

# Mapping Evolution of Audit Quality Measurement

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**Abstract**—This study discusses audit quality measurement issue. The issue becomes important because of difficult will be to define audit quality measurements by many researchers. This research aims to map audit quality measurements with certain aspects and becomes important in making it easier for researchers, especially beginner researchers to choose the approach audit quality measurement. The type of research is explanatory with a qualitative approached. Data analysis methods doing three steps viz. data reduction, data display and data verification with data triangulation technique. The findings of this study show that researchers who are interested in measuring audit quality variables should do to mapping first to understand of measurement formats into the audit quality proxies according to the definition of audit quality, derived from proxies used in previous studies, measurement formulation and choose the use of scales. This study is very important considering secondary data usage will look at the measurement scale category to determine the methods and data analysis techniques to be selected as well as the statistical program assistance which can be used.

**Index Terms**—audit quality, definition, measurement.

## I. INTRODUCTION

Almost thirty years of research studies that test the construct of audit quality model that uses a proxy measure of audit firms, where a good quality of audits produced by category compared with audit firms. Audit firms smaller since released research on auditor size and audit quality [1,2]. Their sustainability and strength related professions governance and professional practice audit firms to increase the transparency which objectives to foster trust the stock market in an efficient manner business people in the stock market be able to monitor the audit quality, gives high incentives and differentiate between audit firms to view the database publication, it is certainly to improve audit quality [3]. The importance of using a framework quality in a thorough audit that provides comparative information about the firm to the public, assist investors in evaluating the audit quality to see the potential of the latest audit firms service [4,5]. Innovations services do not detach of a determinants factor in the organization's strategy to serve the company and its customers (B2B, B2C), but handle their relations on the products and services. Therefore, audit fees services are complex and very determine the quality of the corporate firms with audit firms [6,7].

Many researchers are emphasizing the impact of failures from the audit quality since and before the Enron and World.com scandal of 2001 and Arthur Andersen's public accountant with various approaches unable to define or detect audit quality.

It is difficult to define the audit quality measurements, many researchers refer to the following definitions: (1) Audit quality as a possibility that auditors will find a violation of the company's accounting system and report it [1]. (2) Audit quality as a function of competency perception and independence of auditors [8]. (3) The audit quality is determined according to the honorarium or the audit fee based on two key factors, namely the total company assets for large-scale companies and the number of receivables for small-scale companies [6]. (4) Audit quality is assumed that the large quality of the audit firms is more than independent which is Big-8 compared with the small audit firms in the inconsistency of GAAP accounting principles between the opportunistic behavior of the manager (client) concerning to the auditor [9]. (5) Audit quality is prime with the quality of financial reporting with the analytical approach of the audit firms industry specialization by Big-5 category will able to result in high performance compared to the industrial specialty of audit firms in addition to Big-5 [10]. (6) Audit quality is constructed based on metrics or quality measurement processing with the quality of auditors focused directly on the technical auditor competencies [11]. (7) The audit quality is measured of capability Audit Alliance indicators and accounting firm characteristics that are periodically reporting to the Advisory Committee on the Auditing Profession ACAP [3]. (8). Audit quality is set up comprehensively by the audit firms, the entanglement of auditors, and regulators through a continuum ranging from low to high. According to the above definitions, over two decades of empirical research conducted in measuring audit quality [12,13].

Audit quality is defined as (9) a "value" considered by stakeholders' to learn about auditing or audit process on the corporate financial statements after in the last decade [14]. (10) Audit quality is a management perception that looks increasing the quality of reporting by the audit-dimensional process that won't be captured using the earnings management indicator or the auditor's tendency to issue a going concern opinion [15]. (11) Audit quality measured based on Big-N audit firms has better quality compared with other than Big-N with Coarsened Exact Matching (CEM) approach [9]. (12) The audit quality is based on information reports to stakeholders and provides additional information on audit quality (e.g. timely reporting) and effectiveness of audit committees [16]. (13) Audit quality is defining a failure point of view to an easier operational and develop frameworks to be the best alternative to measuring overall audit quality [13,17]. (14) Audit quality is measured according to the analysis of sales aspect and other most important parts of potential that have an impact on audits [18]. (15) The audit quality is concern with the quality of the corporate financial reporting which reflects the rule view of

