



A SCREENING OF TOOLS TO MEASURE THE QUALITY OF FINANCIAL REPORTING

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Rezumat: *Obiectivul principal al acestei lucrări este reprezentat de către identificarea, sistematizarea și cuantificarea instrumentelor de măsurare a calității rapoartelor financiare, pentru a veni în sprijinul cercetătorilor care au în vedere această arie cuprinzătoare. Utilizând sistemul PRISMA într-o manieră cât mai transparentă, lucrarea are în vedere și identificarea potențialelor lacune existente, în toate cele 89 de articole și lucrări de specialitate examinate în cel mai mic detaliu. Întrucât calitatea rapoartelor care au drept scop final mijlocirea relației dintre entitate și utilizator nu este un subiect abordat în mod individual, obiectul secundar al acestei lucrări are în vedere expunerea celor mai frecvente teme și discuții asociate acestui obiect de studiu, precum: caracteristicile entităților, adoptarea Standardelor de raportare financiară, structura acționariatului, guvernanta corporativă respectiv comitetul de audit.*

Cuvinte cheie: *instrumente de măsurare, revizuire, calitate, rapoarte financiare*

Abstract: *The main objective of this research is to identify and systematize tools for measuring the quality of financial reports, in order to support researchers considering this comprehensive area. By using the PRISMA system in as transparent a manner as possible, we also aimed to find potential gaps in all 89 articles and scholarly papers examined in the smallest detail. As the quality of financial reporting is ultimately aimed at mediating the relationship between the entity and the user, it is not a topic addressed individually, the secondary object of this paper is to expose the most common themes and discussions associated with this object of study, such as: characteristics of entities, adoption of International Financial Reporting Standards, shareholding structure, corporate governance and audit committee.*

Keywords: *measurement tools, review, quality, financial reporting*

JEL Classification: M41, M42

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1. INTRODUCTION

In the context of the increasing development of economic processes, there is a growing need and desire to deepen our knowledge of the peculiarities of the economic sphere. Presented as a tool for mediating transactions between buyer and seller, information, especially accounting information, is constantly changing in the current climate of economic uncertainty. Optimal decision-making is largely based on the quantity and quality of the economic information presented by the entity, correlated with both reality and its market image.

Given that information is the basis for decision making by its users, it must be given particular importance in order to reduce uncertainties in how it is reported and interpreted and to increase its usefulness. We recognise the usefulness of financial reporting, both for those who provide it and for those who use it in decision making, as accounting provides a wide range of sources of financial and non-financial information, ensuring a high degree of credibility compared to other sources of information.

Those who provide the information presented in financial reports need to be aware of their impact on society and on those who come into contact with them, as they can generate many changes in the attitudes of those who use them, which may or may not favour decision-making. Optimal decision making relies to a large extent on the quantity and quality of the economic information presented by the entity, correlated with both the reality and the market image of the entity.

Entities' financial statements contain a wealth of useful information about the entity's financial position, management policies and strategies, and prospects for future performance. Users of the financial information contained in an entity's published annual, preliminary, half-yearly or quarterly reports should be prepared to deal with a significant amount of information to meet their needs and requirements. It is important to have the necessary knowledge so that the information found can be interpreted, analysed and studied so that it contributes to making an investment decision that is to the user's advantage.

Despite the fact that various research has been developed over the last decades, we believe that there is no universally accepted, precise and accurate definition of the term quality of financial reporting. We believe that quality characteristics of accounting can only be achieved when they influence the ability of users to reduce the cost of capital, i.e. to make a profitable allocation of capital, investments and/or loans.

2. DEFINING THE RESEARCH PROBLEM

The primary goal of this study is to identify methods for quantifying the quality of financial reporting among listed entities in financial markets, current trends in this research area, and possible gaps in the literature in this research area.

