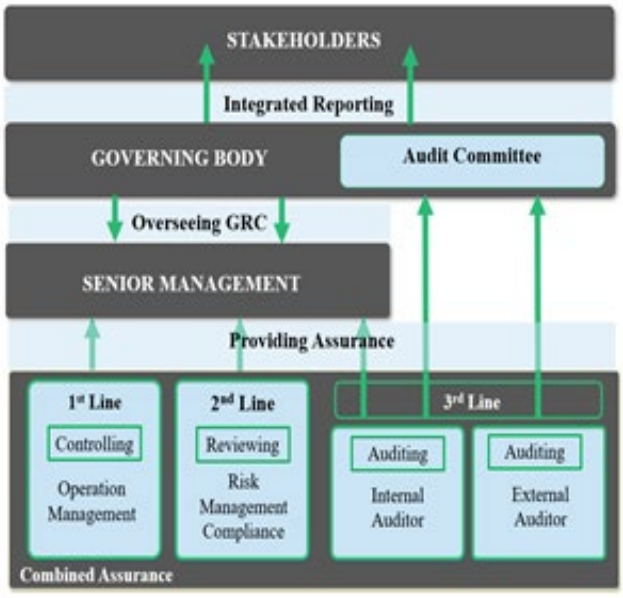

Figure 1. Professions model on combined assurance

Table 3. Themes on combined assurance institutional setting

Themes	JSE (65)	IDX (65)	Total (130)
Audit Committee	95.38%	98.46%	96.92%
Combined Assurance	75.38%	3.08%	39.23%
Compliance	55.38%	44.62%	50.00%
Compliance Committee	49.23%	9.23%	29.23%
External Audit	96.92%	90.77%	93.85%
Governance Code	29.23%	29.23%	29.23%
Integrated reporting	81.54%	73.85%	77.69%
Internal Audit	96.92%	100.00%	98.46%
Shareholders	100.00%	100.00%	100.00%
Risk Committee	81.54%	26.15%	53.85%
Risk Management	98.46%	100.00%	99.23%
TLOD	38.46%	41.54%	40.00%
Total (unique)	100.00%	100.00%	100.00%

Table 4. Univariate analysis

Variable	Proportion (yes)/mean[a]	Stdev	Sig.[b]
Combined_Assurance	0.392	0.043	0.000
TLOD	0.354	0.042	0.359
CA_Reg	0.500	0.044	0.000
Gov_Code	0.292	0.040	1.000
IR	0.446	0.044	0.000
Aud_Com	0.969	0.015	0.619
Risk_Mgt	0.992	0.008	1.000
Int_Aud	0.985	0.011	0.496
Ext_Aud[c]	1.000	0.000	n.a.
Market_Cap (mio)	8,449.900	22,198.060	0.000

[a] Proportion; except for Market_Cap presented in the mean; [b] Fisher test; except for Market_Cap using the Mann–Whitney test; [c] Ext_Aud has no variance (all observations are coded 1)

Independent audits by public accountants become mandatory for companies listed on both stock exchanges so that all constituents in the sample use the "external auditors" profession. However, in South Africa, the external auditor profession from large accounting firms provides acknowledgment or endorsement on the King Report, which shows the normative institutionalization of accounting firms, whereas, in Indonesia, there is no similar institution from the accounting firms.

Both markets are also very acquainted with the profession and activities of audit committees, internal auditing, and risk management. Almost all (about 98%) of the companies from the sample had an audit committee, internal audit, and risk management activity or function. In South Africa, these professions also became actors who provided a view on the preparation of the King Report initiated by the director's profession. This structuration is actually the institutionalization of professions. In Indonesia, in 2013, the profession of internal auditing, risk management, and quality control, together with OJK, also tried to adopt the combined assurance model. However, until now, no regulative or normative pillars have been established, to the best of our knowledge.

Although with a smaller proportion (approximately 35% of the sample), companies in both markets also formally implemented the TLOD model. The TLOD model itself is a normative model initiated by the internal auditing profession (ECIIA) and risk management (FERMA) in the United Kingdom, and it was adopted by many other institutions in many countries later on.

