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Comparison of Earnings Quality Measures at Industries in the National Stock Exchange of India

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Abstract

Earnings quality has emerged as an important phenomenon for many types of investors looking to invest in stocks. There are different approaches to determine the level of earnings management in academic research on earnings quality. Indian companies must increase the quality of their earnings by providing more information to raise funds in the international market. To quantify earnings quality, the present study used the four techniques suggested by Penman (2001), Barton and Simko (2002), Leuz et al. (2003) and Desai et al. (2006). Using a sample of 65 companies from six major industries on the national stock exchange over a 12-year period, this study seeks to determine whether there is any consistency among the four measures of earnings quality. The analysis showed that a single approach cannot be used to define an organization as high or low quality. Hence, this study sheds light on the inconsistency of earnings quality measurements and advises firm stakeholders to employ several indicators when making decisions.

Keywords: earnings quality, international market, national stock exchange, shareholders, earnings management, earnings quality approaches.

I. INTRODUCTION

1.1. Earnings Quality

Earnings are an important element for companies all over the world to know about their true, fair and future financial performance. Earnings comprises operating cash flows and potential accruals that become cash flows thereafter. Although earnings quality affects ongoing cash flows rather than accruals, accruals are more prone to manipulation of earnings. Literature suggested earnings as net income or revenues in financial statement. The viewers of financial statements may assess the quality of firms more effectively. Net income, however, does not indicate a company's true financial state. When an organization has high net revenues and a negative operational cash flow, the outcome will not be as sound financially. Accrual income itself is also not an accurate indicator of a company's financial efficiency. The consistency of the earnings model was seen as a measure of profitability as the continuity of the earnings shows how long the current earnings and estimated earnings will contribute to future earnings (Altamuro & Beatty, 2006).

1.2. Earnings Management

Lev (1989), states that increase or decrease in value of a company is caused to increase or decrease in earnings. In order to cover up a company's losses, the earnings are incredibly useful. The principle of earnings management is thus presented. It happens when management uses its discretionary powers in the financial reporting and structuring

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procedures, or when manages may be specified by management in an effort to achieve earnings consistency as fair as well as legitimate decision makers and reporting on financial performance (Bernstein & Siegel, 1979). According to Yoon and Miller (2002), performance of a company is determined by the degree of earnings management. Lopez & Hernandez (2019) also found a statistically significant increase in earnings management via income smoothing for Mexican companies after the global economic crisis started. (Leuz et al., 2003) stated that with comprehensive earnings management, misleading performance of firms are presented by the financial reports and thus, weaken the ability of externals to manage the firm. The degree of income management is based on the company's operational success (Yoon & Miller 2002). With comprehensive income management, the financial reports inaccurately represent firm performance and thus weaken the ability of externals to manage the firm (Leuz et al., 2003). Earnings management, according to Healy and Wahlen (1999) and Schipper and Vincent (2003), is the modification of a company's recorded economic performance by insiders in order to "misinform other stakeholders" or "influence contractual outcomes".

Stakeholders should be aware that companies which report in a transparent way, behave ethically and fulfil social obligations do not always give a real picture of the company's earnings. On the same subject, a study found that earnings management leads to erroneous valuation of stocks traded on the stock exchange. The accrual model was used to explain the relationship between earnings management and the consistency of reported earnings, where the management of the economic unit often uses the flexibility of the accounting rules in its favor and enables deliberate interference on its part in an effort to manipulate declared earnings. As a result, determining the consistency of a company's earnings is entirely justified. Previous research studies conducted by various researchers focused on how managers manipulate earnings and how various approaches to measuring quality of earnings can be used. To determine if a company has low or high quality of earnings, there is not a single method has been found so far. Our research question is whether the various measurements of earnings quality for sample companies are consistent, given that many methods are used to assess earnings quality. Under the four separate methods Penman (2001), Barton and Simko (2002), Leuz et al. (2003) and Desai et al. (2006), consistency means that one company would have high quality if results are similar for each company, meaning that the company is reporting real financial picture. Earnings quality, on the other hand, is said to be inconsistent if a company demonstrates high quality according to one method but low quality according to another. As stakeholders are unable to draw a decision about the true financial result, inconsistency would be classified as doubtful earnings (Ezat et al., 2019).

