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# **Emergence of Sustainability Reporting and Assurance: A Global Perspective**

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## **ABSTRACT**

This paper examines the factors and consequences of sustainability reporting and assurance (SRA) worldwide using the Global Reporting Initiative database from 2005-2016. Sustainability factors are both the quality and quantity of SRA. We construct several variables pertaining to the consequences of SRA, such as environmental, social, and governance (ESG) sustainability performance disclosures, indices, ratings, and the use of the United Nations Sustainable Development Goals (SDGs). We find (1) a significant worldwide increase in both the quantity and quality of SRA in the past decade; (2) a positive association between the quality and quantity of SRA and sustainability disclosure and many of the SDGs and (3) a significant association between the quantity, quality of SRA and the legal, social, ethical, and environmental attributes. Our findings are relevant to current debates among global policymakers, regulators, standard setters, the business community, and the accounting profession in improving the quantity and quality of SRA and the move toward mandatory and standardized integrated sustainability reporting.

**Key words:** Business Sustainability, Sustainability Reporting, Sustainability Assurance, Sustainability Disclosure, Corporate Social Responsibility

## **I. INTRODUCTION AND THEORETICAL FRAMEWORK**

Corporate reporting, either mandatory or voluntary, provides investors and other stakeholders with financial information on economic sustainability performance (ESP) and non-financial information on environmental, social, and

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governance (ESG) sustainability performance to make sound decisions. Prior studies (e.g., Waddock and Graves, 1997; Ng and Rezaee, 2015; EY 2017; Rezaee and Tuo, 2017; IIRC, 2018) suggest that investors should value both ESP and ESG sustainability performance and find a positive relationship between ESP and ESG dimensions of sustainability performance. In recent years, there has been a move toward sustainability reporting as more than 6,000 European companies are required to disclose ESG sustainability performance information in their 2017 financial reports and onwards (EU, 2014), and other public companies worldwide disclose sustainability information. This global move toward sustainability compels business organizations to produce sustainability reports and have these reports assured. This study examines factors and consequences of sustainability reporting and assurance (SRA) worldwide. Specifically, our research questions are: What is the status of SRA worldwide? (2) Has SRA's quality improved worldwide in the past decade? and (3) What are the factors and consequences of the increasing trends in SRA? We find an increasing trend toward SRA and a positive association between the quality and quantity of SRA and sustainability disclosure.

Prior research (e.g., Rezaee, 2016 and 2017 and Rezaee and Fogarty, 2019) discusses several sustainability theories of shareholder, stakeholder, signaling, legitimacy, and stewardship, among others, in explaining the integrated and interrelated financial ESP and non-financial ESG dimensions of sustainability performance and their relevance to firm value creation. These theories suggest that companies that focus on improving sustainability key performance indicators, including operational efficiency, investment strategies, customer satisfaction, collegial workplace, supply chain management, talent management and innovation, climate change, and social and environmental impacts, are sustainable in the long-term and contribute to their bottom-line earnings. Stewardship theory enables management to effectively exercise stewardship over a broader range of financial and non-financial assets and capital. Stewardship focuses management efforts on achieving ESG sustainability in contributing to financial performance, thus creating shared value for all stakeholders (Rezaee, 2016). However, the relationship between business, society, and the environment is complex and often tense; thus, finding a single theory that explains this relationship is challenging. Furthermore, a single, cohesive, and integrated theory of business sustainability often lacks in explaining the multidimensional and conflicting aspects of both financial and non-financial dimensions of sustainability performance. Thus, management should focus on achieving both financial ESP and non-financial ESG sustainability performance in creating shared value for all stakeholders.

The remainder of this paper is organized as follows: Section 2 presents the literature review, and research questions. Section 3 presents the research design, while Section 4 provides data and samples. Section 5 presents the results, and the last section concludes the paper.

## **II. LITERATURE REVIEW**

Financial and non-financial disclosure is important in providing relevant and useful information regarding the firm's performance to investors and other

users of corporate reporting. The extent and type of voluntary disclosures beyond mandatory disclosure in compliance with applicable rules and regulations depend on corporate governance (Ho and Wong, 2001), executives' backgrounds (Bamber et al., 2010), sustainability performance (Ng and Rezaee, 2015; Khan et al., 2016) and disclosure-related costs (Zhang, 2001). Anecdotal evidence suggests that investors value voluntary disclosures and utilize mandatory disclosures to verify voluntary disclosures (EY 2014; Rezaee and Fogarty, 2019). Prior studies support the importance of the relationship between mandatory and voluntary disclosures (Bertomeu and Magee, 2015; Rezaee and Tuo, 2017) and report a positive association between financial ESP and non-financial ESG sustainability performance and their integrated effect on the cost of equity (e.g., Lopez et al., 2007; Dhaliwal et al., 2011 and 2012; Golicic and Smith, 2013; Eccles et al., 2014; Ng and Rezaee, 2015). Ardiana (2019) finds that Australian companies engage stakeholders in sustainability reporting to manage reputational risk.

Brooks and Oikonomou (2018) provide a synthesis of papers published in ESG sustainability performance and disclosure and suggest direction and a potential agenda for future research on sustainability. Bernardi and Stark (2018) investigate the impact of sustainability-integrated reporting on analyst forecasts and conclude that the level of ESG disclosure is a mediating variable in the relationship between analyst forecasts and integrated reporting. Li et al. (2018) report a positive association between ESG disclosure level and firm value. Bouslah et al. (2018) find that CEO risk-taking incentives are positively associated with socially irresponsible activities. Finally, bolla-Araya, Polo-Garrido, and Segui-Mas (2019) examine factors that affect the adoption of CSR reporting and assurance and find that size, country, and sector significantly affect CSR reporting whereas size, sector, and assessor influence CSR assurance.

The credibility, reliability, and usefulness of sustainability reports on ESP and ESG of sustainability performance are important to all stakeholders. Junior et al. (2014) suggest that a lack of consistency in sustainability assurance guidelines and the voluntary nature of sustainability reports provide the opportunity for external auditors to use several auditing standards in providing assurance on sustainability reports. Wallage (2000) states that "Sustainability reporting and verification are at a very early stage of development," and Simnett, Vanstraelen, and Chua (2009) call for more research in sustainability reporting and assurance. Hummel, Schlick, and Fifka (2019:733) recently claimed, "Research on sustainability assurance is still in its beginnings." The problem statement addressed in this paper is a gap in the sustainability literature regarding the status, factors, and consequences of sustainability reporting and assurance worldwide. Despite recent anecdotal and empirical evidence suggesting the importance of business sustainability, research on SRA is not well-developed. Thus, this paper intends to address this literature gap by examining the factors and consequences of global sustainability reporting and assurance.

### **III. OBJECTIVES OF THE STUDY**

The main objective of this paper is to examine the factors and consequences of sustainability reporting and assurance worldwide that are only addressed sparsely

in the literature. Thus, motivated by recent initiatives on promoting sustainability and the perceived gap in academic studies suggesting the need for recent research on sustainability reporting and assurance, we address the following research questions: (1) What is the global trend in the quantity of voluntary SRA in the past decade? (2) Has the quality of SRA improved worldwide in the past decade? and (3) What are the consequences of the increasing trends in SRA? Rezaee and Fogarty (2019) discuss three ESG sustainability factors: performance, disclosure, and risk. ESG disclosure reflects the extent of sustainability information a firm provides on ESG initiatives (e.g., how many environmental and social topics a company covers in its sustainability report). In contrast, ESG performance focuses on outcomes (e.g., actual levels of greenhouse gas emissions and social justice). Finally, ESG risk shows the company's exposure to ESG challenges. ESG disclosure and ESG performance differ as financial performance is different from financial disclosure; however, they are interrelated and positively correlated (Ng and Rezaee 2015; Jain et al. 2016; Khan et al. 2016; Grewal et al. 2020). This study focuses on ESG sustainability disclosure as reflected in sustainability reporting and assurance.

#### **IV. RESEARCH METHODOLOGY**

We draw on multiple data sources for obtaining different types of information GRI, Thomson Reuters' ASSET4 dataset, and United Nations Sustainable Development Goals (SDGs) index. To construct our sample, we used the GRI database for ten years (2005-2016) to compile data regarding the sustainability reporting quality and quantity and five years of (2012-2016) sustainability assurance quality and quantity (GRI, 2016). For our trend analyses, the selected sample consists of 40,026 companies worldwide that used the GRI database over 2005-2016 and sustainability assurance practices for 7,177 companies across six regions worldwide from 2012 to 2016.<sup>1</sup> Relative to this initial sample, we have eliminated observations with missing financial information. Further, to obtain financial information, we use DataStream, a database. After eliminating data with missing observations, our final sample for empirical testing consists of 4,674 firm-year. Finally, we compute a composite measure of the individual environmental, social, and governance (ESG) scores to assess firms' overall composite ESG score from Thomson Reuters' ASSET4 dataset. The sample size for our regression analyses consists of a total of 4,674 firm-year observations between 2012 and 2016, which is evenly distributed among years and industries. In the Appendix, we provide definitions of our variables and details on the sources used to construct our variables.

Consistent with Rezaee and Tuo (2017), we construct two factors for sustainability reporting quantity and quality and the two factors of sustainability assurance quality and quantity. Sustainability reporting quantity (SRQ1) is determined based on whether the firm issues sustainability reports following GRI guidelines, and sustainability reporting quality (SRQ2) indicates how the firm uses the GRI guidelines in preparing sustainability reports. The GRI classifies

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<sup>1</sup>We use the 2012-2016 period for sustainability assurance because The GRI issued the G4 Guideline for sustainability report preparers in 2012 and encourages firms to generate more reliable and relevant sustainability information by obtaining assurance on sustainability reports.

the sustainability reports' application level of GRI Frameworks into 11 ranks for each firm with the application level as "Undeclared", "Reference Only", "In Accordance" or "In accordance – Core", "Content Index Only", "C", "C+", "B", "B+", "A" and "A+". A higher rank indicates a better application level of the GRI Framework and, thus, better sustainability reporting quality. The sustainability assurance quantity (SAQ1) is determined by whether the firm obtains either external or internal assurance on its sustainability report, whereas sustainability assurance quality (SAQ2) indicates whether the assurance is provided by internal or external assurance providers and whether the type of assurance is classified as either limited or reasonable assurance.

Prior studies suggest several consequences of sustainability reporting and assurance (SRA), including stakeholder orientation and CSR/ESG initiatives (Rezaee 2016 and 2017), legal environment (Simnett et al., 2009), and financial attributes (Casey and Grenier, 2015; Simnett et al., 2009). These studies find that sustainability reporting and assurance reflect the interaction between a firm's financial, social, environmental, and governance performance (Rezaee, 2016). Thus, we examine the relationship between the four factors of SRA (SRQ1, SRQ2, SAQ1, SAQ2) and several consequences of sustainability, including sustainability disclosure, sustainability index, sustainability ratings, and several goals of SDGs after controlling for financial attributes of size and returns. Our research questions of whether there is a relationship between SAR factors and sustainability consequences are addressed by estimating the following equation:

$$SRA\ Factors = \alpha_0 + \sum \beta_i.Explanatory + \sum \beta_i.Control_i + \sum Industry + \sum Region + \sum Year + \varepsilon \quad \dots\dots\dots(1)$$

SRA factors are either SRQ1 or SRQ2, SAQ1, SAQ2. All dependent, explanatory, and control variables are defined in the Appendix. SRA factors take the value of 1 in the case of the presence of SRQ1, SRQ2, SAQ1, or SAQ2, and 0 otherwise. We use Spearman's correlations matrix for all variables. First, we test for multicollinearity and find no variance inflation factor greater than 10, suggesting that there is no indication of multicollinearity that would affect our inferences.<sup>2</sup> Then we use OLS regression analyses to test our model. A summary of the OLS regression relation between the dependent variable and explanatory variables, and control variables are presented in Table 5. In addition, we include both year and industry-fixed effects in the regression and cluster the standard errors at the firm level.

Our main explanatory variables are selected from the 17 Sustainable Development Goals (SDGs), build on the United Nations Millennium Development Goals of 2000-2015, and involve new areas such as climate change, economic inequality, innovation, sustainable production and consumption, and peace and justice (UNSDG, 2015). These SDGs are relevant to the three dimensions of sustainable development, economic development, and social and environmental development and thus can be linked to ESP and ESG sustainability performance. SDGs are supported by 169 targets and 232 indicators aligned with GRI G4 performance indicators (GRI, 2017). Corporations frequently use these goals

<sup>2</sup>We perform multi-collinearity diagnostic tests and review the VIFs for all explanatory variables. There is no evidence of multi-collinearity that could affect our inferences.

and link them to ESP and ESG sustainability performance, from sourcing raw materials and inputs for production to product innovations that lead to positive environmental, health, or societal impacts. In addition, many of these 17 SDGs are relevant to business sustainability performance, reporting, and assurance and are important in accounting research (Bebbington and Unerman, 2018). For example, SDG 6 is a proxy for clean water and sanitation, a combination of SDGs 5, 10, and 16 focusing on human rights and equalities, SDG 13 is related to climate action, and SDGs 14 and 15 apply to the nature of the life below the water and the life on land.

We use two other explanatory variables of the Dow Jones Sustainability Indices (DJSI) and the Thomson Reuters ESG Score. These two sustainability indices are selected as proxies for a firm's reputation for, and commitment to, sustainability. DJSI evaluates more than 2,500 of the world's largest public companies based on economic, environmental, and social factors. We collect data on the membership of DJSI from DJSI's official website and construct an indicator variable that equals 1 if a firm is included in the DJSI in a given year and 0 otherwise. We construct the ESG score from the Thomson Reuters ASSET4 database, which collects environmental, social, and governance (ESG) metrics information. ASSET4 provides objective and verifiable ESG data with comprehensive global coverage. The ESG sustainability disclosure component scores range from 0.1 for companies that disclose the minimum amount of ESG data to 100 for those that disclose every data variable collected by Thomson Reuters.

Consistent with prior research (Casey and Grenier, 2015; Simnett et al., 2009) we include two control variables: size and profitability. First Total Assets (SIZE) is the natural logarithm of a firm's total assets. Profitability is measured by return on assets (ROA), which indicates how profitable a company is relative to its total assets. We construct two more control variables of ReportPop and ReportGDP as sustainability reports base on the continent's population per million and GDP, respectively.

## V. RESULTS

Panel A of Table 1 shows that total sustainability reports following GRI framework worldwide have significantly increased from 438 reports in 2005 to 6,526 reports in 2016, with an increase of about 15 times. This trend is expected to continue as regulators worldwide are moving towards mandatory sustainability reporting. The top two continents with the highest sustainability reporting are Europe and Asia, with 15,008 (37 percent of total 40,026 reports) and 11,318 (28 percent), respectively. The next two continents are Latin America and North America, with a total of 5,093 (13 percent) and 4,722 (12 percent) sustainability reports, respectively. The two continents with the lowest sustainability reports are Africa and Oceania, with 2,328 (6 percent) and 1,557 (4 percent), respectively. These results reveal that European companies followed by Asian companies had the highest percentage of sustainability reporting over the ten years and Oceania had the lowest reporting rate over the last ten years. This suggests that regulators in both Europe and Asia have been effective in promoting sustainability reporting



and assurance. In addition, Asia and Africa exhibit highest sustainability reports per GDP per capita (2009, 1,287) whereas Oceania and Europe (41, 20) show highest sustainability per population respectively.

Panel B of Table 1 reveals that sustainability reports are issued by companies in many industries from Chemical to energy, financial services, real estate, mining, and technology. The top three industries for sustainability reports represented by 12 years are financial services with 5,026 reports (13 percent of total reports), energy with 2,638 reports (7 percent) and food and beverage with 2,402 reports (6 percent). All industries show increasing trend in issuing sustainability reports in the past decade with financial services showing more impressive progress towards sustainability reporting from 66 reports in 2005 to 844 reports in 2016. In contrast, Real Estate went from 2 reports in 2005 to 224 in 2016. These results are inconsistent with those of Casey and Grenier (2015) indicating that finance and utilities firms in the United States are not more likely to obtain CSR assurance.

Table 2 shows the quality of sustainability reporting based on compliance with G4 of the GRI classifications from 2005-2016. There is an increasing improvement in the quality of sustainability reports in the sense that the majority (85 percent) of sustainability reports were issued in accordance with either GRI Core or comprehensive guidelines. The GRI, in its 2013 G4 guidelines, encouraging the preparation of sustainability reports in compliance with either “Core” or “Comprehensive” will enable companies to improve the quality of their sustainability reports to distinguish themselves from the majority of “Undeclared” to the highest level of non-compliance with G4. The top three different levels of the GRI application used by global companies are 5,320 (21 percent) In Accordance –Core: followed by “Undeclared indicators” (20 percent) and by “A+” and “B” application 3,402 (13 percent).

TABLE 1  
**Sustainability Reports (Quantity)**  
**Panel A: A trend of sustainability reporting in the**  
**2005-2016 period by continental**

Continent	# of Reports												# of Reports	% of Reports	X	Y
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016				
Year	230	312	441	604	821	1050	1409	1702	1859	2142	2181	2257	2016	2005-2016	2005-2016	2005-2016
Europe	230	312	441	604	821	1050	1409	1702	1859	2142	2181	2257	15008	37%	20	581
Asia	65	152	245	394	517	671	995	1233	1432	1576	1755	2283	11318	28%	3	2009
Latin America & the Caribbean	29	61	101	175	243	351	464	555	702	751	840	821	5093	13%	12	598
Northern America	59	79	115	181	214	291	477	591	639	687	702	687	4722	12%	8	126
Africa	29	31	30	59	64	116	392	342	343	342	308	272	2328	6%	2	1287
Oceania	26	42	57	75	98	123	159	174	193	197	207	206	1557	4%	41	44
Total	438	677	989	1488	1957	2602	3896	4597	5168	5695	5993	6526	40026	100%	86	4645

X= Reports Base on Pop per Million, Y=Reports Base on GDP per Capita.

**Panel B: A trend of sustainability reporting in the**  
**2005-2016 period by top Ten Industries**

INDUSTRY	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	QUANTITY	%
	1 Financial Services	66	96	140	199	238	327	476	529	646	706	759	844	5026
2 Energy	30	44	80	119	136	180	253	287	342	366	391	410	2638	7%
3 Food and Beverage	25	35	53	82	109	155	237	286	301	341	382	396	2402	6%
4 Energy Utilities	22	43	67	96	116	143	180	198	214	212	202	208	1701	4%

INDUSTRY	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	QUANTITY	%
5 Mining	22	32	40	63	82	119	174	197	208	201	193	210	1541	4%
6 Chemicals	20	26	32	52	67	92	143	165	182	201	249	259	1488	4%
7 Telecommunications	25	35	43	60	78	90	135	147	157	169	162	193	1294	3%
8 Construction	10	26	36	54	61	89	125	159	162	181	174	200	1277	3%
9 Real Estate	2	5	10	23	47	62	114	153	161	196	207	224	1204	3%
10 Technology	15	18	28	38	56	73	101	128	147	176	190	205	1175	3%

TABLE 2  
Quality of Sustainability Reports

GRI	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	QUANTITY	%
Compliance	0	0	0	0	0	0	0	1	47	807	1914	2551	5320	21%
In accordance - Core	11	55	173	393	425	476	428	483	631	722	713	566	5076	20%
Undeclared	1	23	125	221	309	394	502	582	642	451	152	0	3402	13%
A+	0	9	94	153	237	343	469	585	665	468	181	0	3204	13%
B	0	10	76	182	295	407	517	552	540	367	190	0	3136	12%
C	0	5	71	124	154	211	291	354	428	301	104	0	2043	8%
B+	0	9	48	89	134	169	202	203	221	147	59	0	1281	5%
A	0	0	0	0	0	0	0	0	8	181	334	429	952	4%
In accordance - Comprehensive	0	5	28	29	71	109	132	156	136	92	45	0	803	3%
C+	12	116	615	1191	1625	2109	2541	2916	3318	3536	3692	3546	25217	100%
TOTAL														

Type of sustainability reporting in compliance with G4 from 2005-2016, in terms of GRI G4 classifications  
\*In 2016, the GRI changed its G4 guidelines in different categories to the Global Sustainability standards.

Firms that desire to improve the credibility of their sustainability reports may choose to obtain assurance on these reports from internal or external assurance providers. Panel A of Table 3 indicates that sustainability assurance has made steady progress after the issuance of G4. In the past five years, a total of 7,177 sustainability assurance reports worldwide were issued in the 2012-2016. Table 3 shows the trend in sustainability assurance opinions for companies in all six reported continents in the past five years. The top two continents for sustainability assurance represented for almost five years are Europe with 3,042 statements (42 percent) and Asia with 2,162 statements (30 percent). Companies in Latin America reported 957 (14 percent) assurance statements followed by companies in North America (7 percent) and other continents with less than five percent. The last column of Panel A of Table 3 presents the sustainability assurance quantity as the percentage of the number of sustainability reports in each continent. Europe shows the highest percentage (30%) followed by Asia, Latin America, and Africa (26%). The increasing trend in the issuance of sustainability assurance reports is shown for Asia whereas this trend in other continents has been steady from 2012 to 2016.

Sustainability assurance either reasonable or limited can be provided internally by internal auditors, external assurance providers, or external auditors (Brockett and Rezaee, 2012; Rezaee, 2015). A reasonable assurance provides a positive opinion by auditors on whether the subject matter (ESP and ESG dimensions) of sustainability performance is appropriately stated in all material respects. A limited assurance provides a “negative opinion”, in which the auditor states that nothing has come to their attention to cause them to believe that the subject matter (sustainability report) is not appropriately stated in all material aspects. Panel B of Table 3 shows that much of opinions expressed in sustainability assurance reports (over 57 percent) are limited/moderate, suggesting that assurance providers opine that they are unaware of their client company failing to comply with applicable sustainability guidelines (G4 of GRI). Over 31 percent did not specify what type of assurance was provided with their sustainability reports. Approximately nine percent of assurance reports are accompanied with reasonable /high level assurance suggesting that assurance providers opine on whether their client company complies with applicable sustainability guidelines (e.g., G4 of GRI). In contrast, about three percent were a combination of limited and reasonable assurance.

TABLE 3  
Sustainability Assurance

Panel A: A trend of sustainability assurance (quantity) in the past 5 years (2012-16), since 2012 using G4 using a scoring system

Continent	2012	2013	2014	2015	2016	# of Reports	% of Reports	X
Europe	565	606	654	624	593	3042	42%	30%
Asia	279	368	431	512	572	2162	30%	26%
Latin America & the Caribbean	155	196	198	216	192	957	14%	26%
Northern America	87	102	99	94	114	496	7%	15%
Oceania	66	58	57	44	42	267	4%	17%
Africa	58	43	53	57	42	253	4%	26%
Total	1210	1373	1492	1547	1555	7177	100%	

X: % of Assurance Statements per Sus Reports.

Panel B: Type of sustainability assurance (quality) in terms of positive/negative, reasonable/limited assurance since 2012 using G4 using a scoring system

TYPE OF ASSURANCE	2012	2013	2014	2015	2016	UANTITY	PERCENTAGE
Limited/ Moderate	689	695	729	783	1201	4097	57%
Not specified	345	522	597	624	152	2244	31%
Reasonable/ High	147	125	125	101	156	654	9%
Combination	29	31	41	39	42	182	3%
Total	1210	1373	1492	1547	1555	7177	100%

Table 4, Panel A presents the descriptive statistics of all variables used in our regression analyses. To reduce the impact of outliers, we winsorize all continuous variables at 1 percent and 99 percent. Panel A presents the mean, median, Q1 and Q3, and standard deviation of all variables used in the regression analyses for the 4,675 firm-years in our sample. For our dependent variables SRQ1, SRQ2, SAQ1, and SAQ2, the mean (median) is .87 (1), 2.99 (2), .39 (0) and .52 (1) respectively. Panel B of Table 4 shows the Spearman's correlations matrix for all variables. We test for multicollinearity and find no variance inflation factor in greater than 10, suggesting that there is no indication of multicollinearity that would affect our inferences. The results in Table 4 indicate that SRQ1, SRQ2, and SAQ1 are highly correlated with DJSI and several SDGs (4, 5, 6, 15 and 16). Furthermore, SAQ2 and SDGs 4, 5, 6, 13, 15, 16, and 17 are correlated. The signs and significance levels of the correlations between SRA dimensions and control variables are largely consistent with the results presented in prior research.