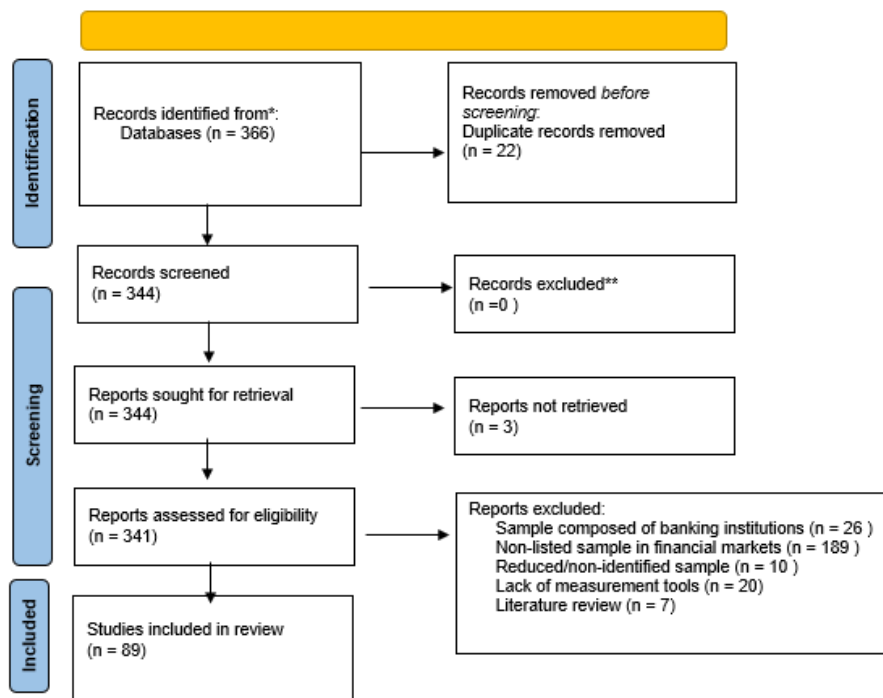
The database used to identify the literature under review is the Web of Science. In order to eliminate possible gaps created and to identify all studies, the following keywords were used as search criteria in both the title and abstract:

- (1) AB=(MEASURING FINANCIAL REPORTING QUALITY)) OR (AB=(MEASURING FINANCIAL STATEMENT QUALITY))) OR (AB=(ASSESSING FINANCIAL STATEMENT QUALITY);

- (2) TI=(MEASURING FINANCIAL REPORTING QUALITY)) OR (TI=(MEASURING FINANCIAL STATEMENT QUALITY))) OR (TI=(ASSESSING FINANCIAL STATEMENT QUALITY));
- (3) AB=(FINANCIAL REPORTING QUALITY)) OR (AB=(FINANCIAL STATEMENT QUALITY));
- (4) TI=(FINANCIAL REPORTING QUALITY)) OR (TI=(FINANCIAL STATEMENT QUALITY).

In order to visually summarize the screening process of the multitude of articles obtained, the PRISMA diagram was used to describe the flow of information across the different phases of a systematic review, the transparency of the screening process being extremely high. Thus, the diagram below (fig.1) illustrates the count of records identified, both included and excluded, along with the specific reasons for exclusions at each selection stage.

Figure 1 Identification of studies through databases and registers



Source: Authors projections

3. PRESENTING THE RESEARCH FINDINGS

Inventory of methods for quantifying the quality of financial reports

3.1 Score created by Pistoni (2018)

In order to achieve the highest possible level of consistency with the quality assessment literature and with reference to the guiding principles of investor relations, a scoring system was

designed based on 23 variables, grouped into four domains (Pistoni, 2018), represented in Table 1. The four domains into which the variables are grouped aim to achieve the highest level of correlation between the guiding principles of integrated reporting: stakeholder relations, strategic focus and future orientation, information connectivity, coherence and comparability. In contrast to the reference paper, the correlation between audit committee tasks and the quality of integrated financial reporting was tested using a slightly larger sample (125 entities versus 116) (Raimo, 2020).

Table 1 Score created by Pistoni (2018)

Title	Year	No. pag.	Authors	Sample (listed companies)
"Do audit committee attributes influence integrated reporting quality? An agency theory viewpoint"	2021	12	Raimo, N and Vitolla, F and Marrone, A and Rubino, M	125

Source: Authors projections

The regression model used is as follows:

$$IRQ = \beta_0 + \beta_1 ACSIZE + \beta_2 ACIND + \beta_3 ACEXP + \beta_4 ACMEET + \beta_5 BSIZE + \beta_6 BIND + \beta_7 BDIV + \beta_8 CSRCOM + \beta_9 PROF + \beta_{10} SIZE + \beta_{11} AGE + \beta_{12} ESEN + \beta_{13} CIV + \varepsilon$$

3.2 Discretionary abnormal accruals

Discretionary commitment expenses often provide managers with the opportunity to manipulate profits due to the flexibility available, with a direct impact on the quality of earnings achieved (Dechow, 2002). Another performance-adaptive measurement tool has also been developed, designed to mitigate the problem of misspecification when applied to samples experiencing non-random performance (Kothari S. L., 2005).

Table 2 shows the total number of articles that used this measurement tool. It is noted that the research sample does not limit the application of this tool, ranging from 100 to over 2000 entities listed.