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higher audit quality would be better [19]. (16) Audit quality as a fidelity guarantee of financial statements reflects the basis for the company's economic conditions, characteristics and financial reporting systems [20]. (17) Audit quality is a further assurance of financial statements reflects the basis for the company's economic conditions, characteristics and financial reporting systems [21]. (18) Audit quality is a framework comprise with audit professionals, audit processes and audit results [22,5]. (19) The audit quality is focusing more on input for the process than the auditor of the public accountants by looking at the overall specific shortcoming[23]. (20) Audit quality depends on the input to the audit, process to the audit, and the output resultant from the audit process as well as the client's characteristics and relationships [4,24]. (21) Audit quality is measured on the size of the Big N Auditor's office and the client industry specialization [18,25]. (22) Audit quality shows a ratio based on audit cost and change of estimation (re-statement) [26]. (23) The external audits quality is the governance and the high quality of external audits serves to protect stakeholders' interests[27].

Audit quality in the context of Indonesia in the last decade is defined as: (1) Audit quality is a way to measure the quality of the work of the auditor is through the quality of the decisions taken [28]. (2) Audit quality as a probability that auditors will not report audits with reasonable opinions exception for financial statements containing material miss offerings [29,2]. (3) Audit quality as an internal audit measurement is the probability that internal auditors can disclose and report violations of accounting information systems [1,30]. (4) Audit quality is the probability of an auditor to find and report a mistake or misappropriation that occurs in a company accounting system measuring based on using indicators financial and non-financial reflecting by input, process, and output orientation, so that due professional care [31].

Some research explicitly states that the difficulty of defined audit quality is universally and in measuring audit quality [12,3,13,21,24,15,19,12]. Several parties try to define about the quality of audit but have difficulty for definitions of the audit quality itself, this is due to the absence of a general understanding of the audit factor of audit quality and much time of role conflict between various users of the audit report [31]. Further, the criticism about the size of audit quality or the quality of auditors is just one example of the debate over measurement and measuring instruments in accounting. If the audit quality is independence and independence is a mental attitude, then it is not an easy thing to measure an auditor's mental attitude when he makes a problem-solving decision [31].

Proxy of audit quality categorize is size have been used among others ranging from the size of an audit firm, audit fee, industry specialization, audit rotation, audit tenure, characteristics of financial reporting, profit management indicators, going-concern opinion, the audit committee, relationship with the audit client, the probability of bankruptcy of the company that is given reasonable opinion, the change of estimation, disagreements between auditors and firms about questionable accounting practices, abnormal accruals to the role of Auditor Alliance in determining audit quality and become very important. Therefore, this study

objective to mapping the measurement of audit quality with certain factors, and it is important in facilitating a researcher, especially beginner researchers to choosing the approach used to audit quality. The focus of this study is the measurement of audit quality using secondary data.

## II. METHODOLOGY

### A. Research Type

This type of study is exploratory research, aiming to look at patterns, concepts or formulating hypotheses not to test hypotheses and prior research is still rare against a problem so that further research is more directed [32]. Further, a framework will be created that lowers the audit quality definition and its measurements based on the theory, year and researcher name in the form of a tabulation summary developed to map the history and results of the audit quality measurement ever performed.

### B. Data Collect

Data collection is the activity of recording an event or event by documenting the characteristics of a variable element or value [32]. The library research approach in this study using reference books, journals, reports and other media linked to the research object. This research data using qualitative data that is not in the form of count it, only explanations that can't be measured with the calculating unit.

### C. Data Analysis

Data analysis techniques are a way of analyzing the data obtained from research to make conclusions about the research results. Data analysis is classified into three phases using the data analysis model Miles and Huberman where the process consists of 3 (three) stages, namely:

- Data reduction is an electoral process, concentrations of attention to it's simply this, abstracting and transformation of abusive data appearing from written records in the field. Data reduction is closely related to be data analysis process.
- Data displaying is a collection of collected information and provides the possibility of withdrawing conclusions and taking action. The presentation that is often used in qualitative research is a form of narrative discourse (chronological storytelling) which is a simplification of the several numbered information into the unified form of simplified.
- Activity verification is a very important activity because, from the beginning of data collection, a qualitative analyzer should be able to search for objects, noting the regularity, patterns, configurations that are all a whole unity, even perhaps there is a relation the plot, cause, and preposition [33]