TABLE 4

**Panel A: Descriptive Statistics for OLS Regression Sample**

<b>Variable</b>	<b>Mean</b>	<b>Std_Dev</b>	<b>25 Pctl</b>	<b>Median</b>	<b>75 Pctl</b>
SRQ1	0.871	0.334	1.000	1.000	1.000
SRQ2	2.998	3.090	0.000	2.000	6.000
SAQ1	0.395	0.488	0.000	0.000	1.000
SAQ2	0.525	0.720	0.000	0.000	1.000
ESG	64.445	64.445	14.811	55.651	66.158
DJSI	0.454	0.454	0.498	0.000	1.000
SDG 4	92.239	92.239	7.123	90.132	93.110
SDG 5	72.670	72.670	10.663	64.215	74.105
SDG 6	92.413	92.413	5.238	91.516	94.300
SDG 12	54.086	54.086	10.621	50.735	55.224
SDG 13	71.293	71.293	14.488	66.015	79.177
SDG 15	57.564	57.564	11.993	44.623	58.338
SDG 16	74.385	74.385	12.635	63.521	81.112
SDG 17	58.882	58.882	14.482	50.467	55.684
TAssets	10.258	10.258	0.699	9.767	10.258
ROA	0.105	0.084	0.061	0.096	0.146
ReportPop	6	8	2	2	8
ReportGDP	1429	853	125	2008	2008

Table 4, Panel A illustrates the descriptive statistics for OLS regression sample which includes 4675 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix.

**Panel B Spearman Correlations**

VAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 SRQ1	1.000																	
2 SRQ2	0.386	1.000																
3 SAQ1	0.298	0.483	1.000															
4 SAQ2	0.270	0.448	0.907	1.000														
5 ESGScore	0.128	0.121	0.204	0.183	1.000													
6 DJSI	0.028	0.031	0.052	0.056	0.206	1.000												
7 SDG 4	<b>(0.093)</b>	<b>(0.192)</b>	<b>(0.198)</b>	<b>(0.202)</b>	0.059	<b>(0.037)</b>	1.000											
8 SDG 5	<b>(0.062)</b>	0.071	<b>(0.025)</b>	<b>(0.076)</b>	0.094	<b>(0.109)</b>	0.534	1.000										
9 SDG 6	<b>(0.059)</b>	<b>(0.141)</b>	<b>(0.162)</b>	<b>(0.171)</b>	0.034	<b>(0.013)</b>	0.554	0.525	1.000									
10 SDG 12	0.088	0.100	0.193	0.154	<b>(0.122)</b>	<b>(0.042)</b>	<b>(0.600)</b>	<b>(0.476)</b>	<b>(0.554)</b>	1.000								
11 SDG 13	0.094	0.041	0.101	0.039	<b>(0.079)</b>	<b>(0.107)</b>	<b>(0.180)</b>	<b>(0.181)</b>	<b>(0.237)</b>	0.539	1.000							
12 SDG 15	0.034	<b>(0.012)</b>	0.070	<b>(0.017)</b>	0.032	<b>(0.117)</b>	0.234	0.201	0.192	0.190	0.515	1.000						
13 SDG 16	<b>(0.018)</b>	<b>(0.166)</b>	<b>(0.078)</b>	<b>(0.087)</b>	<b>(0.039)</b>	<b>(0.024)</b>	0.573	0.079	0.014	<b>(0.092)</b>	0.068	0.303	1.000					
14 SDG 17	0.108	0.129	0.112	0.035	<b>(0.022)</b>	<b>(0.064)</b>	<b>(0.157)</b>	0.272	0.057	0.300	0.169	0.311	<b>(0.070)</b>	1.000				
15 TotalAssets	0.038	0.091	0.107	0.075	0.272	0.170	0.008	<b>(0.031)</b>	0.023	<b>(0.063)</b>	0.058	0.063	<b>(0.082)</b>	<b>(0.043)</b>	1.000			
16 ROA	0.026	<b>(0.023)</b>	0.011	0.004	0.007	<b>(0.018)</b>	<b>(0.009)</b>	0.038	0.009	0.012	0.062	0.073	<b>(0.005)</b>	0.045	0.018	1.000		
17 ReportPop	<b>(0.054)</b>	0.000	<b>(0.020)</b>	<b>(0.002)</b>	0.003	0.048	0.061	0.153	0.258	<b>(0.097)</b>	<b>(0.716)</b>	<b>(0.279)</b>	<b>(0.103)</b>	0.129	<b>(0.120)</b>	<b>(0.028)</b>	1.000	
18 ReportsGDP	0.054	<b>(0.010)</b>	0.116	0.066	<b>(0.034)</b>	<b>(0.100)</b>	<b>(0.021)</b>	<b>(0.166)</b>	<b>(0.221)</b>	0.392	0.695	0.622	0.453	0.005	0.020	0.044	<b>(0.645)</b>	1.000

Table 4, Panel B illustrates the Pearson Correlations for sample which includes 4675 firm-year observations between 2012 and 2016. The descriptions of all the variables contained in this table can be found in the Appendix. Numbers in bold indicate that the correlation is statistically different from zero with a p-value less than 10%.

A summary of the OLS regression relation between the dependent variable of SRA factors and explanatory variables of ESG Score, DJSI, SDGs, and control variables of Total Assets and ROA is presented in Table 5, with R-squared (F-Value) in the models for SRQ1, SRQ2, SAQ1 and SAQ2 being 0.0482 (30.57), 0.1198 (33.57), 0.1343 (50.98), and 0.1198 (46.51) respectively.

TABLE 5  
The OLS Regression relation between SRA and SDG

	SRQ1	SRQ2	SAQ1	SAQ2
ESG Score	0.00349***	0.0242***	0.00701***	0.00907***
	(9.28)	(7.75)	(15.08)	(13.66)
DJSI	-0.00069	0.106	0.0177	0.0193
	(0.07)	(1.18)	(1.27)	(0.98)
SDG 4	0.00532**	0.0356***	0.0158***	0.0347***
	(2.82)	(10.81)	(8.62)	(8.10)
SDG 5	0.00267***	0.0664***	0.00677***	0.00614***
	(4.20)	(10.92)	(7.06)	(4.52)
SDG 6	0.000671	-0.0298*	0.00669***	-0.00999***
	(0.61)	(2.21)	(3.31)	(3.52)
SDG 12	-0.00190*	0.00335	0.00562***	0.00590***
	(2.29)	(0.44)	(4.74)	(3.44)
SDG 13	0.00244***	-0.00368	-0.000795	-0.00201*
	(4.94)	(0.88)	(1.21)	(2.09)
SDG 15	-0.00120*	0.0131*	0.00331***	0.00164
	(2.37)	(2.18)	(3.62)	(1.25)
SDG 16	0.00125*	0.00935	0.00226**	0.00278*
	(2.48)	(1.74)	(2.79)	(2.41)
SDG 17	0.00346***	-0.00629	-0.000635	-0.00226**
	(7.03)	(1.62)	(1.02)	(2.59)
Total Assets	-0.000849	0.318***	0.0354***	0.0266
	(0.11)	(4.99)	(3.55)	(1.9)
ROA	8.22	-1.39**	-1.45	-7.86
	(1.59)	(2.96)	(0.15)	(0.06)
ReportPop	0.000858	0.0480***	0.00963***	0.0113***
	(0.7)	(4.36)	(5.27)	(4.28)
ReportGDP	1.2106	0.000402**	0.000128***	0.000168***
	(0.09)	(3.1)	(6.4)	(6.12)
Constant	0.825***	15.62***	1.196***	2.369***
	(4.47)	(7.95)	(4.16)	(5.59)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	4390	4390	4390	4390
R-square	0.0482	0.1198	0.1343	0.1198
F Value	30.57	33.57	50.98	46.51



Table 5 reports regression estimates of the relation between SAR factors and SAR consequences. \*\*\*, \*\*, \* indicate that a difference or a coefficient is significant at the 1%, 5%, and 10% levels, respectively. All variables are defined in Appendix. The use of a logistic regression model instead of the OLS regression produces statistically similar results presented in Table 5.

Results suggests that all SAR factors (SRQ1, SRQ2, SAQ1 and SAQ2) as proxies for sustainability disclosures are highly associated with ESG Score as a proxy for sustainability performance. These results are consistent with Ng and Rezaee (2015) and Jain et al. (2016), which suggest a positive and significant relationship between sustainability performance and disclosures. None of the SRA sustainability factors are associated with the DJSI sustainability ratings. Our results also indicate that SRA factors are significantly associated with several SDGs, including SDG 4 (quality education) and SDG 5 (gender equality), reflecting social attributes deeply embedded in GRI standards. The results also indicate that SRQ1 and SRQ2 are significantly associated with SDG 15 (life on land) captures for social attributes. In addition, SAQ1 and SAQ2 are significantly associated with environmental attributes, including SDG 6 (clean water and sanitation), SDG 12 (responsible consumption and production), and social attributes, including SDG 16 (peace and justice), capture a legal environment. These results are consistent with those of Simnett et al. (2009) indicate that a stronger legal system relevant to environmental and social goals leads to the decision to ensure better quality for SRA.

The results of the OLS regression models for the relation between SRA and region are presented in Table 6, with R-squared (F-Value) in the models for SRQ1, SRQ2, SAQ1, and SAQ2 being 0.0152 (5.47), 0.0330 (8.66), 0.0361(14.82), and 0.0187 (14.70) respectively. In summary, the results indicate that both sustainability reporting quality and quantity (SRQ1 and SRQ2) are significantly associated with Europe and North America. Furthermore, sustainability assurance quantity (SAQ1) is related to Northern America and Oceania, and sustainability assurance quality (SAQ2) is linked to Asia and Latin America. Sustainability assurance quantity and quality (SAQ1 and SAQ2) are significantly associated with North America. One possible explanation is that European companies have been encouraged to disclose their ESG sustainability performance in the past decades, and they are currently, as of 2017, required to disclose such information. An explanation for the higher quantity and quality of sustainability assurance is that the accounting profession in North America has been more actively involved in issuing guidelines for attestation and assurance services in the past decade.

TABLE 6

**The OLS Regression relation between SRA and Region**

	<b>SRQ1</b>	<b>SRQ2</b>	<b>SAQ1</b>	<b>SAQ2</b>
Asia	-0.00448	-0.587**	-0.0552	0.0144
	(0.21)	(2.96)	(1.76)	0.31
Europe	-0.0634**	0.625**	-0.00144	-0.0604
	(2.98)	(3.21)	(0.05)	(1.33)

	<b>SRQ1</b>	<b>SRQ2</b>	<b>SAQ1</b>	<b>SAQ2</b>
Latin America	0.0207	1.338***	0.0604	0.027
	(0.72)	(5.08)	(1.45)	(0.44)
Northern America	0.0888***	-0.0434	0.238***	0.253***
	(3.97)	(0.21)	(7.38)	(5.30)
Oceania	-0.130***	-0.149	-0.0887*	-0.0912
	(4.63)	(0.58)	(2.19)	(1.52)
_cons	0.919***	2.898***	0.460***	0.593***
	(46.67)	(16.09)	(16.17)	(14.12)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	4675	4675	4675	4675
R-square	0.0152	0.0330	0.0361	0.0187
F value	5.47	8.66	14.82	14.70

Table 6 reports regression estimates of the relation between SAR factors and Region. \*\*\*, \*\*, \* indicate that a difference or a coefficient is significant at the 1%, 5%, and 10% levels, respectively. All variables are defined in Appendix. The use of a logistic regression model instead of the OLS regression produces statistically similar results presented in Table 6.

In summary, our results indicate that companies that have a better legal environment and responsible consumption, production, and social attributes, as determined by the UNSDGs, are more likely to disclose their sustainability reporting and assurance and obtain sustainability assurance to increase the credibility of reports and consequently enhance their corporate reputation. Additionally, our results indicate that companies with the highest ESG score and higher levels of total assets are more likely to have assured sustainability reports. Overall, sustainability assurance quantity and quality models using the SAQ have significantly greater explanatory capability than sustainability reporting quantity and quality models using the SRQ. The reason may be that other variables have a strong and controlling effect on the sustainability reporting quantity and quality, such as external assurance.

## VI. CONCLUSIONS AND POLICY IMPLICATIONS

An increasing number of companies worldwide are issuing integrated SRA. This paper examines the trends and consequences of SRA in the past decade by investigating the quantity and quality of SRA worldwide. Specifically, this paper examines the factors and consequences of sustainability reporting and assurance (SRA) internationally using the GRI database from 2005-2016. It addresses three research questions: (1) What is the global trend in terms of quantity of SRA in the past decade? (2) Has the quality of SRA improved worldwide in the past decade? and (3) What are the consequences of the increasing trends in SRA? We construct four SRA factors sustainability reporting quantity (SRQ1), sustainability reporting

quality (SRQ2), sustainability assurance quantity (SAQ1), and sustainability assurance quality (SRQ2). Consequences of SRA are sustainability disclosures, sustainability ESG scores, the Dow Jones Sustainability Index (DJSI), and several goals of the UNSDGs, including social benefits, environmental and ethical factors, and legal systems.

We find that the quantity and quality of SRA have significantly increased worldwide in the past decade. Our regression results indicate that several variables, namely, ESG sustainability performance score, social, educational, and environmental attributes, and total assets, are significantly associated with SRQ1 and SRQ2. On the other hand, several variables are significantly associated with the SAQ1 and SAQ2, including ESG scores and UNSDGs, such as, gender equality, clean water and sanitation, responsible consumption and production, social attributes, and total assets. This paper provides policy, practical, and research implications by presenting the factors and consequences of sustainability reporting and assurance worldwide that can be used as a benchmark for standard setters (GRI, IIRC, and SASB), business organizations, and researchers in other countries in promoting sustainability performance, reporting, and assurance. Overall, our results suggest that the quality and quantity of SRA have significantly increased and thus generated benefits for firms issuing SRA. Furthermore, results of this study suggest global business organizations provide more transparent, comparative, and robust sustainability disclosures in response to the demand for ESG information by investors (IIRC, 2018). Taken together, our results indicate that the trend towards sustainability reporting and assurance worldwide is increasing, and there has been substantial progress in both the quantity and quality of sustainability reporting and assurance in several continents over recent years. These results suggest that despite the steady progress towards sustainability reporting and assurance, the quality and quantity of these reports can be significantly enhanced by the move towards mandatory sustainability reporting and assurance. Our results also show that the financial services industry provides the most sustainability reporting.

We *contribute* to the emerging sustainability literature in several ways. First, our findings are relevant to current debates among global policymakers, regulators, standard setters, the business community, and accounting professionals, as effectively articulated in the IFRS' consultation report, in improving the quantity and quality of SRA by standardizing reporting on ESG sustainability information. Global accounting standard-setters, such as, the Financial Accounting Standards Board (FASB), IFRS, and International Accounting Standards Board (IASB), are currently debating whether and how to establish accounting guidelines for the proper recognition and disclosure of ESG sustainability information (Barker & Eccles, 2018) and thus our results should be relevant in establishing such standards.

Second, our results support current initiatives that have been taken by international organizations, global regulators, and stock exchanges (GRI, 2013; Sustainability Accounting Standards Board, SASB, 2013; International Integrated Reporting Council, IIRC, 2014 and 2015; HKEx 2015; European Commission 2014; International Sustainability Standards Board, ISSB, 2021) in promoting integrated sustainability reporting and assurance. Given the

substantial variations in sustainability reporting and assurance practices across firms, especially across firms from different countries internationally, the results presented in this paper offer insight into the standardization of such practices.

Finally, our paper attempts to untangle whether SRA's increased quality and quantity are values relevant to companies and their investors by linking SRA factors to SRA consequences of disclosure, ratings, and SDGs. Thus, our study contributes to the literature on corporate social responsibility (CSR) and emerging research in sustainability performance and disclosure. The sustainability literature finds that ESG disclosure is positively related to financial and market performance and negatively associated with volatility and risk (Rezaee, 2016). Bebbington and Unerman (2018) find that SDGs are relevant to business sustainability performance, reporting, and assurance and are important in accounting research. Our results provide an insight into both factors and consequences of SRA, which sheds light on identifying the nature and benefits of SRA in the highly controversial voluntary disclosure literature and the importance of SDGs in sustainability research. This paper adds to the emerging sustainability literature by empirically testing the relevant SDGs in determining whether and which goals are most relevant to accounting and sustainability research, including SDG 15 (life on land) which captures social attributes, SDG 6 (clean water and sanitation) as a proxy for environmental attributes; SDG 12 (responsible consumption and production) that reflects social attributes, and SDG 16 (peace and justice) that captures a legal environment and their collective impacts of SRA.

There are several *caveats* to this study. First, we use the GRI database in our analyses. Thus, the credibility and reliability of the GRI data are influenced by 'awareness' of GRI regarding who prepares sustainability reports and the assurance that the database is unbiased and comprehensive. However, according to the 2017 KPMG report, the GRI taxonomy is one of the most commonly used taxonomies for preparing sustainability reports (63% of the sampled companies in 42 countries). Nonetheless, the GRI database, which is a voluntary submission database, could be skewed to organizations that use the GRI taxonomy. There may be a number of entities using the GRI taxonomy that do submit their sustainability information to the GRI database and thus are not included in our sample.

Second, we count the number of reports in determining the quantity of sustainability reports worldwide regardless of whether the economies in some of these continents in the sample have experienced significant growth in the period examined. The number of sustainability reports may have increased, despite the market growth in some continents. Third, we collect sustainability reporting and assurance quantity and quality from the GRI database, and thus, our results are affected by the data availability of the most recent years. The GRI has started issuing global sustainability standards, and thus, the sustainability information for the 2017 and 2018 reporting years is incomplete, and there could be issues (e.g., data inaccuracy, trend misinterpretations) with the ongoing data collection process for 2016. Fourth, the selected variables as proxies for the consequences of SRA are collected from the UN sustainable development goals (UNSDGs), which are evolving and are not all inclusive. Finally, the possibility of firm and country-

specific omitted variables as well as the potential self-selection bias, could cause endogeneity concerns. While we explicitly consider the effects of SRA based on the prior research, it is noticed that some unobservable variables simultaneously affect both factors and consequences of SRA.

## References

- Ardiana, P.A. (2019). Stakeholder Engagement in Sustainability Reporting: Evidence of Reputation Risk Management in Large Australian Companies. *Australian Accounting Review*. No. 91 Vol. 29 Issue 4: 726-747.
- Bamber, L. S, J. Jiang and I. Y Wang. 2010. What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review*. Vol. 85, No.4:1131-1162.
- Barker, R & Eccles, R. (2018). Should FASB and IASB be responsible for setting standards for nonfinancial information? December 2018, Available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3272250](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3272250)
- Bebbington, J. and J. Unerman. (2018) "Achieving the United Nations Sustainable Development Goals: An enabling role for accounting research", *Accounting, Auditing & Accountability Journal*, Vol.31, Issue 1: 2-24.
- Bebbington, J. and Larrinaga, C. (2014). Accounting and sustainable development: an exploration. *Accounting, Organizations and Society*, 39(6): 395-413.
- Bernardi, C and A W. Stark. 2018. Environmental, social and governance disclosure, integrated reporting, and the accuracy of analyst forecasts. *The British Accounting Review*, Vol.50, Issue 16, 31.
- Bertomeu, J., and Magee, R. P. (2015). Mandatory disclosure and asymmetry in financial reporting. *Journal of Accounting and Economics*, 59(2-3), 284-299.
- Bollas-Araya, H.M. F. Polo-Garrido and E. Segu 1-Mas. (2019). Consequences of CSR Reporting and Assurance: An Analysis of Top Cooperative and Mutual Organizations. *Australian Accounting Review* No. 91 Vol. 29 Issue 4: 692-707.
- Bouslah, K., J. Linares-Zegarra, B. M'Zali and B. Scholtens. (2018). CEO risk-taking incentives and socially irresponsible activities. *The British Accounting Review*, Vol.50, Issue 76-92.
- Brockett, A., and Z. Rezaee. (2012). *Corporate Sustainability: Integrating Performance and Reporting*, John Wiley& Sons, Inc, Hoboken, NJ.
- Brooks, C. and I. Oikonomou. (2018). The consequences of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance. *The British Accounting Review*, Vol.50, Issue 1: 1-15
- Casey, R. J and J. H. Grenier. (2015). Understanding and contributing to the enigma of corporate social responsibility (CSR) assurance in the United States. *Auditing: A Journal of Practice & Theory*. (February 2015), Vol.34, No.1: 97-130.
- Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., Yang, Y.G. (2012). Non-financial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review*, 87(3), 723-759.
- Dhaliwal, D., O. Li, A. Tsang, & Y. Yang. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting, *The Accounting Review*, 86, 59-100.
- Eccles, R.G., I. Ioannou, and G. Serafeim. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance. *Management Science*, 60 (11), 2835-2857.