Since India's expanding capital market is marked by poor investor security and regulation, this study employs four useful approaches proposed by Penman (2001), Barton and Simko (2002), Leuz et al. (2003) and Desai et al. (2006). The aim of this study is to determine the accuracy of among the measures of earnings quality for selected Indian companies. This research provides an empirical investigation into the use of four separate methods to assessing the efficiency of earnings in various industries. Scientifically, the research is important because of the growing interest in companies as an engine of the national economy. As a result, it was necessary to measure the quality of declared and published earnings in their financial statements. This study, therefore, is a practical and academic addition in an attempt to fill the gap in this important and vital area.

The aim of this study is to assess the earnings quality of companies listed on the national stock exchange (NSE) from 2009 and 2020. The lack of empirical work on calculating earnings quality in emerging economies is the driving force behind this

research. This research is completely new in India, particularly in terms of the country's various industries. So far, no research has been conducted that uses the four-dimensional approach to assess the earnings quality of a single company. Analyzing the literature, the idea behind choosing the four different approaches is that the result of each measure will be different based on the type of industry, market capitalization, number of employees, and many other factors. If one industry (company) is showing low quality of earnings according to the four approaches, that will confirm the existence of earnings management in that industry (company). On the other hand, if there is no consistency among these measures for one industry or company, the quality of earning will be questionable and needs further investigations and analysis. Finally, if there is consistency among the four measures for one industry (company) that will confirm that the accounting information represents the real economic performance of the industry without any interference from the management. As a result, the results of this study are beneficial to market participants. It adds to the literature by informing investors that a single metric cannot be used to determine if a company's earnings quality is high or poor (Houqe & Islam, 2011).

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In the last three decades, researchers have paid close attention to earnings quality, and their goal has been to develop a credible and fair approach for assessing earnings quality and its determinants (Desai et al., 2006). Since earnings quality is not observable directly, empirical studies use different indices for its measurement. The versatility of definitions in this regard results in a plethora of earnings quality standards. Some previous research (e.g. Ewert & Wagenhofer, 2010; Perotti & Wagenhofer, 2014) shows more explicative power than market-based ones (Francis et al., 2004) as compared to accounting criteria, whereas others show that using market-based criteria like earnings and the relevance of earnings reaction leads to more returns and explicative power than compliance criteria like accruals and abnormal accruals. Marinovic (2013) found out through studying earnings management and capital market reaction that earnings smoothness is a useful indicator to reflect earnings quality, in fact, predictability and income smoothing, on the other hand, cannot indicate earnings quality since they do not coincide uniformly with the informative content of reported earnings. The presence of these inconsistencies indicates that there is some overlap among various earnings quality measures, resulting in contradictory and conflicting research results (Francis et al., 2004; Dechow et al. 2010).

Abdelghany (2005) in his paper assessed the quality of earnings by using three different approaches. The researcher argued that it is not possible to tag one business or one organization with high or low value earnings. In the context of New Zealand, Houqe and Islam (2011) calculate the quality of earnings that regulate two separate dimensions of earnings management, namely Penman (2001) and Leuz et al. (2003). The aim of the study is to see whether the two measures are consistent with one sector or one business in order to provide clear data on whether earnings quality is low or high. This study suggested that various stakeholders should utilize more than one measure to know the earning quality before taking any corrective action. When a company has a low earnings quality by one methodology and a good earnings quality by another, its stakeholders cannot reach a conclusion and require more investigations and reviews to evaluate the quality of their earnings. Also, Zeinali et al. (2012) in their paper analyzed the different measures of earnings quality to assess the consistency among them. Three techniques were used as part of the Abdelghany (2005) research to measure the quality of the earnings and it is suggested that no single approach is reliable. Different approaches lead to

