Business Spectrum

Volume XI No. 2 July - December 2021

An Open Access Fully Referred Peer Reviewed Journal

The Bi-annual Journal of

Business Spectrum (ISSN: 2249-4804) Vol. XI No. 2 July-December, 2021
An Open Access Fully Referred Peer-Reviewed Bi-annual Journal of IAA South Bengal Branch
(Available online at: www.iaasouthbengalbranch.org)

Editorial Board

Editor-in-Chief
Prof. Pradip Kumar Samanta
Department of Commerce, University of Kalyani
Phone No.: 09433304257
p_samanta@indiatimes.com

Associate Editor
Prof. Pranam Dhar
West Bengal State University, Barasat,
Kolkata-700126, West Bengal
Phone No.: 9830071587
pranamdharit@yahoo.com

Executive Editor
Dr. Manas Naskar
Department of Commerce, Raiganj University,
Uttar Dinajpur, West Bengal
Phone No.: 09231829858/033- 24333378
manas.univ@gmail.com

Desk Editor
Dr. Baneswar Kapasi
Department of Commerce, Kazi Nazrul University,
Asansol, Paschim Bardhaman, west Bengal
Phone No.: 9434633062/6295162284
kapasibaneswar@gmail.com

Business Spectrum (ISSN: 2249-4804) Vol. XI No. 2 July-December,2021

An Open Access Fully Referred Peer-Reviewed Bi-annual Journal of IAA South Bengal Branch

(Available online at: www.iaasouthbengalbranch.org)

Members in the Editorial Board

Prof. Nageshwar Rao Indira Gandhi National Open University drnageshwarrao@yahoo.com	**Prof. Gabrial Simon Thattil** University of Kerala simon.thattil@gmail.com
Prof. S. S. Modi Formerly, University of Rajasthan profdrssmodi@gmail.com	**Prof. R Rangarajan** University of Madras rangarajan@unom.ac.in
Prof. Jaydeb Sarkhel Formerly, The University of Burdwan jaydebsarkhel@gmail.com	**Prof. Sudipti Banerjea** Formerly, University of Calcutta sudiptiban@rediffmail.com
Prof. Samirendranath Dhar University of North Bengal dharsnd@gmail.com	**Prof. Subhrangshu Sekhar Sarkar** Tezpur University subh@tezu.ernet.in
Prof. Subhas Chandra Sarkar University of Kalyani subhasch2004@rediffmail.com	**Prof. Jadab Krishna Das** University of Calcutta jadabkdas@gmail.com
Prof. Debasish Sur The University of Burdwan debasishsur@yahoo.co.in	**Prof. Chinmoy Roy** Tripura University Chinmoy68@gmail.com
Dr. Chandra Sekhar Misra I.I.T. Kharagpur csmishra@vgsom.iitkgp.ernet.in	**Prof. Tagar Lal Khan** Vidyasagar University tagarkhan@yahoo.com
Prof. B. S. Bodla Kurukshetra University bsbkuk@gmail.com	**Dr. Abhigyan Bhattacharyay** North Eastern Hill University, Tura Campus Abhigyan09@rediffmail.com

Dr. Jayanta Kumar Seal
Indian Institute of Foreign Trade, Kolkata jayantaseal@hotmail.com

Business Spectrum (ISSN: 2249-4804) Vol. XI No. 2 July-December,20201

An Open Access Fully Referred Peer-Reviewed Bi-annual Journal

IAA South Bengal Branch

Editorial

I am glad to share that Business Spectrum is now a peer-reviewed e-journal and will be published twice a year in June and December. The current December 2021 issue has five interesting articles contributed by academics and doctoral students. *The first article* by Somnath Bauri and Amitava Mondal discusses the impact of climate risk on the firm's performance using the integrated ratio approach for the pre and during the COVID-19 Pandemic. The study concludes that Covid-19 helped in the reduction of climate risk by decreasing the Carbon Intensity but adversely affected the financial performance of the company. *The second article* by Arindam Das has made an attempt to evaluate the service quality in card banking using a modified SERVQUAL model. The study shows that the service quality on the assurance dimension does not fulfill the expectation of the customers, whereas the customers feel safe using debit cards in their transactions. The study suggests that banks should give more attention to enhancing the service quality in card banking. *The third article* by Sk Nasiruddin and Santanu Kumar Ghosh discusses the issue of diverse practices of sustainability of the agricultural sector across nations and their determinants. The main focus of the article is to identify the current state of sustainability practices of SMEs across nations. T*he fourth article* by Kajal Baran Jana discusses the governance level in the essence of Women Representation in Panchayat System and Gram Panchyat Development Plan (GPDP) through e-Gram SWARAJ in India. The study points out that UP is providing basic administrative structure, women's representation, and basic services under a single umbrella at the GP level to the citizen. In *the fifth article* Atul Kumar Paul and Manas Naskar have taken an attempt to show the impact of profitability on the uniformity of the liquidity and its effects on the financial health of Housing Development and Infrastructure Ltd, one of the largest real estate companies in India. The study finds that the correlation between liquidity management and the Return on Capital Employed has a positive impact on liquidity management. The next issue is to be published soon. If you would like to contribute to the issue, I invite you to submit your article to editor.businessspectrum@gmail.com, for our consideration.

Editor-in-Chief

Prof. Pradip Kumar Samanta

Department of Commerce, University of Kalyani

Phone No.: 7001469507, email:psamanta06@gmail,com

Business Spectrum (ISSN: 2249-4804) Vol. XI No. 2 July-December, 2021
An Open Access Fully Referred Peer-Reviewed Bi-annual Journal of IAA South Bengal Branch
(Available online at: www.iaasouthbengalbranch.org)

Author/s	Title of Paper/s	Page No.
Somnath Bauri and Dr. Amitava Mondal	The effect of climate risk on firms' performance during Covid-19 – A cross-border study on select companies	1-16
Arindam Das	Evaluation of Service Quality in Card Banking – Application of SERVQUAL Model	17-26
Sk Nasiruddin and Santanu Kumar Ghosh	Determinants of Sustainable Behaviour in Cross-Border Trades for Agricultural Sector Among 193 Nations	27-41
Dr. Kajalbaran Jana	Panchyati Raj to e-Gram Swaraj: Steps towards Governance at Gram Panchyat in India with Special Reference to Major States in India	42-56
Atul Kumar Paul and **Dr. Manas Naskar**	Measuring the Uniformity of Liquidity and its Financial Health: A Case Study of Housing Development and Infrastructure Ltd	57-65

The effect of climate risk on firms' performance during Covid-19 – A cross-border study on select companies

Somnath Bauri
Junior Research Fellow
Department of Commerce
Sidho-Kanho-Birsha University, Purulia, West Bengal
Dr. Amitava Mondal*
Associate Professor
Department of Commerce
Sidho-Kanho-Birsha University, Purulia, West Bengal