- European Commission (EU). 2014. Disclosure of non-financial information: Europe information: EuropeCouncil, the European Economic and Social, environmental issues. (September 29, 2014). Available at [http://ec.europa.eu/internal\\_market/accounting/non-financial-reporting/index\\_en.htm](http://ec.europa.eu/internal_market/accounting/non-financial-reporting/index_en.htm).
- Global Reporting Initiative (GRI). (2013). G4 Exposure Draft. 2013. Frequently asked questions about the G4 Exposure Draft and the second G4 Public Comment Period. March 9, 2014. Available at: <https://www.globalreporting.org/resourcelibrary/G4-ED-PCP2-FAQs.pdf>
- Global Reporting Initiative (GRI). (2016), "Sustainability Database Disclosure", available at: [https://www.globalreporting.org/services/Communication/Sustainability\\_Disclosure\\_Database/Pages/default.aspx](https://www.globalreporting.org/services/Communication/Sustainability_Disclosure_Database/Pages/default.aspx)
- Global Reporting Initiative (GRI). 2017. Linking the GRI Standards and the European Directive on non-financial and diversity disclosure. Available at <https://www.globalreporting.org/standards/resource-download-center/linking-gri-standards-and-european-directive-on-non-financial-and-diversity-disclosure/>
- Golicic, S.L., and Smith, C.D. (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *Journal of Supply Chain Management*, 49 (2), 78-95.
- Grewal, J., Hauptmann, C., & Serafeim, G. (2020). Material sustainability information and stock price informativeness. *Journal of Business Ethics*, 1-32.
- Ho, S.S.M., and Wong, K.S. (2001). A study of the relationship between corporate governance structures and the extent of voluntary disclosure. *Journal of International Accounting, Auditing, and Taxation*, 10 (2001), 139-156.
- Hong Kong Stock Exchange (HKEx). (2015), "Appendix 27 environmental, social and governance reporting guide." Available at: [http://www.hkex.com.hk/eng/rulesreg/listrules/mbrules/documents/appendix\\_27.pdf](http://www.hkex.com.hk/eng/rulesreg/listrules/mbrules/documents/appendix_27.pdf) (Accessed 28 July 2015)
- Huang, X., and Watson, L. 2015. Corporate social responsibility research in accounting. *Journal of Accounting Literature*, 34: 1-16.
- Hummel, K., and Schlick, C and M. Fifka (2019). The Role of Sustainability performance and accounting assurors in sustainability assurance engagements. *Journal of Business Ethics*, Vol.154: 733-757.
- International Integrated Reporting Committee (IIRC). (2014), "Integrated Reporting Committee (IRC) of South Africa. Preparing an Integrated Report, A Starter's Guide", available at: <http://integratedreporting.org/resource/irc-of-south-africa-preparing-an-integrated-report/> (accessed 10 August 2017)
- International Integrated Reporting Council (IIRC) (2015), "Assurance on Integrated Reporting (IR): Overview of Feedback and Call to Action, July 2015", available at: <http://integratedreporting.org/wp-content/uploads/2015/07/IIRC-Assurance-Overview-July-2015.pdf> (accessed 10 August 2017)
- International Sustainability Standards Board (ISSB). (2021). About the International Sustainability Standards Board. Available at <https://www.ifrs.org/groups/international-sustainability-standards-board/>
- Investor Responsibility Research Center Institute (IRRCi). 2018. Measuring Effectiveness: Roadmap to Assessing System-level and SDG Investing. March 2018. Available at <https://irrcinstitute.org/wp-content/uploads/2018/03/FINAL-TIPP-Report-Measuring-Effectiveness-Report-2018.pdf>
- Jain, P.K., A. Jain, & Z. Rezaee. (2016). Value-relevance of corporate social performance: Evidence

- from Short Selling. *Journal of Management Accounting Research*, Vol. 28, No2: 29-52.
- Junior, R. M., P.J. Best, & J. Cotter. (2014). Sustainability reporting and assurance: a historical analysis on a world-wide phenomenon. *Journal of Business Ethics*, 120(1): 1-11.
- Khan, M., Serafeim, G., Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91 (6), 1697-1724.
- KPMG. 2017. The KPMG Survey of Corporate Responsibility Reporting 2017, October 12, 2017. Available at <https://home.kpmg.com/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf>.
- Lopez, M.V., Garcia, A., Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones sustainability index. *Journal of Business Ethics*, 75 (3), 285-300.
- Ng, A.C., & Z. Rezaee. (2015). Business sustainability performance and cost of equity capital. *Journal of Corporate Finance*, 34, 128-149.
- Rezaee, Z and T. Fogarty. (2019). Business Sustainability, Corporate Governance and Organizational Ethics. John Wiley and Sons, Inc. Hoboken, New Jersey, Unites States.
- Rezaee, Z. (2015). Business sustainability: Performance, Compliance, Accountability and Integrated Reporting. Greenleaf Publishing Limited, UK.
- Rezaee, Z. (2016). Business sustainability research: A theoretical and integrated perspective. *Journal of Accounting Literature*, 36 (2016): 48-64.
- Rezaee, Z., (2017). Corporate sustainability: Theoretical and integrated strategic imperative and pragmatic approach. *The Journal of Business Inquiry*. 16, Special Issue (Issue 1), In Press.
- Rezaee, Z., L. Tuo. (2017). Are the quantity and quality of sustainability disclosures associated with the innate and discretionary earnings quality? *Journal of Business Ethics*, April 2017, In Press.
- Simnett, R., A. Vanstraelen, and W.F. Chua. (2009). Assurance on general purpose non-financial reports: An international comparison. *The Accounting Review*, 84(3), 937-967.
- Sustainability Accounting Standards Board (SASB). 2013. US SASB publishes exposure drafts on health care sector sustainability reporting. <http://www.iasplus.com/en/othernews/united-states/2013/sasb-health-care-ed>
- Sustainability Development Goals (SDG) Index (2016). SDG Index and Dashboards, Global Report. Available at <http://www.sdgindex.org/reports/>
- The International Financial Reporting Standards (IFRS) (2020) Foundation's Consultation Paper on Sustainability Reporting, September 2020. Available at <https://cdn.ifs.org/-/media/project/sustainability-reporting/consultation-paper-on-sustainability-reporting.pdf>.
- UN Sustainable Development Goals report (UNSDGs ). (2015), "Indicators and a Monitoring Framework for the Sustainable Development Goals Launching a data revolution for the SDGs", available at: <http://unsdsn.org/wp-content/uploads/2015/03/150320-SDSN-Indicator-Report.pdf> (accessed 10 August 2017)
- Waddock, S. A. and S. Graves. (1997). "The Corporate Social Performance-Financial Performance Link," *Strategic Management Journal*, 19, 303-317.
- Wallage, P. 2000. Assurance on sustainability reporting: An Auditor's view. *Auditing: A Journal of Practice and Theory*, 19, supplement 2000, 53-65.
- Zhang, G. (2001). Private information production, public disclosure, and the cost of capital: Theory and implications. *Contemporary Accounting Research*, 18 (3), 363-384.

## Appendix

**Variables, Definitions and Data Source**

<b>Variables</b>	<b>Data Sources</b>	<b>Definitions</b>
<b>Dependent Variables:</b> <b>SRQ1</b>	SRQ1 = Sustainability Reporting Quantity, a dummy variable which is equal to 1, if the firm follows GRI guidelines in the preparation of its sustainability report; zero otherwise.	GRI database
<b>SRQ2</b>	SRQ2 = Sustainability Reporting Quality, the application level of GRI framework in preparing the sustainability report.	GRI database
<b>SAQ1</b>	SAQ1 = Sustainability Assurance Quantity, a dummy variable which is equal to 1, if the firm prepare the sustainability assurance; zero otherwise.	GRI database
<b>SAQ2</b>	SAQ2= Sustainability Assurance Quality, a dummy variable which is equal to 1, if the firm firms' sustainability reports are assured by external assurance providers (accounting firms); zero otherwise.	GRI database
<b>Explanatory Variables:</b> <b>DJSI</b> <b>ESG</b>	An indicator variable that equals 1 if a firm is included in the Dow Jones Sustainability Index (DJSI) in a given year and 0 otherwise.  ESGScore = Thomson Reuters ESG Score – factors company's ESG performance based on reported data in the public domain. The ESG sustainability disclosure component scores range from 0.1 for companies that disclose the minimum amount of ESG data to 100 for those that disclose every data variable collected by Thomson Reuters.	Datastream / Eikon Thomson Reuters
<b>SDG 4</b>	<b>QUALITY EDUCATION</b> = a measure of social dimension based on literacy rate, primary school enrolment rate and population with tertiary education among others.	SDG index (2016)
<b>SDG 5</b>	<b>GENDER EQUALITY</b> = a measure of social dimension based on proportion of seats held by women in national parliaments, female labor force participation rate, gender wage gap and female years of education among others.	SDG index (2016)



<b>Variables</b>	<b>Data Sources</b>	<b>Definitions</b>
<b>SDG 12</b>	<b>RESPONSIBLE CONSUMPTION AND PRODUCTION</b> = a measure of environmental dimension based on percentage of anthropogenic wastewater, municipal solid waste and non-recycled municipal solid waste among others.	SDG index (2016)
<b>SDG 13</b>	<b>CLIMATE CHANGE</b> = a measure of Environmental dimension based on energy-related CO2 emissions per capita and climate change vulnerability monitor among others.	SDG index (2016)
<b>SDG 15</b>	<b>LIFE ON LAND</b> = a measure of social dimension based on red list index of species survival, annual change in forest area, terrestrial sites of biodiversity importance and bird life international among others.	SDG index (2016)
<b>SDG 16</b>	<b>PEACE AND JUSTICE</b> =a measure of social dimension based on Homicides, prison population (per 100,000 people), proportion of the population who feel safe walking alone, corruption perception Index, transparency international, government efficiency and property rights among others.	SDG index (2016)
<b>SDG 17</b>	<b>PARTNERSHIPS FOR THE GOALS</b> = a measure of social dimension based on high-income and all OECD DAC countries, international concessional public finance and health, education and R&D spending among others.	SDG index (2016)
<b>Control Variables: SIZE</b>	<b>Total Assets</b> = The natural logarithm of a firm's total assets.	DataStream
<b>ROA ReportPop ReportGDP</b>	<b>ROA</b> = The return on assets, calculated as operating income after depreciation (OIADP) divided by total assets. Sustainability reports base on the continent's population per million. Sustainability reports base on the continent's GDP.	DataStream Authors' calculation Authors' calculation

# What is Education?<sup>1</sup>

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## ABSTRACT

The gaining of knowledge formed the building blocks of early civilization. The early forms of knowledge created the wonders of the world and these lessons from education form the basis of human society even today. With the passage of time, education also became essential for the earning of livelihoods and in today's competitive world, the focus of education has shifted to making students career ready. Unfortunately, even this purpose of education is not being achieved in India because of the poor quality of education. It is necessary to rediscover the roots of education which taught children the what, how and why of everything. This move to bring back into today's education the original purpose of kindling curiosity and liberating the human mind is gaining traction but we are a long way from the ideal concept of education which will create survival skills as well as liberate the mind. Also, let there be some quotes of many legendary persons in different walks of life over time which would be helpful for understanding the real meaning of education.

"Only The Educated Are Free" --- *Epictetus*

"Education is The Kindling of A Flame Not The Filling of A Vessel" --- *Socrates*

"Educating The Mind Without Educating The Heart Is No Education At All" --- *Aristotle*

"Education Is The Manifestation Of Perfection Present Already In Man" --- *Swami Vivekananda*

## I. EDUCATION --- THE NASCENT STAGE

The origins of education are in curiosity. Primitive man was curious at the phenomena of nature. He wondered about the sun and moon, he wondered at rain, thunder and lightning, he wondered at the change of seasons, he wondered at the behaviour of animals and above all, he wondered about what he could do to gain mastery over nature. This ancient spirit of enquiry, curiosity and wonderment is captured in the hieroglyphics of Egypt, in the rock paintings of Orcha in Madhya Pradesh, in the drawings and sculptures of ancient Babylon. From the beginning of mankind human beings wanted to understand the world around them and this craving for understanding grew over the years. This quest for better understanding led to the first steps in education, the first steps in creating knowledge and the first steps in passing on knowledge to others. Ancient society was so structured that the pursuit of knowledge could not be done by all because life was harsh and the struggle for survival took up all time and

<sup>1</sup>The paper is the revised version of the author's address on Education at the International Seminar on Education held at Shivananda Hall, RKMC, Golpark, on 25th March, 2023.

energy. Yet from these ancient times one can discern a striving for knowledge, efforts at organised education and the development of new frontiers of knowledge which led to the building of pyramids, the building of the great temples in Luxor and Carnac, the creations of the Hanging Gardens of Babylon and the cities of Mohenjodaro and Harappa. It is very difficult to appreciate today that without formal methods of study and learning, such wonders of the world were created and the foundations of modern civilisation were laid. All this was possible because education nurtured a deep sense of inquiry, a quest for knowledge and continuous striving for new inventions and discoveries. It is true that education was confined to a few and such cultivation of knowledge created an elite group in society be they the wise men of Africa or the Mandarins of China or the priests in Europe or the Brahmins in India or the philosophers of Greece and Rome. Access to education had to be restricted because methods of transmittal were not known. Knowledge could only be passed on by word of mouth as in the Guru-Shishya Parampara or by painfully written manuscripts on papyrus or parchment paper or by the even more difficult method of writing on stone tablets. Today we do not appreciate how difficult it was to transmit knowledge because there was no printing press, no television and no internet. Yet we marvel at the frantic pace at which knowledge grew. The invention of the sailing boat which travelled to far off countries, the invention of the compass, methods of harnessing fire, methods of agriculture, researches into ancient medicine, the discovery of the zero in mathematics and the development of ideas of democracy in ancient Greece make us realise how creative education was in spite of difficult circumstances. This was the origin and real purpose of education – to create new horizons of knowledge, to expand these horizons continuously, to enable men and women to explore the unknown and this process create people who became thinkers, whose minds were set free by education and they continuously pushed forward the frontiers of civilisation. Education in this sense and during these phases of civilisation had very little correlation with earning of livelihoods or making of a career. It is true that education was elitist in nature and in that sense the concept of education was different from the progressive character of education as we understand it today. But it is also true that the progress in the history of mankind was created by such education which was creative in nature and opened the frontiers of the mind for those who pursued it.

## II. THE EVOLUTION OF EDUCATION

The scenario on education started changing with the invention of the printing press and with new forms of economic activity developing in Europe. With the availability of the written word in printed form, spread of learning became easier and access to education was open to many more. Also new occupations and vocations were developed leading to clusters of craftsmen coming together as guilds. This led to acquisition of skills pertaining to specific areas of activity rather than knowledge in general. It is from the fifteenth or sixteenth centuries that specific activity-based education systems started taking shape instead of only pursuit of classical education or the study of pure science. This is the beginning of what we know as *Arthakari Vidya*. Today much of education is the

study of specific activities, specific skills, occupations or vocations which has the objective of gaining mastery over such specialised activity and to a great extent the pursuit of knowledge for knowledge's sake has taken a backseat. I would not like to pass judgment whether this is good or bad but to a great extent this was inevitable.

### **III. EDUCATION FOR UPWARD MOBILITY**

Today, the study of specific skills has opened new opportunities, new careers, and new lives for many and that is the primary reason why education is seen today as a stepping stone to success, as an opportunity for the masses to escape from the clutches of poverty. This was inevitable and this movement of education towards being only career oriented cannot be stopped. In historical times, education was only for the elite and education was meant to nurture the mind, to develop civilisation. However, with systems of dispersal of information and knowledge, education is no longer for the elite and therefore most people see education as a tool for improving their economic and social condition. Unfortunately, this has led to an overemphasis on the mercenary angle of education and the real purpose of education which is to liberate the mind, which is to enable the mind to think, is being lost. Today, we have a situation in which acquisition of knowledge has taken a backseat and the ability to pass exams has come to the forefront. Today, we have a situation in which parents do not care whether their children are educated. All they care is they should pass an exam which enables them to get jobs. To feed this mass frenzy, large number of tutorials and coaching classes have grown and have taken centre space. It does not matter whether these tutorials or coaches teach anything. All that they are supposed to do is to prepare students to get better marks in exams. The measure of success of such a tutorial is out of the many students they enrol, how many are successful in exams. These have mass following and are considered to be the epitome of education providers — and have taken the place of hallowed institutions of learning which aim to build character and nurture young minds. It was therefore inevitable that the valuation of a tutorial home like Aakash Educational Services was \$950 million (almost a billion dollars) when it was sold to Byju's. This is the measure of success for an educational institution today. Also to supplement the efforts of the tutorials and the coaching classes and to use technology for enabling students to pass exams, we have a very large number of edtech companies. The edtech industry was worth \$2.8 billion in 2020 and is expected to grow to a figure of \$10.4 billion by 2025. In Bangalore alone, there are over 70 edtech companies. What are these edtech companies doing? They are nothing but glorified I.T. enabled tutorial homes. Today the valuation of three edtech companies, Unacademy, Upgrad and Eraditus, is above \$1 billion each and Byju's, which is the leader, was at a point of time valued at over \$10 billion. Those who conduct tutorials by using technology have myriad followers. A particular Sir, let us not name him, based out of Bihar, who coaches for competitive exams has a subscriber base of 15.2 million on Youtube with average viewers for his videos at 4.9 million. The question arises, is this what education is? Is this the future of education?

This question is reinforced by education being seen as the only escape route from poverty and all other objectives are being lost. Today, leading business schools are no longer education providers, but employment agencies. B-Schools and IITs no longer boast about their brilliant faculty or well stocked libraries but about the placement success of their students. Today, we live in an age in which the most famous quotation on education is “*Lekha para kore je, garighora chore se*” — which means literally in Bengali, one who studies rides in carriages and cars and which really means that the only purpose of education is to earn money. If this is the situation, can education survive? This is the question which we have to answer for ourselves and for the nation as a whole.

#### **IV. DOES PRESENT DAY EDUCATION IN INDIA REALLY SERVE ITS AVOWED PURPOSE?**

If for a moment, for argument’s sake, we accept that the only purpose of education is to enable students to pass exams so that they can get jobs, let us do some checking of facts for India. Let us spend a little time in analysing whether education in India is in fact serving this purpose of preparing students to be career ready or employable or preparing them to aim for higher level exams. A report released on 2<sup>nd</sup> January 2023 (a) by the Chairman of the Economic Advisory Council to the Prime Minister and prepared by Institute of Competitiveness, Stanford University, has quite depressing findings in their report. According to this study, in India, around 50% of the children lack foundational learning, and by the time they reach grade 5, it becomes difficult for them to grasp the teaching and learning as per the appropriate grade level. The report finds that the tests of proficiency in both literacy and numeracy showed that 20% of all children only partially met Global Minimum Proficiency levels and 35% were below Global Minimum Proficiency levels.

The same study for the previous year (published in December 2021, jointly with the Government of India) on the same topic of state of foundational literacy and numeracy in India, had more detailed findings. Foundational literacy and numeracy are the two basic skills that a young student will need if he or she has to pass exams and compete for jobs. This report in its executive summary quite frankly stated that the state of foundational literacy and numeracy in India is dismal. It stated that what was worrisome was that the performance of children was not just low, it was seen to be falling over the last few years. The study of 2021 showed that the percentage of children in Standard II who could read grade appropriate text only climbed from 10.1% to 14.7% from 2012 to 2018. And what was more worrisome is that the percentage of children in Standard VII who can read Standard II level text declined from 69.1% to 67.7% between 2012 to 2018. The study further gave data to state that the percentage of Standard VII students who could do subtractions had declined to 24% from 27.8% between 2012 and 2018 and similarly, the percentage of students in Standard VII who could divide had also declined during this period. The study also highlighted that there was a very large gap between the literacy and the numerical skills of the boy student and the girl student and girls were lagging far behind in such literacy and numerical skills. Another study — the Annual State of Education Report (ASER) — which was published in the year 2022 has similar findings (b).

The study finds that while Gross Enrolment Levels of children have reached a record high of 98.4%, children are not learning much in school. The study finds that in 2022 only one-fourth of all children in Grade III were at their 'grade level' in math and only 20% were at their 'grade level' in reading. This means that most children need urgent help in acquiring foundational skills in reading and in numeracy and the report further goes on to state that during the 10 year period from 2012 to 2022, learning trajectories for both ability to read and the ability to do simple numerical exercises have remained flat. The report also stated that the difference between learning levels between grade V, VI and VII is not much and especially the levels of basic learning in grades V and VI have not seen much improvement in the last decade. This ASER study also states that students who are enrolled in private schools are doing somewhat better than those who are enrolled in Government schools.

While we are now pushing education to be career oriented and rejecting the notion of classical education as something which was intended only for the elite, these facts raise a basic question. Are we really imparting skills to children from disadvantaged families to enable them to make a living or is our education system such that only those who can afford the high fees of edtech companies and tutorial homes are privileged to have this new model of education? If this is the fact, then education is not even serving the limited purpose of making children career ready. It does not enable the underprivileged to better their circumstances as the quality of education they are getting is very poor. Maybe it is no longer confined to the highest echelons of society but it is also not a tool for major economic upliftment.

## **V. THE NEW EDUCATION POLICY**

While this dilemma remains, let us pause for a while and see what the Government is doing in this respect. The Government has come out with a New Education Policy which was published in 2020. Today the New Education Policy seems to have lost its way. Nobody knows whether or when it will be implemented and in what form. It was originally published in 2020, received Cabinet approval and as per news reports which came out in 2021 was to be implemented from the academic year 2022-23. We then received an update in 2022 when the Government announced that the NEP 2020 will be implemented from 2023-24. We have now been told by the Secretary of the Department of School Education in the Union Ministry of Education on the sidelines of the first G20 Education Working Group Meeting in Chennai in February 2023 that the Ministry of Education hopes to roll out the National Education Policy in 12 to 18 months (c). Frankly, for lack of implementation, the NEP remains primarily a statement of intent. There are major changes and disruptions which are envisaged by the New Education Policy. This is not the right forum to debate such potential developments. But it is clear that the implementation has not taken off and whether the New Education Policy will serve its purpose by improving basic levels of education and in the end reach an ideal combination of both education which makes students fit for an occupation and also serves the real purpose of education is a question that is as yet unanswered.

## **VI. THE IDEAL OF EDUCATION – WHAT, WHY AND HOW?**

At this stage let me suspend reality. We have seen the state of so called education in India and where it is headed. Can we go into a fantasy world where I dream of what education should be? The core purpose of education is to make good human beings. Plato had written: “if you ask what is the good of education in general, the answer is easy; that education makes good men and that good men act nobly”. Plato continued by pointing out how students prepared to live virtuous lives pursue the idea of responsible citizenship. That is why Plato put together the idea of “educating for liberty”. To understand what this concept of education is, let us go back to the history of classical education and see what classical education sought to achieve. We must understand that it was classical education that built the ancient civilization in India. It was classical education that created the glories of the Chinese Empires. It was classical education that propelled Western civilization upward. What were the tools of such learning? In the early part of the first millennium of history, we find that across continents and civilizations, there were certain common practices. All the classical curricula utilized a method of learning, known as the Trivium, which had the three elements of grammar, dialectic and rhetoric. This hierarchical approach to education followed the path of the students growing up over the years. In the grammar mode, children learn the foundational or basic knowledge they need in all content and skill areas (the grammar or the basic rules) of language, mathematics, history, science, visual arts, etc. before they begin to interact with concepts at more complex levels. This emphasis on the grammar or basic rules of each discipline of learning was laying down the foundation stones of knowledge so that whenever students learn something new, they understand its structure, the technical term for which is grammar. In the case of younger learners, they learn a great deal of content sometimes through songs and nursery rhymes or games in areas that include rules of the language, math and science facts, history timelines, etc. This is part of the foundation building that prepares them for more advanced learning. This is answering the question “What is this?” which comes to the minds of children when they perceive new objects, new concepts, new tools for learning and want to understand what these are. The second stage was dialectic or logic. This is what young learners are introduced to at a somewhat older age. At this stage, they start learning in a more formal way. Here they continue to build their knowledge base but are also taught rules of logic and/or proper reasoning and inquiry. This is the stage at which the students learn what is commonly referred to as critical thinking which is a part of a true dialectical experience. In a classical environment, students are prepared for proper logic instruction for two reasons. The first reason is physiological — their minds have developed and are ready for more advanced thought. Students in this age group ask and want answers to all kinds of complex questions. This is the age when students are not just satisfied by the answers to what but also ask “why?”. They ask why does this happen, how does this happen and also why does this not happen. Secondly, the ground has been prepared for them in their early years in which a knowledge foundation has been built in each of the academic disciplines. This second point is crucial as if the foundation is weak, the thinking part will fail. In a classical school students gain the foundation of necessary academic knowledge at the elementary level, and then they are ready at a higher level

to learn more complex issues. In other words, children gravitate from knowing things to analysing things. Today, many schools fall short in this endeavour, they do not place a proper emphasis on foundational knowledge in content areas to enable students to develop critical thinking. The last stage of this Trivium is of course, rhetoric. This is when students go beyond what, how and why and want to share their thoughts with others. Rhetoric is the skill of communication of ideas based on evidence, sound judgment and proper form. Rhetoric begins to take shape in the early grades, as students learn the arts of writing and speaking. But rhetoric, in its essence, is the art of training students to take a position on a topic and through oral or written form present a strong case, convincing the readers or listeners of the truth of their arguments. These are additional skills in addition to a strong knowledge base, in addition to critical judgment required to effectively complete the Trivium of classical education.

## **VII. EDUCATION TO NURTURE INBORN QUALITIES — OR TO HINDER THE FLOWERING OF THOUGHTS?**

Coming back to the world of reality, the Stanford University — Govt. of India Study in its report of 2021, had stated that 90% of a child's brain development happens by five years of age. A recent Harvard study also corroborated this. The study found that up to the age of four, almost all children are at genius level in terms of multiple frames of intelligence – be it mathematical, interpersonal, linguistic, musical, artistic, etc. But by the age of 20, the genius level proportion of the tested population dropped to 2%. We are really educating our children to take the intelligence out of them. Albert Einstein said that “it is in fact nothing short of a miracle, that the modern methods of instruction have not strangled the holy spirit of inquiry.” Therefore not only have the models of grammar, logic and rhetoric have to be followed by but we need also to nurture and develop the multiple frames of intelligence within individual children. Each child is different. We need to fuel their imagination, we do not need to cram them with stereotyped information.