## III. FINDINGS AND DISCUSSIONS

The results of this study are outlined in through several stages:

### A. Result (Data Analysis)

TABLE I: MEASUREMENT OF AUDIT QUALITY

Research Name, Years	Proxies	Indicators			
International Research					
DeAngelo, 1981b	Audit firm size	<i>Big 8</i>	Knechel et al., 2013	Input - Process - Outcomes - Context	Knowledge of a client, industry experience, audit committee oversight, compliance with auditing standards, audit firm ethics, economic independence of the auditor, rotation of audit partners, and audit inspection
Watts & Zimmerman, 1981	Independence Competence	Independent auditor Auditor technical expertise			
Chung & Lindsay, 1988	Fee audit	Total asset or sales, number of subsidiaries, the inventory level	DeFond and Zhang, 2014	Commonly used audit quality models	GCs, DACs, <i>Big N</i> , and Audit Fee
DeFond & Jiambalvo, 1993	The size of audit firms	<i>Big 6</i> <i>Big 5</i>	He et al., 2014	Audit quality and analysts' information properties	Share, Leader, Sharecl, Mostcl, Size, MB, and Surp
Beth et al., 2008	The quality of audit report	Independence level of the auditor in the opinion formulation on the accounts, and respect for the ethic rules	Donovan et al., 2014	Audit quality level demanded absent regulation	Audit market share, the auditor's largest share of the SIC industry code, market share calculated based on sales, the number of each client
Manita & Elommal, 2010					
Bedard et al., 2010	Measurable Inputs to and Outputs audit quality	<i>Inputs</i> : Engagement-level indicator i.e. audit and training hours, personnel assignment, fee audit and partner tenure, individual auditor industry specialization and tailoring of audit tests to reflect client risk; <i>Firm-level indicators</i> i.e. industry specialization, tenure, independence, size, compensation plans <i>Outputs</i> : enforcement releases detailing individual acts, accuracy of audit opinion, accounting and auditing, litigation and related costs, peer review results, internal inspection results, inspection activities and report results	Qi et al., 2015	Audit production (level of assurance)	Audit firm-specific, audit client-specific, and engagement auditor-specific effects on audit quality
			Brown et al., 2016	Audit quality indicators	Technical knowledge, confidence, working condition and workload, multi-tasking, firm quality control and review, management communications, reliance on work of outside non-specialists
					Audit professional, audit process, gender, experience, firm size.
Francis, 2004; 2011	Audit results	Audit reports and financial statements	Christensen et al., 2016	Audit quality framework	Input auditor: (fees, auditor characteristics, firm size); investor (well-trained auditors, auditor change, fees, auditor characteristics, skeptical auditors, firm size)
Martin, 2013	Audit quality indicators	Audit firms, audit committees, creditors and investor, audit regulators, and preparers' management			Process auditor: (well-planned audit, timeliness and consultations); investor (well-planned audit)
Svanström, 2013	Discretionary accruals	NAS Ratio, Ln_tenure, <i>Big-4</i> , Ln_TA, ROA, <i>Solvency</i> , <i>Extra owners</i> , <i>Subsidiary</i> , <i>EMP1-9</i> , <i>EMP10-49</i> , <i>Region1</i> and <i>Region2</i>			Output and opinion auditor: (accurate financial statements, restatements, F/S quality, accruals and audit opinion); investor (restatement, poor disclosures, F/S quality, and audit opinion)
DeFond et al., 2013	Audit quality proxies	Absolute discretionary accruals, signed discretionary accruals, restatement, going concern opinion, and audit fees			Output and opinion auditor: PCAOB deficiencies, review/inspection results); investor (review/inspection results)
Gunny & Zhang, 2013	Client-specific measures of audit quality	Abnormal current accruals, the propensity to restate, and the auditor's propensity to issue a going concern opinion			

