



# **An Empirical Analysis of Impact of XBRL on Quality of Financial Reporting in India**

**N. ABHISHEK**

**University of Mysore, India**

## **Abstract**

The efficient and effective communication of business and financial information to end-users helps to get clear insights on the business outlook and assists them in making timely decisions. Financial reporting acts as a vehicle to disseminate the financial information of the business to various interested parties by communicating operating and financial information through financial statements, notes to financial statements and other footnotes in the annual report. Nowadays stakeholders of the business are more expecting both financial and non-financial information to be communicated in a single annual report. Therefore, the corporate houses are required to communicate enhanced information in their annual reports to facilitate the stakeholders in their decision-making process. Communication of enhanced information in the annual report is only possible with the help of the EBR Model (Enhanced Business Reporting Model) which is only possible by the application of XBRL (Extensible Business Reporting Language) to the business reporting purpose. The present paper is intended to examine the impact of XBRL on the quality of financial reporting. For this purpose, the study analysed the financial reporting pattern of 23 select companies in India through the analysis of their annual reports from 2005 to 2020. To derive valid conclusions Tukey test, dummy variable regression analysis techniques were employed and concluded that XBRL has made a significant impact on the quality of financial reporting of select companies.

**Keywords: Financial reporting; Quality of financial reporting; XBRL; Enhanced business reporting**

## **Introduction**

The efficient and effective communication of business and financial information to end-users helps to get clear insights on the business outlook and assists them in making timely decisions. Financial reporting acts as a vehicle to disseminate the financial information of the business to various interested parties by communicating operating and financial information through financial statements, notes to financial statements and other footnotes in the annual report. The operational and financial outlook of a business can be communicated through various Media such as annual reports, news item in newspapers, press meets and so forth. But annual reports are considered as the most appropriate way to disseminate the operational and financial outlook of the business (Kavitha & Nandagopal, 2011; Harris & Morsfield, 2012). Consistent reporting of business and financial information through annual reports enables the organisation in ensuring a high quality of financial reporting (Naser & Nuseibeh, 2003). Financial reports are said to be qualitative only when they are caters to the actual information needs of various stakeholders. Nowadays stakeholders of the business are more expecting both financial and non-financial information to be communicated in a single annual report. Therefore, the corporate houses are required to communicate enhanced information in their annual reports to facilitate the stakeholders



in their decision-making process. Communication of enhanced information in the annual report is only possible with the help of the EBR Model (Enhanced Business Reporting Model) which is only possible by the application of XBRL (Extensible Business Reporting Language) to the business reporting purpose.

XBRL is the global business reporting standard and is adopted in more than 140 nations across the globe. India is one of those nations, which mandated the financial reporting through XBRL by a select class of companies from 2016 onwards. XBRL promotes high-quality transparent business reporting and which eases the corporate reporting's various purposes further it offers many benefits which can be enjoyed during analysis, interpretation and decision-making process by the stakeholders. In this paper, an attempt has been made to assess the Impact of XBRL on the Quality of Financial Reporting in India. The rest of the paper is organized into different sections such as earlier studies and literature gap; research questions and objectives; theoretical framework and hypothesis development; research methodology; results and discussions; findings, conclusions and suggestions; and lastly scope for future research and limitations of the study.

### **Earlier studies and Literature Gap**

To understand the conceptual foundations and to find out the literature gap the study reviewed a sufficient number of literatures and the summary of the review is presented as follows:

Technological advances in financial reporting provide more opportunities for enhanced corporate reporting to external stakeholders by the companies (Uyar, 2016). The quality of financial reporting depends on the effective implementation of superior accounting and reporting standards accepted and implemented in the global scenario (Hina Agarwal, 2013). To ensure the quality of financial reporting it is necessary to consider well accepted conceptual framework issued by standard setters (Zeff, 2013). Qualitative aspects of financial reporting are also influenced by various technical aspects such as XBRL and by inducing XBRL in reporting process timeliness of financial reporting can be enhanced (Lambert *et al.*, 2019). To induce advanced technologies in the financial reporting process the adopting firms can bear additional costs and needs training for their employees who are involved in the process of preparation and presentation of financial statements (Krisiko, 2017). Financial reporting quality is influenced by various dimensions that may be differing from one organization to another (Tarmidi *et al.*, 2014). Financial reports prepared by using advanced technologies such as XBRL enhance the comparability and utility of information so communicated. Further, the cost of re-arranging information for various compliance purposes can also be eliminated as XBRL based reports can be used to file with various regulatory authorities prevailing under a particular business environment (Wenger *et al.*, 2013). For assessing the quality of financial reporting there is a need to have a comprehensive tool that should be constructed based on the various factors such as financial reporting standards, corporate laws, and any other regulatory requirements (Van Beest *et al.*, 2019). To assess the impact of XBRL based financial reports it is prominent to evaluate the taxonomies. For analysing the taxonomies there is a necessity of having a framework (Zhu & Wu, 2014). Relevance, timeliness, reliability, clarity and low cost of reporting can be ensured only with the help of XBRL and which would benefit various stakeholders including regulatory authorities (Harris & Morsfield, 2012). XBRL based financial reports help business organisations in web data management, data analysis and presentation. Further, it also enhances the accessibility feature with high accuracy of information communicated (Wang *et al.*, 2012). XBRL enables the business organizations to report and communicate enhanced information which will cater for the dynamic information needs of various stakeholders (Bortiz *et al.*, 2008). XBRL based financial reports are interoperable and can be easily exchanged with other regulatory authorities and help regulatory authorities quickly gather the required information from companies' filings (Rahwani *et al.*, 2019; Hoffman & Rodríguez, 2013).



From the analysis of earlier studies, it is found that many of the studies have focused on fundamental aspects of financial reporting; the application of XBRL for financial reporting and only a few studies have focused on analysing the quality of financial reporting and no studies have focused on studying the impact of XBRL on quality of financial reporting. Therefore, the present study intended to analyse the “*Impact of XBRL on Quality of Financial Reporting in India*”.

### **Research Questions**

By observing the summary of outcomes of earlier studies and the literature gap following research question has been developed:

1. What is the level of quality of financial reporting of select companies during entire period of study?
2. How does XBRL impact on quality of financial reporting in India?

### **Objectives**

Based on the research question study framed the following objective for the present study:

1. To analyse the level of quality of financial reporting of select companies during the entire period of study.
2. To assess the impact of XBRL on the quality of financial reporting of select companies.

### **Theoretical Framework and Hypothesis Development**

The present business environment is dynamic in which various stakeholders need multiple sources of information to be communicated by the companies in which they are interested. Nowadays both financial and non-financial information getting equal importance in the decision making process by various interested parties. For making timely and sound decisions by the stakeholders, it is necessary to communicate high-quality information (Hill, 2001; Parish, 2000; Bovee *et al.*, 2005). The information communicated by the business organisation is said to be highly qualitative only when it caters for the information needs of various stakeholders (Beattie *et al.*, 2004; Kavitha & Nandagopal, 2011). Only the way to ensure high-quality information in the annual reports of the business organisation is that Enhanced Business Reporting (EBR). EBR is only possible through the adoption of XBRL for financial reporting. XBRL is the global business reporting language that positively influences the quality of business reporting and eases the entire financial reporting system of a business organisation. To keep this in mind the following hypotheses have been developed to achieve the objective of the present paper:

1.  $H_0$ : *There exist the same level of quality of financial reporting among select companies during the period of study.*
2.  $H_0$ : *XBRL does not impact on quality of financial reporting of select companies in India.*

### **Research Methodology**

The present study is empirical. The methodological aspects of the present study are based on the analysis of secondary data. The data was collected from annual reports of select companies for analysing the impact of XBRL on financial reporting. To analyse conceptual aspects and review earlier studies information is gathered from various reputed journals, newspapers, websites and books.