## **VIII. THE GOLDEN MEAN – EDUCATION TO FREE THE MIND AND ALSO FOR SURVIVAL IN TODAY'S WORLD**

A doubt however persists. Will the emphasis on STEM education — Science, Technology, Engineering and Mathematics — crowd out the elements of a more holistic liberal education? The answer is strictly no. Let me start with the lessons learned from the global financial crisis of 2008. When companies toppled like dominoes in the developed world, it was found that many of them were headed by alumni of the top business schools of the world. This led to much soul searching and the book “Rethinking The MBA” came out of this effort. What was found that while students had problem solving skills, while students had technical knowledge, they did not understand the world around them. They did not anticipate the problems that could arise and they were generally poor at appreciating different points of view. They did not have an educated mind in its true meaning — as Aristotle defined it. Aristotle said: “it is the mark of an educated mind to be able to entertain a thought without accepting it”. Today, there is a move across the world to bring back elements of liberal education or if we use an unfashionable term “classical education” into the STEM courses. We had recently a lecture



given by the President of the Royal College of Physicians in Calcutta who came all the way from Edinburgh to explain to us how the overemphasis by doctors on examination of patients by computer assisted techniques was diminishing their skills in understanding the human being who happened to be his or her patient. He further said that while medicine was a great science, doctors also needed to learn the meaning of life and death as a doctor's task was to save patients. For this, the doctor needed to understand the patient not just as a case but as a human being. The doctor also needed to understand the forces that enable a sick man to live. He said that the best way to understand the meaning of life and death was by reading poetry. He advised that all good doctors should carry a book of poems in their bags. The move across the world, therefore, is to bring back elements of liberal education, especially when it is being realized that only focussed technical skills are not sufficient and interdisciplinary skills are needed. Most of technical education is now being reoriented to be encompass learnings from other disciplines. We must remember that the Nobel Prize on Economics went to Daniel Kahneman who was not an economist but a psychologist by training and his profound understanding of human psychology has deeply influenced economic thought. The ability to think critically and work in an interdisciplinary manner in a world which consists of diverse elements which is the cornerstone of a liberal arts education is a gap which was found in so called STEM or business education or in the MBA experience. Therefore, the need to bring this back is being understood. It has also been felt that over emphasis on technical and vocational skills subdued the ability to innovate and to create and therefore the move to reintroduce classical education has been gaining strength. Let me at this stage, use a quotation from the founding fathers of Harvard University. The founders of Harvard University felt that "the purpose of the college was to shape its students' souls. In their minds, a college was above all a place for the training of character for the nurturing of those intellectual and moral habits that together formed the basis of living the best life that one can". They felt the nurturing intellectual and moral habits could only be achieved through a critical study of the human condition which today operates under the nomenclatures of liberal education or the humanities. If this move towards bringing down the crazy focus on technical skills alone and preparing the student with more well rounded skills to deal with the workplace takes off then we would go back to the roots of classical education and if this happy middle path is reached, education in its true sense will survive in the modern age in spite of the mad rush to link it up with financial gains. I must of course acknowledge at this stage that there are many institutions across the world which did not mindlessly succumb to this mad rush and in their educational journey gave the maximum emphasis to character building. The hallowed institution where I am now standing — Ramakrishna Mission — is a shining example of an educational institute that did not lose its moorings.

## **IX. EDUCATION AND MODERN TECHNOLOGY**

Another concept that needs to be understood and discussed is the impact of technology. Is technology a disrupter? Or is it a facilitator? In my opinion, it is both. In many ways, technology has profoundly changed education. For one, it has greatly expanded access to education. While the printing press was a great leap forward, the internet and the various forms of dispersing knowledge online

worldwide are creating new methods of bringing education to a far wider student population. Today, students in rural India with net connection can not only read books on geography but they can also see what a glacier is and understand the description of the Amazon forest as described in the books. However, I must sound one note of caution. The teacher remains central to the role. If the teacher is sought to be replaced by technological tools or if the teacher is sidelined and becomes a guide on the side and students are encouraged to use technology to learn on their own, technology will boomerang as students will absorb more and more information and not education.

## **X. THE WAY FORWARD**

Is there a formula to bring back the balance between education and learning for survival in this materialistic, competitive world? The best education for worldly affairs is to help the student understand oneself. Indian philosophy provides the best guide that has stood the test of millennia. It provides a comprehensive understanding of the working of the mind and intellect and their limitations as well of the sense instruments, on which their working depends. Education must focus on these and help students understand oneself fully and the way the Self drives the whole world. There are benefits from such education not only to the student who learns but also for society in making it tension free and harmonious. Even if this is only a dream in today's educational world, good education should strive to incorporate this as the foundation for all learning, including skills.

Is there any milestone for getting there? I shall not reply to this in my own words. I shall go back to the Kathopanishad and tell you the story of Nachiketa. As you know, Nachiketa was sent to Yama Raja at a very young age. Yama Raja offered to give him three boons or Varadan as we know in Sanskrit. When Nachiketa asked for the first two boons, Yama Raja gave them to Nachiketa without any hesitation. But when Nachiketa asked for the third boon Yama Raja was surprised. He told Nachiketa that he was asking for some knowledge which was the most difficult knowledge and for a young boy of his age that knowledge was not appropriate. What was this knowledge that Nachiketa sought? He sought the knowledge and understanding of Self. In other words Brahma Gyan. It is my view that the highest purpose of education is to understand our own selves and having done so to gain mastery over ones' self. To understand the Self or the Atman is the highest form of knowledge as it empowers us and helps us to attain the highest level of the human condition. This is the key to understanding of the world. This is what education is all about and this is what education should aim for.

## **References**

- “Second foundational Literacy and Numeracy Report”, published by Institute for Competitiveness and Economic Advisory Council to the Prime Minister, Govt. of India supported by USAID.  
 “The Annual Status of Education Report 2022”, facilitated by Pratham  
 The HINDU Bureau Feb 1, 2023.

# Indo-Bangladesh Protocol Inland Waterway : A Comparative Cost Analysis with Railways and Roadways<sup>1</sup>

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## ABSTRACT

Inland waterways are generally fuel efficient, sustainable, environment friendly and economical. In spite of ample scope of development, huge potentiality of inland waterways in India has remained untapped owing to inadequate attention towards its development especially during the post-independent period. Since 2016 Government of India has been undertaking several initiatives to revive country's inland waterways system. Revival of *Indo-Bangladesh Protocol Agreement* is one such landmark developments that came into effect from 31 March 2020. Route - 1 of 'Indo-Bangladesh Protocol (IBP) inland waterway' is the most important as it establishes waterway connectivity between Haldia (West Bengal) to Pandu (Assam) via Bangladesh and in the process connects NW-1, NW-97 and NW-2. It is an alternative route of connectivity between Assam and rest of India to the Siliguri Corridor. The present study attempts to compare all-round viability of freight movement between *Haldia* and *Pandu* (Assam) through 'IBP Route-1' with Railway and Roadway in terms of commercial, environmental and social dimensions. Non-financial factors are also analysed through SWOT analysis.

**Keywords:** Inland Waterways, IBP, Environmental Cost, Sustainability, Navigation, Implicit Economic Cost, and Surface Occupation Cost.

## I. INTRODUCTION

Since time immemorial, civilizations were developed on the bank of prominent rivers, e.g. *Mesopotamia*, *Babylon*, *Indus Valley*, etc. One of the advantages of such pattern is the easy access to waterways as a means of transportation. Even now, water transportation is still the largest, cheapest and eco-friendly mode as it operates on a natural track and hence does not require huge capital investment in its construction and maintenance, except in case of artificial canals (Bhowmik and Dutta, 2021). Geographically, India is blessed with a huge network of rivers and interconnecting canals which make it an ideal place for development of inland waterways system that can facilitate multifarious economic activities of different parts of the country. It has 7,551 km coastline and about 14,500 km

of navigable inland waterways. In 2008, India ranked 9<sup>th</sup> in terms of potential navigable inland water ways (World Fact Book Report, 2008). Though the inland waterways are fuel efficient, environment friendly and economical, the huge potentiality of inland water transportation in India has remained unexploited due to inadequate attention towards its development and hence regarded as a neglected sector (Praveen and Jegan 2015). According to a press release only 13 out of 111 National Waterways (henceforth referred to as NWS) were operational for shipping and navigation. This could also be easily understood if we look at the percentage of freight movement through inland waterways across the selected countries as shown below.

Table 1  
**Freight Movement on Inland Waterways across Countries**

Country	% of Total Freight Movement
USA	8.3
Europe	7.0
China	8.7
India	0.5
Bangladesh	40
Vietnam	10

Source: World Bank Report, 2017

The scenario started to change after 2016 as Government of India undertook initiatives to revive country's inland waterways. Many flag ship mega projects like: *Jal Merg Vikas Project* (NW-1), revival of *Indo- Bangladesh Protocol Agreement*, etc. were undertaken. Such initiatives not only facilitate intra-country trade but also aim at contributing to the trade with neighboring countries, such as Bhutan, Nepal and Myanmar in the days to come. One such significant waterway is 'Indo-Bangladesh Protocol'<sup>2</sup> Inland Waterway Route – 1 which establishes waterways connectivity between Haldia (West Bengal) to Pandu (Assam) via Bangladesh by connecting NW -1, NW -97 and NW - 2.

## II. BRIEF HISTORICAL PERSPECTIVE OF IBP

The origin of water transportation system between Calcutta to Assam can be traced back to Mughal period. During the colonial period, the Britishers also realized the efficacy of it and accordingly started steamer service between Calcutta (the then capital of India) to Gauhati in 1847 with a view to meet the requirement of British tea planters to export Assam tea (which was in high demand in Europe) through Calcutta port. Even after the independence of India (1947) the Ganges-Brahmaputra inland waterway was considered to be the prime mode of communication between Assam and the rest of the country. This was continued till Indo-Pak War in 1965. This water transportation system was disrupted and discontinued after the Indo-Pak War in 1965. But in recent time, efforts are being made to revive that waterway through Indo-Bangladesh Protocol (which was originally signed in 1972).

The above protocol was renewed in 2015 with new terms and conditions and

termed as Protocol Inland Water Transit and Trade (PIWT&T) which came into force on 31st March, 2020. As a result, both the countries can use their waterways for trade and commerce between two places in one country and to third countries through the territory of the other under the terms mutually agreed upon. In such cases, fees, charges, transit guarantee, navigation system, port management and security set-up regime may be established through mutual consultations. As per this new protocol, five inland waterways routes are notified. These are:

- Route-1: Kolkata-Chandpur-Pandu-Silghat-Kolkata
- Route-2: Kolkata-Chandpur-Karimganj-Kolkata
- Route-3: Silghat-Pandu-Ashuganj-Karimganj-Pandu-Silghat
- Route-4: Rajshahi-Dhulian-Rajshahi.
- Route-5: Kalkata-Chandpur-Ashuganj (by waterways) - Akhaura -Agartala (by road)

### III. BRIEF LITERATURE REVIEW

A review of the relevant literatures is given below:

Year	Author	Essence of study
2006	Raghuram and Narayan	Assessed the viability of movement of passengers and freight by inland waterways in India.
2007	Sarkar <i>et al.</i>	Studied on two major national waterways (NW-1 and NW-2) to determine the viability of investments in them.
2010	Sriraman	Attempted to understand various issues involved in the promotion of inland water transport mode with a view to providing some long term guidelines for policy making and implementation.
2013	Nagabhatla and Jain	Explained the historical background of Inland Water Transport (IWT) sector and options that can derive optimum efficiency. It also compared river transportation system with surface road-rail network to gauge contribution of IWT for green economic growth. The study concluded that the prospect of inland navigation looks promising, wherein issues on infrastructural gaps and institutional support are to be addressed suitably.
2015	Praveen <i>et al.</i>	Explored the problems of inland water transportation sector in Kochi. They highlighted many hurdles faced by the people for whom the water transportation system of Kochi was meant for.
2015	Praveen and Jegan	Explained the background of inland water transport sector in India along with issues and challenges faced by the same.

Year	Author	Essence of study
2018	Nandita, K	Studied regular developmental works on the national waterways and pointed out challenges which can only be handled with a far-sighted approach as well as diligent, righteous and collaborative working of all stakeholders.
2019	Kumari <i>et al.</i>	Highlighted the advantage of waterways over roadways in Kuttanad, Kerala. They discussed how the neglect of waterways and growing preference to roadways has led to the environmental pollution in the area.
2020	Loui <i>et al.</i>	Studied the potential demand for inland waterways in the state of Kerala between Kollam and Thiruvananthapuram districts for a stretch of 74 km. They studied social, technical and economic feasibility of inland waterways and concluded that if the neglected navigation system is developed efficiently and economically, it will be a milestone in the development of sustainable transportation systems especially in terms of logistics movement and tourism.
2020	Das	Studied the present status, problems of inland water transportation of Assam.
2021	Bhowmik and Dutta	Evaluated all-round viability of Jal Marg Vikas Project (JMVP) of National Waterways-1 (Stretch-1: Haldia- Varanasi) in terms of economic, commercial, environmental and social perspectives.

Above review clearly showed that virtually no research work has been done so far on the all-round viability of inland water transportation system of the IBP Route-1. It should be kept in mind that both the countries revive this route in 2022 after a long gap mainly because of its economic potentiality and strategic importance. Therefore, an all-round assessment of the route by considering both quantitative (cost perspective) as well as qualitative factors (non-financial factors) will have its own relevance and significance for trade and commerce as well as for strategic use of both the countries as well as for neighbouring countries. The present study, therefore, attempts to shed light on all these aspects so as to provide a comparative cost analysis of the IBP Route-1 with the parallel railway and roadway networks.

#### IV. OBJECTIVES OF THE STUDY

The general objective of the study is to evaluate all round viability of freight movement from Haldia (West Bengal) to Pandu (Assam) through IBP Route -1 in terms of economical, commercial, environmental and social perspective. The specific objectives are as under:

- To estimate and compare the economic cost of freight movement from Haldia to Pandu through Indo -Bangladesh Protocol Inland waterways Route -1 and intra-country railways & roadways.

- To make SWOT analysis of freight movement between Haldia and Pandu through Indo-Bangladesh Protocol Inland Waterways Route -1.
- To offer suggestions, wherever applicable, to address the challenges associated with the freight movement through Indo -Bangladesh Protocol Inland Waterways Route -1.

## V. METHODOLOGY

The present study is both explorative and analytical in nature. The study uses secondary data which were collected from different websites of national and international agencies. The focal point of the study is to estimate, analyse and compare economic cost of freight movement from Haldia to Pandu through Route-1 of IBP inland waterways. It analyses both explicit and implicit costs with India's intra-country rail and road corridors. Economic cost is estimated by summing up four categories of costs – commercial cost (explicit cost), surface occupation cost (explicit cost), environmental cost (implicit cost) and accidental cost (implicit cost). Operating Costing method is used to determine the cost in terms of in composite cost unit (i.e. Per Ton-Kilometer). **Quantity of goods (Steel) transported on 17<sup>th</sup> February, 2022 from Haldia to Pandu<sup>3</sup> through IBP Route -1 and distance from Haldia to Pandu under three different modes of transportation are two basic multipliers** that are being used for estimation of commercial cost, environmental cost, accidental cost and surface occupation cost. Besides, the study individually analyses the underlying factors (e.g. energy efficiency, distance, pollution generated, etc.) that contribute heavily in choosing the best possible mode of transportation for the freight movement between Haldia and Pandu.

## VI. ANALYSIS AND DISCUSSIONS

Analysis of economic cost under rail, road and inland waterways can be presented under two broad heads – component-wise analysis and composite analysis.

### 5.1 Component-wise Analysis:

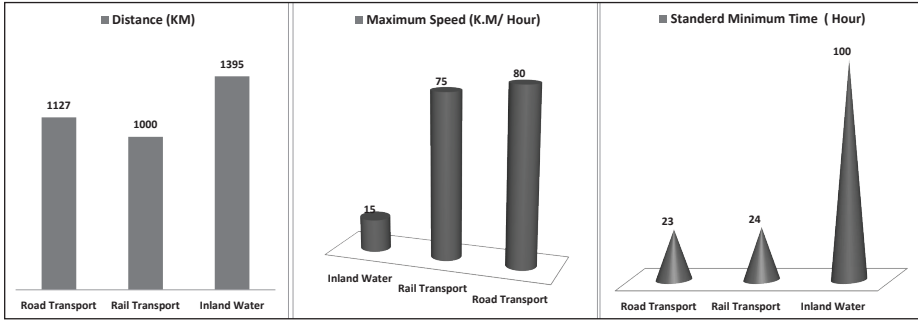
Under this section, we try to assess the impact of underlying factors individually into the cost (implicit and explicit both). These factors are – distance, standard minimum time, congestion of vehicles, energy efficiency, level of pollution generated, etc.

**(a) Standard Minimum Time Required:** Distance is the key factor in estimating economic cost of freight movement from Haldia to Pandu. From chart 1, it is clear that the distance between Haldia to Pandu in three different modes of transportation is different (1,127, 1000 and 1395 K.M corresponding to roadway, railway and waterway respectively). Here inland waterway covers highest distance comparison to roadways and railways. With the given average speed, we can calculate the expected time taken under three modes. The chart revealed that road and rail transport ensure quick movement of goods within a day whereas waterway expected to take almost 100 hours (4-fold higher time) for the same. Which means Route-1 is not time efficient mode in comparison to its

counterparts (rail and roadway) and as such not suitable for perishable products or products which require quick marketisation of product.

CHART - 1

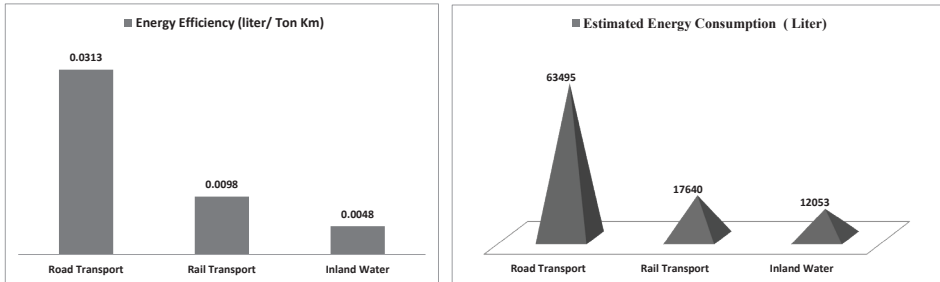
### Analysis of Standard Time Taken to Reach Haldia to Pandu



**Source:** Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www.irctc.co.in, 14-08-2022 (iii) www.biwta.portal.gov.bd, 16-08-2022 (iv) ICAR Project Report, 06-02-2020 (v) Raghuram and Agarwalla, 02-07-2012 (vi) www.pib.gov.in, 19-07-2018. (v) Authors' Calculation

CHART-2

### Analysis of Congestion of Vehicles for Freight Movement



**Source:** Calculated and constructed on the basis of (i) ICAR Project Report, 06-02-2020 (ii) Raghuram and Agarwalla, 02-07-2012 (iii) www.yatra.com, 14-08-2022 (iv) www.irctc.co.in, 14-08-2022 (v) www.biwta.Portal.gov.bd, 16-08-2022 (vi) Authors' Calculation.

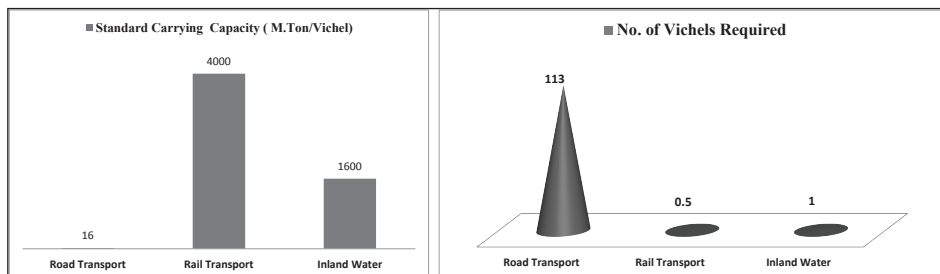
**(b) Congestion of Vehicles:** The level of congestion is very high both in road and rail route from Haldia to Pandu. Road between Haldia and Pandu uses the newly numbered NH-116 (Haldia to Kolkata), NH-12 (Kolkata to Dalkhola) and NH-27 (Dalkhola to Assam). In case of railways, Haldia and Pandu route is covered by the Eastern Railway and the North-East Frontier Railway. Both the mode is passing through very busy 'Siliguri Corridor' (popularly, known as 'Chicken Neck of India'). Chart 2 shows that railway and inland waterway required very less number of vehicles (only one) in comparison of roadway (113 vehicles) if we considered the initial freight transported through waterways (1800 MT). Therefore, use of both railway and waterway results into less congestion. But railways of this region have already been overburdened. That is why Route-1 will open up a new window for freight movement from Haldia to



Pandu and in the process expected to minimize the load and congestion, both for railway and roadways.

CHART 3

**Determination of Commercial Cost of Freight Movement**

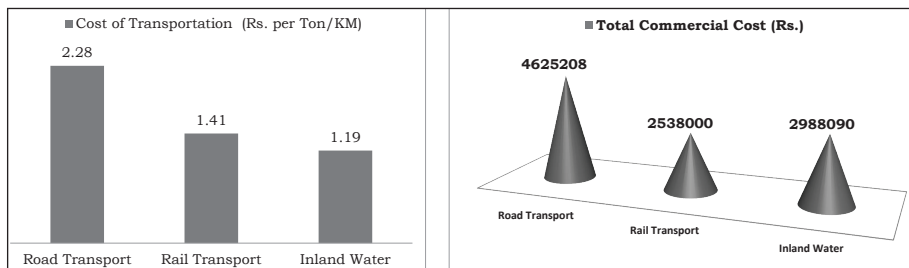


**Source:** Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www. irctc.co.in, 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) www. economictimes. indiatimes.com, 07-03-2022 (v) Authors’ Calculation.

**(c) Analysis of Commercial Cost:** Chart 3 shows that inland waterway (Rs. 2988090) is the most economical mode for freight movement in terms of commercial cost as compared to roadways (Rs. 4625208) and railway (Rs. 2538000). As the distance covered by three mode of transportation are more or less same, so, per Ton – KM cost of transportation plays the key role in favour of inland waterways. Per Ton-KM commercial cost is lowest (Rs. 1.19) in waterway as compared to roadway (Rs. 2.28) and railway (Rs. 1.41). Therefore, waterway of this route can play a significant role in transportation of durable goods and inputs (such as steel, coal, iron, metal, machinery, etc).

CHART 4

**Energy Consumption for Initial Freight Movement from Haldia to Pandu**



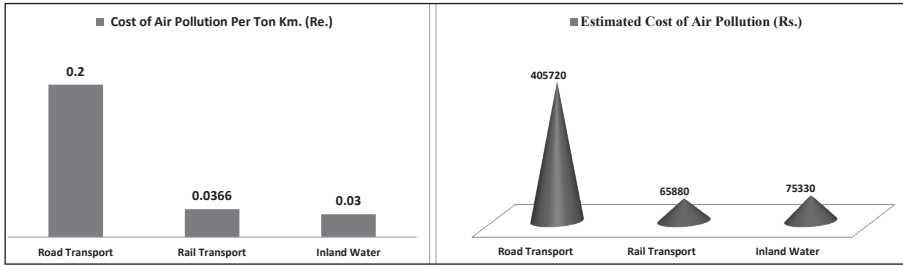
**Source:** Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www. irctc.co.in, 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) www. economictimes. indiatimes.com, 07-03-2022 (v) Authors’ Calculation.