Abstract

Purpose of the study: *The main purpose of the present study is to investigate the impact of climate risk on the financial performance of the sample companies in the pre and during the COVID-19 pandemic. This paper also aims to explore the country-wise comparison of the impact of climate risk between the sample companies during the study period.*

Study Design/Methodology/Approach: *To meet the object of the study we have selected 12 companies from G-4 countries. We have collected financial as well as climate-related data manually from the annual/integrated/ sustainability reports. This study has used the Integrated Ratio Approach to explore the impact of climate risk on the firm's performance.*

Findings: *Using the integrated ratio approach the present study has found that climate risk affected the performance of the firm but during the Covid-19 its effect was lower than in the previous periods of Covid-19. In most of the sample companies,Carbon Intensity was lowest at the time of the Covid-19 Pandemic and we have also found that BlackRock's Efficiency improvements were negative for most of the sample companies during the pandemic.*

Originality/Value: *Despite some limitations, this is the first paper that has examined the impact of climate risk on the firm's performance using the integrated ratio approach for the pre and during the COVID-19 Pandemic. This paper may help the policymakers and the stakeholders to make more informed decisions, as the present study has examined the one most emerging issues from a cross-broader perspective.*

Key Words: *Climate Risk, Covid-19, Transboundary Risk, Integrated Ratio Approach, Firm's Performance,Cross Country Analysis.*

* *Corresponding Author*

Introduction:

In December 2019 Covid-19 was first detected in Wuhan, China, and after that, this virus spread rapidly around the world. Over the 5.3 million dead and over 272 million infections reported worldwide, this is the hardest time we have faced in our history **(Ringsmuth et.al., 2022)**. Covid-19 has negatively affected public health not only through direct infection but also increase the patient's severity infected by other deceases by creating a scarcity of medical sources **(Chudasama et.al., 2020).** At the same time, Covid-19 has made us understand our basic priorities and change our perception of risk. Covid-19 has forced society for adopting new norms around the world wearing masks, social distancing, and working from home. This pandemic leads to double hits of lockdown in some particular countries, which is mainly responsible for the reduction in the export revenues and thereby increases the level of debt related to GDP **(Adam et. al., 2020)**. On the other hand, this lockdown has also played a crucial role in improving the quality of the air and water and also in the reduction of global greenhouse gas emissions **(Ray et. al., 2022)**.

Like Covid-19, Climate change-related risk is one of most the emerging threats to society as it has the potential to disrupt the activities of trade, readiness, finance, and communication at multiple stages **(Ringsmuth et.al., 2022).** As the Covid-19 crisis and the door-knocking climate emergency have many similarities, this crisis offered new insights into how to manage the severe impacts of climate risks **(Manzanedo and Manning, 2020)**. Covid-19 has given us a lesson about how to react to transboundary risks like climate emergencies proactively to better preparedness for the future. Covid-19 has revealed how much it is difficult to manage the transboundary crisis. Maladaptive responses toward climate risk could increase its potential of disrupting the economy and society **(Ringsmuth et.al., 2022)**. Transboundary risks are not new but their understanding of mitigating and adapting in the near is the greater concern in the current situation. In this context, we have tried to evaluate the performance of the firms after incorporating the climate risk in the pre and duringCovid-19 periods to understand the impact of the pandemic on the climate risk and the firm's performance. As Covid-19 and Climate emergency, both are transboundary in nature so we have selected our sample companies from G-4 countries (Japan, Germany, India, and Brazil) to get a clear picture of how climate risk impacted the firm's performance in the preand duringthe covid-19 pandemic period. We have focused on G-4 countries for our analysis because these four countries are among the most vulnerable countries to climate risk. According to Climate Risk Index 2020by Garmanwatch (2020) Japan, Germany and India are one of the most vulnerable countries to climate change-related risks. This analysis found that climate change-related weather events are responsible for economic losses of 35839 million dollars in Japan which made Japan the most vulnerable country in the world. This analysis also found that climate change-related weather events are also responsible for the understanding of mitigating and adapting in the near is the greater concern in the current situation. In this context, we have tried to evaluate the performance of the firms after incorporating the climate risk in the pre and duringCovid-19 periods to understand the impact of the pandemic on the climate risk and the firm's performance. As Covid-19 and Climate emergency, both are transboundary that's why we have selected our

sample companies from G-4 countries (Japan, Germany, India, and Brazil) to get a clear picture of how climate risk impacted the firm's performance during the pre and covid-19 pandemic. We have focused on G-4 countries for our analysis because these four countries are among the most vulnerable countries to climate risk. According to an analysis byGarmanwatch, climate change-related events are responsible for the decrease in the per capita GDP by 0.12% and 0.36% for Germany and Indian respectively (The Climate Risk Index, 2020). Climate change-related extreme weather events also affected Brazil negatively (**Escada et.al., 2021**).
The rest of the paper is arranged as follows: the next section reviews some past studies related to the present study, after that this paper includes the analysis and interpretation and the last section of this paper includes the concluding remarks.

Literature Review:

Transboundary risks are the most complex threats to the development of the society, economy, and environment of the planet. For understanding the potential threats related to climate change and also to explore the possible ways of managing these risks efficiently researchers around the world have conducted abundant research from different perspectives. Climate change-related risk has the potential to disrupt the firm's operation activities by damaging the infrastructure, assets, and properties of the firm and also by imposing several transitional threats on the firm. Researchers around the world have conducted several studies on the topic of climate risk and the performance of the firms from a different perspectives. One of the most important issues is a sustainable supply of energy without hampering the growth of the economy and at the same time without damaging environmental health. The energy sector is one of the most vulnerable to climate risk as this sector is very much exposed to the physical and transitional risks related to climate change. **Cruz and Krausman (2013)** have revealed that climate risk imposes a greater threat on the oil and gas sector. They also found that the severity and frequency of the climate risk in this particular sector is depending on the location's exposure to climate risk, from where it is operated. They suggested that this sector should take these emerging threats very seriously and also proactive actions to mitigate or adapt to the negative impact of climate risk. **Jianfei et.al. (2014)** emphasized that sustainable energy supply without hampering environmental health is one of the major issues in China. They also revealed that the top power generation companies have increasingly made several efforts to transit a carbon economy with a sufficient energy supply. **Boadi and Owusu (2017)** found that climate change-related variability in rainfall has created major issues in the hydropower sector in Ghana. **Gerlak et. al. (2018)** revealed that "significant emphasis on the identification of potential climate change impacts and opportunities for adaption, but less attention paid to the assessment of risk, stakeholder engagement, and cross-sectoral collaboration in climate risk management." **Engels et.al (2020)** have found that conventional companies are facing potential threats from the adaptation of low-carbon strategies in the long-run survival. Recently **Abreu et.al. (2021)** conducted a study on the Canadian oil and gas sector and found that external pressure from the government, suppliers, customers, and competitors could potentially increase the likelihood to adopt low-carbon strategies by the firms. The non-Energy Mineral sector including the iron and steel industry is also one of the most exposed to climate

change-related risks. Several studies have been conducted on *climate risk and iron and steel industries* around the world. **Morfeldt et. al. (2015)** estimated that the binding obligations related to the low-carbon economy shifted the price of crude steel up to approximately $500 per tonne in 2050. According to a report by **the Carbon Disclosure Project (2019)** an average of 14% of the steel companies' value is at the risk of rising carbon pricing. The automobile industry is also very much exposed to climate risk, for instance, **Andersson et. al. (2018)** emphasized that "Automobile manufacturers would largely be preserved because most of the carbon emissions for a car-maker are scope 3 emissions".

