



Exploring the Affiliation between Integrated Reporting and Firm Performance: Evidence from Bangladesh

Golam Shahria*

Department of Business Administration, BGC Trust University Bangladesh, Chittagong, Bangladesh

*Corresponding author: g.s.parveez@gmail.com

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ABSTRACT

The objective of this study is to assess the extent of integrated reporting (IR) practice with reference to the disclosure pattern and to examine its association with financial performance and market growth in the voluntary disclosure of manufacturing companies in Bangladesh. Samples of this study are 41 manufacturing companies from nine different industries listed in Dhaka Stock Exchange (DSE). The total observations were 123 firm year observations. Using two-stage-least-squares approach to reduce endogeneity concerns, this study reveals that Integrated Reporting Index (IRDINX) is positively and significantly related with firm performance. However, the relationship between IRDINX and growth is positive but insignificant. The content analysis found an increasing pattern of IR disclosure by the sample firms. The findings of this study encourage firms to adopt IR practice and add value to the existing literature as very few researches have been done on IR area in Bangladesh.

Menggali Hubungan antara Pelaporan Terintegrasi dan Kinerja Perusahaan: Bukti Empiris dari Bangladesh

ABSTRAK

Tujuan dari penelitian ini adalah untuk menilai sejauh mana praktik pelaporan terintegrasi (IR) dengan mengacu pada pole pengungkapan dan menguji hubungannya dengan kinerja keuangan dan pertumbuhan pasar dalam pengungkapan sukarela perusahaan manufaktur di Bangladesh. Studi ini melibatkan 41 perusahaan manufaktur yang terdaftar di Dhaka Stock Exchange (DSE) dari sembilan industri yang berbeda. Jumlah observasi adalah 123 tahun-perusahaan. Dengan menggunakan pendekatan two-stage-least-squares (OLS) untuk mengurangi masalah endogenitas, penelitian ini menemukan bahwa indeks pelaporan terintegrasi (IRDINX) berhubungan positif dan signifikan dengan kinerja perusahaan. Namun, hubungan antara IRDINX dan pertumbuhan adalah positif tetapi tidak signifikan. Analisis konten terhadap pengungkapan perusahaan menemukan sejauh mana pengungkapan IR meningkat dengan pola perusahaan sampel. Temuan dari penelitian ini dapat memotivasi perusahaan yang belum mempraktikkan IR dan menambah literatur yang ada karena penelitian terkait IR di Bangladesh relatif masih sangat sedikit.

1. Introduction

The present global world is highly based on technological devices and use of technology in business is emergence for corporate world. Technology makes easy of communication of information for the stakeholders of enterprises. As a result, today's stakeholders are now very aware about social responsibility, environmental, sustainability, corporate governance of the business

enterprises. People are now raising voice on big and renowned corporate house about their social, environmental and welfare responsibility due to any natural disaster or any crisis moment of the countries as well as in the world. Therefore, the demand of information about environmental performance, human resource practice, governance etc. has been increased day by day by the stakeholders. The performance measurement of the corporation is not

now evaluated only based on financial information but also social relation, environmental practice, use of intellectual assets, manufacturing facilities information, usages of human resources that are sought by stakeholders. The enterprises that want to survive as good corporate world in long term, establishing and maintaining positive relationships with all stakeholders is essential. Now, it is time to think how corporation provides their integrated information to their respective interested stakeholders. Integrated thinking is the process of actively considering the connections between the many operating and functional units of an organization and the capital that are used or impacted.

One of the most recent trends in corporate reporting is integrated reporting (IR), which is a relatively new idea that is still being studied in various parts of the world (Hamad et al., 2020). An integrated report (IR) is a concise communication of how an organization's strategy, governance, performance, and prospects, in light of its external environment, contribute to the generation of value over the short, medium, and long terms. IR assimilates all material issues into a full story of value creation incorporating both financial and pre – financial issues. Pre – financial means the factors that do not directly impact on the financial performance of an organization in the short – term will unavoidably have a financial impact over time as well as a long life in their business. IR is now a volunteer discloser in most countries, although some of countries have taken initiative to impose the requirement as a compulsory requirement for business reporting.

Fijałkowska & Sobczyk (2013) found that the Integrated Report (IR) has the potential to develop into a cross-border business communication tool that would meet the demands of both the internal and external global environments. Vaz et al., (2016) mentioned that integrated report is a corporate reporting model for sustainability information. IR will make the corporate entities become more accountable and transparent to the lenders of capital

and other interested parties, organizations are publishing their financial and non-financial performance in greater numbers. IR will be more beneficial in terms of the public relations.

The growing demand for integrated information from stakeholders led to the creation of the International Integrated Reporting Council (IIRC) in August 2010. IIRC has created an application architecture for integrated reporting that simplifies and directs how integrated reporting is facilitated in a global context. A draft book of an application for international integrated reporting has been presented for debate on September 12, 2011 in this respect. In November 2012, a prototype was made public based on input from stakeholders and the 80 businesses that had participated in the pilot program. The final publication date of this book is on December 9, 2013, which contains the Integrated Reporting Framework for the global world.

A good amount of research work has been conducted basically on reporting practices in Bangladesh based on financial reporting. A comprehensive study on financial reporting has been conducted by the World Bank (WB) Group. It has been observed that the financial reporting practices in Bangladesh are deficient (World Bank, 2004). Shahria (2019) found that only 62.6% of mandatory financial disclosures have been disclosed by the listed (Dhaka Stock Exchange) manufacturing companies in Bangladesh.