Raak and Thürheimer, 2016	Input - Output	Input: client characteristics and contextual factors (discretionary accruals and earnings characteristics) Output: internal quality review reports, waived misstatements, the size of required adjustments to be made by the client, and inspection reports to audit firms by oversight bodies (PCAOB)	DeAngelo, 1981b DeFond & Jiambalvo, 1993 Beth et al., 2008 Wibowo & Rossieta, 2009 Bedard et al., 2010 Martin, 2013 Svanström, 2013 DeFond and Zhang, 2014 Donovan et al., 2014 Qi et al., 2015 Brown et al., 2016 Christensen et al., 2016 Raak and Thürheimer, 2016 He et al., 2018 Rajgopal et al., 2018 Sarhan et al., 2019	The size of audit firms	Big 8 Big 6 Big 5 Big 4 Audit firm size Big 4 Big N Big 4 Big N Big 4/6/8 Big 4
He et al., 2018	The accuracy of individual information and general analysis	Big N, Share, Leader, Sharecl, Mostcl, Analysis, MB, PostSOX, Size, Surp, and USA	Chung & Lindsay, 1988 Bedard et al., 2010 Svanström, 2013 DeFond et al., 2013 DeFond and Zhang, 2014 Donovan et al., 2014 Rajgopal et al., 2018	Fee audit	Ln_audit fees Audit fee ratios Natural logarithm of Audit fees
Rajgopal et al., 2018	output-based proxies, input-based proxies, and other proxies	DA, AbsDa, Total Accruals, Rstmt, SmlProfit, SmlBeat, GC, Big N, Audit fee ratio, audit fee city ratio, tenure, new client, top 20 city, auditor Firm Diff, city specialist, and industry specialist.	Sarhan et al., 2019	Audit fee ratios LNFE	$\Sigma$ audit fees and non-audit fees for a given firm-year. Natural log of audit fee in thousands of US dollars.
Sarhan et al., 2019	company and country level approach	Big 4, LNFE.	Chung & Lindsay, 1988 Svanström, 2013 Gunny & Zhang, 2013 He et al., 2014 He et al., 2018	Size LNFA Size	Ln_total assets Natural logarithm of total assets LnAsset Natural logarithm of the firm's market capitalization
Wibowo & Rossieta, 2009	Indonesian's Research Earning surprise benchmark	Audit assignment tenure, audit firm, and audit regulation	Wibowo & Rossieta, 2009 Bedard et al., 2010 Svanström, 2013 Knechel et al., 2013 Christensen et al., 2016 Rajgopal et al., 2018	Audit tenure	Audit assignment tenure Audit firm tenure Ln_Tenure Short & long tenure Auditor change Short & long auditor tenure
Widiastuty & Febrianto, 2010	Assignment individual vs client / audit firms	Independence, competence, driver (power of monitoring)	Bedard et al., 2010	Industry specialization (audit firms)	The length in year of the auditor-firm relationship Audit firm industry specialization Share, Sharecl Industry dummy
Rosnidah, 2012	Internal audit quality	Competence, independence, professionalism, and motivation	He et al., 2014 He et al., 2018 Rajgopal et al., 2018	Industry specialization (client)	Share, Sharecl EMP1-10, EMP10-49 Auditor Firm Diff Individual auditor industry specialization Leader, Mostcl
Tandiontong, 2016	General, Middle Range, and Applied Theory	Commitment professional accountant, organizational commitment accountant, auditor job satisfaction, independent audit based on IFRS	Bedard et al., 2010 Svanström, 2013 He et al., 2014 He et al., 2018 Rajgopal et al., 2018	Subsidiaries Subsidiary	Number of subsidiaries Firm of subsidiary

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### B. Data Display

TABLE II: SUMMARIZED INDICATORS OF AUDIT QUALITY

Research Name, Years	Proxies	Summary of Indicators
		RETURN
		ROA
		Solvency
		LEV
		Leverage