Climate change-related risk potentially affects the financial performance and financial policies of the firms. In this context**, Delmas et.al (2015)** investigated the relationship between climate change and the financial performance of the firms focusing on 1095 US Corporations. They found positive impacts of a decrease in greenhouse gas emissions on the companies' financial performance. **Huang et.al (2017)** investigated the impact of climate risk on the financial performance of the firms. They have taken the Climate risk index (CRI) scores climate variable, and return on assets and cash flow from operations as financial performance indicators of the firms. They have found a negative relationship between a firm's financial performance and climate risks. They have also revealed that climate risk also potentially affected the financial policies of the firms. **Arnell et. al. (2021)** revealed that a reduction in greenhouse gas emissions has the potential to reduce the climate risk in the long run.

From the above literature review, it is clear that no study has been conducted to evaluate the performance of the firms after incorporating climate risk with the help of the Integrated Ratio Approach in the light of pre and during Covid-19 pandemic periods evidencing from select firms from G-4 counties.

Data and Methodology:

The main objective of the study is to explore the impact of climate-related risk on the firm's performance during the pre and covid-19 pandemic. For this purpose, we have selected 12 companies based on their market capitalization from G-4 countries (Japan, Germany, India, and Brazil). These twelve companies have comprises of five companies from five different sectors in each country. The financial and climate-related data have been collected manually from the respective company's Integrated Reports, Sustainability Reports, and Annual Reports for the period 2016 to 2021. In the case of Nippon Steel Corporation (Iron and Steel Industry) from Japan, We are unable to evaluate the integrity ratios for 2020-21 due to the unavailability of data.

To understand the impact of climate risk on the financial performance of the companies we have used *the Integrated Ratio Approach*. The Centre for ESG Research released a set of formulas related to Non-Financial and Integrated Ratios to evaluate the performance and Risk of the companies in their "Integrated Ration Guidelines" on 15th December 2017. This *Integrated Ratio Approach* may help the investors, assets managers, and other stakeholders by acting as a tool for evaluating the companies' performance after incorporating

climate-related risks. We have selected the following Integrated Ratios to evaluate the climate risk and performance of the sample company.

a) **Carbon Intensity:** Carbon Intensity helps us to understand how much a company emitted Co2e per amount of revenue in a given period. The formula for calculating Carbon Intensity is as follows:
Carbon Intensity = (CO2e Scope 1+ Scope 2)/ Revenue
Unit of Expression: CO2e.

b) **BlackRock's Efficiency Improvement:** A positive output of this ratio indicates the possibility of reduction in the CO2e emission per activity and gaining a return on investor's capital at the same time. This implies the company's ability to transfer its methods of working to a lower emission production without hampering its profits and revenues. This can be calculated as follows:

BlackRock's Efficiency Improvement = $\{(Carbon\ Intensity)_{t-1} - (Carbon\ Intensity)_t\}$ Return on Equity*
Unit of Expression: CO2e.

**Here $(Carbon\ Intensity)_t$ is the carbon intensity for the current year and $\{(Carbon\ Intensity)_{t-1}$ is the carbon intensity for the previous year.

c) **Return on CO2e:** This ratio helps to understand how much profit has been earned per emitted CO2e. This can be calculated with the help of the following formula:

Return on CO2e = Profit or loss for the period/ (Scope 1+Scope 2)
Unit of Expression: Monetary.

d) **Cash flow from CO2e:** This ratio represents the Cash flow from operating activities per emitted CO2e. This can be calculated with the help of the following formula:

Cash flow from CO2e= Cash flow from Operating Activities/ (Scope 1 CO2e +Scope 2 CO2e)
Unit of Expression: Monetary.

Data Analysis and Interpretation:

Table 1: Integrated ratios of selected companies from Germany

Name of the company	Year	(Carbon Intensity)t [Tonnes of CO2e)/USD]	BlackRock's Efficiency Improvement[Tonnes of CO2e)/USD]	Return On Co2e [USD/ tonnes of CO2e]	Cash Flow from CO2e[USD/ tonnes of CO2e]
Uniper Energy Sales GmbH	2016-17	0.0008320	-0.0008570	-8.9511851	23.0434783
	2017-18	0.0007382	-0.0003802	-8.5257479	21.5049861
	2018-19	0.0006963	0.0002305	14.0547663	20.3401277

	2019-20	0.0008076	-0.0003867	9.7666743	30.1503553
	2020-21	0.0002974	-0.0233046	-84.1849130	74.2410058
VOLKSWAGEN	2016-17	0.0000435	0.0000505	946.4202420	1362.7238724
	2017-18	0.0000362	0.0000882	1402.7470817	2547.7120623
	2018-19	0.0000345	0.0000221	1590.8195876	4198.0644330
	2019-20	0.0000370	-0.0000178	989.1848739	3670.0644258
	2020-21	0.0000328	0.0000452	1623.6061453	4796.9441341
RIO TINTO PLC	2016-17	0.0007744	0.0034302	285.5161290	447.8709677
	2017-18	0.0007157	0.0016212	480.1724138	407.6206897
	2018-19	0.0006232	0.0013563	259.1821561	554.3494424
	2019-20	0.0005963	0.0005765	390.9774436	596.8045113
	2020-21	0.0004126	0.0076421	861.6412214	967.3664122

Source: Authors' computation

Interpretation: From the above table, it is can be seen that the Carbon Intensity of Uniper Energy Sales GmbH is 0.0002974 lowest in 2020-21 and 0.0008320 highest in 2016-17. This implies that Uniper's highest Co2e emission per revenue is in the year 2016-17 and the lowest Co2e emission per revenue is in the year 2020-21. The same inferences are also true in the case of Volkswagen and Rio Tinto PLC. A positive outcome of BlackRock's Efficiency Improvement indicates the possibility of reduction in the CO2e emission per activity and gaining a return on investor's capital at the same time. Here from the above table, it can be seen that in the case of Uniper there is only one positive outcome in 2018-19 but on the other hand there is one negative outcome in the year 2019-20 for Volkswagen. But in the case of Rio, the outcomes of BlackRock's Efficiency Improvement are positive for all the study periods, it is the best performer. In the case of Uniper, we can see that there are only two (14.0547663 and 9.7666743) positive Returns on Co2e in the year 2018-19 and 2019-20 respectively. In this case, Volkswagen holds the highest Return on Co2e in 2020-21 and the lowest Return on Co2e in 2016-17. The above table also shows that all the sample companies from Brazil have the highest Cash Flow from CO2e in the year 2020-21.