different assessment regarding their quality of earnings and one company can not be labeled as good or bad on the result of one single approach. Momenzadeh and Abbaszadeh (2013) compared four different earnings quality measurement indices Dichev and Dechow model, Leuz et al. (2003), modified Jones Model, and Penman (2001), in 159 companies listed in Tehran stock exchange during 2001-2011. Lyimo (2014) in his paper investigated the consistency among measures of earnings quality. The author found that different metrics such as consistency, predictability, accrual performance, smoothness and profit-making surprises are not consistent with each other. The author further suggested the analysts do not depend on any single measure while making any decision because one measure of earning quality cannot complement each other. The goal of the study (Akter & Ali, 2020) is to examine whether the four earnings quality measurements for the textile companies listed in Bangladesh are consistent. The analysis utilised four approaches (Penman, 2001; Barton & Simko, 2002; Leuz et al., 2003 and Desai et al., 2006) to measure earnings quality. The majority of companies' earnings quality measures were found to be inconsistent. As a result, a single approach cannot be used to define an organisation as high or low quality. Financial analysts and investors should use more than one method or strategy to determine low or high earnings performance.

2.1. Hypothesis Development

The main problem of this research is studying the relationship among different earnings quality measurements. The question of this research is: what relationship is there among different methods and models of earnings quality estimation? Do different methods and models confirm each other? To answer those questions, the following hypothesis has been built:

H₀: there is consistency among four approaches with each other.

H₁: there is no consistency among four approaches with each other.

III. RESEARCH METHODOLOGY

3.1. Sample Selection

Sixty-five companies listed on national stock exchange from six major industries auto, FMCG, IT, pharma, metals, media and entertainment have been selected. The Nifty indices are designed to reflect the behavior and performance of the companies. These industries have performed well and, in the past, have achieved high returns. These are the common industries in which investors invest more, and their contribution compared to other sectors is greater. Banking and Finance sector is also among the major sector but these companies are excluded because the nature of data it provides. Data has been collected from the period 2009-2020 from Prowess Database.

3.2. Sampling Technique

Purposive sampling technique has been chosen for the study. This sampling technique is used by researcher to concentrate on a particular characteristic of the population that will assist the relevant research.

3.3. Model Development to Measure the Earnings Quality

Assessment of earning quality requires sometimes the separations of earnings into cash from operation and accruals, the more the earnings is closed to cash from operation, the higher earnings quality. Despite the fact that earnings quality is used to evaluate a company's financial performance, there is not a standardized method for determining it. In the previous studies, various metrics were used for measurement of earnings quality, such as value relevance, persistence, predictability, accrual quality and earnings surprise. Three simple approaches were used by Abdelghany (2005). Houqe and Islam (2011)

tested only two approaches i.e. Penman (2001) and to compare the earnings quality of companies through Leuz et al. (2003), Penman (2001) modified Jones model, Dichev and Dechow model in their study. Thus, from the literature there are four basic approaches that are identified to measure the quality of earnings which control three different dimensions of earning management. These four approaches are Penman (2001), Barton and Simko (2002), Leuz et al. (2003) and Desai et al. (2006). These models are explained as follows:

Table 1

Approaches of Earnings Quality used in the Present Study

Approach	Penman (2001) Approach	Barton and Simko (2002) Approach	Leuz et al. (2003) Approach	Desai et al. (2006)
Definition	This approach measures the quality by dividing the cash flows by the net income.	In this approach, quality is calculated by the ratio of the beginning balance of net operating assets relative to sales.	EQ is calculated by variability of earnings meaning thereby, std. dev. of operating income divided by the std. dev. of cash flows from operations.	Accrual quality is often employed as a metric for calculating EQ. It is known as the ratio of accruals to average total assets.
Formula	Cash flows from operations/net income.	Net operating assets in beginning /sales.	Std. dev. of operating cash flows/std. dev. of cash flow from operations.	Accruals/average assets.
Quality of earnings	Small ratio denotes the higher earnings quality. It distinguishes between the "hard" numbers resulting from cash flows and the "soft" numbers resulting from accrual accounting, which will help to identify the persistent earnings.	The smaller the ratio the higher the quality of earnings.	The smaller the ratio the lower the EQ.	Lower ratio means high EQ.
Advantage		This approach reduces the occurrence of earnings surprise, a situation where reported profits of company are significantly above or below its earlier estimate.	This approach identifies the variation in earnings because managers tend to smooth income. They believe that the investors prefer smoothly increased earnings.	This approach identifies the manipulation of earnings. Large accruals mean earnings are manipulated by managers to attract investors and firms with fewer accruals shows high earnings quality.

Source: developed through various research studies.

IV. RESULTS AND DISCUSSIONS

The company categorization, as well as the mean and standard deviation for the variables employed in this study, are shown in Table 2. To evaluate earnings quality and prove hypothesis, the study calculated the earnings quality through above mentioned four approaches. The research design is primarily based on measuring four different indicators of earnings quality at the industry and company levels. If a company's earnings quality is poor in each of the four methods, it confirms the manipulation of earnings. If, on the other hand, the company has a good earnings quality, it confirms that the data in the

financial statement are correct. The aim of the analysis is to check if the four measurements for one sector or one company are consistent in order to demonstrate that the quality of income is low or high. The earning quality becomes doubtful and necessitating further investigation if there is a discrepancy among the four measures for a company.

Table 2**Descriptive Statistics**

Industry	No. of Companies	Variables	Mean	Std. Deviation
Media & Entertainment	10	Operating Cash Flows	16861.06	26162.5
Metals	10	Operating Income	26090.41	37754.3
FMCG	15	Net Income	20479.17	38043.27
Automobiles	10	Sales	113768.2	155167.6
Pharma	10	Average Assets	183373.2	429291.1
IT	10			

Source: calculated by researcher.

Descriptive statistics has been shown in table 2 for all industries. Mean of operating cash flows is 16861 approx. while std. deviation is 26162.5. Operating Income has mean value of 26090.41 with standard deviation 37754.3. Sales has mean value and std. deviation 113768.2 and 155167.6 respectively. Mean value of average assets of industries are 183373.2 and std. deviation is 429291.1.

Table 3**Overall Earnings Quality of Industries Based on Four Specified Approaches**

EQ Approach	Penman (2001)	Barton & Simko (2002)	Leuz et al. (2003)	Desai et al. (2006)	General EQ
Industry	EQ	EQ	EQ	EQ	
IT	High	High	High	High	High
FMCG	High	Questionable	Questionable	High	Questionable
Media & Entertainment	Questionable	Questionable	Questionable	High	Questionable
Automobiles	High	High	High	High	High
Pharma	High	High	High	High	High
Metals	Questionable	Questionable	Questionable	High	Questionable

Source: calculated by researcher.

Table 3, depicts the individual as well as overall earnings quality of selected industries. According to Penman (2001), Barton and Simko (2002), Leuz et al., (2003) and Desai et al. (2006) approach. Based on specified four approaches, IT industry, Automobiles and Pharmaceutical have high earnings quality. Thus overall quality of earnings is high for these industries. High quality earnings depicts that information shared in its financial statements are true and there is no possibility of earnings management. On the other hand, FMCG sector, Media & Entertainment and Metal industry shows questionable earnings quality. Questionable earnings quality is called on the basis of companies having high as well as low earnings quality for different approaches. Industries with questionable earnings quality needs more investigation and analysis for investment decisions.