The governance code does not significantly differ in proportion. About 29% of the sample in both markets each stated that they followed specific corporate governance in the annual report. In addition to following the King IV Code, some companies in South Africa also follow the corporate governance code in the host country, such as UK Corporate Governance Code 2018, Dutch Corporate Governance Code, and the Belgian Corporate Governance Code. Meanwhile, in Indonesia, the implementation of corporate governance code through state institutionalization with the OJK regulation number 21 /POJK.04/2015 and OJK circular letter number 32/SEOJK.04/2015. Compared to the King IV Code, the OJK corporate governance code only regulates the pattern of relationships between shareholders, board of commissioners, and directors. The code does not regulate combined assurance, and it hardly mentions professions in the field of governance. Nevertheless, state-owned enterprises follow a detailed governance code issued by the Ministry of State-owned Enterprise.

Sample Description and Group Characteristics

Table 5 presents group characteristics. A random split of 130 samples resulted in 84 companies on the training dataset and 46 companies on the testing dataset. The split was performed without repetition, so both groups were independent, and one company could only be a member in one group, either training or testing the dataset.

Table 5. Variables description in total samples, training, and testing dataset

	Total Sample (n = 130)	Training (n = 84)	Testing (n = 46)
Combined_Assurance			
no = 0	79 (60.8%)	51 (60.7%)	28 (60.9%)
yes = 1	51 (39.2%)	33 (39.3%)	18 (39.1%)
TLOD			
no = 0	84 (64.6%)	51 (60.7%)	33 (71.7%)
yes = 1	46 (35.4%)	33 (39.3%)	13 (28.3%)
CA_Reg			
no = 0	65 (50.0%)	42 (50.0%)	23 (50.0%)
yes = 1	65 (50.0%)	42 (50.0%)	23 (50.0%)
Gov_Code			
no = 0	92 (70.8%)	60 (71.4%)	32 (69.6%)
yes = 1	38 (29.2%)	24 (28.6%)	14 (30.4%)
IR			
no = 0	72 (55.4%)	46 (54.8%)	26 (56.5%)
yes = 1	58 (44.6%)	38 (45.2%)	20 (43.5%)
Stock_Exch			
JSE	65 (50.0%)	42 (50.0%)	23 (50.0%)
IDX	65 (50.0%)	42 (50.0%)	23 (50.0%)
Aud_Com			
no = 0	4 (3.1%)	3 (3.6%)	1 (2.2%)
yes = 1	126 (96.9%)	81 (96.4%)	45 (97.8%)
Risk_Mgt			
no = 0	1 (0.8%)	1 (1.2%)	0 (0.0%)
yes = 1	129 (99.2%)	83 (98.8%)	46 (100.0%)
Int_Aud			
no = 0	2 (1.5%)	2 (2.4%)	0 (0.0%)
yes = 1	128 (98.5%)	82 (97.6%)	46 (100.0%)
Ext_Aud			
no = 0	0 (0.0%)	0 (0.0%)	0 (0.0%)
yes = 1	130 (100.0%)	84 (100.0%)	46 (100.0%)
Market_Cap (million)			
below 50.000	122 (93.8%)	77 (91.7%)	45 (97.8%)
above 50.000	8 (6.2%)	7 (8.3%)	1 (2.2%)

Variable Evaluation

The important thing in a predictive model such as logistic regression is the balance of proportions of variable classes. Class imbalance can significantly impact the model value and accuracy (James et al. 2013). The dependent variable, implementation combined assurance (Combined_Assurance), did not have a perfectly balanced class proportion in the overall sample. However, it is still acceptable with the proportion of implementing Combined_Assurance (yes) and not implementing Combined_Assurance (no) of 39.2% and 61.8%, respectively. This variable also has almost similar proportions in the training and testing dataset.