**(d) Analysis of Energy Efficiency:** Chart 4 shows that IBP Route-1 will be most energy efficient mode of transportation as compared to road and railways to move the initial freight from Haldia to Pandu. Here, total energy consumption is the key factor which is lowest in case of inland waterways (12053 Liters) as compared to railways (17,640 Liters) and roadways (63495 Liters). This is largely because energy/fuel consumption per Ton-KM is the lowest in case of inland

waterways (Re. 0.0048 per Ton-KM).

CHART 5

**Estimation of Cost of Air Pollution for Initial Freight Movement**

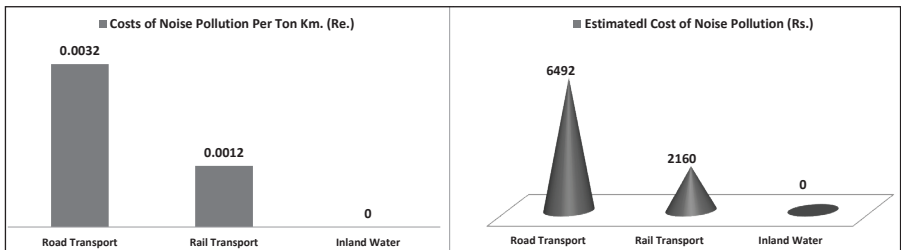


Source: Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www.irctc.co.in, 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) www.economicstimes.indiatimes.com, 07-03-2022 (v) Authors' Calculation.

**(e) Analysis of Environmental Cost:** The pollution generated by transportation mode is one of the significant costs which require to be considered very seriously. Environmental costs (though implicit in nature) can be segregated into two categories – cost of air pollution and cost of noise pollution. Chart 5 shows that implicit cost in terms of air pollution under roadway (Rs. 4,05,720) will be much higher than inland waterways (Rs. 75,330) and railways (Rs. 65,880) if the initial freight movement from Haldia to Pandu is taken as base. It is basically due to high level of per Ton-KM implicit cost of air pollution generated by the roadways which in turn occurs due to comparatively large number of vehicles requires (113 fold higher). Whereas, chart 6 shows that waterway is zero noise pollution mode of transportation as compared to railways (Rs.2,160) and roadways (Rs.6,492).

CHART 6

**Estimation of Cost of Noise pollution for Initial Freight Movement**

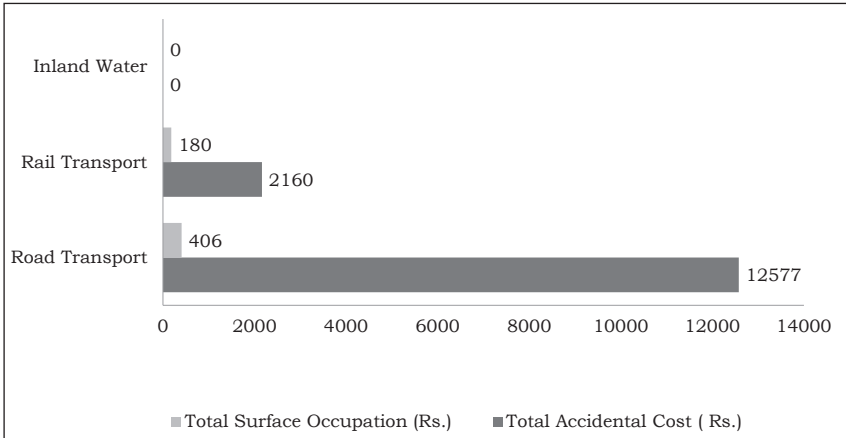


**Source:** Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www.irctc.co.in, 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) www.economicstimes.indiatimes.com, 07-03-2022 (v) Authors' Calculation.

Total environmental cost is highest in case of roadways (Rs. 4,12,212). Railways generate lowest environmental cost (Rs. 68,040). Inland water ways is slightly higher than railways (Rs. 75,330).

Chart 7

**Analysis of Surface Occupation and Accidental Cost**



**Source:** Calculated and constructed on the basis of (i) [www.yatra.com](http://www.yatra.com), 14-08-2022 (ii) [www.irctc.co.in](http://www.irctc.co.in), 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) [www.economicstimes.com](http://www.economicstimes.indiatimes.com), 07-03-2022 (v) Authors' Calculation.

**(f) Analysis of Surface Occupation and Accidental Costs:** We know that water vessels do not occupy any surface (garage etc.) and more or less accident free mode of transportation. So, the cost associated with this mode is almost zero or negligible. But in case of roadways and railways per Ton-KM accidental costs and surface occupation costs are Re. 0.0062 and 0.0012 & .0002 and 0.0001 respectively. If we consider the initial shipment, then the details of estimated surface occupation costs and accidental costs are depicted in Chart 7. It is quite clear that the inland waterways account for zero accidental cost and surface occupation cost in comparison to roadways (Rs.12577 and Rs. 406) and railways (Rs.2160 and Rs. 180) while moving freight between Haldia to Pandu.

**5.2 Composite Analysis**

Under this section, we would try to compare quantitatively three modes of transportation in terms of estimated economic cost. Estimated economic cost is determined by summing up both explicit costs (Commercial Cost) and implicit cost (environmental costs, surface occupation cost and accidental costs). The details of calculation in terms of Cost Sheet under Operating Costing technique are shown in Table 2. The total estimated economic cost under explicit and implicit costs under three modes is presented in Chart 8 below. The cost is highest under roadways and lowest in the waterways. Railway is slightly costly as compared to waterways.

TABLE 2

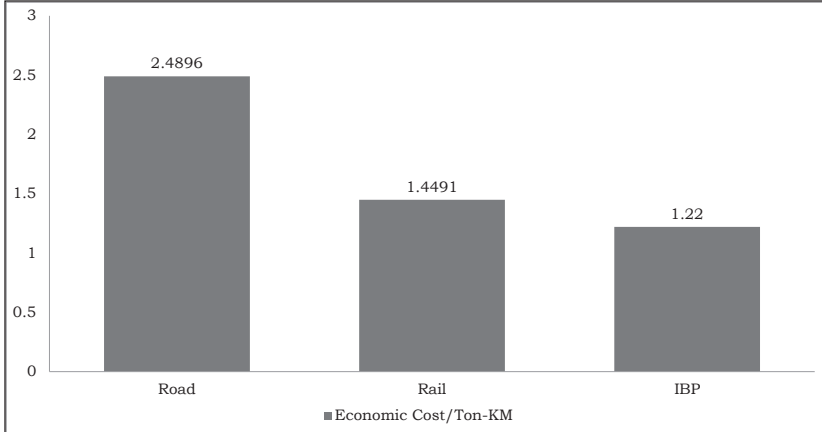
**Estimated Comparative Cost Sheet**

Sl. No	Particulars	Roadway	Railway	Waterway
01	Cost of transportation (per Ton-KM)	2.28	1.41	1.19
02	Cost of Air Pollution (per Ton-KM)	0.2	0.0366	0.03

03	Cost of Noise Pollution (per Ton-KM)	0.0032	0.0012	0
04	Accidental Cost (Per Ton-KM)	0.0062	0.0012	0
05	Surface Occupation Cost (Per Ton-KM)	0.0002	0.0001	0
06	Total Cost in INR (Per Ton-KM) = (1+2+3+4+5)	2.4896	1.4491	1.22
07	Distance Involved (KM)	1127	1000	1395
08	Freight Transport on 17-02-2022 (Ton)	1800	1800	1800
09	Total Cost (Rs.) = (6x7x8)	5050403	2608380	3063420

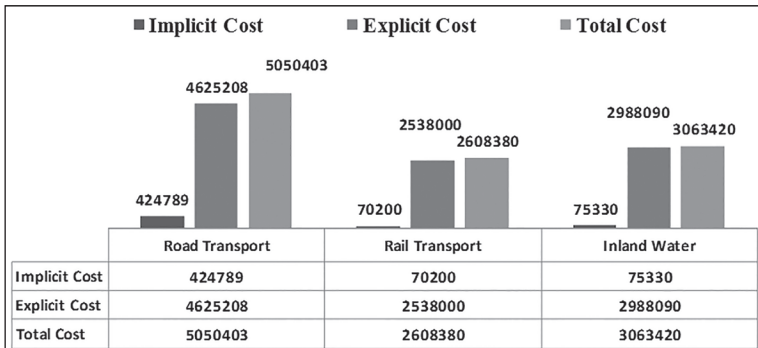
**Source:** Calculated and constructed on the basis of (i) www.yatra.com, 14-08-2022 (ii) www.irctc.co.in, 14-08-2022 (iii) ICAR Project Report, 06-02-2020 (iv) www.economicstimes.indiatimes.com, 07-03-2022 (v) Authors' Calculation.

CHART 8

**Comparison of Total Estimated Economic Cost of Freight Movement**

**Source:** Constructed on the basis of Estimated Cost Sheet

CHART 9

**Comparison of Per Ton-K.M Cost under Rail, Road and Waterways**

**Source:** Estimated Cost Sheet as shown in Table-2

The final output in terms of estimated economic cost per Ton-KM. as presented in Chart 9 explains as to why inland waterway is the most economical mode of transportation. Economic cost per Ton-KM in inland waterways (Rs. 1.22 per ton-KM) is lowest for freight movement as compared to railways (Rs. 1.45) and roadways (Rs. 2.49). But it has to be noted that inland waterway is facing a neck to neck competition with railways.

No doubt, inland waterway has an edge in terms of cost of transportation. But there are several other factors that influence the choice of transport. For example, if we stick to timeliness as well as quick marketability of the product, roadway is the most favourable choice followed by railway and waterway in that order. But if we put much emphasis on cost efficiency, energy efficiency, and environmental impacts and if the product is of durable nature then inland waterway would be the most preferred means in case of movement of goods from Haldia to Pandu (Assam) followed by railway. However, railway is always the favourable mode of transportation if we tend to consider all the underlying factors. The above point could easily be understood by a cursory glance to Table 3.

TABLE 3

**Factor- wise Summary of Favourable Mode of Freight Movement**

<b>Factors/Parameters</b>	<b>Most Favourable</b>	<b>Favourable</b>	<b>Unfavourable</b>
Commercial Cost Efficiency	Railways	Inland waterways	Roadways
Time Efficiency	Roadways	Railways	Inland waterways
Energy Efficiency	Inland Waterways	Railways	Roadways
Air Pollution Efficiency	Railways	Inland Waterways	Roadways
Noise Pollution Efficiency	Inland Waterways	Railways	Roadways
Environmental Cost Efficiency	Inland Waterways	Railways	Roadways
Accidental Cost Efficiency	Inland Waterways	Railways	Roadways
Surface Cost Efficiency	Inland Waterways	Railways	Roadways
Per Unit (Ton KM.) Economic Cost Efficiency	Inland Waterways	Railways	Roadways
Quick marketability of product or High perishability of product	Roadways	Railways	Waterways

**VIII. SWOT ANALYSIS OF IBP ROUTE-1**

The IBP Inland Waterways agreement is one of flagship bilateral projects of Indian inland waterways system which aims at reviving the historical abandoned route. Apart from economic and environmental consideration, the revival of the waterways has some strategic implications. It would open up a new window of transportation as an alternative route to Assam through Siliguri Corridor. The

increasing hostility between India and China added strategic importance to the development of the route using Indo-Bangladesh Protocol. As such, non-financial factors play a very vital role. In order to take into account all such non-financial factors into consideration, we can use SWOT Analysis (Strength Weakness Opportunities and Threats). Table 4 attempted to capture all such non-financial factors affecting the viability of Indo-Bangladesh protocol waterway route – I. The analysis is presented in the matrix in Table 4.

Table 4  
**SWOT Analysis of Freight Movement from  
Haldia to Pandu through ‘IBP Route -1’**

Strength	Weakness
Minimal land acquisition All weather mode. Low development cost. Minimal traffic congestion. Minimal environmental cost. New route of connectivity to north-eastern part of India with rest of India. Present pro-India minded Bangladeshi Government.	Huge time consuming mode Pending construction work Historically neglected mode in India. Lack of river management system. Huge international statutory formalities are associated
Opportunities	Threats
Scope of employment. Less accident prone mode. Revival of water ways Prospect of linking up with Jaigaon (Bhutan). Reduce the burden of rail and roadways Possibility of infrastructural development on the river basin area In case of adverse bilateral relation with China, the Indo-Bangladesh Protocol Inland waterways Route -1 will be the alternative route of access to North-East India avoiding the strategic ‘Siliguri Corridor’.	Securing <i>Aviral Dhara</i> of water in all monsoons. Over dragging harmful for river system. Maintaining permanent navigation facility. In case of change in political situation in Bangladesh, the renewal of protocol agreement may be in big trouble. Possibility to face competition from the ongoing road and rail projects in Bangladesh. Upon completion, they will be most favourable mode transportation between Kolkata and North-East India through Bangladesh. Bio-diversity of Sundarban Delta may be affected

## IX. SUMMARY OF FINDINGS AND CONCLUSION

Per Ton-KM. economic cost of inland waterway (Rs. 1.22) is the lowest for freight movement from Haldia to Pandu through IBP inland waterways route-1. Railways occupied the next slot with Rs 1.45 per Ton-KM.

Except time inefficiency, commercial cost efficiency and air pollution cost, inland waterway is found to be most favourable mode of freight transportation in all other factors or parameters. Even in case of commercial cost efficiency and air pollution cost, inland waterway occupied the favourable slot. In totality, waterway appears to be most preferable mode of transport.

As water vessels are slow moving waterway is time inefficient and as such will create major obstacle for quick transportation and quicker marketing of goods.

Herculean infrastructural initiatives (e.g. dragging, installation of navigation facilities, ports, protecting environmental obligations, office and administrative set up, etc.) are associated with this project and these are the joint responsibilities of two countries.

Inland waterway is the cheapest mode of transportation all over world and IBP Route-1 is not an exception to that. Apart from economic importance the route will have to cater the geo-political interest of India. This protocol route will be the only alternative window of connectivity with north-eastern part if 'Siliguri Corridor' becomes non-functional. From defense perspective, development of transport line alternative to Siliguri Corridor is of immense importance to counter any military face off situation. In such case, the Siliguri Corridor will be the first potential target and the total rail and road connectivity with north-eastern part will be cut-off from the rest of the country. Then the IBP Route-1 will be the only window for maintaining supply line with north-eastern part of India. As such, mutual understanding and cooperation with the Bangladesh Government is needed for the long term operational sustainability of the project. As the route combines environmental friendliness with competitive economic advantage (lowest cost of freight movement as compared to roadway and railway), it would have tremendous importance in promoting trade and commerce between India and neighbouring countries like Bangladesh, Nepal, Bhutan and Myanmar and as such will be a facilitator to trade and commerce of the entire region.

## References

### Published Works

- Bhowmik, G. & Dutta, S. (2021). Jal Marg Vikas Project of National Waterways-1 (Haldia to Varanasi): a comprehensive assessment. *Indian Journal of Accounting*, 53(1), 90-107.
- Crompton, G. (2004). The tortoise and the economy: inland waterways navigation in international economic history. *Journal of Transport History*, 25(2), 1-22.
- Das, A. (2021). Role of waterways in Assam with special reference to inland waterways transport [Doctoral Dissertation]. *Gauhati University*.
- Kumari, M., Syamaprasad, S. & Das, S. (2019). Inland waterways as an alternative and sustainable transport in Kuttanad region of Kerala, India. *Advances in Water Resources Engineering and Management*, 39, 245-257.
- Loui, T.R., Longhinos, B., Adhin, P.C. & Kartik, S. (2020). Feasibility study on sustainable development of inland navigation under changing traffic scenario of Kerala: a case study. *Journal of the Institution of Engineers (India): Series A*, 101(3), 523-534.
- Nagabhatla, N. & Jain, P. (2013). Assessing the potential role of inland water navigation for green economy. *Journal of Environmental Professionals Srilanka*, 2(1), 25-37.

- Nandita, K. (2018). A reckoning of inland waterways transport system in India. *Public Affairs and Governance*, 6(2), 172-185.
- Praveen, S. & Jegan, J. (2015). Key issues and challenges for inland water transportation network in India. *International Journal for Scientific Research and Development*, 3(10), 653- 658.
- Raghuram, G. & Narayan, R. (2006). Viability of inland water transport in India [Working Paper]. *Indian Institute of Management Ahmadabad*.
- Reference Note, Lok Sabha Secretariat (2015). Development of waterways in India. *Parliament Library and Reference, Research, Documentation and Information Service*, 1-13.
- Praveen, S., Rajakumar, S., Bhagavathi, P.T. & Jegan, J. (2015). A case study on inland water transportation system in Kochi city region. *International Journal for Technological Research in Engineering*, 2(11), 2802-2806.
- Sarkar, P.K., Mathur, V., Maitri, V., & Kalra, K. (2007). Potential of economic gains from inland water transport in India. *Transportation Research Record*, 2033(1), 45-52.
- Sriraman, S. (January, 2010). Long term perspectives on inland water transport in India. *RITES Journal*, 18.1-18.14.

### Websites

- <http://www.inlandwaterwaysauthorityofindia.nic.in>.
- <https://www.economicstimes.indiatimes.com>.
- <https://www.irctc.co.in>.
- <https://www.mea.gov.in>.
- <https://www.pib.gov.in>.
- <https://www.rewway.at>.
- <http://www.worldbank.org>.
- <https://www.yatra.com>.
- <https://www.yourarticlelibrary.com>.

### Endnotes

- IBP Route-1 is passing through NW-1 (Kolkata to Haldia), NW-97 (Namkhana to Akara Bank, last point of India) and afterwards entering into Bangladeshi side, covering Khulna, Narayanyanganj, Siralgunj and Chilmari. This route further enters into India at Dhubri of Assam and taking NW-2, it reaches at Pandu (which is adjacent to Gauwati).
- As per the report of the *Economic Times* (published on 7<sup>th</sup> March, 2022), one vessel with two barges started voyage from Haldia to Pandu via Indo-Bangladesh Protocol Inland Waterways Route-1. In their inaugural voyage on 17<sup>th</sup> February, 2022, after a long interval, these vessels were carrying 1800 MT Tata steel and reached at Dhubri of Assam.



# **The Trajectory of Consumer Buying Behaviour in Kolkata during the COVID-19 Pandemic**

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## **I. BACKGROUND OF THE STUDY**

At the end of 2019, a pandemic broke out in Wuhan, China due to which the entire globe turned out to be a victim. The occurrence was first noted on December 31, 2019, which was later declared as a worldwide pandemic on March 11, 2020 (<https://pubmed.ncbi.nlm.nih.gov/32191675/>) which led to a medical and financial emergency across the world with a spillover effect on different sectors having an economic impact over a long-run time horizon. This encouraged governments around the globe to inspire their citizens to exercise social distancing and undertake quarantine as greatly as probable to limit the spreading of the disease and contact (CDC, 2020). The leaders of the nations most affected by the sickness, including those in the European Union and the UN, have acknowledged their helplessness in the face of this natural disaster and stated that they are unsure of when this abomination will come to an end. Leading journals and publishers have therefore issued an urgent plea for further research and pertinent information for individuals dealing with the COVID-19 pandemic. In-depth research on the social, behavioral, and contextual aspects of the communities, societies, and populations affected by the COVID-19 outbreak has been requested by social science experts (WHO, 2020). Previous research has shown that the dread of an unidentified deadly contagious illness can have a profound psychological impact on people, increasing their worry and tension (Arumugam, 2020; Hyams *et al.*, 2002).

Unemployment went up to nearly 24 per cent in April 2020. This was possibly a result of a reduction in demand as well as the disruption of the workforce faced by companies. Moreover, this caused a gross value added (GVA) loss of more than nine per cent for the Indian economy that month. In January 2021, India saw an unemployment rate of over six per cent. This was a noteworthy improvement

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from the previous month. A damaging impact on the Indian economy caused due to a total lockdown was looming (<https://www.statista.com/statistics/1111487/coronavirus-impact-on-unemployment-rate/#:~:text=COVID-19>). As a result of this event, the expenditure on medical items increased in leaps and bounds with an increase in demand for masks, sanitizers, hand gloves, hair caps, disinfectants, soaps, hand wash and many more. This has made a tremendous change in the buying behaviour of the customers and their intuition toward purchase decisions.

Previous studies have examined individual panic buying from a variety of angles, including governmental and legal actions (Kobayashi & Anbumozhi, 2016), retailers and suppliers (Shou *et al.*, 2011; Zheng *et al.*, 2020), panic purchase of vaccinations (Godlee, 2010), and natural calamities (Thomas & Mora, 2014). According to certain studies, it is crucial to understand how social media affects consumers' behaviour and purchasing intents (Aragoncillo & Orus, 2018), as well as their need to make impulsive purchases (Chung *et al.*, 2017).

Even though these studies have shed light on consumer stockpiling behaviour, comprehensive research that emphasizes how consumer psychology affects panic buying during a pandemic is still absent (Liren *et al.*, 2012; Sheth, 2020; Yuen *et al.*, 2020). Since, people, places, and things have begun to become more reachable and affordable as a result of globalization and digitization everything in life, from toilet paper to airline tickets, moved very quickly. This was only a mouse click away. With the introduction of COVID-19 to the world, all business planning, meetings, and travel came to an end. The COVID-19 outbreak issue caused people to reflect on how families have changed their spending and online buying, as well as what the traits of the households that have reacted the quickest and most forcefully are. Customers reportedly used supermarket sales to stockpile durable products, according to news reports (Sharma & Jhamb, 2020).

Traders and service providers have also had to change with the times and provide what customers want. The opportunity for traders to greet their clients has been limited recently. However, when they reopened, they encountered greater costs for maintaining and disinfecting their property. Consumers frequently feel uneasy to attend stores because of the risk of infection, so they simply make required purchases and buy quickly products (Valaskova, 2021).

The literature now in print has demonstrated the significance of considering panic buying from an economic, social, and psychological perspective. However, the body of empirical research that has examined the variables that can significantly affect consumer panic buying is still in its infancy (Wijaya, 2020). Although some recent studies have suggested that perception, scarcity, coping mechanisms, uncertainty, and a variety of other psychological and social factors are antecedents to consumer panic purchasing, they have also suggested that additional empirical research is needed to understand how these factors interact as well as how they mediate or moderate the relationships between the predictor variables and consumer panic buying (Yuen *et al.*, 2020).

COVID-19 has altered the entire spectrum of consumer behaviour processes, from problem awareness through purchase and consumption, creating several chances for further study.

Hence, it becomes imperative for us to make an in-depth analysis empirically as to how buying behavior is evident among consumers during the outbreak of the COVID-19 pandemic in Kolkata.

This study serves several benefits. Firstly, it can assist firms to adjust to changing consumer needs and advance their understanding of consumer behaviour during times of crisis. Moreover, one of India's greatest metropolises, Kolkata boasts a distinctive cultural and economic environment. Investigating consumer behaviour in Kolkata can help researchers understand how people behave in similar cities in India and other emerging nations. Additionally, a future study in this area may have a foundation for the analysis of consumer behaviour during the pandemic. It can aid academics in locating gaps in the body of knowledge and in creating fresh frameworks for comprehending and explaining consumer behaviour in times of crisis.