Table 2 Discretionary abnormal accruals

Subject	Year	No. pag.	Authors	Sample (listed companies)
The study investigates how short selling relates to the quality of financial reporting in Chinese AH shares	2019	12	Jiang, HY and Chen, J	86
The article explores the relationship between overlapping membership on audit and compensation committees and its impact on financial reporting quality	2016	14	Habib, A and Bhuiyan, MBU	14110 observations
he study investigates the correlation between adherence to recommendations on the audit committee in codes of good practices and financial reporting quality	2018	25	Garcia-Blandon, J and Argiles-Bosch, JM and Martinez-Blasco, M and Merino, DC	101
The study explores the relationship between monitoring by busy and	2017	34	Mendez, CF and Garcia, RA and Pathan, S	798 observations



overlap directors, executive remuneration, and financial reporting quality				
The study investigates the impact of Mandatory Corporate Social Responsibility (CSR) Reporting on financial reporting quality, using evidence from a quasi-natural experiment	2018	19	Wang, X and Cao, F and Ye, KT	1888
The study examines the relationship between management's personal ideology and financial reporting quality	2019	50	Notbohm, M and Campbell, K and Smedema, AR and Zhang, TM	2154
The study investigates whether various political connections have distinct effects on financial reporting quality, utilizing evidence from Malaysia	2022	11	Hoang, K and Tran, TT and Tran, HTT and Le, AQ	All entities listed on the Malaysian Stock Exchange
The study examines the influence of audit committees on financial reporting quality from the perspective of the 8th EU Company Law Directive	2018	12	Bajra, U and Cadez, S	2,300
The study explores the relationships among accounting comparability, financial reporting quality, and audit opinions, drawing evidence from Iran	2021	18	Shuraki, MG and Pourheidari, O and Azizkhani, M	104
The study investigates the impact of tick size on financial reporting quality in small-cap firms, utilizing evidence from a natural experiment.	2020	45	Ahmed, AS and Li, YW and Xu, NN	2,213
The study examines the interplay between financial reporting quality, structural problems, and the informativeness of mandated disclosures on internal controls	2013	31	Ghosh, A and Lee, YG	2056
The study explores the relationship between financial reporting quality and the divergence of opinion among investors	2021	28	Silva, D and Cerqueira, A	All entities listed on the London Stock Exchange
The study investigates whether auditor locality plays a role in financial reporting quality	2017	5	Diaz, J and Martin, GW and Thomas, WB	14,000 observations
The study evaluates the financial reporting quality of family firms, focusing on the perspective of auditors	2015	21	Ghosh, A and Tang, CY	2000
The study examines the impact of internal controls on financial reporting quality in Iranian family firms	2019	16	Dashtbayaz, ML and Salehi, M and Safdel, T	139

The study explores the relationship between corporate carbon risk exposure, voluntary disclosure, and financial reporting quality	2020	13	Lemma, TT and Shabestari, MA and Freedman, M and Mlilo, M	100
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Source: Authors projections

Table 3 shows the proxies for applying the measurement models of the above mentioned items:

Table 3 Summary of reference points

Authors	Proxy
Jiang, HY and Chen, J	(Kothari, 2005)
Habib, A and Bhuiyan, MBU	(Jones, 1991)
Garcia-Blandon, J and Argiles-Bosch, JM and Martinez-Blasco, M and Merino, DC	(Dechow, 2002)
Mendez, CF and Garcia, RA and Pathan, S	(Dechow, 2002)
Wang, X and Cao, F and Ye, KT	(Kothari, 2005)
Notbohm, M and Campbell, K and Smedema, AR and Zhang, TM	(Hutton I, 2015)
Hoang, K and Tran, TT and Tran, HTT and Le, AQ	(Dechow, 2002)
Bajra, U and Cadez, S	(Dechow, 2002), (Kothari et al., 2005)
Shuraki, MG and Pourheidari, O and Azizkhani, M	(Hutton I, 2015)
Ahmed, AS and Li, YW and Xu, NN	(Dechow, 2002), (Defond, 2010)
Ghosh, A and Lee, YG	(Francis, 2005)
Silva, D and Cerqueira, A	(Jones, 1991)
Diaz, J and Martin, GW and Thomas, WB	n/a
Ghosh, A and Tang, CY	(Jones, 1991)
Dashtbayaz, ML and Salehi, M and Safdel, T	(Kothari, 2005)
Lemma, TT and Shabestari, MA and Freedman, M and Mlilo, M	(Jones, 1991)

Source: Authors projections

3.3 Accruals quality

On the other hand, the most widely used method to quantify the quality of financial reports of companies listed on capital markets, accruals quality has a share of 22.47% in research using a single measurement method, and is present in the highest proportion in research presenting a multi-method approach, as it is shown in Table 4. Research whose methodology focuses on calculating quality using this instrument was published between 2002 and 2022.