Class imbalance occurred in *Ext_Aud* (absolute class imbalance; 0:100) and on each of the variables *Risk_Mgt*, *Aud_Com*, *Int_Aud* (extreme class imbalance), as seen in Table 5. This imbalance is consistent with what has been outlined that companies in both markets adopt the profession and activity of audit committees, internal audits, and risk management, and use external audits of financial statements and other assurances. Class imbalance in *Ext_Aud*, *Risk_Mgt*, *Aud_Com*, and *Int_Aud* will cause classification bias, accuracy bias, and non-significances if it remains included in the model. This imbalance can significantly reduce the efficacy of the model in predicting (James et al. 2013). Therefore, the variables *Ext_Aud*, *Risk_Mgt*, *Aud_Com*, and *Int_Aud* were excluded to get a better model.

In all three groups (total sample, training dataset, testing dataset), *Stock_Exch* and *CA_Reg* were perfectly correlated. Therefore, *Stock_Exch* was also excluded from the model, so the model was adjusted as follows:

$$Combined\_Assurance = \beta_0 + \beta_1 TLOD + \beta_2 CA\_Reg + \beta_3 Gov\_Code + \beta_4 IR + \beta_5 Market\_Cap + \varepsilon$$

We checked the multicollinearity of the five remaining independent variables using the variance inflation factor (VIF) parameter, with results shown in Table 6. All VIF values were <5, so it can be concluded that non-multicollinearity was not an issue in these data.

Logistic Regression Model

We built the model based on a training dataset with a binomial glm function. Table 7 shows the results. Based on Table 7, *CA_Reg* is significant at a 1% significance level. This result answers the statement on H_3. Furthermore, *IR* and *Market_Cap* are also significant at a 5% significance level. It means that the statement in the H_5 and H_6 statements can also be answered. However, H_2 and H_4, *TLOD* and *Gov_Code* have no significant association with *Combined_Assurance*.

The formed model produces a pseudo R^2 value of 0.650, which indicates an increase in the fit model when compared to null models or models without predictors. The Hosmer–Lemeshow test and a significant likelihood ratio test indicate the model built fit with the data.

The *CA_Reg* has a positive effect with an odds ratio of 1,120. This odds ratio shows that the opportunity for companies to implement a combined assurance model in a business environment with more stringent institutional pillars, both regulative normative and cognitive, is much higher than companies with loose institutional pillars. The *Market_Cap* has a negative effect with an odds ratio of 0.447. The number shows that the higher the market capitalization, the lower the chances of implementing the combined assurance model. The *IR* has a positive effect with an odds ratio of 6.996. It shows that companies adopting the integrated reporting framework are more likely to implement combined assurance compared to companies that have not or do not adopt the integrated reporting framework. This relationship between combined assurance and integrated reporting complements what was previously reported that combined assurance enhances the credibility of company reports in an environment that adopts integrated reporting (Simnett et al. 2016; Zhou & Hoang, 2019).

Table 6. Variable multicollinearity analysis

Variable	Tolerance	VIF
TLOD	0.965	1.035
CA_Reg	0.469	2.131
Gov_Code	0.228	4.369
IR	0.924	1.081
Market_Cap	0.321	3.114

Predictive Performance of the Model

Based on the testing dataset, we evaluated the model. Table 8 shows the model's performance test results. The AUC value, as illustrated in Figure 2 of 0.971, indicates that the model has an excellent ability to predict the implementation of *Combined_Assurance* (yes/no) (Azen & Traxel, 2009). Overall, the model is a good predictive model. According to the Confusion Matrix in Figure 3, the model's accuracy rate in predicting the implementation *of Combined_Assurance* (both yes and no) is 89.1%. Compared to actual data, the model can predict the implementation of *Combined_Assurance* (yes) by 80.9%, and that does not implement *Combined_Assurance* (no) by 94.4%.

Independent Variable Importance Level

Figure 4 presents the importance level of independent variables. In the logistic regression model, some predictors have a higher level of importance relative to other predictors. The higher the value of variable importance, the more it shows the degree of importance of that variable in the model (James et al. 2013). *CA_Reg* has the highest predictive values on logistic regression models, with *Market_Cap* as the second-highest value.