Table 2: Integrated ratios of selected companies from Japan

Name of the company	**Year**	**(Carbon Intensity)t**	**BlackRock's Efficiency Improvement**	**Return On Co2e** [USD/	**Cash Flow from CO2e**[USD/

		[Tonnes of CO2e)/USD]	[Tonnes of CO2e)/USD]	tonnes of CO2e]	tonnes of CO2e]
INPEX	2016-17	0.0007320	-0.0002638	87.6900387	430.8734691
	2017-18	0.0006124	-0.0000285	-3.6728875	487.1630565
	2018-19	0.0009598	0.0005030	129.7840941	286.2384933
	2019-20	0.0010666	0.0016099	-126.2210161	356.1646623
	2020-21	0.0006564	-0.0053516	261.8962275	545.3502543
Honda Motors Japan	2016-17	0.0000413	-0.0000182	1174.5281121	1530.1034742
	2017-18	0.0000394	-0.0000275	1866.3436217	1633.2356681
	2018-19	0.0000374	-0.0000043	1136.8579389	1304.4601223
	2019-20	0.0000369	0.0000032	925.3795817	1777.3558887
	2020-21	0.0000374	-0.0002948	1410.6695182	2175.2612249
NIPPON STEEL CORPORATION	2016-17	0.0018409	-0.0008350	13.8816913	46.1666666
	2017-18	0.0016669	-0.0000126	21.4664341	44.5568754
	2018-19	0.0016651	-0.0001978	-43.2180373	50.1360471
	2019-20	0.0016787	0.0012013	-2.3840116	49.7334146

Source: Authors' computation

Interpretation:

From table 2 we can see that the lowest Carbon intensity holds in the year 2017-18 and the second-lowest Carbon intensity holds in the year 2020-21 and the highest at 0.0009598 holds in 2018-19 in the case of Inpex. In the case of Honda Motors Japan, we can see that the lowest carbon intensity is held in the year 2019-20 and the highest carbon intensity holds in 2017-18. The highest Carbon Intensity is held in the year 2016-17 and the lowest carbon intensity in the year 2018-19 in the case of Nippon Steel. In the case of Inpex, there are two positive outcomes of BlackRock's Efficiency Improvement in the year 2018-19 and 2019-20. In the case of Honda Motors and Nippon Steel, there is only one positive outcome of BlackRock's Efficiency Improvement in the year 2019-20. We can also see that the highest Return on Co2e holds in 2020-21 and the lowest Return on Co2e holds in 2019-20 in the case of Inpex, In the case of Honda Motors and Nippon Steel, the highest *Return on Co2e* holds in 2017-18. The lowest Return on Co2e holds in the year 2019-20 in the case of Honda Motors and for Nippon Steel, the lowest Return on Co2e holds in the year 2018-19. In the case of Inpex and Honda Motors, the highest cash flow from operating activities per emitted Co2e holds in the year 2020-21 but in the case of Nippon Steel, the highest cash flow from operating activities per emitted Co2e holds in the year 2018-19.

Table 3: Integrated ratios of selected companies from India

Name of the company	Year	(Carbon Intensity)t [Tonnes of CO2e)/USD]	BlackRock's Efficiency Improvement[Tonnes of CO2e)/USD]	Return On Co2e [USD/ tonnes of CO2e]	Cash Flow from CO2e[USD/ tonnes of CO2e]
BCPL	2016-17	0.000823293	-0.00270033	3.99136458	0.12803268
	2017-18	0.000770772	0.00130343	3.70705382	4.20105522
	2018-19	0.000845855	-0.00151077	2.49738359	2.6769587
	2019-20	0.001009325	-0.00125406	0.81152546	1.92288879
	2020-21	0.00104708	-0.00085317	6.02448636	0.20083414
TATA MOTOR	2016-17	6.05101E-06	5.5666E-05	-818.51777	1726.8178
	2017-18	5.26655E-06	-3.9281E-06	-329.55311	7597.5136
	2018-19	5.45021E-06	-9.1773E-07	535.727688	5008.56074
	2019-20	5.72146E-06	3.174E-06	-2900.38625	10596.6952
	2020-21	4.66148E-06	-4.2069E-06	-1092.63001	13228.2014
TATA STEEL	2016-17	0.000384753	0.00426013	238.686539	54.3192117
	2017-18	0.000351953	0.00399502	330.87662	55.3589202
	2018-19	0.000308407	0.00067196	48.3685871	69.7670187
	2019-20	0.000351421	-0.00038788	31.7527707	63.3457371
	2020-21	0.000305823	0.00073814	68.5870725	148.038496

Source: Authors' computation

Interpretation:

From the above table, it can be observed that except for BCPL both the companies Tata Motors and Tata Steel have the lowest Carbon Intensity in the year 2020-21. In the case of BCPL, the highest carbon intensity holds in the year 2020-21 and the lowest Carbon Intensity holds in the year 2016-17. We have also observed that the possibility of shifting the operational activities towards a lower-carbon economy without hampering the profits and revenue is lower in the case of BCPL, on the other hand in the case of Tata Motors we also observed two positive outcomes 5.5666 and 3.174 of Blackrock's Efficiency Improvement in the year 2016-17 and 2019-20 respectively. But there is a higher possibility of transferring the business activities without hampering the profit and revenues in the case of Tata Steel. From the above table, it is also observed that in the years 2019-20 and 2020-21 on the one side there are lower carbon emissions in earnings per revenue but at the same time, these years are witnesses a lower return of Co2e in the case of Tata Motors and Tata Steel. But these two companies have held the highest Cash from Co2e during the Covid-19 periods.