Dechow and Dichev's (2002) model has been widely accepted as one of the most effective because, as Doyle, Ge and McVay (2007) noted, "it has the ability to capture biased discretionary commitments as well as unintentionally misestimated commitments". Consequently, management's intentions in measuring these commitments are not taken into account and the focus on the accuracy of accounting information is facilitated. In this model, the focus is on the relationship between current period working capital accruals and operating cash flows in different periods. This approach allows the quality of the accruals to be considered as the degree to which it can be compared with past and current cash flows and predicted for the future.



$$\Delta WC_t = \beta_0 + \beta_1 + CF_{t-1} + \beta_2 CF_t + \beta_3 CF_{t+1} + \varepsilon_t \quad (1)$$

However, McNichols (2002) suggested improving the model by including two variables from the original model advanced by Jones (1991), as follows:

$$\Delta WC_t = \beta_0 + \beta_1 + CF_{t-1} + \beta_2 CF_t + \beta_3 CF_{t+1} + \beta_4 \Delta SALES_t + \beta_5 PPE_t + \varepsilon_t \quad (2)$$

Another proxy used is the cross-sectional version of the Jones (1991) model developed by Jeter and Shivakumar (1999), taking into account quarterly observations. This model is believed to contribute significantly to detecting artificially induced unexpected quarterly accruals when an entity's performance is controlled.

Table 4 Accruals quality

Subject	Year	No. pag.	Authors	Sample (listed companies)
The study investigates whether financial reporting quality varies across the firm life cycle	2021	33	Krishnan, GV and Myllymaki, ER and Nagar, N	27,880 - 143,601 observations
The study examines the influence of CEO involvement in selecting Chief Audit Executives (CAE), internal audit competency, and independence on financial reporting quality	2018	17	Alzeban, A	307
This research evaluates the benefits and drawbacks of auditor's assurance through the examination of quarterly financial statements	2015	15	Bedard, J and Courteau, L	2,055
The impact of audit-firm tenure on the quality of financial reports is investigated in this study	2002	23	Johnson, VE and Khurana, IK and Reynolds, JK	11,148 observations
The study explores how remuneration structures influence financial reporting quality, drawing evidence from the Australian context	2016	9	Safari, M and Cooper, BJ and Dellaportas, S	214 observations
Analyzing the interplay between financial reporting quality, audit quality, and investment efficiency is the focus of this research, using evidence from Pakistan	2019	14	Shahzad, F and Rehman, IU and Hanif, W and Asim, GA and Baig, MH	190
This study assesses the influence of corporate governance mechanisms on financial reporting quality	2022	18	Kothbudeen, N and Manual, VSO	70
The impact of administration efficiency on financial reporting quality in small-sized companies listed on the Tehran Stock Exchange is investigated in this study	2011	7	Shoorvarzy, MR and Tuzandehjani, M	80
Examining the effect of financial reporting quality on corporate investment efficiency is the central theme of this research, using evidence from the Tunisian stock market	2017	16	Houcine, A	30
Investigating the nexus between financial reporting quality and investment efficiency is the primary objective of this study	2020	14	Ullah, RF and Ayub, U and Khan, H	290

This research explores the impact of the Internal Audit Function (IAF) on financial reporting quality in Saudi Arabia	2011	9	Al-Shetwi, M and Ramadili, SM and Chowdury, THS and Sori, ZM	All listed on the Saudi Arabian Stock Exchange
The relationship between financial reporting quality, free cash flow, and investment efficiency is analyzed in this study	2015	9	Wang, FS and Zhu, ZB and Hoffmire, J	3,726
Assessing the impact of family ownership on financial reporting quality and its influence on the cost of debt for SMEs is the focus of this research	2015	15	Vander Bauwhede, H and De Meyere, M and Van Cauwenberge, P	8908 observations
The study examines the connection between financial reporting quality and investment decisions for family firms	2016	33	Lin, CJ and Wang, TW and Pan, CJ	19,762 observations
Exploring the relationship between financial reporting quality and idiosyncratic return volatility is the main objective of this research	2011	14	Rajgopal, S and Venkatachalam, M	95,270 observations
This study investigates the impact of family ownership on financial reporting quality, providing evidence from Iran	2018	17	Shiri, MM and Salehi, M and Abbasi, F and Farhangdoust, S	221
Assessing the influence of corporate governance on the financial reporting quality of politically connected firms is the primary focus of this research	2020	17	Wati, LN and Ramdany and Momon	871
This study explores whether independent director characteristics have an impact on financial reporting quality	2018	18	Bravo, F and Reguera-Alvarado, N	193
Examining the relationship between corporate social responsibility disclosure and its impact on financial reporting quality in Gulf Cooperation Council countries is the main focus of this research	2021	12	Al Ani, MK	1845 observations
The role of audit committees in enhancing financial reporting quality in Singapore is investigated in this study	2016	17	Kusnadi, Y and Leong, KS and Suwardy, T and Wang, JW	423
Analyzing whether audit committee characteristics contribute to improved financial reporting quality in emerging markets, with evidence from Iran, is the main objective of this research	2021	15	Gerayli, MS and Pitenoiei, YR and Abdollahi, A	558 observations