## II. PAST STUDIES

Some of the existing studies from both the national and international contexts are studied minutely which gives us some exciting outcomes that are noted below:

AbdelAziz *et al.* (2023) try to examine the variables that affect customers' intention to co-create value during the COVID-19 pandemic. This essay examines Egypt as a Muslim nation's small and medium-sized firms (SMEs) that sell modest clothing online. This research bases its theoretical framework for the variables impacting customers' value co-creation intention on social media on the social cognitive theory (SCT) and the literature. The framework is then quantitatively tested using the Smart PLS software's structural equation modelling methodology based on the partial least squares method (SEM-PLS). First, addressing the subject factors, self-efficacy has a positive significant effect on all dimensions of customer engagement, and outcome expectancy has a positive significant effect on cognitive customer engagement. These findings provided empirical support for the SCT. However, Dash, G. (2023) introspected that the most recent pandemic strain, COVID-19, has, as usual, created fresh opportunities for research into consumer behaviour. This study is focused on consumer panic buying as a result of the current pandemic. To assess the papers published in the recent three years (2020-2022), this study uses a bibliometric technique (obviously, there is no research before 2020). According to the Web of Science database, 79 studies are listed. To begin, a broad examination of the state of research is carried out by mapping nations, authors, publishing venues, citations, institutions, etc. The association or connection between the aforementioned factors and the research is provided. Second, based on detailed keyword research and deep dive, insights and suggestions are offered. According to the data, panic buying did occur during COVID-19, particularly in the first year, and specific causes were to blame. Pop *et al.* (2023) stated that many people today utilize mobile applications for a variety of reasons to manage their everyday tasks more comfortably and effectively. Mobile applications help to improve the shopping experience for customers as they make decisions. The current study, which is based on the S-O-R paradigm, investigates the direct and indirect effects

of the utilitarian, hedonic, and social characteristics of mobile applications on users' attitudes and intent to purchase through fast fashion mobile apps. The proposed conceptual model was tested using an online survey, and the reliability and validity of the reflective constructs were assessed using the partial least squares (PLS) modelling technique. According to the findings, hedonistic reasons influence consumer attitudes more than utilitarian ones. Moreover, Said *et al.* (2023) introspected that diverse consumer responses to the COVID-19 pandemic have included changes in purchasing frequency, volume, product categories, and delivery methods. To understand changes in expenditure and behaviour one year into the pandemic, this study examines spending data from a sample of 720 U.S. households at the beginning of de-confinement and the early vaccination deployment. Apart from a 28 per cent reduction in prepared food spending, this study reveals that overall spending is comparable to pre-pandemic levels. While politically conservative respondents are more likely to shop in-person and by pickup, better-educated and higher-income households with children have switched away from in-person purchasing. Furthermore, Theodorou *et al.* (2023) introspected that the theory of planned behaviour (TPB) was used in the current study to analyze customers' intentions to shop online during the COVID-19 epidemic and its effects on consumer behaviour. The core components of the model, which already included attitudes towards e-commerce, subjective norms, and perceived behavioral control, were expanded to include the fear of shopping in a physical store brought on by COVID-19. 406 adults over the age of 18 who all lived in the Regional Unit of Thessaloniki participated in the survey. The results showed that during the epidemic, different factors affected online purchasing intention than they would in the future, with fear of buying in a physical store being the most important component. Similarly, Sharma & Sonwalkar (2013) studied consumer buying behaviour during the economic crisis. They are of the view that consumers all across the world experience significant economic and social effects as a result of any financial crisis. Through many levels of economies, including the Indian culture's purchasing pattern, diverse behaviours have changed. They concentrate on the shifting trends in consumer purchasing behaviour amid the global economic crisis as a result. In the study by Leong *et al.* (2008), based on a large-scale survey of 2000 adult consumers from the five impacted countries—Indonesia, Malaysia, Singapore, South Korea, and Thailand—the nature, causes, and effects of consumer hostility during the 1997 Asian economic crisis are examined. The US and Japan were chosen as the target nations for the development and testing of an animosity model. As expected, both situational and stable hostility decreased consumers' willingness to purchase goods from a country they saw as being unfriendly. Situational enmity, but not persistent animosity, had a negative impact on both affective assessments and cognitive judgements. As anticipated, external attribution, perceived external control, and stable enmity all increased situational animosity. These results have implications, which are explored along with potential study avenues. It should also be mentioned that Ang *et al.* (2000) state that consumer research from a variety of Asian nations shows that during the recession, people are being more frugal and have less confidence. More comparative shopping, delaying the purchase of expensive items, emphasizing product functionality, and durability,

switching to the lower end and local brands, adopting a product life cycle cost perspective, relying more on informative than imagery-based advertisements, and shopping at discount stores more frequently are some of the strategies used by consumers to get through the economic crisis.

After an inclusive survey of the existing studies from both national and international contexts, the authors could identify some research gaps. First, comparatively, a lesser number of research works exist regarding consumer buying behaviour in the context of the national scene during the pandemic, particularly in Kolkata. Moreover, the existing studies have failed to take note of a large number of samples throughout the study area.

Considering the past studies, the present study seeks answers to the following questions:

- Do there exist any difference in consumer buying behaviour on the basis of gender during the COVID-19 pandemic?
- Do there exist any difference in consumer buying behaviour on the basis of age during the COVID-19 pandemic?
- Do there exist any difference in consumer buying behaviour on the basis of educational qualification during the COVID-19 pandemic?
- Do there exist any difference in consumer buying behaviour on the basis of monthly income during the COVID-19 pandemic?

### **III. OBJECTIVES OF THE STUDY**

The loopholes within the existing studies allow the authors the opportunity to carry out a comprehensive study with the below-mentioned objective:

- To study the buying behaviour of consumers during the COVID-19 pandemic on the basis of personality characteristics.

### **IV. RESEARCH METHODOLOGY**

This study belongs to the domain of marketing where consumer intuition has been tried to measure. There are different factors that can affect buying behavior of consumers. These include the marketing factors (product design, price, promotion, packaging, positioning, and distribution) (Alhaimer, 2021), personality characteristics (age, gender, education, and income) (Muangmee *et al.*, 2021), psychological drivers (purchase motives, product perception, and attitude to the product) (Hudimova *et al.*, 2021), situational framework (the physical environment at the time of purchase, the environment, and the time factor) (Zhang *et al.*, 2021), social determinants (social status, reference groups, and family) (Naeem & Ozuem, 2021), cultural factors (religion, social class) (Goswami & Chouhan, 2021), and intergenerational behavior (Dabija *et al.*, 2018). This study focuses on the consumers of Kolkata with their buying products from different categories during the presence of the global pandemic COVID-19 on the basis of personality characteristics (Muangmee *et al.*, 2021) only. The study is empirical with primary data. It also includes secondary data as far as the literature review is concerned from different websites to analyze consumers' sentiments theoretically along with identifying the existing research gaps.

#### 4.1 Sample Design

The primary data is collected through a well-structured questionnaire from the consumers in Kolkata using a five-point Likert scale to quantify the same. Also, some secondary data is collected to analyze the consumers' sentiments.

The population of the study includes the people who are the consumers of the mentioned product categories in the Kolkata district of West Bengal.

Cochran's formula for determination of sample size (1977) is applied considering an infinite population following the below-mentioned formula that gives us a sample size of 384.16.

$$n_0 = \frac{Z^2 pq}{e^2}$$

$$n_0 = \frac{(1.96)^2 * 0.5 * 0.5}{0.05^2}$$

Where;

Z = selected critical value of desired confidence level

$n_0$  = sample size

p = estimated proportion of an attribute present in a population

q = 1 - p

e = desired level of precision

At a 95% confidence interval with a 0.05 level of significance

The total complete sample of 384 is collected from 144 wards under the Kolkata Municipal Corporation (KMC) (<https://www.kmcgov.in/KMCPortal/jsp/KMCPortalHome1.jsp>) to include respondents from all over the city.

#### 4.2 Data Collection

The data collection work is conducted from August 29, 2022, to February 6, 2023. Keeping in mind the advent of the pandemic, the authors consciously decided to collect the data through Google Forms. A stratified representative convenient sampling technique is used while collecting the sample.

#### 4.3 Variables Used

This study uses different variables namely gender, age, educational qualification, and monthly income, which are the grouping variables. Moreover, different variable constructs namely searching the information, purchasing decision, post-purchase evaluation, personal choices, ability and knowledge, lifestyle, role of family members, role of reference groups, place, change in purchase behaviour, and discouraging offline purchase.

#### 4.4 Tools Used

To analyze the non-parametric data, the authors decide to apply different statistical tools like Cronbach's Alpha to study the reliability of the scale, and the Mann-Whitney test and Kruskal-Wallis test for studying the differences in the constructs on the basis of the grouping variables. Furthermore, the authors applied IBM SPSS Statistics 21 to compute the results of the different statistical tools.

#### 4.5 Cronbach's Alpha

It is essential to compute and report Cronbach's alpha coefficient for internal consistency and reliability for any scales or subscales that are applied when employing Likert-type scales. The usual range for Cronbach's alpha reliability coefficient is 0 to 1. The coefficient, however, truly has no lower bound. The internal consistency of the scale's items is inversely correlated with how near Cronbach's alpha coefficient is to 1. On the basis of the formula  $\frac{r_k}{1+(k-1)r}$ , where  $r$  is the average of the inter-item correlations and  $k$  is the number of objects taken into consideration. The mean inter-item correlations and the number of items on the scale both affect how large of alpha is produced (<https://scholarworks.iupui.edu/bitstream/handle/1805/344/gliem+&gliem.pdf?sequence=1>). The rule of thumb for the alpha is  $> 0.9$  is excellent,  $> 0.8$  is good,  $> 0.7$  is acceptable,  $> 0.6$  is questionable,  $> 0.5$  is poor, and  $< 0.5$  is unacceptable (George and Mallery, 2003).

##### Mann-Whitney Test (U)

N.H. ( $H_0$ ): The two populations are equal

A.H. ( $H_1$ ): The two populations are not equal

The formula for the Mann-Whitney test is as follows:

$$U_1 = n_1 n_2 + \frac{n_1(n_1 + 1)}{2} - R_1$$

$$U_2 = n_1 n_2 + \frac{n_2(n_2 + 1)}{2} - R_2$$

Where;

$R_1$  = sum of the ranks for group 1 and  $R_2$  = sum of the ranks for group 2.

The null hypothesis is rejected if the p-value is less than 0.05 ([https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704\\_nonparametric/bs704\\_nonparametric4.html](https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704_nonparametric/bs704_nonparametric4.html))

#### 4.6 Kruskal-Wallis Test (H)

$$K = \frac{12}{N(N+1)} \sum_i^k \frac{R_i^2}{n_i} - 3(N+1)$$

Where;

$N$  is the total number,  $n_i$  is the number in the  $i$ -th group, and  $R_i$  is the total sum of ranks in the  $i$ -th group.

The null hypothesis is rejected if the p-value is less than 0.05 (<https://www.sciencedirect.com/topics/medicine-and-dentistry/kruskal-wallis-test>).

## V. RESULTS AND DISCUSSIONS

### Cronbach's Alpha

TABLE-1  
Reliability Testing of the Scale

Construct Name	Cronbach's Alpha	No. of Items
Searching the Information	0.838	3
Purchasing Decision	0.854	3
Post-Purchase Evaluation	0.799	3
Personal Choices	0.764	4
Ability and Knowledge	0.875	3
Lifestyle	0.786	2
Role of Family Members	0.703	3
Role of Reference Groups	0.894	3
Place	0.812	3
Change in Purchase Behaviour	0.771	4
Discouraging Offline Purchase	0.833	7

To get the best result, the authors decided to collect the responses from the 384 respondents by providing a list of 38 questions which were well structured using a five-point Likert scale. Cronbach's alpha is used to test the reliability of the scales used within the questionnaire. A total of 11 constructs are analyzed using this technique where it is observed that searching the information, purchasing decision, ability, and knowledge, the role of the reference group, place, and discouraging offline purchase have a Cronbach's alpha of greater than 0.8 indicating that the constructs have a good scale. However, the constructs post-purchase evaluation, personal choices, lifestyle, the role of family members, and change in purchase behaviour have a Cronbach's alpha of greater than 0.7. This indicates that the constructs have an acceptable scale. Hence, the authors can proceed with further analysis work.

### Mann-Whitney Test (U)

TABLE-2  
Mann-Whitney Test on the basis of Gender

Construct	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	a. Grouping Variable: Gender
Searching the Information	16986.500	-1.323	0.186	
Purchasing Decision	18283.000	-.117	0.907	



<b>Construct</b>	<b>Mann-Whitney U</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed)</b>	<b>a. Grouping Variable: Gender</b>
Post-Purchase Evaluation	14090.000	-4.003	0.000*	
Personal Choices	15254.500	-2.930	0.003*	
Ability and Knowledge	14651.000	-3.490	0.000*	
Lifestyle	16399.000	-1.889	0.059	
Role of Family Members	17079.500	-1.232	0.218	
Role of Reference Groups	14909.000	-3.254	0.001*	
Place	16612.500	-1.664	0.096	
Change in Purchase Behaviour	16299.000	-1.953	0.051	
Discouraging Offline Purchase	16531.000	-1.731	0.083	

(\* indicates significance at 1% level)

The above table 2 represents the result of the Mann-Whitney (U) test where it can be seen that at a 95% confidence interval, with a 5% level of significance, the null hypothesis is rejected for the factors namely, Post-Purchase Evaluation, Personal Choices, Ability and Knowledge, and Role of Reference Groups. So, this clearly provides the conclusion that on the basis of gender, the above-mentioned factors create a difference in consumer buying behaviour among males and females. Post-Purchase Evaluation can be defined as the period following the purchase and usage of a good or service during which the user considers whether the purchase met, surpassed, or fell short of expectations. It is so because men tend to adopt a simple, rapid approach and strengthen their utilitarianism. They will base their choice on information and facts. Women, on the other hand, like making emotional decisions and have a tendency towards self-satisfaction. Likewise, the personal choices of men and women vary due to differences in gender as men want to follow a quicker process in buying whereas women want to go through different products before arriving at the buying decision which has remained unchanged during COVID-19. During the time of COVID-19, the role of reference groups played a significant role as buying decisions were adopted after frequent consultations and suggestions keeping in mind the pandemic. However, factors like Searching the Information, Purchasing Decisions, Lifestyle, Role of Family Members, Place, Change in Purchase Behaviour, and Discouraging Offline Purchase indicates equality in consumer buying behaviour among male and female due to a p-value more than 0.05. So, the unexpected occurrence of

the COVID-19 pandemic turned out to be a nightmare for the citizens keeping a similar decision-making pattern by both genders.

### Kruskal-Wallis Test (H)

TABLE-3  
Kruskal-Wallis Test on the basis of Age

Test Statistics a,b				a. Kruskal Wallis Test	b. Grouping Variable: Age
	Chi-Square	df	Asymp. Sig.		
Searching the Information	9.453	4	0.051	a. Kruskal Wallis Test	b. Grouping Variable: Age
Purchasing Decision	10.924	4	0.027*		
Post-Purchase Evaluation	12.718	4	0.013*		
Personal Choices	30.328	4	0.000*		
Ability and Knowledge	19.867	4	0.001*		
Lifestyle	10.376	4	0.035*		
Role of Family Members	14.448	4	0.006*		
Role of Reference Groups	11.268	4	0.024*		
Place	10.315	4	0.035*		
Change in Purchase Behaviour	2.225	4	0.695		
Discouraging Offline Purchase	22.830	4	0.000*		

(\* indicates significance at 1% level)

Table 3 represents the result of the Kruskal-Wallis test where it can be seen that at a 95% confidence interval, with a 5% level of significance, the null hypothesis is rejected for all the factors except Searching the Information and Change in Purchase Behaviour. Hence, on the basis of age, the buying behaviour of the consumers differs on most of the predictors during COVID-19. The predictors Searching the Information and Change in Purchase Behaviour provide a contrary scenario. It may be so because consumers from different age groups apply the same technique to search for information on any product category during COVID-19 as everyone was following the stringent rules imposed by the government. Change in Purchase Behaviour also remains the same across

different age groups as most of the consumers made a shift from normal buying behaviour to buying essential commodities and health and hygiene items.

TABLE-4

**Kruskal-Wallis Test on the Basis of Educational Qualification**

<b>Test Statistics<sup>a,b</sup></b>				
	<b>Chi-Square</b>	<b>df</b>	<b>Asymp. Sig.</b>	
Searching the Information	48.688	3	0.000*	a. Kruskal Wallis Test b. Grouping Variable: Education Qualification
Purchasing Decision	17.690	3	0.001*	
Post-Purchase Evaluation	64.102	3	0.000*	
Personal Choices	61.314	3	0.000*	
Ability and Knowledge	104.682	3	0.000*	
Lifestyle	73.410	3	0.000*	
Role of Family Members	.757	3	0.860	
Role of Reference Groups	49.127	3	0.000*	
Place	51.710	3	0.000*	
Change in Purchase Behaviour	11.573	3	0.009*	
Discouraging Offline Purchase	20.113	3	0.000*	

(\* indicates significance at 1% level)

Table 4 represents the result of the Kruskal-Wallis test where it can be seen that at a 95% confidence interval, with a 5% level of significance, the null hypothesis is rejected for all the factors except the Role of Family Members. So, it can be stated that during COVID-19, the family members played a significant homogeneous role throughout all types of the family keeping in mind the medical and health emergency. However, the remaining factors differed on the basis of educational qualification as the decision-making for buying in educated people was different during the pandemic, where the educated focussed on buying medical items for health safety, and the comparatively lesser educated people focussed much more on savings and ensuring consumption needs.

TABLE-5  
**Kruskal-Wallis Test on the Basis of Monthly Income**

Test Statistics a,b				a. Kruskal Wallis Test	b. Grouping Variable: Monthly Income
	Chi-Square	df	Asymp. Sig.		
Searching the Information	23.099	4	0.000*		
Purchasing Decision	7.541	4	0.110		
Post-Purchase Evaluation	15.814	4	0.003*		
Personal Choices	25.791	4	0.000*		
Ability and Knowledge	47.082	4	0.000*		
Lifestyle	20.299	4	0.000*		
Role of Family Members	14.068	4	0.007*		
Role of Reference Groups	19.809	4	0.001*		
Place	18.383	4	0.001*		
Change in Purchase Behaviour	14.055	4	0.007*		
Discouraging Offline Purchase	9.233	4	0.056		

(\* indicates significance at 1% level)

Table 5 represents the result of the Kruskal-Wallis test where it can be seen that at a 95% confidence interval, with a 5% level of significance, the null hypothesis is rejected for all the factors except Purchasing Decision and Discouraging Offline Purchase. Hence, it can be said that on the basis of monthly income, consumer buying behaviour is remaining the same irrespective of their earnings. It is so because, during the presence of the global pandemic, consumers were looking for health safety products like masks, sanitizers, disinfectants, and so on sacrificing their usual buying habits while keeping in mind medical emergencies. Even, all the consumers had to resort to online purchases making a major change in the buying process in offline mode. During the pandemic, the restrictions imposed by the government induced them to give up the offline mode of buying. Hence, irrespective of the earnings, the consumers resort to online mode of buying.

## VI. CONCLUDING OBSERVATIONS

The ramifications of our results for practitioners and policymakers are numerous. The consumers have a relatively strong preference for Post-Purchase Evaluation, Personal Choices, Ability and Knowledge, and the Role of Reference Groups in the context of gender confirmed by the Mann-Whitney test. Moreover, on the basis of age, there is a strong inclination towards all the factors except Searching the Information and Change in Purchase Behaviour confirmed by the Kruskal-Wallis test. Furthermore, on the basis of educational qualifications, there is a strong preference for all the factors except the Role of Family Members. Finally, on the basis of monthly income, the inclination is noted towards all the factors except Purchasing Decisions and Discouraging Offline purchases. Hence, we can conclude that age, educational qualification, and monthly income

turn out to be some of the key grouping characteristics that direct the buying behaviour of consumers during COVID-19. However, gender is also relevant but to some extent only.

The data collection work is made from August 29, 2022, to February 6, 2023 when the effect of the COVID-19 pandemic was comparatively less which can be a limitation of the study. There are other determinants like marketing factors, psychological drivers, situational framework and the time factor, social determinants, cultural factors, and intergenerational behavior which have not been considered in this study. Moreover, the Jonckheere-Terpstra test could be applied that forecast how the ordinal character of the groups in the independent variable will affect the variations in scores of the dependent variable.

## References

- AbdelAziz, K., Md Saad, N. H., & Thurasamy, R. (2023). Analysing the factors influencing customer engagement and value co-creation during COVID-19 pandemic: the case of online modest fashion SMEs in Egypt. *Journal of Islamic Marketing*, 14(1), 146-173.
- Alhaimer, R. (2021). Fluctuating attitudes and behaviors of customers toward online shopping in times of emergency: The case of Kuwait during the COVID-19 pandemic. *J. Internet Commer*, in press.
- Ang, S. H., Leong, S. M., & Kotler, P. (2000). The Asian apocalypse: crisis marketing for consumers and businesses. *Long Range Planning*, 33(1), 97-119.
- Aragoncillo, L., & Orus, C. (2018). Impulse buying behaviour: an online-offline comparative and the impact of social media. *Spanish Journal of Marketing-ESIC*, 22(1), 42-62.
- Arumugam, T. (2020). Caring for your mental health during MCO. *New Straits Times*.
- Chung, N., Song, H. G., & Lee, H. (2017). Consumers' impulsive buying behavior of restaurant products in social commerce. *International Journal of Contemporary Hospitality Management*.
- Cochran, W. G. (1977). Sampling techniques. *John Wiley & Sons*.
- Dabija, D.C., Bejan, B., & Tipi, N. (2018). Generation X versus Millennials communication behavior on social media when purchasing food versus tourist services. *Ekon. Manag*, 21, 191-205.
- Dash, G. (2023). A Bibliometric Analysis of Panic-Buying Behavior during a Pandemic: Insights from COVID-19 and Recommendations. *Sustainability*, 15(2), 1352.
- George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). *Boston: Allyn & Bacon*.
- Godlee, F. (2010). Conflicts of Interest and Pandemic Flu, *British Medical Journal Publishing Group*, vol. 340 (2010), p. c2947
- Goswami, S., & Chouhan, V. (2021). Impact of change in consumer behaviour and need prioritisation on retail industry in Rajasthan during COVID-19 pandemic. *Mater. Today Proc*, in press.
- Hudimova, A., Popovych, I., Baidyk, V., Buriak, O., & Kechyk, O. (2021). The impact of social media on young web users' psychological well-being during the COVID-19 pandemic progression. *Amazon. Investig*, 10, 50-61.
- Hyams, K. C., Murphy, F. M., & Wessely, S. (2002). Responding to chemical, biological, or nuclear terrorism: the indirect and long-term health effects may present the greatest challenge. *Journal of health politics, policy and law*, 27(2), 273-292.

- Kobayashi, Y., & Anbumozhi, V. (2016). Cooperation framework for oil stockpiling and emergency response system.
- Leong, S. M., Cote, J. A., Ang, S. H., Tan, S. J., Jung, K., Kau, A. K., & Pornpitakpan, C. (2008). Understanding consumer animosity in an international crisis: Nature, antecedents, and consequences. *Journal of International Business Studies*, 39, 996-1009.
- Liren, X., Junmei, C., & Mingqin, Z. (2012). Research on panic purchase's behavior mechanism. *Innovation and Management*.
- Muangmee, C., Kot, S., Meekaewkunchorn, N., Kassakorn, N., & Khalid, B. (2021). Factors determining the behavioral intention of using food delivery apps during COVID-19 pandemics. *J. Theor. Appl. Electron. Commer. Res*, 16, 1297-1310.
- Naeem, M., & Ozuem, W. (2021). Customers' social interactions and panic buying behavior: Insights from social media practices. *J. Consum. Behav*, in press.
- Pop, R. A., Hlédik, E., & Dabija, D. C. (2023). Predicting consumers' purchase intention through fast fashion mobile apps: The mediating role of attitude and the moderating role of COVID-19. *Technological Forecasting and Social Change*, 186, 122111.
- Said, M., Tahlyan, D., Stathopoulos, A., Mahmassani, H., Shaheen, S., & Walker, J. (2023). In-person, pick up or delivery? Evolving patterns of household spending behavior through the early reopening phase of the COVID-19 pandemic. *Travel Behaviour and Society*.
- Sharma, A., & Jhamb, D. (2020). Changing consumer behaviours towards online shopping-an impact of Covid 19. *Academy of Marketing Studies Journal*, 24(3), 1-10.
- Sharma, V., & Sonwalkar, J. (2013). Does consumer buying behavior change during economic crisis? *International Journal of Economics & Business Administration*, 1(2), 33-48.
- Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of business research*, 117, 280-283.
- Shou, B., Xiong, H., & Shen, X. (2013). Consumer panic buying and quota policy under supply disruptions. *Manuf. Serv. Oper. Manag*, 6, 1-9.
- Theodorou, A., Hatzithomas, L., Fotiadis, T., Diamantidis, A., & Gasteratos, A. (2023). The Impact of the COVID-19 Pandemic on Online Consumer Behavior: Applying the Theory of Planned Behavior. *Sustainability*, 15(3), 2545.
- Thomas, J. A., & Mora, K. (2014). Community resilience, latent resources and resource scarcity after an earthquake: Is society really three meals away from anarchy? *Natural hazards*, 74(2), 477-490.
- Valaskova, K., Durana, P., & Adamko, P. (2021). Changes in consumers' purchase patterns as a consequence of the COVID-19 pandemic. *Mathematics*, 9(15), 1788.
- Wijaya, T. (2020). Factor analysis of panic buying during the COVID-19 period in Indonesia. Available at SSRN 3603750.
- Yuen, K. F., Wang, X., Ma, F., & Li, K. X. (2020). The psychological causes of panic buying following a health crisis. *International journal of environmental research and public health*, 17(10), 3513.
- Zhang, X., Liu, H., & Yao, P. (2021). Research jungle on online consumer behaviour in the context of Web 2.0: Traceability, frontiers and perspectives in the post-pandemic era. *J. Theor. Appl. Electron. Commer. Res*, 16, 1740-1767.
- Zheng, R., Shou, B., & Yang, J. (2021). Supply disruption management under consumer panic buying and social learning effects. *Omega*, 101, 102238.