Table 4: Integrated ratios of selected companies from Brazil

Name of the company	Year	(Carbon Intensity)t [Tonnes of CO2e)/USD]	BlackRock's Efficiency Improvement[Tonnes of CO2e)/USD]	Return On Co2e [USD/ tonnes of CO2e]	Cash Flow from CO2e[USD/ tonnes of CO2e]
PETROBRAS	2016-17	0.0008556	0.000012	253.6014406	406.8427371
	2017-18	0.0007259	0.001271	12067.05729	428.922526
	2018-19	0.0007681	-0.000604	17615.16233	435.1521333
	2019-20	0.0010342	-0.000380	1707.492795	520.3530259
	2020-21	0.0007317	0.009391	32529.29688	615.0878906
WHIRLPOOL	2016-17	0.0000381	0.000016	41658.63162	1562.507726
	2017-18	0.0000358	-0.000011	-21099.51007	1630.899237
	2018-19	0.0000335	0.000101	175041.0207	1797.165738
	2019-20	0.0000341	-0.000017	161496.565	2261.856653
	2020-21	0.0000278	0.000259	295717.9839	3563.0251
VALE ON NM	2016-17	0.0004063	0.002186	45746.37681	902.173913
	2017-18	0.0003882	0.000276	48309.85915	908.5211268
	2018-19	0.0003141	-0.000298	-14262.71186	1026.271186
	2019-20	0.0002504	0.000842	48712.57485	1429.341317
	2020-21	0.0001871	0.004052	220274.5098	2517.54902

Source: Authors' computation

Interpretation: From the above table, we can see that the lowest Carbon Intensities hold in the year 2019-20 and 2020-21 for Whirlpool and Vale ON NM. But in the case of Petrobras, the lowest Carbon Intensity was found in the year 2017-18 but the second-lowest Carbon Intensity has been found in the year 2020-21. We have also found two negative outcomes of Blackrock's Efficiency Improvement in the case of Petrobras and Whirlpool and there is one negative - outcome in the year 2018-19 for Vale ON NM. So the possibility of transforming the operational activities towards a lower-carbon economy is higher than the other companies. We

have also observed that for all the sample companies the highest Return on Co2e holds in the year 2020-21. In the case of Petrobras, the lowest Return on Co2e holds in 2016-17 and for Whirlpool the lowest return holds in the year 2017-18. On the other hand, the lowest return on CO2e holds in the year 2018-19 in the case of Vale ON NM. We have also observed the highest Cash flow on CO2e in the year 2020-21 for all the sample companies.

Key Findings:

The following figures show the year-wise average integrated ratios of the sample companies from Germany

Figure 1

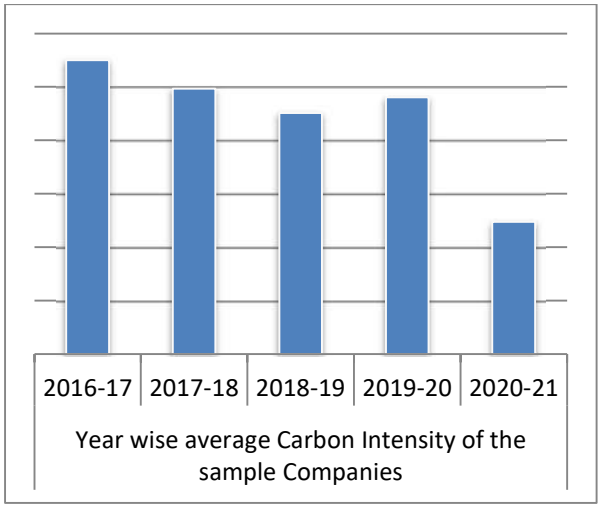


Figure 3

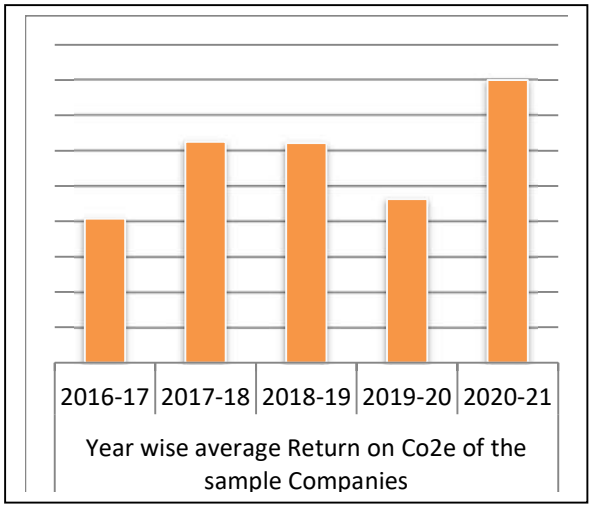


Figure 2

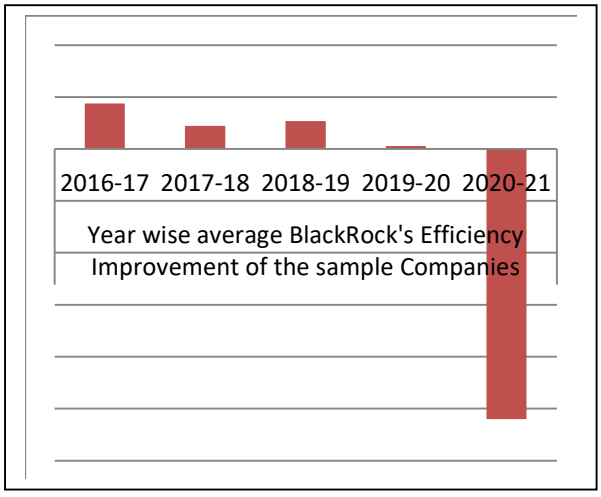
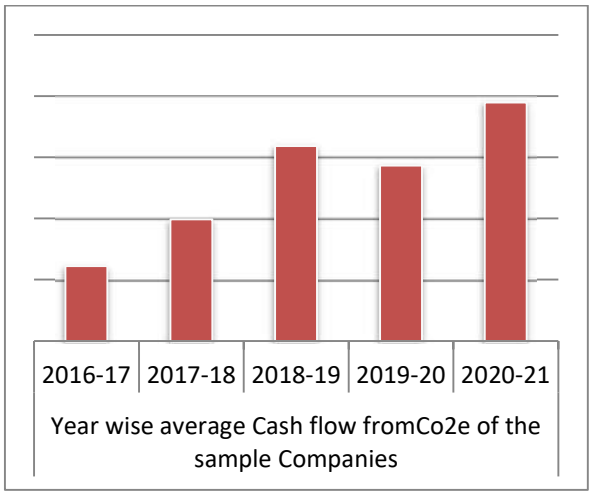


Figure 4



From the above figure, it is clear that Carbon emission per revenue of the sample companies is highest in 2016-17 and lowest in the year 2020-21. Even though there is a small rise in carbon intensity in 2019-20 we can observe that during the pandemic the Carbon Intensity was lower than in the pre-covid periods. Here we can observe that except for Uniper Energy, other

companies comparatively have the potential to transfer their operational activities without hampering the profits and revenues. We can also observe that in the year 2020-21 there is the highest Return on Co2e and the Highest Cash flow from Co2e. Though in the year 2019-20 the return on Co2e and Cash flow from Co2e went down and Co2e emission per revenue have risen in 2020-21 but in 2020-21 the sample companies have the lowest emission per revenue and highest return on Co2e and highest Cash flow from form Co2e in the case of Germany.