Source: Authors projections

3.4 Earnings management

Investors and users are interested in obtaining high quality financial information, and this quality can be derived from high earnings quality, which is known to be one of the important indicators of capital market efficiency. This notion is among the major concerns in assessing the financial health of entities to signify the level of reliability of reported results. In addition, this



indicator has been used as an analytical tool to assess the impact of conversion of accounting standards, external audit, enforcement and corporate governance and cost of capital. In the literature, there are several metrics to assess earnings quality, such as: persistence, predictability, smoothness, abnormal accruals, accrual quality, value relevance, timeliness, conservatism and earnings variability. Earnings quality plays an important role in the utility of the decision. It is also affected by other factors such as managerial incentives and regulatory actions. The more an entity engages in earnings management, the lower the quality of the entity's financial reporting. However, focusing on accrual accounting management rather than revenue or cash flow management has a negative impact because accrual accounting is easier to manipulate and less visible to stakeholders than cash flows.

Mbir (2002) reinforces Armstrong's (2010) argument that there is a positive relationship between IFRS compliance and the quality of financial reporting. The models used also integrate the impact of corporate governance:

$$\ln RQ_{it} = \alpha_0 + \beta_1 COMP_{it} + \beta_2 \ln GOV_{it} + \sum_{i=1}^n \beta_i Z_{it} + \epsilon_{it} \quad (1)$$

$$\ln RQ_{it} = \alpha_0 + \beta_1 COMP_{it} + \beta_2 \Delta COMP_{it} + \beta_3 \ln GOV_{it} + \sum_{i=1}^n \beta_i Z_{it} + \epsilon_{it} \quad (2)$$

Table 5 shows the total number of articles that used this measurement tool.

Table 5 Earnings Management

Title	Year	No. pag.	Authors	Sample (listed companies)
„IFRS compliance, corporate governance and financial reporting quality of GSE-listed non-financial firms,,	2020	19	Mbir, DEG and Agyemang, OS and Tackie, G and Abeka, MJ	23
„Financial reporting quality, family ownership, and investment efficiency An empirical investigation,,	2019	22	Shahzad, F and Rehman, IU and Colombage, S and Nawaz, F	All companies listed on the Pakistan Stock Exchange
„Critical mass and voice: Board gender diversity and financial reporting quality,,	2022	15	Dobija, D and Hryckiewicz, A and Zaman, M and Pulawska, K	350
„Does environmental law enforcement matter for financial reporting quality?,,	2021	16	Zhang, XH and Tan, JH and Chen, YN and Chan, KC	4,966 observations
„How Do Financial Distress Risk and Related Party Transactions Affect Financial Reporting,, „Quality? Empirical Evidence from Iran,,	2022	23	Tarighi, H and Hosseiny, ZN and Abbaszadeh, MR and Zimon, G and Haghghat, D	140
„How Do Financial Constraints Relate to Financial Reporting Quality? Evidence from Seasoned Equity Offerings,,	2018	30	Kurt, AC	1317

Source: Authors projections

3.4 Qualitative characteristics approach

Qualitative characteristics of information serve a major supporting role in the decision utility framework, i.e. in the decision modelling approach in accounting theory. The qualitative characteristics are the attributes that enhance the usefulness of the information presented in

financial statements for users. Accounting information that is reported to facilitate economic decisions must possess certain characteristics or normative standards. Table 6 shows the total number of articles that used this measurement tool.

Yurisandi (2015) used the quality measurement index developed by NICE (Nijmegen Centre for Economics) in his study. The index used is based on each quality characteristic determined by the IASB and FASB.

In order to build the quality measurement tool for financial reporting, Beest et. Al (2009) took into account the fundamental qualitative characteristics that underpin decision usefulness. This resulted in an index composed of 21 items, ensuring the construct validity of the quality measurement tool. The differentiating elements between the three scholarly articles consider the associated themes, namely corporate governance (Mohd. Y, 2016), the presence of the accounting professional in the senior management team (Rashid, 2020), and a comparison between listed companies in Africa and India (Haarburger, 2020).