Table 4

The Results of Earnings Quality for Different Industries are Presented Below

Panel A: Results of Automobile Companies using Specified Approaches of Earnings Quality										
No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
1.	Amara Raja Batteries Ltd.	0.72	H	0.98	H	1.24	H	0.06	H	H
2.	Ashok Leyland Ltd.	0.42	H	1.09	H	0.49	L	-0.04	H	Q
3.	Bajaj Auto Ltd.	0.60	H	1.25	H	1.41	H	0.11	H	H
4.	Balkrishna Industries Ltd.	0.90	H	0.68	H	0.97	H	0.075	H	H
5.	Bharat Forge Ltd.	1.23	H	1.32	H	1.16	H	-0.06	H	H
6.	Bosch Ltd.	0.72	H	0.87	H	1.52	H	0.07	H	H
7.	Eicher Motors Ltd.	1.10	H	0.98	H	1.32	H	0.34	H	H
8.	Exide Industries Ltd.	0.73	H	1.42	L	0.70	L	0.08	H	Q
9.	Hero MotoCorp Ltd.	0.82	H	1.30	H	0.94	H	0.05	H	H
10.	MRF Ltd.	0.99	H	0.86	H	1.60	H	-0.03	H	H
11.	M&M Ltd.	0.95	H	0.98	H	1.07	H	0.02	H	H
12.	Maruti Suzuki India Ltd.	0.99	H	1.10	H	1.02	H	0.03	H	H
13.	Motherson Sumi Systems Ltd.	1.02	H	1.06	H	1.32	H	0.05	H	H
14.	TVS Motor Co. Ltd.	0.42	H	0.95	H	0.60	L	0.06	H	Q
15.	Tata Motors Ltd.	1.72	H	0.88	H	1.10	H	-0.06	H	H

Notes: calculated by researcher, H= High, L= Low and Q= Questionable.

Panel A, presents results of four different approaches of measuring the quality of earnings on automobile industry. An organization is labelled as high if the value is smaller than 3 and low if the value is larger than 3 using the Penman (2001) approach. Quality is said to be high if value is greater than two and it would be considered low if value is less than two in Barton and Simko's (2002) method. Under the Leuz et al. (2003) approach, if the range of the value falls below one, the level of earnings becomes poor, and greater than one implies high quality. The approach calculation parameters, according to Desai et al. (2006), the quality is considered to be high if value exceeds than one and vice versa. As shown in Panel A of Table 4, for automobile companies, earnings quality of three companies out of fifteen are found to be questionable while earnings quality of other twelve companies are high. High quality earnings means a company is in good financial position.

Panel B: Results of IT Companies using Specified Approaches of Earnings Quality										
No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
1.	Coforge Ltd.	0.84	H	1.25	H	0.95	H	0.04	H	H
2.	HCL Technologies Ltd.	0.94	H	1.64	H	12.47	H	0.02	H	H
3.	Info Edge (India) Ltd.	0.67	H	0.59	H	0.99	H	0.05	H	H
4.	Infosys Ltd.	0.63	H	0.88	H	1.38	H	0.11	H	H
5.	L& T Infotech Ltd.	0.70	H	1.19	H	1.15	H	0.09	H	H
6.	MindTree Ltd.	1.02	H	1.14	H	1.19	H	0.04	H	H
7.	Mphasis Ltd.	0.73	H	1.35	H	1.07	H	0.05	H	H
8.	TCS Ltd.	0.66	H	0.97	H	1.41	H	0.14	H	H
9.	Tech Mahindra Ltd.	0.76	H	1.35	H	1.56	H	0.06	H	H
10.	Wipro Ltd.	0.77	H	0.798	H	1.02	H	0.05	H	H

Notes: calculated by researcher, H= High, L= Low and Q= Questionable.