The following figures show the year-wise average integrated ratios of the sample companies from Japan

Figure 5

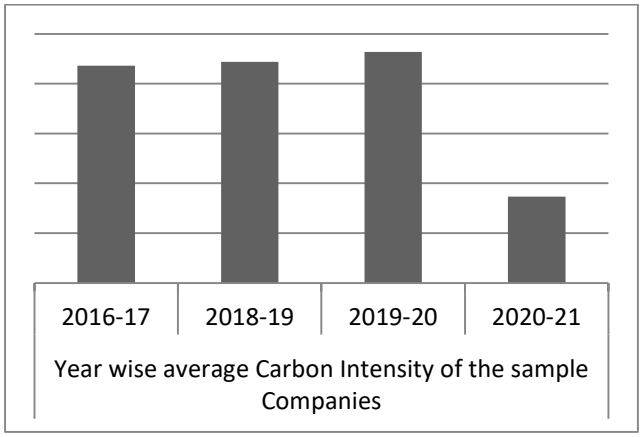


Figure 7

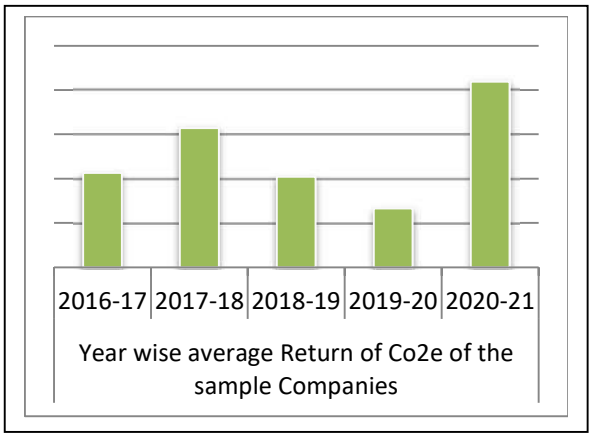


Figure 6

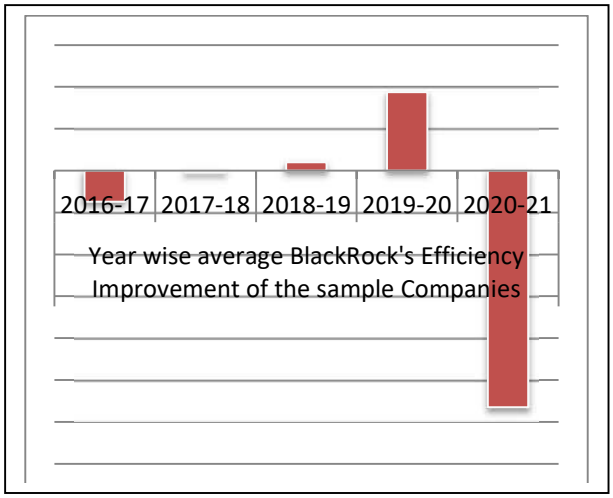
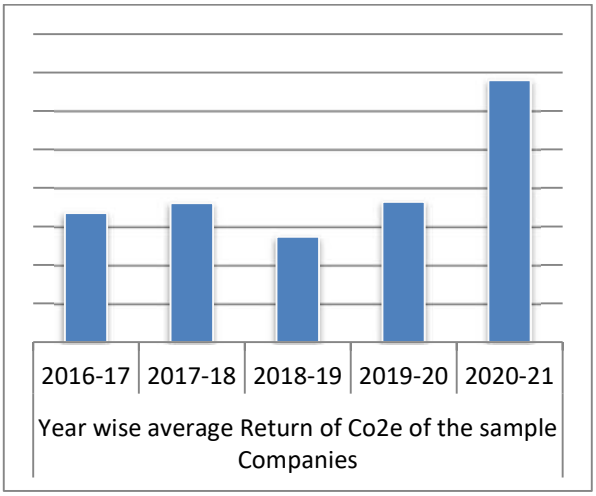


Figure 8



Here we can see that as compared to the pre-covid period in 2019-20 the carbon intensity has risen to its highest but in 2020-21 the Co2e emission per revenue has come to its lowest. At the

same time, we have seen that in 2019-20 the Return of Co2e is at its lowest position and in the year 2020-21 Return of Co2e and Cash flow from Co2e is at their highest position.

The following figures show the year-wise average integrated ratios of the sample companies from India

Figure 9

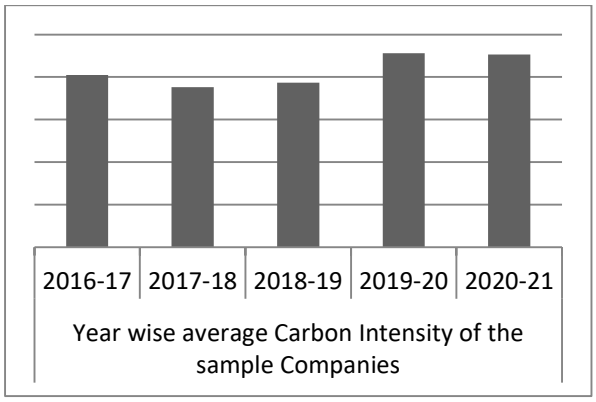


Figure 10

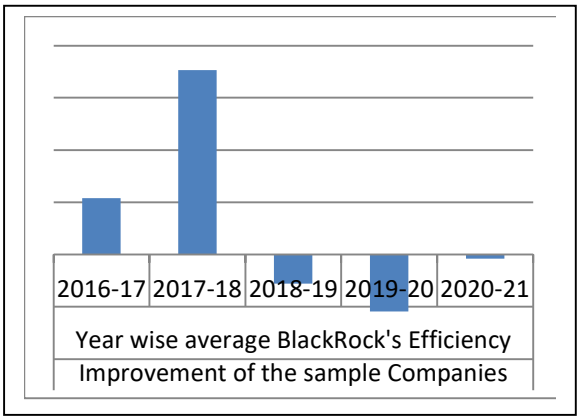


Figure 11

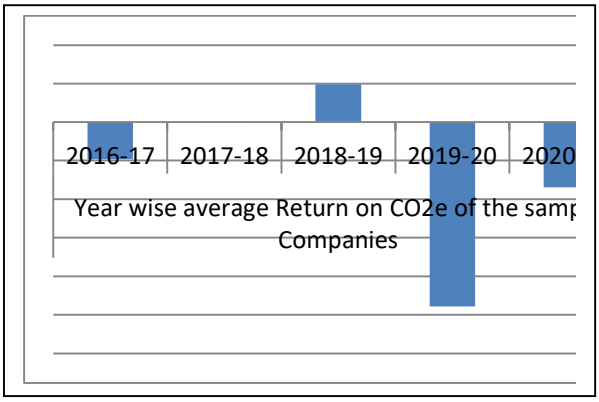
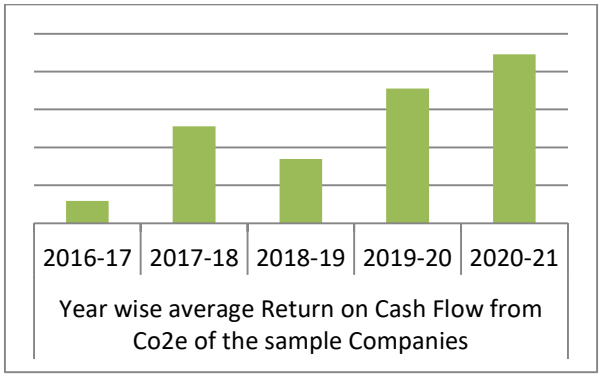