CDC, 2020

WHO, 2020

<https://pubmed.ncbi.nlm.nih.gov/32191675/>

<https://www.statista.com/statistics/1111487/coronavirus-impact-on-unemployment-rate/#:~:text=COVID-19>

<https://www.kmcgov.in/KMCPortal/jsp/KMCPortalHome1.jsp>

<https://scholarworks.iupui.edu/bitstream/handle/1805/344/gliem+&+gliem.pdf?sequence=1>

[https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704\\_nonparametric/bs704\\_nonparametric4.html](https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704_nonparametric/bs704_nonparametric4.html)

<https://www.sciencedirect.com/topics/medicine-and-dentistry/kruskal-wallis-test>

# **Revisiting the Ancient Accounting Education: Was Pacioli really ‘Father of Accounting’?<sup>1</sup>**

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## **ABSTRACT**

The scepticism about the value of historical accounting research and publication may stem from beliefs that accounting history is a restricted, highly specialised topic that is not part of the “main stream accounting literature” or the part of “anecdote” of human’s earliest stimuli of civilization. But history stands current as always and therefore, unavoidable. So is the case of accounting history. It has a personal influence on all of us. Even in this global, technological post-modern period, it is the “accounts” of resources that matters in daily life in every sphere. Hence it becomes inevitable for all to understand accounting and its use in some form or the other. This paper attempts to present a comparative analysis of major contributors to the development of double-entry bookkeeping – Datini, Cotrugli, Raphaeli, and Pacioli. It was found that Cotrugli had written an accounting treatise several years before publication by Pacioli. The work of all contributors has been critically analysed and reasons have been identified why Pacioli is considered as ‘Father of Accounting’ when knowledge of double-entry bookkeeping was already existing several years before him. After reviewing the work of these authors, a list of topics that might have been included in the accounting course curriculum in those times have identified and discussed.

**Keywords:** Accounting History, Raphaeli, Cotrugli, Datini, Pacioli

## **I. INTRODUCTION**

Accounting is a very old profession. Accounting stretches back to the earliest days of civilization when it was driven by the trading system of crops and items required for existence. Something resembling Accounting was found in use thousands of years before the knowledge of numbers and writing in Mesopotamia, which is now late Persia, and the countries of Iran and Iraq. The introduction of small clay tokens, of various shapes initially, and then the introduction of money have contributed a lot in the development of accounting. Gradually single-entry system was adopted by businessmen.

The spread of double-entry bookkeeping by Luca Pacioli in 14th Century Italy has often been regarded as the most significant event in accounting history. He was a friend of Leonard oda Vinci and was highly regarded during his lifetime. Indeed, the Italians of the 14th and 16th centuries are often regarded as the fathers of modern accounting. They were the first to commonly employ Arabic

<sup>1</sup>This paper was presented in the 44<sup>th</sup> All India Accounting Conference in Gwalior, M.P., but not published anywhere, as declared by the author.



numbers for recording corporate accounts rather than Roman numerals.

Historians of the beginnings of modern accounting generally agree that Luca Pacioli wrote the earliest known instructional work on double-entry bookkeeping in 1494. This is why Pacioli is known as the “Father of Accounting.” This study debunks that theory by providing considerable evidence of double-entry bookkeeping practice from a merchant’s records and an earlier bookkeeping handbook from 1475 that had previously gone overlooked. A fundamental bookkeeping curriculum for the period is determined throughout this process, and specialist themes addressed in the 1475 handbook are recognised and contested.

## II. RESEARCH OBJECTIVE

The present paper discusses the contribution of three eminent persons, before Pacioli, who contributed a lot to the development and documentation of double-entry bookkeeping but remained unnoticed for centuries, namely Datini, Cotrugli, and Raphaeli. It has also been attempted to explore why only Pacioli is considered the *father of accounting* when the knowledge and practice of double-entry bookkeeping already existed years before him. It is further attempted to list out the accounting curriculum prevailing at that time for accounting students.

## III. CONTRIBUTORS: ANCIENT ACCOUNTING EDUCATION

### Francesco Datini (1335-1410)

Rich trader Francesco Datini (1335–1410) was from the town of Prato. This region was one of the most significant cultural hubs on the Italian peninsula in the fourteenth century. After serving as an apprentice, he started his business endeavours in Avignon, France, in 1378. Datini frequently travelled between Avignon, where he wed Margherita, the daughter of a very successful Florentine businessman, and Prato, where he purchased a “casolare,” where his archive is currently maintained. The operations of his first business in Avignon were eventually entwined with those of the three additional businesses he founded in Firenze, Prato, and Pisa. This resulted in a “company system” that included eight branches, or “fondaci,” as Datini referred to them: Avignon, Prato, Pisa, Firenze, Genova, Barcelona, Valenza, and Majorca (Sangster, 2016).

Francesco Datini started compiling a comprehensive archive made up of several ledgers, books, and correspondences in 1363. The collection of Datini contains, according to the official catalogue that can be seen online at the Archivie Datini website (Istituto Datini, n.d.), 602 accounting ledgers and 592 correspondence envelopes that together hold about 150,000 letters.

Several researchers have studied these archives and came up with the conclusion that Datini had adopted a single-entry system of bookkeeping initially and later on he shifted to a double-entry system of accounting. Some of the salient features of accounting by Datini are as follows:

1. *Entrata-e-Uscita*: At the Datini firm in Avignon, the first Ledger to record money funds initially emerged in 1367. The method employed by the company’s original accountants was high-level and resembled

methods that would have been employed in Pisa and other Datini enterprises two decades later. Typically, these were two distinct parts called “Entrata” and “Uscita,” which might either be included in the “Entrata e Uscita” book or used independently, but when combined, they offered a single cash flow accounting method. The accounting records provided an example of how to extract an intermediate cash balance.

2. Early fully retained “Profits on merchandise” accounts, a prototype for the “Profits and Losses” account; early internal trial balances that performed both the control function and the function of closing the old General Ledger and opening the new one; early financial interim and final reporting; periodic impairment accrual of long-term assets (as opposed to the statement about depreciation made by Western scientists); and early examples of the formation and use of reserves were also found and translated by some researchers.
3. Of course, the method used to determine financial results is the most intriguing. Since 1367, stocktaking had been utilised at Datini’s businesses for these purposes: on the one hand, products for sale, inventories, cash, food stocks, and receivables; and on the other, invested capital, accumulated (undistributed) earnings, and debt obligations. The first sum was referred to as “They Must Give,” and the second sum as “They Must Have.” The financial outcome was indicated by the difference between the first and second amounts. Since 1398, they had started using double-entry and Venetian form accounts, which were handled in the Ledger and Secret Ledger, to account for invested and reinvested capital, accounts receivable, and payable (including arrears in management wages).
4. The accounting entries for the period 1397-1399 were placed in:
  - a. Libro Grande (Ledger)
  - b. Mercanzie (Book of sales of goods)
  - c. Ricordanze (Memory book for system and non-system entries)
  - d. Memoriale (Memorial)
  - e. Entrata e Uscita (Cash receipts and Payments Book)
5. In Datini’s archives alone we were able to find the early “Profit on Merchandise” account (1392), Trial Balances, and the Statement for sending to the headquarters (1393) (Kuter, 2017), early examples of asset impairment and depreciation (1392-1399) (Kuter, 2018a), the formation and use of a profit reserve (Kuter, 2019a), adjustment entries (Kuter, 2019b), cash accounting (Aleinikov, 2018b), early accounting of insurance transactions (Kuter, 2019c).
6. In 1410 one of his accountants prepared the first-ever synthetic balance sheet of one of Datini’s companies as given in Figure 1 and Table 1.

Figure 1  
Datini's Synthetic Balance Sheet

(121)

A d. p. d. gennaio 1410

— Debitorj Emortatanti — Off. cont. di Damoione — d.  
vignoni — fitro varono ditto d. alfalio & amio

mercantile fitrouarone incasa embottogsa	ff	1877	s	12	d	96
di contanti incassa grande	ff	453	s	3	d	87
di appoggi — di casa embottogsa	ff	253	s	16	d	96
di cassoaglio incasa vignoni	ff	25	s	18		
di traditorj Emort. acemuni conalti abbiogsa	ff	4877	s	9	d	94
& nero ciferato						
		7497		11		11

— Creditorj

di vangi fatti 1° anno finito d. 31 dicembre 1410	ff	463	s	13	d	96
di Creditorj albro gradi ciferato arande mof						
Creditorj refumay d'ugusta mo	ff	7033	s	22	d	95
		7497		11		11

Table 1  
Synthetic Balance Sheet of Datini's Company in  
Avignon, as of Jan. 1, 1410

<i>Debtors and goods and cash of the Avignon enterprise that are, at this date, as balance of the enterprise</i>	
Goods in the house and in the shop	f. 1877 s. 12 d. 6
Money, in the main cash	f. 453 s. 3 d. 7
Household goods in the house and in the shop	f. 253 s. 16 d. 6
Provisions in the house	f. 35 s. 18
41 debtors and goods, jointly with others, to the Black main and secret Ledger	f. 4877 s. 9 d. 4
	(sum f.) 7497.11.11
<i>Creditors.</i>	
Gains of a year ended December 31, 1410	f. 463 s. 13 d. 6
11 creditors, to main and secret Ledger, counting Goods and creditors of this enterprise and profits; all in all,	f. 7033 s. 22 d. 5
	(sum f.) 7497.11.11

The balance sheet has three sections: Debtors and other assets ("What we must be given"), Creditors ("What they must have"), and the "Financial Result," which suggests that it was generated using the double-entry accounting system. Here, the letters f, s, and d stand for the respective currencies that were in use at the time: Florin, Soldi, and Denari. At the time of Datini, 1 Soldi was equal to 12 Denari, and 1 Florin was equal to 24 Soldi. Details of these three sections were also located in other archived documents. After a thorough study of the

records, it was discovered that Datini initially employed the stocktaking method of accounting before switching to the double-entry bookkeeping approach.

### **Benedetto Cotrugli (1416-1458)**

The earliest document still in existence that contains a description of double-entry bookkeeping is dated 1458. It was finished in the Serpico castle, which is close to Avellino. Its author, Benedetto Cotrugli, had fled there from Naples to avoid the plague. *Libro dell'arte di mercatura* is the title of the manuscript. Francesco Patrizi created an edition of the manuscript more than a century after it was completed. *Della mercatura e del mercante perfetto* (Of commerce and the perfect merchant) was the title under which it appeared in Venice in 1573 (Yamey, 1994). Hence despite being acclaimed as the first written book on bookkeeping, the first published book is considered Pacioli's. Cotrugli's book contains a five-page chapter on an overview of double-entry bookkeeping.

#### **Salient Features of the Chapter are as follows:**

1. The merchant requires at least three account books: a ledger, a journal, and a waste-book or memorial (*ricordanze*) (*libm grande*). Cotrugli states that each book should be designated with an alphabetic letter, starting with A for the series. The title of the book should be written on the first page, along with the names of the partners, the method for keeping the book, its page count, and a prayer to the Lord.
2. Each transaction should be written two times in the ledger, making debtor (he who must give), and making creditor (he who must have, i.e. receive).
3. Cotrugli advises, next, that you should first write and then give, first receive and then cancel.
4. Items of profit or loss are entered in the profit and loss account (*avanzz*) in the ledger. The credit balance of the account is carried to capital, which is to be credited and the profit and loss account is to be debited.
5. Then, with two money columns on each side of the ledger account, Cotrugli goes on to explain how a ledger account can be maintained in two currencies. There are two sets of columns: one for sums expressed in the specified foreign currency and the other for sums stated in the ledger currency.

### **Marino De Raphaeli (1475)**

Almost nothing is known about Marino de Raphaeli, not even his birth and death years. He made a copy of Cotrugli's manuscript that is bound in the bookkeeping manual's front and signed it at the conclusion, identifying himself as Ragusan. One reason his manual went overlooked for so long is that it is bundled in a single volume at the back of a manuscript edition of Benedetto Cotrugli's (1458) *Libro de Larte dela Mercatura* (The Book of Art of Trade). It was a manual written to teach a member of a wealthy family how to do the bookkeeping for the family business. The guidebook has numerous variations of

his name, showing how a teacher might divide up lessons for each of his students or perhaps because these were actual persons.

The manual by Marino de Raphaeli has no title, but it begins with the statement, *Questa sie la riegola de libro, la qual sie fondamento de ogni quadernier* - These are the bookkeeping principles that are basic to any bookkeeper. The remaining 36 pages provide a rich mix of business practices of a merchant involved in import and export, slavery, silk making, building construction, merchandise accounts, and bills of exchange, an essential financial medium for many firms during the period. It expresses the variety of commercial practices, the vagaries of commerce, and the manipulation of bills of exchange to gain money. Above all, it is an example of how to keep a Venetian-style double-entry journal.

De Raphaeli was explicit in saying that the journal serves as the initial step and was used to record transactions in the ledger. The manual was divided into 13 sections and several pages, some of which are missing. Table 2 shows the contents, page numbers (*cartas*), dates of transactions, merchant name, topics covered, and the number of journal entries on each topic in the manual.

Table 2

**Contents and Number of Journal Entries in Raphaeli's Manual**

<b>Section</b>	<b>Cartas</b>	<b>Began</b>	<b>Merchant</b>	<b>Topics</b>	<b>J/Es</b>
I	101v-102r	Dec, 19	Rafael de Nicolò	General instructions, <i>aventario</i> and its journal entries	7
II	102v-105v	Mar, 1	Rafael (presumably the same person)	Entries of another <i>aventario</i> , purchases, sales	57
III	105v-106v	Apr, 11		Buying/selling for the account of another	21
IV	107r	May, 4		Voyage to Beirut, commissioned to someone	8
V	107v	May 16		Camera d'Imprestedi (Government Bonds)	8
VI	108r	June, 6	Rafael de Marin	Partnership, with voyage in persona to the Levant	8

Section	Cartas	Began	Merchant	Topics	J/Es	
VII	108v-109r	June, 14		Voyage to Alexandria, commissioned to someone: 108v purchases, etc. 109r shipping	6 6	12
VIII	109v-111v	Aug, 1	Marin de Rafael	Partnership, with voyage in persona: 109v-110v purchases, etc. 110v-111v shipping, conduct business by barter in several seaports	15 16	31
IX	112r-115r	Sep, 4	Zuan de Domenego	Partnership of a 'silk shop', with the complete cycle from formation to selling the finished products	55	
X	115v-116r	Oct, 1		Construction of a building	18	
XI	116v	Oct, 14		Let of houses, bad debts, and the decima	9	
	117 & 118			Missing		
XII	119r-120r	Oct, 29		Bills of exchange (with protesto) and some instruction	23	
XIII	120v-121r	Nov, 2		Maritime insurance and some additional instructions regarding maritime insurance, voyages, and balancing the ledger	10	
					267	

It is surprising to see all those topics in Table 1 which are taught at present as an accounting syllabus. It is found that this manual contains 7 and 57 journal entries on the basics of double-entry accounting. There are 8 entries on voyage accounting, 10 entries on maritime insurance, more than 75 entries on the partnership, 18 entries on the construction of the building, and 23 entries on bills of exchange transactions. Ledger balancing entries are also mentioned.

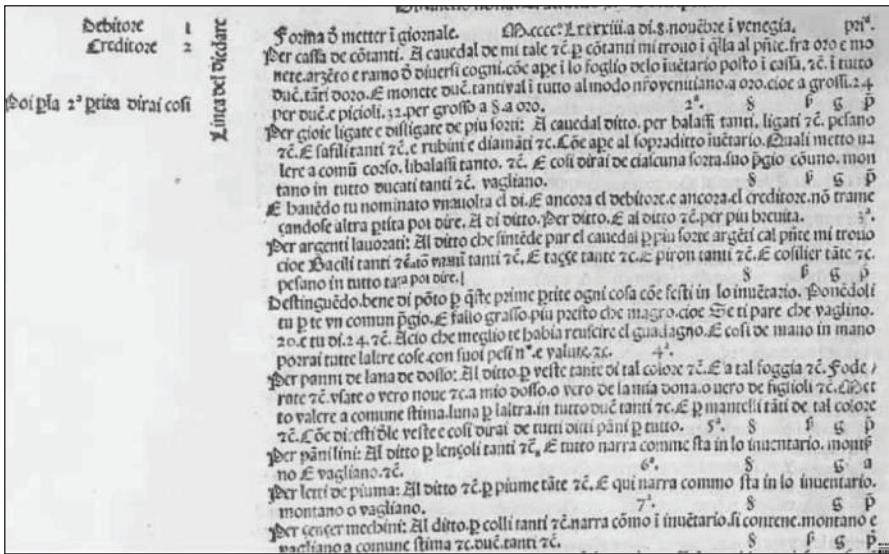
**Luca Pacioli (1445-1517)**

Luca Pacioli is widely regarded as the father of double-entry bookkeeping. In reality, the history of accounting would be incomplete without including Luca Pacioli’s outstanding work. His 1494 book “*Suma de Arithmetia, Geometria, Proportioni et Proportionalita*” (Summary of Arithmetic, Geometry, Proportion, and Proportionality) included two chapters - de Computis et Scripturis - that described double-entry bookkeeping. His concept resembled Venice’s economic activity at the time, particularly the manner they logged financial transactions. This is to suggest that even before Pacioli wrote his book, the Merchants of Venice kept accounting records, which they conducted in a certain fashion.

Pacioli just documented the unusual approach employed by early merchants to retain their records in his book. This technique was known as “the Method of Venice” or “the Italian Method”. That implies that Luca Pacioli did not invent the double-entry accounting method. He just detailed the accounting procedure used at the time. Figure 1 shows an extract from his book depicting journal entries.

Figure 2

**Journal Entries in the Book of Pacioli**



Some peculiar features of his writing about accounting are as follows:

1. Pacioli explains practical business rules without delving into DEB theory (Littleton, 1928). This would imply that DEB was already a well-established discipline and that its usage did not require justification.

2. According to him, the goal of bookkeeping was to supply the trader with up-to-date information about his assets and liabilities.
3. He proposed that all accounting entries must be double-entry, such that when a creditor is formed, someone must be made a debtor.
4. He suggested that an accountant should not sleep until all debits equal all credits.
5. He proposed that “not only was the name of the buyer or seller recorded, as well as the description of the goods with its weight, size or measurement, and price, but the terms of payment were also shown,” and that “whatever cash was received or disbursed, the type of currency and its converted value...”
6. Despite the brief lifetime of economic undertakings at the time, Pacioli advocated for the closing of accounts and the calculating of profits regularly.
7. The title of the *Summa* indicates that the book is a collection of pre-existing knowledge. Further, he describes this method as Venetian Accounting, which indicates that the method already existed.
8. Cotrugli wrote a treatise on accounting several decades before Pacioli in 1458 i.e., but since could not be published before publication by Pacioli in 1494, the latter is considered to be the ‘Father of Accounting’.

#### **IV. ACCOUNTING COURSE CURRICULUM IN THE 15<sup>TH</sup> AND 16<sup>TH</sup> CENTURIES**

Based on the text that appeared in Datini, Cotrugli, Raphaeli, and Pacioli, it was attempted by Sangster (2015) listing out major contents of the accounting curriculum in the 15<sup>th</sup> and 16<sup>th</sup> centuries. While studying accounting history, one often comes across that scribes were appointed for doing the work of accountants. Datini, being the owner of several companies, kept accountants in his various companies. Hence it can be inferred that there must have existed some formal education or course of persons to, an accountant. Raphaeli’s manual was itself written to teach accounting to the son of a wealthy merchant. Pacioli also wrote the chapter on double-entry bookkeeping as if it was to be taught formally. Hence, following topics are shown as included in accounting curriculum in those times by Sangster (2015):

1. Basics of Double-entry Bookkeeping: Debit, Credit, and Principal Books
2. Opening a new journal for a new business
3. Purchases and expenses
4. Sales and income
5. Brokers’ Fees
6. Banking
7. Loans
8. Interest



9. Book Transfers
10. Bills of Exchange and Promissory Notes
11. Settlements in various forms– barter and use of credit
12. Foreign Exchange Translation
13. Letting and renting
14. Household Accounting
15. Voyage Accounting
16. Partnership
17. Marriage Accounting and Dowry Accounting

Apart from basic journal entries using double-entry principles on purchase, sales, expenses, and income, some specialised journal entries were also taught such as banking, broker's fees, loans, and interest. Europe, in those times, was flourishing with the boom in trade and commerce, which was reflected in varieties of business transactions, which further led to the need for their accounting. Hence, we can see even more specialised topics such as bills of exchange, partnership, foreign exchange translation, voyage accounting, letting and renting, etc. The list also contains some other topics which are not taught these days – Household Accounting, Marriage Accounting, and Dowry Accounting. While household accounting was not treated differently from business accounting, it involved recording all the inventories, assets, and liabilities that belonged to personal transactions. Marriage accounting involved accounting for all expenses incurred at marriages and dowry accounting involved recording all items received in the dowry. It also included entries to be done in case when some amount needed to be returned on the death of the wife. This reflects the socio-economic culture of those times.

## V. CONCLUSION

The purpose of this paper is to investigate the works of important contributors to the development of double-entry accounting - Datini, Cotrugli, Raphaeli, and Pacioli. Double-entry accounting was found to be prevailing long before Pacioli. Datini, who was a trader, preserved a very systematic records of accounting and bookkeeping prevalent in those times. Raphaeli and Cotrugli were accounting teachers who used to teach accounting to either merchants or scribes. Therefore, it may be concluded that prevalence of accounting not only as profession but also as a subject is very old. And Pacioli is known as the father of accounting just because his work was published before anyone else. Through review of these authors' work, a list of topics that might have been included in accounting school curricula at that time has been identified..

In India, or any other country for that matter, accounting curricula should include accounting history as a separate subject instead of just telling them that Luca Pacioli is considered as *Father of Accounting*. It is argued that studying how accounting has developed and changed in response to environmental changes (economic, political, and social) might provide significant insights. Accounting graduates will lack the requisite historical perspective if they do not have the

necessary experience to critically analyse contemporary accounting practices or contribute significantly to our ever-changing profession.