As discussed earlier, an organization is labelled as high if the value is smaller than 3 and low if the value is larger than 3 using the Penman (2001) approach. Quality is said to be high if value is greater than two and it would be considered low if value is less than two in Barton and Simko's (2002) method. Under the Leuz et al. (2003) approach, if the range of the value falls below one, the level of earnings becomes poor, and greater than one implies high quality. The approach calculation parameters, according to Desai et al. (2006), the quality is considered to be high if value exceeds than one and vice versa. For IT industry (Panel B), earnings quality of all selected companies are high that means information given in financial statements of these companies are correct and companies are making genuine profits.

Panel C: Results of FMCG Sector using Specified Approaches of Earnings Quality										
No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
1.	Britannia Industries Ltd.	2.22	H	0.87	H	1.20	H	0.05	H	H
2.	Colgate Palmolive (India) Ltd.	2.31	H	1.02	H	0.70	L	0.13	H	Q
3.	Dabur India Ltd.	2.43	H	1.31	H	1.36	H	0.06	H	H
4.	Emami Ltd.	2.57	H	2.06	L	0.72	L	0.002	H	Q
5.	Godrej Consumer Products Ltd.	2.47	H	1.14	H	1.14	H	0.04	H	H
6.	HULtd.	2.40	H	0.94	H	1.21	H	0.08	H	H
7.	ITC Ltd.	2.50	H	1.36	H	0.88	H	-0.01	H	H
8.	Jubilant Foodworks Ltd.	0.85	H	0.87	H	0.78	L	-0.12	H	Q
9.	Marico Ltd.	0.76	H	0.98	H	1.46	H	0.09	H	H
10.	Nestle India Ltd.	0.78	H	1.20	H	6.59	H	0.28	H	H

To be continued Panel C.

No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
11.	P & G Hygiene & Health Care Ltd.	0.83	H	1.03	H	1.36	H	0.09	H	H
12.	Tata Consumer Products Ltd.	0.82	H	2.54	L	0.62	L	0.35	H	Q
13.	United Breweries Ltd.	0.77	H	0.67	H	0.73	L	0.01	H	Q
14.	United Spirits Ltd.	0.77	H	0.74	H	3.41	H	-0.04	H	H
15.	Varun Beverages Ltd.	0.79	H	2.03	L	0.78	L	-0.12	H	Q

Notes: calculated by researcher, H= High, L= Low and Q= Questionable

Earnings quality of FMCG sector has been shown in Panel C. According to Penman (2001) approach, earnings quality is high for all companies. As per Barton and Simko's (2002) method, earnings quality three companies (Emami Ltd., Tata Consumer Products Ltd. and Varun Beverages Ltd.) are low. Low earnings quality states that there is a possibility of manipulating earnings by companies in their financial statements. Under the Leuz et al. (2003) approach, companies like (Colgate Palmolive (India) Ltd, Emami Ltd., Jubilant Foodworks Ltd., Tata Consumer Products Ltd., United Breweries Ltd. and Varun Beverages Ltd.) have shown the low earnings quality while other companies have high earning quality. According to Desai et al. (2006), all companies have high quality of earnings. High quality earnings depicts the decent financial statements of company. Thus, 5 companies out of 15 companies are found with questionable earnings quality. Companies with questionable earnings quality needs more investigation to invest in those companies. These companies might be indulged in manipulation of earnings.

Panel D: Results of Media & Entertainment Companies using Specified Approaches of Earnings Quality

No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
1.	D.B.Corp Ltd.	0.58	H	2.88	L	0.13	L	0.07	H	Q
2.	Dish TV India Ltd.	6.66	L	2.34	L	1.46	H	-0.16	H	Q
3.	Hathway Cable & Datacom Ltd.	0.41	H	1.05	H	0.82	H	-0.08	H	H
4.	Inox Leisure Ltd.	2.44	H	1.32	H	0.50	L	-0.06	H	Q
5.	Jagran Prakashan Ltd.	0.88	H	0.87	H	1.10	H	0.03	H	H
6.	PVR Ltd.	2.12	H	2.16	L	0.02	L	-1.04	H	Q
7.	Sun TV Network Ltd.	0.87	H	1.78	H	1.22	H	0.05	H	H
8.	TV Today Network Ltd.	6.40	L	2.54	L	0.23	L	-0.18	H	Q
9.	TV18 Broadcast Ltd.	3.12	L	3.12	L	0.60	L	-0.03	H	Q

To be continued Panel D.