Table 7. Logistic regression model results

Variables[a]	Estimate	Std. Error	p-value	Odds Ratio
TLOD (1) (ref: No)	0.889	0.893	0.319	2.433
CA_Reg (1) (ref: No)	7.021	1.765	0.000***	1,120.001
Gov_Code (1) (ref: No)	−0.888	0.916	0.332	0.411
IR (1) (ref: No)	1.945	0.973	0.045**	6.996
Market_Cap	−0.803	0.357	0.024**	0.447
Constant	11.202	6.690	0.094*	
Model information				
- McFadden Pseudo R2	0.650			
- Hosmer–Lemeshow p-value	0.663			
- Likelihood Ratio p-value	0.000			

[a] ref: reference category for dummy variables;*) significance at 10%; **) significance at 5%; ***) significance at 1%

Table 8. Model performance in predicting combined assurance implementation

Prediction Model	Accuracy (%)	Precision (%)	Sensitivity (%)	Specificity (%)	AUC-ROC (%)
Logistic Regression	89.1	80.9	94.4	85.7	97.1

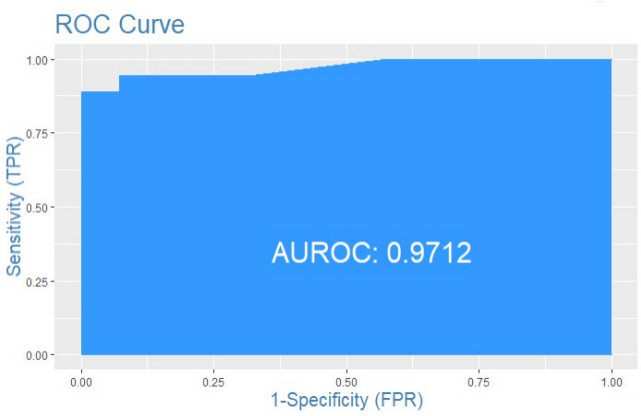

Figure 2. ROC Curve Prediction Model

Figure 3. Confusion Matrix

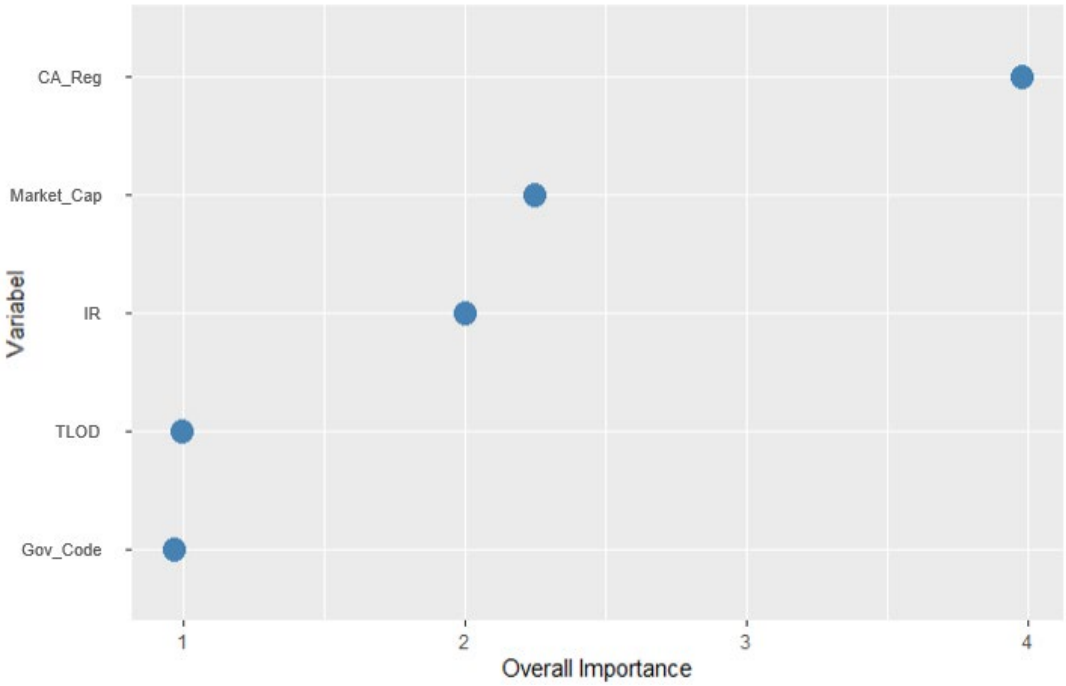

Figure 4. Independent variable importance level on the model

This study found professions on corporate governance cornerstones in Indonesia and South Africa, namely commissioners/directors and its standing committees such as the audit committee and risk committee. At the operational level, we also found the profession of quality control, risk management, compliance, and internal and external audits. These findings are consistent with the governance code issued by both states and professions within the framework of institutional pillars.