Most of the empirical studies have investigated that financial reporting practices in Bangladesh are weak. But IR practice is now an emergence issue in the corporate house in Bangladesh. When a disclosure checklist in accordance with the International Integrated Reporting Framework (IIRF) has been distributed by the Institute of Chartered Accountants of Bangladesh, the process is expedited. IR will increase the number of users and help to become new investors and loyal customers as well as stakeholders for companies. It also helps to attract foreign agencies to develop the capital market in Bangladesh. Islam & Islam (2018) carried out a study on the multinational sector of Bangladesh for

the status of IR. They found that the IR tendency has been increased year by year in the multinational sector of Bangladesh.

This research's prime objective is to investigate and examine the relationship of firm performance and growth with the IR disclosure practice among the listed manufacturing companies of Bangladesh. The following are the sub – objectives of this study:

1. Investigates the sample firms' annual reports to explore the extent of their IR disclosure practice following the IIRC's framework for IR.
2. Figure out the year to year change of the IR disclosure practice and change in the sample companies' reporting format.
3. Evaluate the year to year reporting practice of IR content elements among sample companies.
4. Examine the degree of relationship of performance and growth with IR disclosure practice among sample firms.

2. Literature review and hypotheses development

Theoretical foundations

The concept of IR adoption is to develop by discussing several theories in this section, which also strengthens the theoretical support of the findings of this study.

Institutional theory

A theory on the more substantial and durable elements of social structure is known as institutional theory. The institutional theory explains how companies respond to the contexts in which they operate. The capacity to influence any corporation belongs to a variety of stakeholders, including governments, regulatory authorities, non-governmental organizations (NGOs), and supply chain companies. According to Scott (1995), organizations must obey all of the rules, regulations and norms and culture that are usual in the society where they operate their business. Moreover, Adams et al., (2016) institutional theory has been used for understanding the frameworks employed by various

businesses and organizations in their business environment.

Beck et al., (2015) suggests that the compliance of institutional prevailing formal rules, regulations and norms will create more legitimacy for organizations to their stakeholders. According to Adams & Whelan (2009), the bulk of studies and theoretical theories that have been utilized to examine the voluntary disclosure of non-financial information have found that companies frequently act selfishly, particularly when aiming to maximize financial outcomes like profit. Most of the institutions have contributed to the advancement of integrated reporting, both alone and jointly.

On the other hand, Carpenter & Feroz (2001) found that the connection between corporations adopting a specific framework in respect to its rivals in the result of pressure from external parties in the business environment. Therefore, Camilleri, (2015) discovered that the integration of financial and environmental, social & governance (ESG) disclosure demand has been increasing in the marketplace by the stakeholders.

Legitimacy theory

In general, institutional regulators will provide various regulatory frameworks for their respective entities to disclose financial and non – financial information in the annual reports. A strong institutional environment will create a good number of legitimate entities in the country. Beck et al., (2015) suggested the stakeholders believe that a responsible organization will be a legitimate organization because they have to comply with all relevant societal rules that prevail in the countries.

According to Higgins et al. (2014), in order to establish themselves as industry leaders, some firms adopt the IR framework more quickly than other companies in their industry. Camilleri (2017) stated that an organization can acquire legitimacy through strong relationships with external stakeholders. As a result, organizations try to adopt and change their corporate reporting practice according to their stakeholders' expectations. According to Vitolla et

al. (2020), legitimacy theory and the IR exposé are related. They make the argument that businesses with higher market values frequently provide more information on their governance, social, and environmental performance in order to justify their actions in society.

Agency theory and internal pressure

Currently, it is very clear that they have differences between ownership and control of wealth. In the twentieth century, it was considered that business owners were principals and they hire executives (agents) to manage their business. Ness & Mirza (1991) mentioned that the central principle of agency theory is that principals should give agents permission to act on their behalf. Therefore, governance is the crucial issue in agency theory. So, the extent of voluntary disclosure is also influenced by the agency theory. Because agents are faced facing various pressure from the principals due to of disclosing non - financial information in the corporate report. The principals expect relevant and reliable information from their agents, which ensures quality information.

According to Beretta & Bozzolan's (2008), investors may place greater value on information quality than quantity. Consequently, following the agency theory, the incorporation of the vision & mission of the firm, corporate strategy, future outlook, probable future risks, opportunities, strength and weakness of the companies in the form of an integrated report will enhance the quality of corporate disclosure.

Hasan et al. (2022) find that it negatively influences firms' sustainability reporting decisions by concentrated ownership, managerial ownership, and foreign ownership. These study findings provide valuable insight to Pakistani policymakers for identifying the attributes that require regulatory focus to achieve the public policy objective of sustainable development. Hamad et al. (2020) proposed a conceptual framework that could be very useful, which can be assisted by public limited companies (PLCs) having sustainability practices to

adopt the IR framework, reduce information asymmetries, increase information transparency, and create value. Mishra et al (2022) conducted on an empirical study on company's perception regarding integrated reporting in India and they find that there are three major components impacting their perception are – concise reporting, effective and transparent reporting and finally, better decision-making. The majority of companies have a positive opinion about IR practice in India. The following hypothesis have been developed from the theoretical and empirical studies for this study.

Hypotheses development

Kolk (2008) and KPMG (2011) discovered that corporate reporting strives to inform stakeholders of an organization's performance. Over the past two decades, voluntary disclosure, a component of this communication process, has increased dramatically. Integrated reporting is a clear form of voluntary disclosure that focuses on adding value and sharing that value with interested users. This IR disclosure information can be used by stakeholders for long-term assessment of improvement of the respective company's sustainability as well as to identify possible uncertainties.

IR focuses on creating value and better allocating corporate resources, particularly financial capital; the assumption is that implementing IR will improve financial results. This relationship has been found in some previous studies found in different countries.