Figure 12

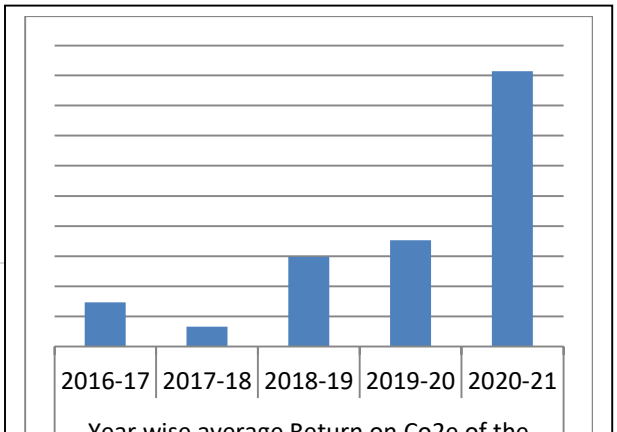


Unlike the previous findings, in the case of India, we can observe that the Co2e emission per Revenue is higher than in the pre-Covid Periods. Here we can observe a negative Return of Co2e emission for the Covid-19 periods. But there is higher Cash flow from Co2e emissions in 2019-20 and 2020-2021.

The following figures show the year wise average integrated ratios of the sample companies from Brazil

Figure:13

Figure:14



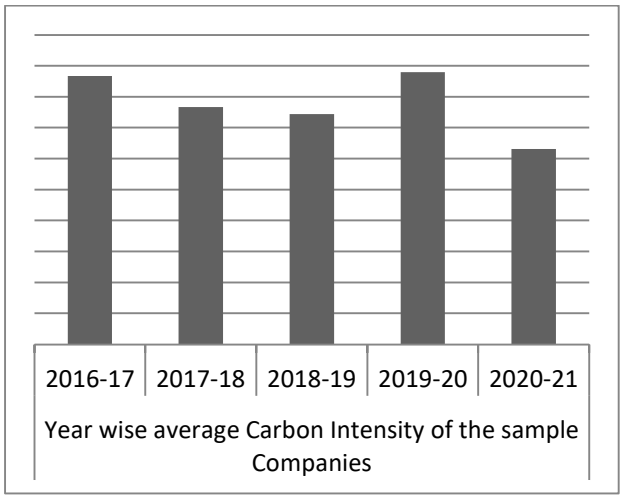


Figure:15

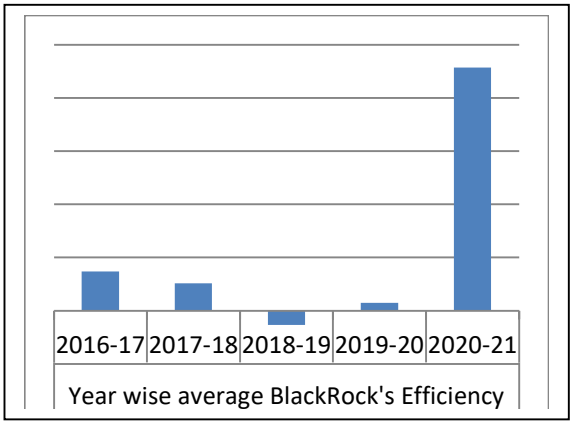
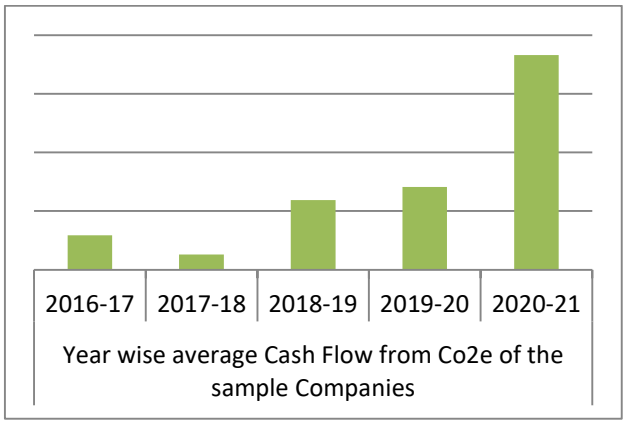


Figure:16



From the above figures, we can observe the same inferences as we have found in the case of Germany and Japan i.e. in 2019-20 the Co2e emission per revenue is increased as compared to the previous period but in 2020-2021 we have observed the lowest Co2 emission per revenue as compared to the pre-Covid periods.

Conclusions:

The present study aims to evaluate the performance of the firms after incorporating climate risk for the pre and during Covid-19 pandemic periods. We have selected twelve companies to form energy mineral, non-energy minerals, and consumer durable sectors from G-4 countries. Traditional Ratio analysis fails to give a clear picture of a firm's performance as these only incorporate the financial variables only but when we incorporate the non-financial variables with the financial performance indicators, we can get better information that may be more useful in decision making. Thus, we have used Integrated Ratio Approach to evaluate the performance of the firms during study periods.

Based on the above finding following conclusions may be derived:

1. Except for the Sample Companies from India, in the case of the other companies from Brazil, Japan and Germany have the lowest average Carbon Intensity i.e. Lowest Carbon emission per Revenue in 2020-21 as compared to the previous periods.
2. We have also found that for most of the sample companies (except the companies from Brazil) the *BlackRock's efficiency Improvement* were negative in 2020-21 which implied that there are difficulties to transform those business activities to a lower carbon economy without sacrificing the profits and revenues.
3. We have observed except for the sample companies from India the rest of the companies' Return on Co2e decreased in 2019-20 as compared to the previous periods but then in the year 2020-21, the companies hold the highest Return on Co2e.
4. It has been also evidenced that most of the companies have higher cash s from Co2e emissions during the pandemic time as compared to the pre-Covid periods.

So it is clear that Covid-19 helped in the reduction of climate risk by decreasing the *Carbon Intensity* but at the same time, it has also witnessed that the pandemic also adversely affected the financial performance of the sample companies in 2019-20. Though in 2020-21 there are higher *Cash Flow from Co2e* and higher *Returns on Co2e* for most of the companies but it has also been found that most of the companies have a negative outcome of *BlackRock's efficiency Improvement* during the pandemic. So though there are improvements in the Carbon intensity, there may be low potential to transform the operating activities to lower-carbon business activities for sample companies.