#### *Data collection*

For the collection of secondary data, annual reports of the top 30 NSE listed companies were considered. But out of the top 30 companies, 7 companies were eliminated because of the non-application of XBRL for financial reporting and these companies are out of the purview of XBRL regulations as they are operating in the banking, finance and power sector.

#### *Research Period*

To analyse the impact of XBRL on the quality of financial reporting the study is considered 2011 as the base year because XBRL was implemented in India for financial reporting by select companies. Based on the availability of annual reports of all the 23 select companies from 2005 to 2010 is considered as pre-XBRL implementation period and from 2011 to 2020 is considered as XBRL period.

*Research Instrument*

The self-constructed research instrument (Appendix-1) was used and is based on the financial reporting quality assessment model (developed by Jonas & Blanchet, 2000). The research instrument contains 11 dimensions and 44 variables and which is the base for assessing the quality of financial reporting both during the pre-XBRL period and during the XBRL period. The list of dimensions considered for assessing the quality of financial reporting is shown in the following table.

**Table No.01: Quality of Financial Reporting Dimensions**

Sl. No.	Quality of Financial Reporting Dimensions	No. of. Variables
01.	Relevance	04
02.	Predictive Value	06
03.	Feedback Value	04
04.	Timeliness	04
05.	Verifiability	06
06.	Completeness	03
07.	Representational Faithfulness	05
08.	Neutrality	02
09.	Comparability	02
10.	Consistency	04
11.	Clarity (Understandability)	04
Total number of items		44

Source: (Jonas & Blanchet, 2000).

*Content Analysis*

Information from annual reports of selected companies is gathered with the help of content analysis techniques based on a checklist developed with the help of Jonas & Blanchet's model of financial reporting quality assessment. Content Analysis is the scientific and systematic approach that involves classifying and codifying qualitative and quantitative information contained in the annual reports of companies into pre-defined categories for drawing valid conclusions by applying more appropriate statistical tools (Holsti, 1969; Krippendorff, 1980 ; Guthrie & Abeysekera, 2006). To mark the score about the information contained in the annual report binary code or ordinal scale method can be used. The binary code method of scoring is used for quantitative analysis which involves recording either the presence or absence of information which is indicated in '1' or '0' respectively(Guthrie & Abeysekera, 2006; Marston & Shrives, 1991). Under the ordinal scale method both quantitative and qualitative analysis can be done (Guthrie & Abeysekera, 2006; Beattie *et al.*, 2004; Kavitha & Nandagopal, 2011). The score is ranging from 5 to 1, where 5 indicates the high quality of information and 1 indicated the low quality of information.

*Quality of Financial Reporting Index*

The quality of the Financial Reporting Index (QFRI) was calculated from the data gathered from content analysis for further statistical analysis. The main aspect of the present study is to assess the quality of financial reporting of select companies both in the context of XBRL and Non-XBRL

reporting. Several methods can be employed for assessing the quality of financial reporting. Among the several methods, the disclosure index method is the most popular in accounting research for assessing the quality of financial reporting. Further, the disclosure index methodology helps in assessing both the quantity and quality of financial reporting (Cerf, 1961; Hooks *et al.*, 2002). Therefore, the study is used the following index to assess the quality of financial reporting and which is adopted from (Beattie *et al.*, 2002; Urquiza *et al.*, 2009).

$$QFR_i = (A_s - Min_s) / (Max_s - Min_s)$$

Where,

**QFR<sub>i</sub>**= Quality of Financial Reporting Index.

**A<sub>s</sub>**= Actual score obtained by the company on a specific QFR dimension.

**Min<sub>s</sub>**= Minimum score a company can obtain on a specific QFR dimension.

**Max<sub>s</sub>**= Maximum score a company can obtain on a specific QFR dimension

#### *Reliability and Validity*

Reliability analysis was made to check the internal consistency of the research instrument. Validity shows the accuracy of data to test and re-test to derive valid conclusions. The following table reveals the results of the reliability analysis.