Dey (2020) investigates the factors that affect integrated reporting (IR) in the context of voluntary adoption and how it relates to firm value and liquidity. Barth et al. (2017) found a positive association between the firm's valuation and projected cash flows, together with IR and stock liquidity. Using a sample size of 822 from 2010 to 2013, Lee & Yeo (2016) established a positive association between IR and company value. Adegboyegun et al, (2020) carried out a study in Nigeria. This study looked at how integrated reporting affected company performance between

2009 and 2018. According to Albetairi et al. (2018), Return on Assets (ROA) of five Bahraini listed insurance businesses is negatively but significantly connected with risk, opportunity, and performance characteristics, but favorably and highly correlated with the business model, strategy, and resource allocation.

Above all value studies and their findings, it is reasonable to be assumed that IR disclosure is associated with a company's superior financial performance. This guided to the prime hypothesis to be tested in this study as follows: H1: There is a positive relationship between firm performance and IR disclosure. Firm performance can be evaluated based on financial & operational performance and market growth. Islam, (2021) used market growth as a firm performance measurement tool. In this study firm performance have been examined from financial and operational and market growth.

Financial and operational performance

Profitable firms try to disclose their positive financial signs to the stakeholders. The generalized hypothesis is that the return on assets (ROA) and return on equity (ROE) have positive relations with firms' disclosure practice. The comparison of the ROA and ROE ratio, compared to which one ratio is more effective compared to the other, is not clearly established under any fundamental theory or practice. Only ROA has been used in some of the studies and also only ROE has been used as a profitability measure.

Ulupui et al., (2020) & Dey (2020) used only ROA and Menicucci (2018) used only ROE as a measure of profitability. Some authors have used both as measures. Rahman et al. (2020) examined the annual reports of the listed pharmaceutical and chemical companies in Bangladesh and discovered a positive correlation between ROA, ROE, and intellectual capital disclosure.

Islam (2021) investigates the relationship of IR voluntary disclosure with ROA and ROE of 20 listed companies in Bangladesh. Kurniawan & Wahyuni (2018) demonstrated the positive impact of

profitability related to the level of information sharing by the company. Pavlopoulos et al., (2019) identified that profitability is a prominent determinant, and has a significant positive impact on IR. From the above studies and their findings, the following hypotheses have been developed and tested:

H2: There is positive relationship between ROA and IR disclosure practiced in Bangladesh by manufacturing sector.

H3: There is positive relationship between ROE and IR disclosure practiced in Bangladesh by manufacturing sector.

Performance of market growth

Another important indication of corporate performance is market performance. The growth in market share is to be used to measure market performance. Market performance measures the expansion of the possibilities of the value of shares in the future. The ratio of the current market price to its book value is used to calculate market growth. IR is to be a platform for presenting an enterprise financial position and the allocation of funds which will create an image in the capital market. Therefore, IR will create a great avenue in the capital market for sources of funds for businesses.

It can be assumed that IR disclosure practice and market growth have positive relationships. According to Beaver, et al., (1989), extra disclosures are effective in capturing the cross-sectional variations in market to book ratios for bank equities. Abuzayed, et al., (2009) evaluated the components that create the gap between market value and book value for bank valuation.

Sharma, et al., (2013) believe that Market-to-Book ratio is a common measure of firm value for over two decades and it emphasizes the reflecting of efficiency and growth of firms' value. Dey (2020) discovered that IR disclosure practice and market to book value ratio has a significant positive relationship between them in the banking sector of Bangladesh. Based on the above-mentioned

literature and their findings, the following hypothesis has been erected to test in this study:

H₄: There is positive relationship between market growth and IR disclosure practiced in Bangladesh by manufacturing sector.

Control variables

Two control variables have been considered in this present study while developing the research model, such as size of the firm and financial leverage. According to Lee & Yeo (2016), the primary determinants of IR are firm age, firm size, sales growth, and profitability.

Busco et al. (2019) identified that the factors of integrated thinking and reporting are board-size, board meeting frequency, firm size, leverage, and sensitive industries, which are influenced by preparing a higher quality integrated report. Another study by Vitolla et al. (2020) found that a significant positive association between profitability, size, leverage and IR quality in financial institutions.

Dey (2020) and Rahman et al. (2020) have used the natural logarithm of the firm's total assets as a control variable of firm size and to regulate the impact of the firm's size on the IR disclosure index. Financial leverage is another variable that controls the impact of the debt-to-equity ratio on the IRDINX.

An investigation found that there are fewer studies that have been conducted in the field of Integrated Reporting basically in terms of association between levels of IR disclosure & firm performance in Bangladesh. Islam & Islam (2018) conducted a study on eleven listed multinational sectors of Bangladesh to just find out the degree of IR disclosure of material non-financial information that has been disclosed by sample companies.

Another study has found that Shahria (2022) carried out a study on seven listed non – bank financial institutions of Bangladesh to examine the software has been used for research analysis utilizing multivariate regression.

extent of IR disclosure for value creation. These studies just found the magnitude of IR disclosure in a specific industry. Islam (2021) evaluated the relationship between IR voluntary disclosure and financial performance of only twenty companies from all listed companies in Bangladesh and the author claimed that it is the first study in Bangladesh to examine the relationship. Generally, there are two categories of companies found in Bangladesh, such as the manufacturing sector and the service sector.

From the earlier discussion, it is shown that there is no study conducted on any specific sector, which could be increased and motivate each other for IR practicing in their respective industries as well as in that sector. The present study makes attempts to fill some of the gaps in research and it will contribute original research on affiliation of IR disclosure and firm performance of manufacturing companies in Bangladesh.