No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Mea- sure	EQ	Mea- sure	EQ	Mea- sure	EQ	Mea- sure	EQ	
10.	Zee Ent. Enter- prises Ltd.	0.48	H	1.43	H	3.35	H	0.11	H	H

Notes: calculated by researcher, H= High, L= Low and Q= Questionable.

Earnings quality of media and entertainment industry is shown in Panel D. According to Penman (2001) approach, earnings quality is low for TV Today Network Ltd. and TV18 Broadcast Ltd. and high for remaining companies. As per Barton and Simko's (2002) method, earnings quality for five companies are low. Low earnings quality states weak financial position of companies. Under the Leuz et al. (2003) approach, five companies have shown the low earnings quality while other five companies have high earning quality. According to Desai et al. (2006), all companies have high quality of earnings. High quality earnings depicts the decent financial statements of company. Out of 10 companies, 6 companies are found with questionable earnings quality.

Panel E: Results of Metal Companies using Specified Approaches of Earnings Quality

No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Mea- sure	EQ	Mea- sure	EQ	Mea- sure	E Q	Mea- sure	EQ	
1.	APL Apollo Tubes Ltd.	4.47	L	2.07	L	0.27	L	-0.18	H	Q
2.	Coal India Ltd.	0.52	H	0.76	H	0.85	H	0.29	H	H
3.	Hindalco Industries Ltd.	1.63	H	1.43	H	0.40	L	-0.01	H	Q
4.	Hindustan Copper Ltd.	1.22	H	1.21	H	1.20	H	0.02	H	H
5.	Hindustan Zinc Ltd.	0.73	H	0.58	H	1.25	H	0.07	H	H
6.	JSW Steel Ltd.	2.19	H	0.99	H	0.73	L	0.02	H	Q
7.	Jindal Steel & Power Ltd.	0.89	H	1.32	H	0.54	L	-0.04	H	Q
8.	MOIL Ltd.	0.95	H	1.06	H	1.05	H	0.05	H	H
9.	Mishra Dhatu Nigam Ltd.	0.70	H	2.10	L	0.52	L	0.25	H	Q
10.	NMDC Ltd.	6.17	L	3.14	L	1.82	H	-0.04	H	Q
11.	National Aluminium Co. Ltd.	1.67	H	2.67	L	0.98	L	0.01	H	Q
12.	Ratnamani Metals & Tubes Ltd.	0.41	H	2.36	L	0.23	L	0.04	H	Q
13.	SAIL	0.079	H	0.96	H	1.78	H	0.10	H	H
14.	Tata Steel Ltd.	1.54	H	0.87	H	1.09	H	-0.023	H	H
15.	Welspun Corp Ltd.	0.60	H	2.05	L	0.67	L	-0.03	H	Q

Notes: calculated by researcher, H= High, L= Low and Q= Questionable.

Earnings quality of metal industry is shown in Panel E. As shown in table, Barton and Simko's (2002) method, earnings quality for APL Apollo Tubes Ltd. Mishra Dhatu Nigam Ltd., NMDC Ltd., National Aluminium Co. Ltd., Ratnamani Metals & Tubes Ltd. and Welspun Corp Ltd. is low. According to Penman (2001) approach, earnings quality is low for companies APL Apollo Tubes Ltd. and NMDC Ltd. and high for remaining

companies. Under the Leuz et al. (2003) approach, eight companies out of fifteen have shown the low earnings quality. According to Desai et al. (2006), all companies have high quality of earnings. High quality earnings depicts the decent financial statements of company. Therefore, for Metal Industry 9 companies out of 15 companies have questionable earnings quality means more focus should be given while making investment decisions for these companies.