**Table No.02: Results of Reliability Analysis**

Scale	No. of Items	Cronbach Alpha	Remarks
Relevance	04	<b>0.814</b>	<b><i>The reliability level of data is Excellent</i></b>
Predictive Value	06	<b>0.866</b>	
Feedback Value	04	<b>0.854</b>	
Timeliness	04	<b>0.864</b>	
Verifiability	06	<b>0.875</b>	
Completeness	03	<b>0.739</b>	
Representational Faithfulness	05	<b>0.885</b>	
Neutrality	02	<b>0.612</b>	
Comparability	02	<b>0.716</b>	
Consistency	04	<b>0.878</b>	
Clarity	04	<b>0.801</b>	
<b>Overall</b>	<b>44</b>	<b>0.926</b>	

**Source: Annual Reports of Companies**

The Cronbach's Alpha concerning all the financial reporting quality dimensions is more than 0.6. Hence, it can be concluded that the internal consistency and validity of data gathered from annual reports of select companies is excellent.

#### *Statistical Tools*

For drawing valid conclusions from the data gathered for the study statistical and econometric tools were used which include ANOVA dummy variable regression models for assessing the level of Quality of Financial Reporting and the Impact of XBRL on the Quality of Financial Reporting and to test the hypothesis Tukey's Post Hoc Multiple comparison tests are used.

#### **Results and Discussions**

This section of the paper deals with the analysis and interpretation of data collected for the study through various statistical techniques.

The following table depicts the summary of the QFR Index Analysis and the descriptions of the values shown in the table are given in the notes.

**Table No.03: Results of Tukey Test on Level of Quality of Financial Reporting Among Select Companies**

Companies	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>
APS	1	4	2	4	2	2	4	2	2	2	2
AP	1	4	2	4	2	2	4	1	3	2	2
BAL	1	4	2	4	1	1	4	3	2	2	2
BATL	1	4	2	4	2	2	4	1	2	2	2
CIPLA	2	4	2	4	1	2	4	2	2	2	2
COI	1	4	2	4	2	2	4	1	1	2	2
DRL	1	4	2	4	2	3	4	2	2	2	2
HEMO	2	4	1	4	2	2	4	3	2	1	2
HIUNI	3	4	2	4	2	2	4	1	3	2	2
INFY	3	4	2	4	2	2	4	1	1	2	2
ITC	3	4	2	4	3	3	4	3	1	3	3
L&T	2	4	2	4	1	2	4	1	3	2	2
M&M	2	4	2	4	3	2	4	2	3	2	2
MSI	2	4	2	4	2	2	4	2	1	2	2
NTPC	2	4	2	4	2	2	4	1	3	1	2
ONGC	1	4	2	4	2	2	4	3	1	2	2
RIL	3	4	2	4	3	2	4	1	2	2	2
SPI	1	4	1	4	2	1	4	2	2	2	2
TCS	2	4	2	4	2	3	4	2	1	2	2
BPCL	1	4	2	4	2	2	4	1	1	3	2
TMOTO	2	4	2	4	2	2	4	1	2	1	3
TSL	2	4	2	4	3	2	4	3	2	1	2
WIPRO	3	4	3	4	3	3	4	1	3	2	1
<b>F-Value</b>	3.58 2	0.93 9	1.87 0	1.15 7	3.74 2	2.98 2	1.49 3	5.73 3	4.95 6	2.78 9	2.67 7
<b>Sig</b>	<b>0.00</b> <b>0</b>	<b>0.54</b> <b>3</b>	<b>0.01</b> <b>1</b>	<b>0.28</b> <b>4</b>	<b>0.00</b> <b>0</b>	<b>0.00</b> <b>0</b>	<b>0.07</b> <b>3</b>	<b>0.00</b> <b>0</b>	<b>0.00</b> <b>0</b>	<b>0.00</b> <b>0</b>	<b>0.00</b> <b>0</b>

*Note:(1= low, 2=medium, 3=high, 4=No difference (Similar))*

*(D<sub>1</sub>:Relevance, D<sub>2</sub>:PredictiveValue, D<sub>3</sub>:FeedbackValue, D<sub>4</sub>:Timeliness,*