3. Research method

Manufacturing firms registered in the Dhaka Stock Exchange (DSE) in 2019 are the population of this study. The samples were selected using convenient sampling techniques. There are nine industries that have been taken as sample industries out of ten industries in the manufacturing sector of Bangladesh. A three-year study period has been considered in this study, consisting of 2018 – 2019, 2019 – 2020, and 2020 – 2021.

There are 41 listed manufacturing companies that have been selected conveniently from nine different industries (see the list of sample companies in appendix -2). This gives of 123 firm years - observation of the robust pooled – OLS regression. In order to capture the association between firm performance and growth with the IR disclosure practices in Bangladesh by manufacturing organizations, three distinct research models have been built in this study and SPSS

To assess the endogeneity problems, a two-stage least squares technique is also used. The first research model is described as follows:

$$IRDINX_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 FIRMSIZE_{it} + \beta_3 LEV_{it} + \epsilon_{it} \quad (1)$$

The second research model is as follows:

$$\text{IRDINX}_{it} = \beta_0 + \beta_1 \text{ROE}_{it} + \beta_2 \text{FIRMSIZE}_{it} + \beta_3 \text{LEV}_{it} + \epsilon_{it} \quad (2)$$

The third research model is as follows:

$$\text{IRDINX}_{it} = \beta_0 + \beta_1 \text{GRWT}_{it} + \beta_2 \text{FIRMSIZE}_{it} + \beta_3 \text{LEV}_{it} + \epsilon_{it} \quad (3)$$

In this study, one dependent, three independent, and two control variables were employed. Integrated Reporting Index (IRDINX) is designated as a dependent variable on the model mentioned above. In multivariate regression, the constant is β_0 and the independent (ROA, ROE, GRWT) and control variables (FIRMSIZE and LEV) have coefficients of β_1 - 3.

On the annual reports of the study's sample manufacturing businesses, a content analysis was done. The most popular technique for evaluating pre-financial information reporting is content analysis (Gray et al., 1998). According to Krippendorff (2004) the use of content analysis enables accurate inferences to be made from data in light of the context.

To know the IR practice of the selected companies, a unique “Integrated Reporting Disclosure Index (IRDINX)” is constructed as a checklist (51 items) from the content elements of IR framework for this study (see the checklist in the

Appendix -01). If a sample company disclosed checklist related information of IR in their annual report it is assigned a score of 1, otherwise 0. The following mathematical formula can be used to build the dependent variable (IRDINX):

$$\text{IRDINX} = \frac{\sum_{t=1}^n X_{ij}}{nj}$$

The aforementioned equation indicates that n_j is the firm's j th item's number. $X_{ij} = 1$ if the i th item is disclosed, 0 if i th item is not disclosed, so that $0 \leq \text{IRDINX}_j \leq 1$.

In this study, operational performance, financial performance, and market growth performance will each be measured using independent variables (ROA, ROE, GRWT). Control element GRWT is calculated as the ratio of market value to book value and FIRMSIZE is the natural log of the firm's total assets. In this study, i and t stood for the firms and time, respectively, and ϵ represented the random error. The detail information of all variables has been provided in the Table – 1.

Table 1. Description of variables

Acronym	Definition	Operationalization	Type	Reference
IRDINX	Integrated reporting disclosure index	Number of items disclosed divided by the maximum possible score (51)	Dependent	Krippendorff (2004), Vitolla et al. (2020), Dey (2020)
ROA	Return on assets	Net income to total assets	Independent	Ulupui et al., (2020) and Dey (2020)
ROE	Return on equity	Net income to total equity	Independent	Menicucci (2018), Vitolla et al. (2020)
GRWTH	Growth of the firm	Market value to book value of share	Independent	Beaver et al. (1989), Abuzayed et al., (2009), Dey (2020)
FIRMSIZE	Size of the firm	Natural logarithm of the firm total asset	Control variable	Lee & Yeo (2016), Busco et al. (2019) Vitolla et al. (2020) Adegboyegun et al. (2020)

LEV	Financial leverage	Debt to equity ratio	Control variable	Vitolla, et al. (2020), Busco et al. (2019)
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4. Results and discussion

Descriptive statistics analysis

Table 2 includes the mean, standard deviation, minimum and maximum scores acquired as well as

a full breakdown of the content-wise reporting status by sample firms, which is the sub-index in this study.

Table 2. Descriptive information of IR disclosure index

Variable Name	Symbol	Obs.	Mean	Sd.	Min	Max	Mean		
							2019	2020	2021
Integrated reporting disclosure index	IRDINX	123	0.46	0.17	0.25	0.90	0.45	0.45	0.48
Organizational overview	OOV	123	0.66	0.24	0.22	1	0.65	0.65	0.68
External environment	EE	123	0.48	0.19	0.14	1	0.47	0.47	0.5
Governance	GOV	123	0.39	0.17	0	1	0.39	0.39	0.4
Business model	BM	123	0.39	0.16	0.17	1	0.38	0.38	0.41
Risks & opportunities	RO	123	0.41	0.36	0	1	0.41	0.41	0.41
Strategy & resource allocation	SRA	123	0.22	0.30	0	1	0.21	0.2146	0.23
Performance	PEF	123	0.70	0.15	0.33	1	0.7	0.7	0.71
Outlook	OL	123	0.43	0.24	0	1	0.42	0.42	0.44
Basis of preparation & presentation	BPP	123	0.53	0.33	0.25	1	0.53	0.53	0.543
General reporting guideline	GPG	123	0.33	0.19	0	1	0.32	0.32	0.356

The Performance sub-index reached reporting status at 70%, possibly as a result of the need for financial performance data under the Companies Act, Securities and Exchange Rules, and International Accounting Standards (IAS), among other regulations. Figure 1 shows a graphic representation of the calculated mean index scores for ease of comparison. Figure 1 shows that IRDINX obtained a mean score of 45%, which will remain stable between 2019 and 2020. But IRDINX means the score flashes in 2021 by reaching 48%. There have been significant improvements occurring this year.