Table 6 Qualitative characteristics approach

Title	Year	No. pag.	Authors	Sample (listed companies)
The proposed study seeks to explore the influence of corporate governance regulations on board independence and the quality of financial information reporting	2016	7	Ibrahim, MY and Ahmad, AC and Johl, SK and Rahman, HU	300
The study examines the influence of the presence of a professional accountant in the top management team on financial reporting quality, utilizing evidence from Bangladesh	2020	20	Rashid, MM	351 annual reports
This study aims to assess the financial reporting quality of listed companies in South Africa and India	2020	6	Haarburger, C and Yasseen, Y and Omarjee, I and Varachia, Z	100
This study explores the relationship between financial reporting quality and share price movement, presenting evidence from listed companies in Bangladesh	2020	33	Rashid, MM	296 annual reports
Examining Financial Reporting Quality Before and After IFRS Adoption Using NiCE Qualitative Characteristics Measurement	2015	8	Yurisandi, T and Puspitasari, E	All companies listed on the Indonesia Stock Exchange

Source: Authors projections

3.5 Multi-method research

Engaging in multi-method research enables the qualitative researcher to comprehensively explore complex entities or phenomena in a holistic and meaningful manner. The aim is to approach the research objective from all methodological sides and not to limit it.

a. Use of 2 combined methods



Out of the total number of researches using a multi-method approach, 11 of them focus on obtaining empirical results by applying two distinct methods. Most of them use accruals quality as a pillar in combination with another method, such as: financial statement restatements, found in Bao (2019), discretionary accruals, found in Alzeban (2019) and Gebrayel (2018). Also, other methods used in parallel to measure accrual accounting quality are: timeliness (Magali Costa, 2022), abnormal accruals, and earnings persistence, respectively. Another way of measuring the quality of financial reporting is represented by earnings managements, used alternatively with methods based on: timely recognition of losses, conditional conservatism, accrual accounting management.

b. Use of 3 combined methods

Table 7 shows the variety of combinations of methods used by the researchers who chose to use three tools to measure the quality of financial reports as their methodology. It is natural to note that the discretionary abnormal accruals method is common to more than half of the items studied, while the opposite is true for the less common discretionary accruals method found in the research initiated by (Houcine, 2022).

Table 7 Use of 3 combined methods

	earnings managements	accounting conservatism	accruals quality	discretionary abnormal accruals	discretionary revenues	others
1	USED	USED	USED	-	-	-
2	-	-	USED	USED	USED	-
3	-	-	-	USED	-	USED
4	-	-	-	USED	-	USED
5	-	-	-	USED	-	USED
6	-	USED	USED	-	-	USED
7	-	-	-	USED	-	USED
8	-	USED	USED	-	-	USED
9	USED	USED	USED	-	-	-
10	USED	-	-	USED	-	-
11	-	USED	USED	-	-	USED
12	-	-	-	-	-	-
13	USED	-	-	USED	-	-

Source: Authors projections

Here again, attention is drawn to the preference for traditional tools, based on making and interpreting accurate calculations, using information from the sample's public financial reports as a starting point. Another common typology is that of parallel use of the same instrument, but using different variations of it (Mahdi S., 2018), which is based on the model originally proposed by Dechow (2002), later modified by Francis (2005). The same paper also uses a modified version of the Jones (1991) model as an alternative measure. Based on the main assumption, changes in the fundamentals of an entity, such as changes in revenues, receivables, property, plant and equipment, are significantly associated with changes in the quality of financial reporting. The same situation is found in Lobo (2017), Martinez-Ferrero (2017) and Saji (2021), respectively.

c. Use of 4 combined methods

Three of the researches below (Table 8) have in common the measurement tool called accruals quality, (Paulo, 2014), (Ma, 2019), (Cutillas Gomariz, 2014), demonstrating again that it is one of the most used means used for this purpose. Another common method used in the listed researches is the one related to the management of accrued income. The proxies considered for the application of this method are diverse, observing a variety of methods used, eliminating the dependence, found in other cases, on a single method. (Pae, 2005), (Chen C. C., 2014), (Hass, 2018), (Sohn, 2014).