No.	Company Name	Penman (2001)		Barton & Simko (2002)		Leuz et al. (2003)		Desai et al. (2006)		Overall EQ
		Measure	EQ	Measure	EQ	Measure	EQ	Measure	EQ	
1.	Alkem Lab Ltd.	0.51	H	1.03	H	1.35	H	0.08	H	H
2.	Aurobindo Pharma Ltd.	0.54	H	0.98	H	1.14	H	0.07	H	H
3.	Biocon Ltd.	0.66	H	1.25	H	0.98	H	0.04	H	H
4.	Cadila Healthcare Ltd.	0.80	H	0.98	H	1.32	H	0.04	H	H
5.	Cipla Ltd.	0.82	H	1.38	H	0.90	H	0.03	H	H
6.	Divi's Lab Ltd.	0.68	H	1.20	H	1.36	H	0.08	H	H
7.	Dr. Reddy's Lab. Ltd.	0.95	H	0.88	H	0.86	H	0.02	H	H
8.	Lupin Ltd.	0.76	H	0.67	H	1.01	H	0.07	H	H
9.	Sun Pharma Industries Ltd.	7.74	L	2.54	L	1.16	H	0.02	H	Q
10.	Torrent Pharma Ltd.	0.99	H	1.26	H	0.95	H	0.03	H	H

Notes: calculated by researcher, H= High, L= Low and Q= Questionable.

Results of earnings quality for pharmaceutical industry is shown in Panel F. It has been found that only one company i.e. Sun Pharma Industries Ltd. has low earnings quality according to Penman (2001) and Barton and Simko (2002) approach which proves that the only company needs further investigation and analysis. Remaining nine companies have high earnings quality. Under the four approaches, companies demonstrate high earnings quality, indicating that their financial statements accurately represent their financial performance. Companies with either one or two low earnings qualities according to four methods, show that earnings quality is inconsistent and doubtful, so more research is needed before decisions are taken. These findings indicate that, before drawing any conclusions about the quality of earnings for a particular company, financial analysts and the government should ensure full consistency among various measures taken from various perspectives; otherwise, the quality of earnings would require further detailed investigation.

V. CONCLUSION

The aim of this research is to determine whether there is any consistency among the various earning quality measures. The present study has used the four approaches to measure the quality of earnings. The four-dimensional measurements of earnings quality found in this analysis are inconsistent, confirming the presence of earnings management by the selected Indian companies. We do not categorize a company into high or low earning quality groups solely based on one methodology because there is not a consensus on how to define earnings quality or how to calculate it. For automobile industry, IT sector and pharmaceutical companies the quality of earns has been found high while in case of Media and entertainment sector, FMCG and Metal companies, the quality of earnings is questionable. High quality earnings depicts a complete consistency among

above discussed measures, and questionable earnings quality needs different other approaches for measurement and more investigations and analysis. Thus, null hypothesis is rejected and alternate hypothesis is accepted because inconsistency has been found among four approaches. The results are in line with the studies conducted by Abdelghany (2005), Houque and Islam (2011), Momenzadeh and Abbaszadeh (2013), Lymio (2014) and Akter and Ali (2020). As a result, the outcomes of this study are consistent with previous studies. Thus, investor and creditor evaluations must take into account more than one criteria because if a business has a low-income quality and a high quality based on one criterion, it can make little claim to shareholders' income quality.

5.1. Implications and Future Research

Earnings quality is a good indicator of performance and a good measure of the value of economic unity. Thus, this study provides implication for regulator of accounting standard setting. The quality of earnings contributes to increasing investment efficiency and borrowing and thus helping users of financial statements to evaluate performance of the economic units and make rational decisions to use available economic resources. We can expand this research in future by taking in account the different earnings quality measures and approaches used by researchers to measure the quality of earnings.

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