The reason behind this is that all listed firms must comply with the BSEC Corporate Governance Code (CGC) of 2018, which was released by the Bangladesh Securities and Exchange Commission (BSEC) on December 31, 2019. It also proved that the reporting year 2019 – 2020 was the initial stage

for following CGC. The reason remains stable in 2018 – 2019 and 2019 – 2020. But it seems that in the second reporting year, 2020 – 2021, reporting status increased by 3%. Another reason might be that the Institute of Chartered Accountants of Bangladesh (ICAB) has introduced a prestigious Award for the best presented annual report and best presented integrated report each year. This renowned award will give stakeholders more confidence in the company's sustainability image. The minimum IRDINX score is 25% compliance, which means that a company minimum of 25% IR information is disclosed in their annual report. On the other hand, the IRDINX maximum mean score is 90%, implying that none of the sample companies did fully disclose IRD in their annual report. But it is very promising that 90% of IR voluntary information has been disclosed by some of the sample firms.

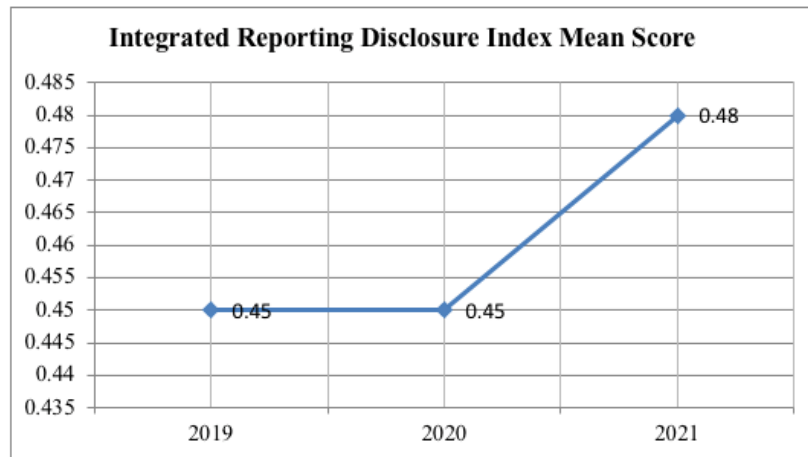


Figure 1. Graphical presentation of IR status

The overall mean disclosure score of IR practices in Bangladesh is found to be 48% in this study. It appears that among the sample businesses, 52% of the IR information required by IIRC requirements is still not included in the annual reports. Islam & Islam (2018) reports that in the years 2013, 2014, and 2015, the proportion of IR disclosure was 69%, 77%, and 79%, respectively, from analysis of 11 large multinational companies'

annual reports for the sample period of 2013–2015, which are listed on the DSE.

Another study found that 60% IR information have been disclosed by DSE seven non – bank financial institution of Bangladesh (Shahria, 2022). Islam (2021) also found that 65.97%, 65.83% and 70.69% of IR information have been disclosed by the 20 DSE listed companies in 2016, 2017 and 2018 respectively.

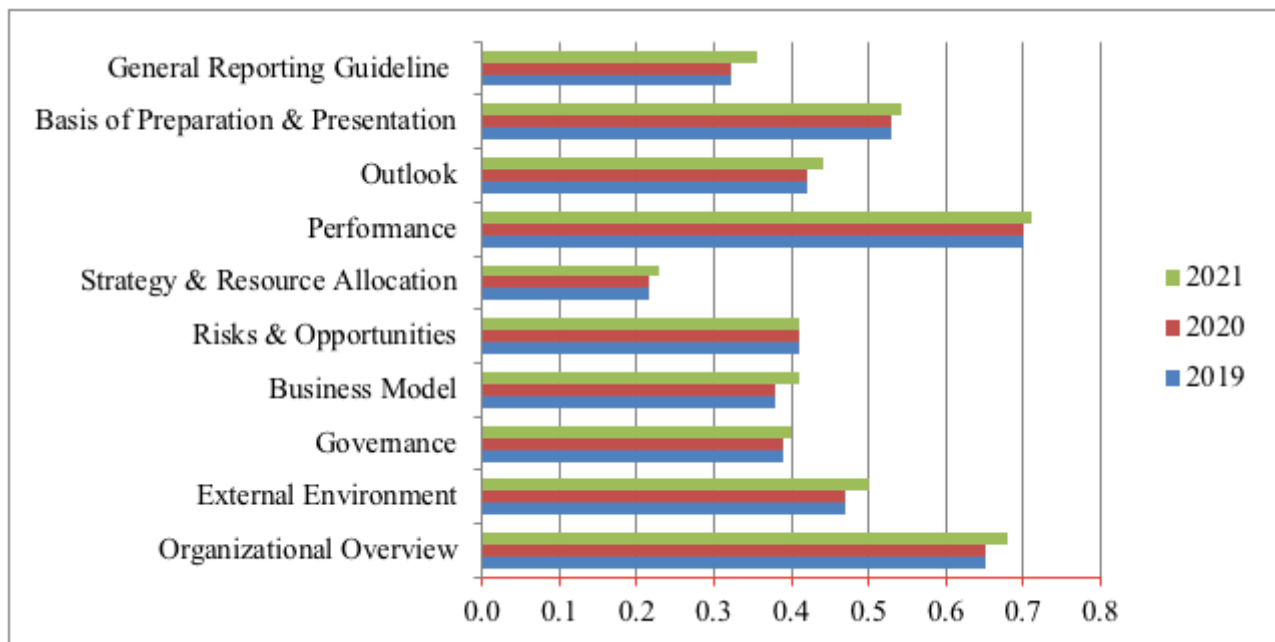


Figure 2. Integrated reporting mean index score of content elements

The author also concludes that approximately 68% of IR information provided by the sample firms in Bangladesh. However, this study focuses on sectorial IR reporting practice with most recent disclosure practice in large sample size of