*D<sub>5</sub>:Verifiability, D<sub>6</sub>:Completeness, D<sub>7</sub>:Representational Faithfulness,*

*D<sub>8</sub>:Neutrality, D<sub>9</sub>:Comparability, D<sub>10</sub>:Consistency, D<sub>11</sub>:Clarity (understandability)*

Based on the financial reporting quality index Tukey Post Hoc Multiple comparison tests have been conducted and it has been found that a significant difference exists among the companies in the financial reporting quality dimensions of Relevance, feedback value, verifiability, completeness, neutrality, comparability, consistency, clarity and differences doesn't exist in dimensions of predictive value, timeliness and representational faithfulness. Accordingly, the Null hypothesis (H<sub>0</sub>) is rejected and the alternative hypothesis (H<sub>1</sub>) is accepted. Therefore, ***there are significant differences in the level of quality of financial reporting in most of the dimensions in the select companies.***

**Analysis of Company Wise Impact of XBRL on Quality of Financial Reporting**

The major focus of the present paper is to analyse the impact of XBRL on the QFR of select companies in India by considering all 11 dimensions together. The company-wise results of dummy variable regression models are presented in the following section:

The following model has been used for the estimation of the impact of XBRL on company-wise QFR:

$$Y_t = \beta_0 + \beta_1 D_t + U_t$$

Where,

$Y_t$  = Value of index for company-wise QFR.

$\beta_0$  = Benchmark and represents the pre-XBRL period.

$\beta_1$  = Difference between benchmark and dummy variable.

$D_t$  = Dummy variable for XBRL.

$U_t$  = random error term.

**Table No.04: Impact of XBRL on Financial Reporting of Select Companies**

Company	$\beta_0$	t-value	Sig.	$\beta_1$	t-value	Sig.
COI	<b>0.360</b>	21.476	0.000	<b>0.258</b>	12.173	0.000
AP	<b>0.395</b>	19.620	0.000	<b>0.214</b>	8.416	0.000
L&T	<b>0.414</b>	21.382	0.000	<b>0.215</b>	8.772	0.000
SPI.	<b>0.429</b>	20.259	0.000	<b>0.188</b>	7.013	0.000
BAL	<b>0.407</b>	20.097	0.000	<b>0.230</b>	8.973	0.000
BATL	<b>0.413</b>	23.374	0.000	<b>0.231</b>	10.347	0.000
APS	<b>0.392</b>	21.578	0.000	<b>0.272</b>	11.819	0.000
HEMO	<b>0.427</b>	18.897	0.000	<b>0.213</b>	7.463	0.000
CIPLA	<b>0.458</b>	24.636	0.000	<b>0.176</b>	7.462	0.000
TMOTO	<b>0.470</b>	26.640	0.000	<b>0.140</b>	6.250	0.000
DRL	<b>0.433</b>	24.293	0.000	<b>0.218</b>	9.682	0.000
INFY	<b>0.444</b>	24.440	0.000	<b>0.188</b>	8.192	0.000
MSI	<b>0.432</b>	25.316	0.000	<b>0.220</b>	10.179	0.000
NTPC	<b>0.435</b>	22.603	0.000	<b>0.234</b>	9.629	0.000
HIUNI	<b>0.462</b>	29.633	0.000	<b>0.178</b>	8.980	0.000
TCS	<b>0.458</b>	25.633	0.000	<b>0.196</b>	8.654	0.000
ONGC	<b>0.483</b>	27.121	0.000	<b>0.157</b>	6.961	0.000
TSL	<b>0.482</b>	24.199	0.000	<b>0.177</b>	7.023	0.000
M&M	<b>0.474</b>	23.595	0.000	<b>0.188</b>	7.385	0.000
BPCL	<b>0.483</b>	30.521	0.000	<b>0.158</b>	7.904	0.000
RIL	<b>0.476</b>	29.756	0.000	<b>0.182</b>	8.973	0.000
ITC	<b>0.518</b>	25.522	0.000	<b>0.138</b>	5.368	0.000
WIPRO	<b>0.498</b>	34.869	0.000	<b>0.206</b>	11.402	0.000