We also found that the pillars of normative and regulative institutions primarily determine the application of the combined assurance model. In the case of JSE in South Africa, this pillar is the enactment of the King IV Code promulgated by the Institute of Directors South Africa, which was initially a normative pillar. However, JSE uses this code to be followed by all companies listed there so that it can be said to be a regulative pillar. Indonesia has no such regulative and normative pillars, so it is hard to find companies implementing the combined assurance model.

Other determining factors were the reporting approach used and the size of the company. Companies that use an integrated reporting approach will have a greater opportunity to implement a combined guarantee, where companies that must report multi-faceted capital to a diverse range of stakeholders need diverse assurance. Perez (2018) points out that the scope of reporting assurance that also includes non-financial information in integrated reporting is significantly related to market liquidity (Perez, 2018). Economic aspects in the positive association of integrated reporting and combined assurance are affirmed in the significance of internal assurance and other governance mechanisms for the increasing credibility and reliability of financial and non-financial statements in the context of economic-related theories (Engelbrecht et al. 2018; Hajj and Anifowose, 2016; Wang et al. 2019).

Meanwhile, the size of the company is also significantly related to the implementation of the combined assurance, although it still requires further research on the direction of its influence. The negative association between the firm size and the application of combined assurance may be due to the many unit and subunits of large companies that cause vertical and horizontal differentiation (Beyer and Trice, 1979). The increase in work unit size is also associated with a decrease in group coordination and cohesiveness and an increase in the formation of subunits (Ven et al. 1976). Since combined assurance represents the combining of all three defense lines, naturally, it will require intense coordination between the three. Coordination in the organization can be done with technology. In the application of combined assurance, the use of technology is also one of the significant factors (Wibowo et al. 2021). The relationship between firm size in adopting the

technology is also mixed and inconsistent due to the influence of moderating variables among the company types (Lee and Xia, 2006). Different company types, such as manufacturing and service companies, will provide different directions of influence in the relationship between technology use and centralization, formalization, and professionalization of corporate structures (Miller et al. 1991).

In conclusion, there are very few normative mimetic efforts from companies in Indonesia to gain economic benefits from the combined assurance model. If the state and professions in Indonesia or other countries want companies to implement combined assurance to improve GRC integration, then there must be pillars of regulative and normative institutions, either from the government, regulators, or professionals supporting corporate governance.

Managerial Implications

This finding can be used as a reference for Indonesia's government, regulators, and market authorities, particularly as state institutional agents in the regulative pillar, in encouraging the implementation of combined assurance. This finding is also a reference for professions in Indonesia, such as director and commissioner, audit committee, quality assurance, risk management, compliance, internal audit, and external audit in enhancing the level of GRC integration of companies in Indonesia.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

To the best of our knowledge, this study is the first to provide empirical evidence that the pillars of institutions are the most fundamental factor in applying combined assurance in an integrated GRC. This study has some limitations. First, it used a sample of just 130 companies. Although we have sampled companies from constituent market indices with corporate governance and good stock performance, one should be careful when generalizing the research results. Second, the study uses content analysis of annual reports available on the company's website that possibly do not report all practices necessary in coding and model calculation. Content analysis is also helpful in conceptual analysis, but it is limited to interpreting relationships among identified professions. Third, our focus is on related aspects of the institutional approach. We added the company size variables to contain the size difference in both markets. There may be essential variables beyond these two aspects that significantly affect the application of combined assurance.

Recommendations

Although this study is limited in solving the infrequent application of the combined assurance model in Indonesia, it could open other pathways in combined assurance research, such as how other theories explain the infrequent application. Research that directly captures the aspirations of regulators and market participants is also required to capture the real problems behind the infrequent application of this model.

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