Bangladesh. This research will provide fresh IR practicing information to the interested users. The summary bar chart in Figure 2 makes the findings of Table 2 easier to grasp. It is obvious that the majority of content components' information is below 50%,

which suggests that Bangladesh's implementation of IR has not yet achieved a sufficient level.

The disclosure pattern of the examined annual reports has a number of areas that might be improved. The mean score for strategy and resource allocation (SRA) was about 22%, which is not an acceptable or adequate result in terms of the overall score for the other indices. This indicates that the sample companies are not currently motivated to share their short-, medium-, and long-term plans' objectives combined with a strategy for allocating resources. Inadequate disclosure about the General Reporting Guideline (GRG), Governance (GOV), and Business Model are further issues of concern (BM). The sample businesses' GRG index mean score of 33% shows that they are unwilling to discuss key difficulties, future targets, etc. To provide investors a clear knowledge of how the company is handling its material issues, it must be properly addressed. Operating culture serves as the basis for governance, and BM adds value to the company. These two factors are more crucial for the

long-term viability of a company. However, the positive and auspicious things to notify that the Performance (PEF), Organizational Overview (OOV), Basis of Preparation & Presentation (BPP), External Environment (EE), Outlook (OL), Risks & Opportunities (RO) viewing mean score are 70%, 66%, 53%, 48%, 43% and 41% respectively. These indices have shown an upward trend during the sample year, suggesting that sample firms have started to embrace the IIRC standards for optional IR disclosure and that this adoption will accelerate among Bangladeshi enterprises in the near future.

Firm performance and control variables

Table 3 summarizes the detail information about firm performance and market growth variables. The mean score of ROE shows 6.67% with a maximum 72% and a minimum -120%, which implies that a wide variation occurred during study period in the ROE among the sample firms. However, the median ROE of 4.8% shows that majority of the study enterprises' ROE rates were just fair.

Table 3. Descriptive statistics of firm performance and control variables

Variable name	Symbol	Obs.	Mean	Sd.	Min	Max	Med.
Return on asset	ROA	123	0.047	0.093	-0.26	0.71	0.022
Return on equity	ROE	123	0.066	0.162	-1.21	0.72	0.048
Growth of sample firm (market value to book value)	GRWT	123	2.401	3.025	0.27	20.64	1.249
Size of sample firm	FIRMSIZE	123	22.78	1.619	19.08	26.61	22.9
Financial leverage	FLEV	123	0.47	0.701	0	3.51	0.182

The mean score of ROA is 4.7%, and the maximum obtained is 71% and the minimum is -26%, median score is 2.20%, which denotes that most of the sample firm generate moderate ROA during study period. It is noted that sample firms faced COVID – 19 financial crises during study period. On the other hand, firm's growth mean score obtained 2.41, the maximum ratio is 20.64 and the minimum ratio is 0.27.

The average firm size of the sample firms is 22.78, the maximum size is 26.61, minimum size is 19.08 and median score is 22.9, which implies that there is very little variation in total assets of the

sample firms. The debt-to-equity ratio is used to assess the financial leverage in this study. The majority of the firms use more debt than equity in their capital structure, as shown by the average financial leverage of the capital, which is determined to be 0.47, the lowest is 0, the highest is 3.51, and the median is 0.182. The minimum value 0 indicates the positive thing that one of sample firm did not use any debt; use only equity in the capital source.

Bivariate analysis

Table 4 shows the relations of dependent variable, independent variables and control variable

by using Pearson Correlation matrix along with variance inflation factor (VIF). Table 4 demonstrates a substantial positive association between ROA and the IRDINX, suggesting that greater firm success encourages greater IR disclosure in the sample businesses' annual reports. The correlation between

ROE and IRDINX is both statistically significant and positive. It suggests that the sample businesses' enhanced IR practice will result from an increase in ROE. In this study, a proximate indicator of businesses' growth has been the market value to book value of equity ratio.

Table 4. Correlation among variables

Variables	IRDINX	ROA	ROE	GRWT	FIMSIZE	FLEV	VIF
IRDINX	1.000						
ROA	0.266**	1.000					3.489
ROE	0.332**	0.833**	1.000				3.623
GRWT	0.098	0.336**	0.259**	1.000			1.187
FIMSIZE	0.597**	0.290**	0.323**	-0.102	1.000		1.468
LEV	0.078	-0.337**	-0.378**	-0.174	0.272**	1.000	1.47

Note: significant at 5%

Although there is a favorable relationship with IRDINX, it was shown to be statistically insignificant. The firm size control variable, which measured by natural logarithmic form of the total assets of the sample firms, which shows significant positive correlation with IRDINX. It makes perfect sense for a company with more assets to want to disclose everything possible in their annual reports in order to appear more valuable to stakeholders. Financial leverage also shows positive correlation with IRDINX, which denotes that levered firms want to disclose more about their voluntary information at now.

Previous study showed an insignificant negative correlation of leverage with IR disclosure (Islam, 2021). It is surprising that all independent variables and control variables are positively correlated with dependent variable IRDINX, which are statistically significant except growth and financial leverage.