Table 8 Use of 4 combined methods

„Accounting comparability, financial reporting quality, and the pricing of accruals,, (Chen, 2019)	<ul style="list-style-type: none"> • restatements • the mapping of accruals into cash flows, • earnings persistence • audit fees
„Accounting information quality in latin- and north-american public firms,, (Paulo, 2014)	<ul style="list-style-type: none"> • earning persistence • the level of conservatism • earnings management • accruals quality
„Managerial academic experience, external monitoring and financial reporting quality,, (Ma, 2019)	<ul style="list-style-type: none"> • accrual quality • earnings management • the aggregate of these two measures • the probability of future restatements
„Financial reporting quality, debt maturity and investment efficiency,, (Cutillas Gomariz, 2014)	<ul style="list-style-type: none"> • discretionary revenues • discretionary accruals • accruals quality • an aggregate measure that includes the previous three proxies.

Source: Authors projections

d. Use of more than 4 methods combined

In table 9, a small number of researches are observed to use a significant number of tools to quantify the quality of financial reports in their methodology. Although the empirical results obtained show a higher degree of accuracy, and a high contribution to the development of this area of research, the main drawback is represented by the long time required to apply and interpret all the instruments.

Table 9 Use of more than 4 methods combined

„Voluntary Reporting Incentives and Reporting Quality: Evidence from a Reporting Regime Change for Private Firms in Taiwan,, (Chi, 2013)	incidences of small positive earnings conservatism abnormal accruals earnings smoothness auditor choices
„Some personal observations on the debate on the link between financial reporting quality and the cost of equity capital,, (Shevlin, 2013)	incidences of small positive earnings conservatism abnormal accruals



	earnings smoothness auditor choices
„Quality of financial statements, financial constraints, and investment efficiency: evidence in Vietnam,, (Hung Ngoc DANG, 2020)	5 different methods
„Does earnings quality impact firms' performance? The case of Portuguese SMEs from the mold sector,, (Duarte, 2022)	accruals quality earnings persistence earnings predictability earnings smoothness earnings timeliness earnings conservatism

Source: Authors projections

3.6 Other measurement methods

Used on a much smaller scale, the other tools designed to measure the quality of financial reporting are:

- Modified Capita Index, based on the content, presentation, timeliness and attributes of the information, used by (Tarmidi, 2014);
- Non-operational commitments, in the work of (Chu, 2016), taking as a starting point, the model proposed by (Givoly, 2000), in which costs are classified into operational and non-operational;

$$NACCit = TOTAL ACCit OPER ACCit \quad (1)$$

- Predictive value, used by (Salehi, 2018);
- Transparency index (TI), defined by Zeljiana (2021), as follows:

$$TI_i = \frac{\sum_{x=1}^{X=50} X_{i,t}}{N}$$

- Voluntary commitments method (Hosinzadeh, 2021) to investigate the impact of competitiveness dynamics among the quality of financial reporting;
- General Moment Method (GMM) (Abdulmalik, 2020) and to examine contemporary changes in the reporting regime of Nigerian entities and their impact on the quality of financial reporting;
- Interaction test (Moderate Regression Analysis) (Shonhadji, 2018).

3.7 Analysis of associated themes

Collaborative scientific networks are a hallmark of contemporary academic research. Researchers are no longer independent actors, but members of teams bringing together complementary skills and multidisciplinary approaches around common goals. The most frequently addressed topics in the area of financial reporting quality (shown in Table 10) are related to auditing, i.e. audit committee characteristics, audit opinion, but also elements of internal control, with the main objectives of studying the impact and influence of these aspects on the quality of financial reporting. The characteristics of management and the way it operates,

together with elements of corporate governance, are among the other topics that are strongly debated, closely related to the quality aspects of financial reports, and are specific to companies listed on financial markets.

Also in Table 10 we have indicated the time periods in which the associated themes have been interlinked with the research area of financial report quality. The purpose of this approach is to identify a typology with respect to the frequency and novelty of associated themes. The persistence of audit-focused themes was observed over the longest time period, i.e. 2002-2021. The association of family businesses with quality measurement tools is the least used, occurring only between 2015 and 2019. The most recent association concerns corporate governance, determining the novelty of this theme among researchers.

Table 10 Summary of associated themes

	Audit Committee, audit opinion, internal control	Adoption of IFRS	Management	Corporate governance	Family business	Financial indicators	Other related themes
No.	29	5	12	11	3	10	30
Year	2002-2021	2010-2022	2017-2021	2016-2022	2015-2019	2010-2021	2010-2021

Source: Authors projections

As each tool has both positive and negative aspects, in Table 11 we have presented in parallel the advantages and disadvantages of measuring the quality of financial reports using these tools.