Svanström, 2013		Absolute value of estimated total discretionary accruals	
DeFond et al., 2013		Performance-matched absolute discretionary accruals	
DeFond and Zhang, 2014	Discretionary accruals	DACs	
Christensen et al., 2016		Accruals	
Raak and Thürheimer, 2016		Discretionary accruals and earnings characteristics	
Rajgopal et al., 2018		DA and Abs DA	
DeFond et al., 2013	Restatement	Equals one when a firm restates net income downward by more than 10%	
Gunny & Zhang, 2013		RESTATE	
Christensen et al., 2016		Restatements	
Raak and Thürheimer, 2016		Waived misstatements	
Rajgopal et al., 2018		Rstmt	
DeFond and Zhang, 2014	Going-concern	GC's	
Qi et al., 2015		Going concern issues	
Rajgopal et al., 2018		GC	
Martin, 2013		Audit committee	
Knechel et al., 2013	Audit committee	Audit committee oversight	
Christensen et al., 2016		Audit committee meetings	
Watts & Zimmerman, 1981	Independence	Independent auditor, accountant and group	
Manita & Elommal, 2010		Independence level of the auditor in the opinion	
Bedard et al., 2010		Audit firm independence	
Knechel et al., 2013		Economic independence of the auditor	
Widiastuty & Febrianto, 2010		Independent public accountants	
Rosnidah, 2012		Independence	
Tandiontong, 2016		Independent audit based on IFRS	
Watts & Zimmerman, 1981		Competence	Auditor technical expertise
Manita & Elommal, 2010			Formulation on the accounts
Widiastuty & Febrianto, 2010			Competence
Rosnidah, 2012	Competence		
Knechel et al., 2013	Knowledge of a client		
Brown et al., 2016	Technical knowledge		
Christensen et al., 2016	well-trained auditors		
Bedard et al., 2010	Audit opinion	Accuracy of audit opinions	
DeFond et al., 2013		Going concern opinion	
Gunny & Zhang, 2013		Going concern audit opinion	
Christensen et al., 2016		Audit opinion	
Rosnidah, 2012	Professional	Professionalism	
Brown et al., 2016		Auditor knowledge and confidence	
Christensen et al., 2016		Audit professional	
Tandiontong, 2016	Skepticism	Commitment professional accountant	
Christensen et al., 2016		Skeptical auditors	

etc.

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### C. Discussions (Data Verification)

Audit quality measurements are important issues that researchers need to consider. Researchers sometimes find it difficult to distinguish between individual audit quality

measurements (using the perception of Auditors) and agencies (using the inherent factors of the audit firms), it is caused by difficult to distinguish clearly between the results of the auditor's work with the work of the audit firms. The use of Auditors' perception in the summary of frequently tested indicators is independence, competence, proof of audit, audit opinions, professional attitudes and skepticism while the factors attached to the KAP (having characteristics) of its own, namely the size of the accountant office, honorarium, tenure audit, industry specialization, as well as the specialization of the client industry, company size, subsidiaries, ROA, Solvency, Because of the focus of research based on the measurement of audit quality with secondary data (Stock Exchange), audit quality measurements should be formulated by the definition of audit quality and the analysis unit measured so that it can be concluded with the following measurement formats:

TABLE III: ILLUSTRATION OF FILL MEASUREMENT THE FORMAT OF AUDIT QUALITY

Proxies	Definition	Formulation	Scale
<b>Big N (8/6/5/4)</b>	The firm is audited by PwC, Ernst & Young, Deloitte or KPMG (Big 4)	1 = The firm is audited by a Big 4 0 = The firm is not audited by a Big 4	Nominal, <i>dummy variable</i>
	Prior Research: [1,34,10,14,28,14,15,9,19,21] [5,23,24,25,26,27]		
<b>Fee Audit</b>	Audit Fee Ratio	Ln_audit fees	Ratio
Prior Research: [6,3,15,9,20,19,26,27]			

Etc.

Developed by this research (2020)

The next step can be an analysis of data to view the feasibility assessment of the audit quality measurement model with the structural equation analysis method and model specification test so that the next test result will give better results and representation.

## IV. CONCLUSION

Researchers interested in the measurement of audit quality variables should do the mapping first to formulate a measurement format based on the audit quality proxies used based on the audit quality definitions themselves derived through the proxies used in the prior research, the measurement formula and the use of scale, it is important to remember the use of secondary data will see the measurement scale category to determine the methods and techniques of data analysis to be selected as well as the help of the statistical program used.

The results of this research are only providing an overview of the audit quality measurements that have been used by previous researchers, so the findings of this research should be retested in applied research on the determinant of the quality of audits and their relationships and influence. This research has contributed to the development of models that implicates particularly for academics or novice researchers to facilitate the formulating of audit quality measurements for research in accounting and finance.

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