The possibility of any collinearity problem among the independent variable is tested in this study; the table 4 lists the calculated VIF. According to general guidelines, For the purpose of avoiding

any collinearity problems, the Variance Inflation Factor (VIF) should be 5 or below. (Hair et al., 2011).

Gujarati (2015), suggest that a VIF of less than 10 implies that the specific independent variable employed in the regression model does not have a serious multicollinearity issue. Since VIF values of all independent variables' (see the table 4) are less than five, this means that independents variable used in this study are free from any severe multicollinearity problems.

Empirical results

After addressing the issue of heteroskedasticity, the robust pooled-OLS regression has been used to explore the three distinct models in this section. It refers to the situation when the variance of the model's errors is different for each observation, despite the fact that one of the fundamental tenets of modeling is frequently that the variances are homogenous and the errors of the model are uniformly distributed.

Table 5. Result of regression of model 1

Dependent variable (IRDINX)	Model 1 (ROA)	Model 1 (ROA)	Model 1 (ROA)
Constant	0.439	-0.887	-0.932
P – value	0.000	0.000	0.000
ROA	0.480**	0.183	0.137

P – value	0.003	0.184	0.378
t statistics	3.034	1.335	0.886
Firm size		0.059***	0.061
P – value		0.000	0.000
t statistics		7.468	7.069
FLEV			-0.014
P – value			0.504
t statistics			-0.670
Observation	123	123	123
R Square			0.37
White Test for Heteroskedasticity			p = 0.013
Tests of endogeneity	Durbin (score)	chi2(1)	p= 0.1038
(Ho: variables are exogenous)	Wu-Hausman F(1,118)		p= 0.1099

Note: Level of significance: ***1%, **5%, *10%

Model 1 ROA, which is utilized as a measure of operational success and is shown in Table 5, has a substantial positive association with the study's dependent variable (IRDINX). It has an excellent coefficient of 0.480, indicating that an increase of 1 unit in the ROA by the sample business would result in an increase in the IR index mean score of 0.480. Profitable companies that are enlightened strive to retain their legitimacy and sustainability by using better transparency practices like internal reporting (IR).

Adams & Whelan (2009) examine the voluntary disclosure of non-financial information have found that companies frequently act selfishly, particularly when aiming to maximize financial outcomes like profit by the bulk of studies and theoretical theories.

This is stated in the institutional theories of the above literature, Islam (2021) discovered almost identical evidence, and Dey (2020) discovered a positive but negligible association between IR disclosure and ROA using two-stage least squares (2SLS) estimate in the banking sector of Bangladesh

Additionally, Table 5 demonstrates that the t statistic is less than 1.96 and the p value is less than 0.05, indicating that hypothesis 2 is accepted. The correlation between company size and IRDINX is positive and statistically significant, as shown in Table 5.

The sample firms' coefficient of company size is 0.059, meaning that if sample businesses raise their total assets by one unit, the IR disclosure index score will increase by 0.059 units. Financial leverage has a poor and negligible correlation with the index of IR transparency. It can result in some form of limitation on voluntary disclosure items from the viewpoint of equity and debt sources for that highly leveraged organization.

The ROE in model 2 is used as an indicator of financial performance for this study. Table 6 shows that the coefficient of ROE is positive and statistically significant, which indicates that higher returns will lead to a higher volume of voluntary IR disclosure. Higgins et al. (2014) stated in the legitimacy theories that some firms adopt the IR framework more quickly than other companies in their industry for establishing themselves as industry leaders, when they earned more profit.

Table 6. Result of regression of model 2

Dependent variable (IRDINX)	Model 2 (ROE)	Model 2 (ROE)	Model 2 (ROE)
Constant	0.439	- 0.840	-0.855
P – value	0.000	0.000	0.000
ROE	0.345****	0.162**	0.152
P – value	0.000	0.043	0.101
t statistics	3.871	2.047	1.653
Firm size		0.057***	0.057***

P – value		0.000	0.000
t statistics		7.185	6.480
FLEV			-0.004
P – value			0.846
t statistics			-0.194
Observation	123	123	123
R Square			0.39
White Test for Heteroskedasticity			p = 0.006
Tests of endogeneity	Durbin (score) chi2(1)		p = 0.4985
(Ho: variables are exogenous)	Wu-Hausman F(1,118)		p = 0.5079

Note: Level of significance: ***1%, **5%, *10%

According to Yuliawati & Sukirman (2015), the corporation will provide more CSR information as a result of its increased profitability. Profitable firms want to convey their positive message to their stakeholders as well as to society. According to the empirical findings of this study and previous studies

supporting results, hypothesis 3 is accepted. Firm size has a positive and significant correlation with IR disclosure and financial leverage has a negative and insignificant correlation with IR disclosure, which is similar with model 1.

Table 7. Result of regression of model 3

Dependent variable (IRDINX)	Model 3 (GRWT)	Model 3 (GRWT)	Model 3 (GRWT)
Constant	0.448	- 1.008	- 1.004
P – value	0.000	0.000	0.000
GRWT	0.005	0.009**	0.008**
P – value	0.280	0.028	0.041
t statistics	1.084	2.230	2.066
Firm size		0.064***	0.065***
P – value		0.000	0.000
t statistics		8.499	8.431
FLEV			-0.016
P – value			0.376
t statistics			-0.888
Observation	123	123	123
R Square			0.39
White Test for Heteroskedasticity			p = 0.02
Tests of endogeneity	Durbin (score) chi2(1)		p = 0.8838
(Ho: variables are exogenous)	Wu-Hausman F(1,118)		p = 0.8864

Note: Level of significance: ***1%, **5%, *10%

Table 7 shows the relationship of firms' growth and the IR disclosure index in detail. The coefficient of firms' growth and firm size is positive and statistically significant. The large firm size indicates a strong financial position in the market; they want to present this strong situation to their investors, potential investors, creditors in a complete form of reporting like the IR framework. The coefficient of growth is positive but statistically insignificant with the IR disclosure index. The financial leverage, the coefficient is negative and statistically insignificant. But three variables ran simultaneously, observed that

the coefficient of growth is positive and statistically significant, which means that growth is influenced by other control variables. Dey (2020) discovered that growth has a positive and significant relationship with IR disclosure but financial leverage has a positive but insignificant relationship with IR disclosure. Therefore, hypothesis 4 (H4) cannot be accepted according to the findings of this study and previous research results.