Table 11 Summary of advantages and disadvantages

Instrument	Score created by Pistoni	Discretionary abnormal accruals	Accruals quality	Earnings management	Qualitative characteristics approach
Sumar	Scoring system based on 23 variables, grouped into four areas: relationship with stakeholders, strategic focus and future orientation, information connectivity, coherence and comparability.	Examine the level of management of existing manipulations at the level of the results obtained	Examines the level of revenue management as an indicator of revenue quality	Examines the level of revenue management employing accounting techniques to generate financial statements that portray an excessively optimistic view of a company's business activities and financial standing.	Evaluates the extent of decision usefulness of information by operationalizing qualitative characteristics
Advantages	Easy data collection process	Easy data collection process	Easy data collection process	Aimed at improving the informative nature of earnings in the reporting process	Focus on the quality of financial reporting through direct quality measurement
Disadvantages	Difficulties in	Indirect quality	Indirect quality	Indirect quality	Difficulties in



	implementation due to the subjectivity involved	measurement,	measurement as it focuses on the quality of the results obtained	measurement	implementation due to the subjectivity involved
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Source: Authors projections

The authors' contribution to this screening of measurement tools is to establish a system of their own that offers the possibility of choosing the most appropriate measurement tool, i.e. instruments. As the data base is the main starting point in carrying out a research, we established the criteria underlying this selection, the first criterion being the sample size on which the results are based (Table 12). On the basis of the samples inventoried in the 89 articles studied, we defined the following reference intervals, specific to each instrument:

Table 12 Criteria 1 (sample size)

Instrument	Score created by Pistoni	Discretionary abnormal accruals	Accruals quality	Earnings management	Qualitative characteristics approach	Other instruments
Sample (listed companies)	116-125	101-2300	30-2025	140-1317	300-351	93-300

Source: Authors projections

The second component of the selection system concerns the way quality is measured, both indirectly, by associating with other elements and making connections, and directly, by obtaining an exact value. Table 13 shows how the result is obtained, according to the tools mentioned so far.

Table 13 Criteria 2 (measurement method)

Instrument	Score created by Pistoni	Discretionary abnormal accruals	Accruals quality	Earnings management	Qualitative characteristics approach	Other instruments
Measurement	Direct	Indirect	Indirect	Direct	Direct	Direct

Source: Authors projections

As a direct result of the two measurement methods mentioned above, for the third criteria (Table 14) we took into account the final purpose of the research carried out, i.e.: obtaining an accurate value, i.e. quantifying the objectives initially set, making connections/associations between various elements such as management characteristics, audit committee, IFRS adoption and the quality of financial reports, as well as identifying the aspects involved in the process of altering or improving the quality of financial reports distributed to the general public.

Table 14 Criteria 3 (final goal)

Instrument	Score created by Pistoni	Discretionary abnormal accruals	Accruals quality	Earnings management	Qualitative characteristics approach	Other instruments
Final Goal	Obtaining an accurate value	Making connections, identifying elements with an impact on quality	Making connections, identifying elements with an impact on quality	Obtaining an accurate value	Obtaining an accurate value, identifying elements having an impact on quality	Obtaining an accurate value, making connections/associations, identifying elements that change quality

Source: Authors projections

As the quality of reporting is not a research area in its own right, and multidisciplinary should be used in this context as well, the last criterion chosen in the established selection system concerns the associated theme that is studied in parallel, elements related to the quality of financial reporting. Thus, in Table 15 we have listed the most frequently used themes studied in parallel with obtaining as accurate a value of quality as possible.

Table 15 Criteria 4 (associated theme)

Instrument	Score created by Pistoni	Discretionary abnormal accruals	Accruals quality	Earnings management	Qualitative characteristics approach	Other instruments
Associated theme	Audit Committee	Audit Committee Management	Corporate governance Audit Committee Family Affairs	Audit Committee, Financial constraints/risks	IFRS Adoption	Company characteristics, reporting environment

Source: Authors projections

4. CONCLUSIONS

This paper provides an in-depth analysis of the tools for measuring the quality of financial reports of listed companies. It also identifies some gaps in the literature and offers suggestions for future research. This paper is of practical significance and value to enlighten management, investors and other users on various aspects of financial reporting quality and quality measurement tools. As business environments, reporting standards and the regulatory framework become increasingly complex, an understanding of the term financial reporting quality and how to measure it is increasingly necessary in order to make the best investment decision.

Reaching a level where the quality of financial reporting can be accurately measured will contribute substantially to the investigation of other global issues related to accounting reforms



and changes in capital markets around the world. In order to emphasize this approach we have identified and established a system of criteria for selecting the most appropriate measurement tools, designed to contribute to the most accurate results associated with the objectives set and the ultimate goal to be achieved.

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