## References

- Aleinikov, D., M. Kuter, and A. Musaelyan. (2018). The Early Cash Account Books. In: Antipova T., Rocha Á. (eds) *Information Technology Science. MOSITS 2017. Advances in Intelligent Systems and Computing*, 724. Springer, Cham
- Kuter, M, M. Gurskaya and A. Papakhchian (2019c). The Early Practice of Maritime Insurance Accounting in the First Proprietorship of Francesco di Marco Datini in Pisa in 1382–1406. *Digital Science, AISC* 1114, Chapter DOI:10.1007/978-3-030-37737-3\_27.
- Kuter, M, M. Gurskaya and R. Bagdasaryan (2019b). The correction of double-entry bookkeeping errors in the late 14th century. *CONTABILITÀ E CULTURA AZIENDALE*, XIX (1), 7-30.
- Kuter, M, M. Gurskaya, A. Andreenkova and R. Bagdasaryan (2017). The early practices of financial statements formation in Medieval Italy. *The Accounting Historians Journal*, 44(2), 17-25.
- Kuter, M, M. Gurskaya, A. Andreenkova and R. Bagdasaryan (2018a). Asset impairment and depreciation before the 15th century. *The Accounting Historians Journal*, 45(1), 29-44.
- Sangster, A. (2015). The Earliest Known Treatise on Double-entry Bookkeeping by Marino De Raphaeli. *Accounting Historians Journal*.
- Sangster, A. (2016). The Genesis of Double-entry Bookkeeping. *The Accounting Review*, 91 (1), 299-315.
- Sangster, A. (2018). Benedetto Cotrugli On Double-entry Bookkeeping. *De Computis, Revista Española de Historia de la Contabilidad*.
- Sangster, A. (2021). The Life and Works of Luca Pacioli (1446/7–1517) Humanist Educator. *Abacus*, 28.
- Yamey, B. S. (1994). Benedetto Cotrugli on bookkeeping (1458). *Accounting, Business & Financial History*, 4 (1), 43-50.

Book Review

## **FIRST THIRTY YEARS OF IAA RESEARCH FOUNDATION: 1991-2020**

**Dr. Bhabatosh Banerjee**

President, IAA Research Foundation

(2023, pp.259; Price Rs.400)

By

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I am pleased to write this review on the book “First Thirty Years of IAA Research Foundation: 1991-2020” by Dr. Bhabatosh Banerjee. I want to start with a definition of history that I found recently on the internet by the University of The People “History is the story of who we are, where we come from, and can potentially reveal where we are headed.” (<https://www.uopeople.edu/blog/why-is-history-important/>). Dr. Banerjee, in writing this book, has captured the essence of this definition. The book starts with a description of the IAA Research Foundation’s inception, administrative structure, and the legal status, and then describes its goals and objectives, provides snapshots of activities and achievements of the Foundation, and finally concludes with a forward-looking mission and objectives to improve accounting education and research.

I am impressed with the Foundation’s objectives which include creation and dissemination of new knowledge in fundamental and applied areas of accounting and finance. To encourage members to create new knowledge, the IAA Research Foundation provides funds to support specific projects that are of importance to the accounting discipline. To promote dissemination of knowledge, the Foundation has been regularly organizing national and international conferences, and has been publishing a peer reviewed journal, *Indian Accounting Review*. In addition, the Foundation has published several research monographs. I am impressed to see numerous eminent scholars from all over the world who have participated in the conferences organized by the Foundation.

**Chapter 1** start with describing the legal status of the Foundation and highlights its objectives. It provides not only the names of the thirteen founding members but also provides a brief background on these individuals, which shows the level of commitment by these leaders in their respective fields to create an organization like the IAA Research Foundation to promote excellence in research and teaching in accounting. Chapter 1 also describes the specifics of the Foundation’s administrative activities from the membership requirements to election of the Executive Committee, and how often the Executive Committee should meet. **Chapter 2** describes in detail the activities of IAA Research Foundation that promote the fulfilment of its objectives set out in their Charter (i.e., Memorandum of Association in 1989-90):

- Promoting fundamental and applied research in accounting and allied subjects
- Sponsoring research projects
- Holding seminars, symposia, conferences, and workshops, etc.
- Publishing research journals, books, and monographs.

**Chapter 3** introduces the two international organizations: AAA (American Accounting Association) and IAAER (International Association for Accounting Education and Research) with a brief history of each organization, and provides a detailed description of their activities. The author uses 18 pages (page 44 to 61) to highlight the activities of the AAA with a brief history and introduction to the seven regional sections, 17 different current Interest Sections, annual meetings, and publications. What I find to be of great value for the IAA Research Foundation is the exposition of AAA activities. For example, the author describes in detail the activities being performed in one of the annual meetings from starting of the conference to plenary sessions, parallel sessions, breakfast sessions, and poster sessions. This kind of details would help in organizing a future coreference by the IAARF. This chapter also talks about the association between the Foundation and the AAA, and between the Foundation and IAAER and the benefits of such an association. The author concludes this chapter by highlighting the process of creating the Global Code of Ethics for Accounting Educators by the task force committee of the IAAER of which the author was one of the members.

**Chapter 4** provides summaries of the six research projects that were sponsored by the Foundation and were published in the form of books during 1991-2020. The titles of these projects are:

- *Contemporary Issues in Accounting Research*, edited by Bhabatosh Banerjee, 1991.
- *Design and Development of a Suitable Organizational Productivity Accounting System for the Manufacturing Sector*, by M. K. Kolay, 1995-96.
- *Budgeting for Corporate Success: Indian Practices*, jointly by M. N. Kaura and S. Mallikharjuna Rao, 2000.
- *Corporate Mis-governance*, by P. Chattopadhyay, 2008.
- *Accounting Standards and the Standard Regime in India*, by Arun Kumar Basu, 2008.
- *My Journey: Down the Memory Lane*, by Bhabatosh Banerjee, 2021.

This chapter provides a good overview of each book. The overview on his book “My Journey: Down the Memory Lane” is worth mentioning here. In particular, the review by Professor Bruce K. Behn, Deloitte LLP Professor, The University of Tennessee, USA, provides the essence of the book highlighting on specific themes. I too enjoyed reading this book. It provides a detailed description of the hardships and challenges Dr. Banerjee faced in achieving what he has achieved. It is an inspiring book to read.

**Chapter 5** describes the process of how the concept of publishing an academic journal under the banner of the IAA Research Foundation was conceived, and

how the name of the journal “*Indian Accounting Review*” was finalized. The inaugural issue was published in June 1997 with articles contributed by some of the distinguished scholars in the world like Prof. Shyam Sunder, currently the James L. Frank Professor Emeritus of Accounting, Economics, and Finance at Yale School of Management, USA, and Late Prof. Richard Mattessich, University of British, Columbia, Canada. The journal has been successful in achieving its international reputation by attracting articles by well know scholars worldwide. This chapter also highlights the purpose and philosophy of the journal and concludes with the “Change of Guards”. I congratulate and thank Dr. Banerjee for serving as the Editor-in-Chief of the Indian Accounting Review since its inception. I am positive that the journal with its high-quality editorial board will continue to publish high quality articles and promote research in accounting and finance within India and abroad.

The management development program is an essential dimension for any professional organization. It provides opportunities to its members to keep abreast with the developments in the discipline. **Chapter 6** focuses on this aspect of the activities of the Foundation. I applaud the IAA Research Foundation to undertake this activity. Not only that management development program exposes to its participants about the current developments in the discipline but also creates an environment where both practitioners and academics come together and collaborate on projects. The Foundation has done an excellent job in this dimension. This chapter provides an overview of the first program that was held in 1991 and of the fifth program that was held in 2012. I was a presenter on XBRL technology in the fifth management development program. It was conducted in an effective and efficient manner. I enjoyed participating in it. I hope the Foundation continues with this program because it contributes in many ways to the accounting profession from education, research, to practice.

**Chapter 7** gives a snapshot of the national and international conferences and seminars organized by the IAA Research Foundation during 1991–2020. The Foundation has invested resources, both the human and financial resources, to organize and execute world class national and international conferences. I applaud the members of the organizing committee to conduct these conferences and seminars with the participation from several national and international distinguished scholars as speakers in plenary sessions, keynote speakers, and presenters. Also, the themes of these conferences have been very timely. I have been a part of these conferences and seminars as a keynote speaker and have enjoyed it always. This chapter is divided in two parts. Part I provides summaries of fourteen national seminars and conferences organized during 1991 to 2020. The Executive Committee of the Foundation decided to organize every year the National Seminars and Conferences along with the Annual General Meeting (AGM) as required by the provisions of the Memorandum of Association. The Foundation has done a great job in involving other professional and academic institutions in the national and international seminars. The author provides specific details of some of the conferences and about the G. D. Roy Memorial Lecture which would benefit the current and future organizers of such conferences.

**Part II of Chapter 7** provides overview of the Biennial International Seminars. There have been fourteen International Conferences organized by the

Foundation during 2019-2020. However, to conserve the space, the author gives a brief account of 2nd, 10th, 11th, 12th, and 14th conference. In addition to providing the specific details of the topics being presented and the execution of the program as to the timing of presentation and introduction of the speaker, the author has provided a brief introduction of sixteen distinguished national and internal scholars who have participated in the program during 1991-2020. Also, the author of the book, Dr. Banerjee, provides numerous photographs of the events. As a reader I enjoyed this aspect of the book. These pictures tell you a story of the events reflected in these pictures. This Chapter also highlights the introduction of the Namita Banerjee Memorial Best Paper Awards in 2013. This award provides Rs. 2,500 and a Citation to two research papers based on the quality of the paper.

**Chapter 8** titled Looking Ahead, first, identifies ten different activities under the section on Future Agenda to promote and improve accounting education and research. These include from “Aim High” to “Think Globally but Act Locally”. Such a philosophy encourages the members of the Foundation to think of issues related to education and research on a global basis but think finding solutions on the local level in terms of financial and human resources. The author proposes to invest in research scholars to train them to be future academics and researchers by (1) encouraging them to attend National and International Conferences at a subsidized or especially low registration free, and (2) by conducting periodical workshops on special topics of research to expose them to new research topics and methodologies at a reasonable price. In addition, the author proposes that the Foundation should (i) sanction more research projects on contemporary topics, (ii) incorporate best paper award on the paper published in the Indian Accounting Review to improve the quality of the journal, (iii) organize regional seminars in collaboration with the other academic and professional bodies, (iv) work with the neighboring countries to promote the accounting education and research, and (v) maintain regular academic relationship with the professional organization such as IAAER and AAA.

Next, in this chapter, the author highlights the following four challenges that needs to be dealt with by the Foundation to effectively achieve its goals.

1. Improve infrastructure.
2. Increase the number of members.
3. Find cost effective ways to distribute the *Indian Accounting Review* to the life members.
4. Increase institutional subscribers.

In Section 8.4 of Chapter 8 titled Emerging Research Areas, the author highlights several contemporary research topics and activities to improve accounting education and research. Some of these topics are relevant globally and some are specifically relevant to India. He puts his thoughts into three categories: *Category A* where he enlists 16 topics with brief introduction on each topic. *Category B* where he highlights the topics including accounting analytics, quality of financial data, and crypto-currency, and lets the researcher think through the researchable questions related to each topic mentioned. Under *Category C*, the author enlists the following topics as future researchable issues

without much elaboration: Forensic Audit, Accounting Information and Security Price Determination, Cost Competitiveness in the Education Sector in India, Business Valuations, and Impact of CSR Cost on Firm Performance. The author provides a lot of interesting researchable topics in this chapter that should be helpful to researchers not only within India but also for researchers outside of India.

In conclusion, I am pleased to review this book. I have enjoyed reading it and learnt a lot about the mission, objectives, and various activities of the IAA Research Foundation. This book would not only provide a history of the Foundation, but also provide stimulating thoughts for future planning and execution of the activities of the Foundation to the executive members of the Foundation. In addition, I see its value for the academics and researchers within India and outside of India to explore on few of those research topics highlighted in Chapter 8. I congratulate Dr. Bhabatosh Banerjee for doing an excellent job in writing this book and express my sincere thanks to him for asking me to write a review on this book.

# SIXTEENTH INTERNATIONAL ACCOUNTING CONFERENCE 2024

*Theme*

**Issues in Accounting and Finance – the Role of Accounting  
Educators and Professionals in the 21<sup>st</sup> Century**

January 13 & 14, 2024 (Saturday & Sunday)



*Venue:* **Science City Mini Auditorium**  
Kolkata-700 046

*Organised by*



**Indian Accounting Association Research Foundation**

*(An Associate of  
American Accounting Association and  
International Association for Accounting Education & Research)*

*Jointly with*



**EILM Kolkata**

*Home Page: [www.iaarf.in](http://www.iaarf.in)*



## IAA RESEARCH FOUNDATION

The Indian Accounting Association (IAA) Research Foundation is a body constituted under the Societies Registration Act for promoting, among others, accounting, higher education and research in India and abroad. The Foundation has already earned a great deal of reputation in India and abroad through its activities of conducting national and international conferences, publishing research volumes, sponsoring research projects and conducting management development programmes. The Foundation has been publishing *Indian Accounting Review (IAR)*, a bi-annual research journal, since 1997. IAR has already made its mark with its Impact Factor (GIF:2019) 2.8229 as an international research journal in accounting and finance (see [www.journal.iaarf.in](http://www.journal.iaarf.in)). There is international institutional (Germany) subscriber for IAR.

## EIILM- KOLKATA

Situated in the heart of Kolkata, the Eastern Institute for Integrated Learning in Management (EIILM) is a highly focused source of professional education (2-year MBA and other allied courses) for building careers in management, representing an effective and significant investment in human potential development in India in the evolving context of the world (see [www.eiilm.kolkata](http://www.eiilm.kolkata)).

## CONFERENCE THEME AND VENUE

The **16<sup>th</sup> International Conference** of the Indian Accounting Association (IAA) Research Foundation will be held at the Science City Mini Auditorium, Kolkata-700046 on **13<sup>th</sup> and 14<sup>th</sup> January, 2024** in collaboration with EIILM - Kolkata. The theme of the Conference is **Issues in Accounting and Finance – the Role of Accounting Educators and Professionals in the 21<sup>st</sup> Century**.

Research-based papers on the following topics are invited for presentation at the Conference:

1. Accounting Education and Research in Emerging Economies
  - Current trends in Accounting Research
  - Ethics in Accounting
2. The Role of Technology in Accounting and Auditing
  - Accounting and Data Analytics
  - Fintech and Accounting
  - Accounting for Cryptocurrencies (including standardization)
  - Artificial Intelligence – Inhibitor or Facilitator of Accounting & Finance Profession
  - Issues and Imperatives of Digital Finance
3. Management of Public Sector in India
  - Under Present Scenario, Is Government Undertaking a Myth or Reality
  - Performance Measurement of Public Enterprises – In Search of a Composite Index
  - Merger and Consolidation of (public sector) Banks: Challenges & Opportunities

4. Operation of Stock Markets in India
  - Role of Accounting with respect to Capital Markets
  - Performance of Mutual Funds
5. Environment Management and Accounting
  - Environmental, Social and Governance (ESG) Issues
  - Accounting for Management of Climate Change
  - Carbon Accounting
6. Sustainability Reporting
7. Identifying and managing Audit Risk in a Volatile World
8. International Tax Havens are a Threat to the World Economy
9. Behavioural Finance
10. Enhancing Competitiveness of the Firm: the Role of Strategic Cost Management
  - Michael Porter's Value Chain Analysis (1985) for Cost Management: Challenges & Opportunities
  - Application of Cost Management Tools to Manufacturing Industries
11. Taxation Reforms and its Impact on Accounting
12. Other International Accounting and Finance related Topics

### Submission Guidelines

- (1) Soft copy of the paper should be submitted through e-mail. The text of the paper will be in double space, 12 font, Times New Roman, keeping a margin of one inch in three sides. MS Word (.doc format) is required. Each paper should be preferably within 5000 words including tables and references and in addition, an abstract of not more than 500 words in a separate page.
- (2) There should be a **separate title page** on each paper giving title of the paper, the **topic /sub-topic to which the paper relates**, details of author/s, affiliation, address, telephone numbers and e-mail.
- (3) A declaration must be submitted, along with the paper, by the author(s) mentioning that the manuscript is not copyrighted, and has not been submitted / published elsewhere.
- (4) Paper presentation will take place in **concurrent sessions** and abstract of each accepted paper will be published in the Conference Proceedings.
- (5) Papers must be submitted within **September 30, 2023**.
- (6) Notification about the acceptance or otherwise of a paper will be made by **November 30, 2023**.
- (7) Papers submitted for presentation will be subject to blind review and the decision of the Scientific Committee will be final.

### Namita Banerjee Best Paper Memorial Awards

The best two papers will each be awarded Rs.2500/- (Rupees two thousand five hundred only) to be selected by a panel of distinguished reviewers. Research papers submitted by the delegates from SAARC countries within the age limit of 40 years will be considered for the purpose. **In case of a joint paper, the junior faculty within the above age group will be entitled to the cash award although the certificate will be issued giving details of the paper with name of all the Co-author(s).**

### Registration Fees

**(For delegates from Bangladesh, India, and other SAARC Countries)**

	For payment on or before	For payment After
	<b>November 30, 2023</b>	<b>December 01, 2023</b>
Members of IAARF / IAA (INR)	2,250	2,500
Non-member (BDT)	2,500	3,000
Research Scholars (INR)	1,500	2,000
Corporate (INR)	4,000	4,500

- **Deadline for Registration: December 23, 2023 (no spot registration).**
- Accommodation Charges for delegates from outside West Bengal only (for 3 nights, i.e., January 12, 13 & 14): **Rs. 3000 per delegate on a double occupancy basis.**

(\*Only a few rooms in different guest houses will be available on a first come, first served basis.)

Registration fees will cover 3 breakfasts, 2 luncheons, 2 dinners, copy of Conference Proceedings and transport facilities within the city (for attending Conference only).

In December–January, the weather in Kolkata is pleasant, with temperature varying between 12°C and 22°C. There are many beautiful places and monuments of tourist attraction in the City. Popularly known as the Cultural Capital of India, the City is famous for the warm hospitality of Kolkatans. Kolkata is well connected by air (Netaji Subhas Chandra Bose International Airport) and rail (Howrah Station, Shalimar Station, Sealdah Station and Kolkata Station).

### EXPECTED PARTICIPANTS

Distinguished academicians and practitioners from different parts of the world are expected to attend the Conference. Besides, members of the IAA Research Foundation, academic heads and deans of many reputed business schools and universities in India, representatives of three professional bodies, viz., the Institute of Chartered Accountants of India, the Institute of Cost Accountants of India and the Institute of Company Secretaries of India, will grace the occasion by their kind presence and active participation in different sessions.

Dr. Shyam Sunder, James L. Professor Emeritus of Accounting, Economics and Finance, Yale University, and former President, American Accounting Association, Dr. Zabihollah (Zabi) Rezaee, Thompson-Hill Chair of Excellence/

Professor of Accountancy/PhD Coordinator, The University of Memphis, Tennessee, have given their initial consent to attend the Conference and to give keynote addresses on suitable topics. Professor Sunder was inducted to the Hall of Fame of AAA in 2020. Professor Rajendra P. Srivastava, Professor Emeritus of Accounting and Information Systems, School of Business, University of Kansas, Lawrence, is also expected to grace the occasion. Dr. Harunur Rashid, former Professor of Accounting and Information Systems, Dhaka University, and former Vice-Chancellor, Presidency University, Dhaka, and President, Bangladesh Accounting Association will attend. Besides, a good number of distinguished educationists and professionals from Bangladesh Accounting Association will also attend the Conference.

A maximum of 250 delegates can attend the Conference on a first come, first served basis.

#### Contact Persons for Sending Queries, Papers, Registration of Interest

<p><b>Dr. Dhrubaranjan Dandapat</b>  <i>Secretary, IAA Research Foundation</i>  <i>e-mail: iaarfconf24@gmail.com</i></p>	<p><b>CA CMA Mr. Shubhayan Basu</b>  <i>Treasurer, IAA Research Foundation</i>  <i>e-mail: basushu@gmail.com</i></p>
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**Note: Members and delegates are requested to go through the Foundation's website ([www.iaarf.in](http://www.iaarf.in)) for updates.**

#### **Some of the Eminent Academics/Professionals who attended the previous conferences are:**

- Professor Stephen A.Zeff, Past President, AAA (2nd Conf.) (Rice University, USA)
- Professor Sidney J. Gray, Professor of International Business and Co-Director of the Entrepreneurship and Innovation Research Group at the University of Sydney Business School, The University of Sydney
- Professor Kazuo Hiramatsu, Past President, JAA (Kwansei Gakuin University) and Past President, International Association for Accounting Education and Research (IAARF)
- Professor Donna L.Street, Past President, IAAER (University of Dayton)
- Professor Andrew D. Bailey, Past President, AAA
- Professor Stefano Zambon, Italy
- Professor Belvered E. Needles, Jr., DePaul University, Chicago (attended twice)
- Professor Marion Powers, Members (USA) (10th Conference)
- Professor Tony Kang, Member, AAA(USA) (10th Conference)
- Professor Shyam Sunder, Past President, AAA (Yale School of Management (attended thrice).
- Professor Rajendra P. Srivastava, The University of Kansas, USA (attended 4 times)
- Professor Bruce K. Behn, Past President, AAA (Deloitte LLP Professor, The University of Tennessee) (attended thrice)

- Professor Bikki Jaggi, Former Chair, Rutgers University, New Brunswick, USA
- Professor S. Gupta, Former Chair, Department of Accounting, Lehigh University, USA
- CA Mr.P. R. Ramesh, Chairman, Deloitte India
- CA Mr.Dipankar Chatterjee, Partner L.B.Jha & Co.
- Professor Asis Kumar Banerjee, former Vice-Chancellor, University of Calcutta
- Director of Finance, Damodar Valley Corporation of India
- Dr. Bhaskar Banerjee, Former Chairman, The Calcutta Stock Exchange Ltd.

**IAA Research Foundation jointly with EILM-Kolkata  
Organizing 10th G.D.Roy Memorial Lecture and a National Seminar on  
Saturday the 2nd September, 2023**

Venue: EILM-Kolkata  
DN9 Sector V, Salt Lake City Kolkata  
(Near College More)  
Tentative Programme

10.00 a.m. – 10.45 a.m.:	Registration & Tea
11.00 a.m. – 12.00 p.m.:	Prof. G. D. Roy Memorial Lecture
In Chair	: Prof. R. P. Banerjee, Chairman & Director, EILM Kolkata, Vice President, IAA Research Foundation,
eynote Speaker	: Prof. K.Eresi, Former Professor, Head and Dean, Faculty of Commerce, Bangalore University <i>International Corporate Tax in Global Digital World – Some Emerging Issues</i>
12.15 p.m. – 01.15 p.m.:	: NATIONAL SEMINAR
In Chair	: Prof. Bhabatosh Banerjee, President IAA Research Foundation
Keynote Speaker	: Prof. D. V. Ramana, Professor, XIM Bhubaneswar <i>The Shifts in Accounting (Teaching and Research)</i>
1.15 p.m. – 2.30 p.m.	: LUNCH
2.30 p.m. – 3.30 p.m.	: ANNUAL GENERAL MEETING OF IAA RESEARCH FOUNDATION
3.30 p.m. – 4.00 p.m.	: TEA / COFFEE
Registration Fee: Rs.200 per member. Please send the bank acknowledgement after payment through e-mail attachment to CA Shubhayan Basu	: Payable within 19 <sup>th</sup> August by bank transfer. <i>Bank details:</i> A/c Holder: IAA Research Foundation Savings a/c No. 011010100013404 Axis Bank, Gol Park Branch, Kolkata-700 019 IFS Code: UTIB0000011
Contact Persons: Prof. D. R. Dandapat Secretary, IAARF Email: dhruba@yahoo.co.in	: CA Shubhayan Basu Treasurer, IAARF Email: basush@gmail.com

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