From the above discussion on model 1, 2 and 3, all the hypothesis regarding firm performance is accepted except hypothesis H4 (growth). Therefore,

the prime hypothesis H1 can partially accepted and can conclude that firm performance measured in operating and financial is positively related to IR disclosure but growth performance is negatively related with IRDINX among the sample firms in this study. Suttipun, (2017) concluded in their study that manufacturing capital reporting has positive relation with financial performance but environmental capital reporting is negatively related with financial performance of 150 listed companies. Another study conducted on 171 sample companies and found that profitability and company size have a positive & significant impact on integrated reporting; stakeholder pressure has a positive & insignificant impact on integrated reporting; profitability and stakeholder pressure have a positive & significant impact on investor reactions; firm size and integrated reporting have a positive & insignificant impact on investor reactions. (Ulupui et al., 2020). It is also found by Dey (2020) that IR disclosure has positive relation with firm value but negative relation with stock liquidity.

Therefore, the mixed findings on the relationship of firm performance and IR disclosure practice with large sample size in the corporate annual reports are justified by previous findings of studies. But Islam (2021) found that a positive relationship among all three variables with the IR disclosure, which is conducted on only 20 sample firms. The diverse parameters under which the specific research was conducted led to varying findings. R squared is a measure of goodness-of-fit for linear regression models. It provides a measure 0–100% scale to quantify the strength of the relationship between the model and the dependent variable.

The value of R squared of all three models within the 0 -100% scale. According to Wong (2013), $R^2=0.75$ is substantial, $R^2=0.50$ is moderate and $R^2=0.25$ is weak. Therefore, the relationship of all three models is moderate. Heteroskedasticity result of all three models implies that the variance of the errors does not depend on the values of the independent variables. Finally, all three models

achieved all condition of the classical linear regression model without violating any conditions. Furthermore, it is also observed that the value of endogeneity test is greater than p (0.05) value in all three models. Therefore, there is no endogeneity problem in this study.

5. Conclusions

Bangladesh is now a fast-growing country due to an increasing trend of GDP in Asia as well as the world. Most of the export – oriented companies are involved in the manufacturing sector. A good number of listed manufacturing companies export their quality products across the country's border. As a result, the number of employees of manufacturing companies increased day by day, not only the companies that export but also those companies that are trying to export to the foreign market. Therefore, the interest in non – financial performance information of these firms has been growing in recent years. This study tried to explore the relationship between IR disclosure practice and firm performance of the manufacturing sector in Bangladesh.

The finding of the study is that IR practice in Bangladesh has grown in recent years by the listed manufacturing sample companies. It may be caused that ICAB issued an IR checklist as per the IR framework, BSEC issued CGC and the pressure of the stakeholders on the needs. The content analysis based on the extent constructed by IRDINX found that the extent of disclosure percentage by sample firms is 45%, 45% and 48% in the years 2018 -2019, 2019 -2020, 2020 -2021 respectively.

The overall percentage of IR disclosure practice in this study is 46%, other IR studies in Bangladesh found 68% by (Islam, 2021), 60% by (Shahria, 2022) and 75% by (Islam & Islam, 2018). It is noted that the mean IR disclosure score in this study is low compared to the previous studies, due to the large sample size compared to theirs and it also shows that the disclosure pattern patten from industry to industry. It is also found that only 6 out of 41 sample firms are following the framework as per the

required format. It is also revealed that the Chairman's Report, Director's Report, Corporate Governance Report, and the Notes to the Financial Statements contain the majority of the information about IR. There are four hypotheses that have been tested by three cross – sectional regression models; ROA and ROE exposed the positive and statistically significant relationship between financial performance and adoption of IR disclosure practices in Bangladesh in the manufacturing sectors' companies. But the market growth (market – to-book value) independent variable has to show a positive relationship but is statistically insignificant. This result has been supported by various previous studies findings. Almost one – third of the listed manufacturing companies are in textiles, which are export – orientated, but IR practice status in this industry is not significant. BSEC can focus on this industry to motivate them to increase their IR practice. It is hopeful that Bangladesh's firms have taken initiative to address IR voluntary reporting practice, which has increased year to year tremendously. The results of this study will enable decision-makers to assess the degree to which integrated thinking is occurring and affecting the manufacturing sector's choice and presentation of information. The regulatory agencies that oversee the listing of firms can acquire important findings from this study about whether IR practices should be implemented in Bangladesh alongside financial reporting. This study makes an effort to fill some knowledge gaps and research gaps in the realms of integrated reporting. BSEC can issue a checklist of IR in line with IIRC like ICAB, which will be compulsory for all listed companies in Bangladesh. Therefore, all listed firms will be able to measure both the financial and non-financial performance through IR, which will be the long-term perspective and future orientation for value creation. Stakeholders can harmonize the corporate information with the business model associating performance with the strategic objectives, which can provide more transparency.

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