Source: Annual Reports of Companies, Compiled by Researcher

The table-03 depicts results of dummy variable regression models and explains the company wise impact of XBRL on financial reporting quality. During the pre-XBRL period, the quality of

financial reporting of COI was 0.360 and it increased by 0.258 times during the XBRL period which shows a significant impact of XBRL on enhancing the quality of financial reporting. In the above table, we can observe the value of  $\beta_1$  for all the select companies are having a significant t-value which signifies the positive impact of XBRL on the quality of financial reporting during the XBRL period.

### **Overall Impact of XBRL on Quality of Financial Reporting**

In the following section, an attempt has also been made to analyse the impact of XBRL on the overall QFR of the companies by considering all 11 dimensions of 23 selected companies for both pre-XBRL and XBRL periods i.e.,(2005-2010 and 2011-2016) together.

The following model has been used for the estimation of the impact of XBRL on the QFR of all the selected companies:

$$Y_t = \beta_0 + \beta_1 D_t + U_t$$

Where,

$Y_t$  = Value of index for Overall QFR of 23 companies, 11 dimensions and 16 years period.

$\beta_0$  = Benchmark and represents the pre-XBRL period.

$\beta_1$  = Difference between benchmark and dummy variable.

$D_t$  = Dummy variable for XBRL.

$U_t$  = random error term.

The above ANOVA dummy variable regression model estimated the overall impact of XBRL on QFR by considering all the selected companies, and 11 QFR dimensions for the entire study period. The results are as follows:

$$Y_t = 0.427 + 0.208$$

$$t\text{- Value} = (31.353) (12.070)$$

$$P\text{-value} = (0.000) (0.000)$$

The constant of the model for QFR concerning all the selected companies, 11 QFR dimensions for the entire study period is significant at one per cent level. Therefore, during the pre-XBRL period, the average QFR was 0.427. The co-efficient of the dummy is also significant at the one per cent level. Therefore, the average QFR has increased by 0.208 times. Therefore, XBRL has made a significant impact on the overall QFR of all the selected companies. Hence, the null hypothesis "*XBRL does not impact on quality of financial reporting of select companies in India*" is rejected and the alternative hypothesis "*XBRL has made a significant impact on quality of financial reporting of select companies in India*" is accepted.

### **Findings and Conclusions**

Based on the objectives and analysis of gathered information with the help of the Tukey Post Hoc, Multiple comparisons test the study found that there were a lot of fluctuations in the level of quality of financial reporting during the pre-XBRL period and in the XBRL period the level of financial reporting is improving and becoming consistent and which shows the positive impact of XBRL. Further, there is an inconsistency in the quality of financial reporting among select companies in respect of all the financial reporting quality dimensions. Concerning the second objective with the help dummy variable regression model it is found that the quality of financial reporting of select companies during the pre-XBRL period is comparatively low and it is increased among all the select companies after the initiation of XBRL for financial reporting. This can be observed from the overall analysis of dummy variable regression analysis that the overall financial reporting quality during the pre-XBRL period was 0.427 and it was increased by 0.208 times after the introduction of XBRL. This study concludes that enhanced business reporting is the only tool that enhances the quality of financial reporting and certainly meets the varied information needs of different stakeholders (Hill, 2001; Parish, 2000; Bovee *et al.*,



2005). Further, the application of technologies like XBRL improves the transparency of financial reporting and enhances the timeliness, comparability and uniformity of financial reports for various corporate filings. This builds confidence among various stakeholders group and contributes to the long-lasting survival of the business at large.

### **Limitations**

The study is confined only to secondary data and assessment of the impact of XBRL on the quality of financial reporting and it is not focused on the primary opinions of regulators, reporters, and users of annual reports.

### **Future Research**

Based on the limitations of the study the future research can address the following issues:

1. The study can be undertaken to analyse the XBRL based reporting for value relevance of the firms.
2. The primary opinion-based analysis from the different stakeholder's points of view can be conducted.

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