Contribution, Limitations, and Future Research:

The present study contributes to the existing literature on Climate risk and Performance of Firms as very limited studies are focused on this emerging area of research. The present study aims to provide a picture of companies' performance after incorporating climate risks during the pre and Covid-19 pandemic evidencing from G-4 countries to understand the current situation to make a better future.

Nevertheless, the present study has some limitations, like the sample size of the present study and future research may include a large number of companies from different countries of the world to get a clearer picture of the transboundary risk and performance of the firms. More especially, the conclusions drawn by the present study are not valid for all the companies around the world as the sample size of the present study is very small. Another limitation of the present study is the ability to examine the climate risk-related information is limited to five study periods.

Hence further investigation is needed to explore the current study with a larger sample size for a larger period to generalize the results for all companies around the world.

References:

Abreu, M. C. S. de, Webb, K., Araújo, F. S. M., & Cavalcante, J. P. L. (2021). From "business as usual" to tackling climate change: Exploring factors affecting low-carbon decision-making in the Canadian oil and gas sector. Energy Policy, 148, 111932. https://doi.org/10.1016/j.enpol.2020.111932

Andersson, Mats; Bolton, Patrick; Samama, Frédéric (2016). Hedging Climate Risk. Financial Analysts Journal, 72(3), 13–32. doi:10.2469/faj.v72.n3.4

Arnell, N.W., Kay, A.L., Freeman, A., Rudd, A.C., Lowe, .J.A. (2021). Changing climate risk in the UK: A multi-sectoral analysis using policy-relevant indicators, *Climate Risk Management, 31*, 100265. https://doi.org/10.1016/j.crm.2020.100265

Assad, E. D., Ribeiro, R. R. R., &Nakai, A. M. (2018). Assessments and How an Increase in Temperature may Have an Impact on Agriculture in Brazil and Mapping of the Current and Future Situation. *Climate Change Risks in Brazil*, 31–65. doi:10.1007/978-3-319-92881-4_3

Boadi, S. A., & Owusu, K. (2017). Impact of climate change and variability on hydropower in Ghana, *African Geographical Review*, DOI: 10.1080/19376812.2017.1284598.

Briz-Redón, Á., and Serrano-Aroca, Á. (2020). The effect of climate on the spread of the COVID-19 pandemic: A review of findings, and statistical and modeling techniques. Progress in Physical Geography: Earth and Environment, 44(5), 591-304. https://doi.org/10.1177%2F0309133320946302

Chudasama, Y.V., Gillies, C.L., Zaccardi, F., Coles, B., Davies, M.J., Seidu, S., et al., 2020. Impact of COVID-19 on routine care for chronic diseases: A global survey of views from healthcare professionals. Diabetes MetabSyndr Clin Res Rev 14 (5), 965–967.

Cruz, A.M., &Krausmann, E. (2013). Vulnerability of the oil and gas sector to climate change and extreme weather events, *Climatic Change*, 121, 41-53. https://doi.org/10.1007/s10584-013-0891-4

Delmas, M. A., Nairn-Birch, N., & Lim, J. (2015). Dynamics of Environmental and Financial Performance. *Organization & Environment, 28*(4), 374–393. https://doi.org/10.1177/1086026615620238

Engels, P. D. A., Kunkis, M., and Altstaedt, S. (2020). A new energy world in the making: Imaginary business futures in a dramatically changing world of decarbonized energy production. Energy Research & Social Science, 60, 101321. https://doi.org/10.1016/j.erss.2019.101321

Escada, P., Coelho,C.A.S., Taddei, R., Dessai, S., Cavalcanti, I.F.A., Donato, R., Kayano, M.T., Martins, E. S.P.R., Miguel, J.C.H., Marko Monteiro, M., Moscati, M. C.L. (2021). Climate services in Brazil: Past, present, and future perspectives. *Climate Services, 4,* 100276, https://doi.org/10.1016/j.cliser.2021.100276.

Jianfei, S., Song, X., Ming, Z., Yi, W., Yuejin, W., Xiaoli, L., &Zhijie, W. (2014). Low-carbon development strategies for the top five power generation groups during China's 12th Five-Year Plan period. Renewable and Sustainable Energy Reviews, 34, 350–360. https://doi.org/10.1016/j.rser.2014.03.029

Morfeldt, Johannes; Nijs, Wouter; Silveira, Semida (2015). The impact of climate targets on future steel production – an analysis based on a global energy system model. Journal of Cleaner Production, 103(), 469–482. doi:10.1016/j.jclepro.2014.04.045

Ray, R.L., Singh, V.P., Singh, S.K., Acharya, B.S., He, Y. (2022). What is the impact of Covid-19 Pandemic on Global carbon emissions?.*Science of The Total Evironmen, 816*, 151503. https://doi.org/10.1016/j.scitotenv.2021.151503

Ringsmuth, A.K., Otto, I.M., Hurk, B. V. N., Lahn, G., Reyer, C.P.O., Carter, T.R., Magnuszewski, P., Monasterolo,I., Aerts, J.C.J.H., Benzie, M., Campiglio, E.,Fronzek, S., Gaupp, F., Jarzabek, L., Klein, R.J.T., Knaepen, H., Mechler, R., Mysiak, J., Sillmann, J.,

Rubén D. Manzanedo, Peter Manning, COVID-19: Lessons for the climate change emergency, Science of the Total Environment, Science of the Total Environment 742 (2020) 140563https://doi.org/10.1016/j.scitotenv.2020.140563

Stuparu, D., West,C. (2022). Lessons from COVID-19 for managing transboundary climate risks and building resilience. *Climate Risk Management*, *35*, 100395. https://doi.org/10.1016/j.crm.2022.100395.

****

Evaluation of Service Quality in Card Banking – Application of SERVQUAL Model

Arindam Das
Department of Commerce
The University of Burdwan

ABSTRACT

In this study an attempt has been made to evaluate the service quality in card banking.In this study the systematic sampling method has been applied to collect the sample data from 400 respondents who are availing card banking service in the districts of Burdwan, Purulia, Bankura and Birbhum.The study shows that there existsa noteworthygapbetween mean of perceived score and the mean of expected score of all the attributes for all the dimensions of service quality of card banking. The average unweighted and weighted SERVQUAL gap score in card banking are negative which indicatesthat the services delivered by the card banking are not up to the expectationand the bank should give more attention to reduce these gap scores in the seven dimensions of service quality in card banking.

Key words: *Service Quality, SERVQUALgap score, Card banking*

1. Introduction

Banks issue different card to the customers so that the customers can perform different banking activities without going to the bank physically. Some of the most common cards are debit cards, credit cards, prepaid cards, and charge cards*etc.*[Dingra, (2018)]. These card banking services provide the facility for users to avail different services like withdrawal and deposit of cash, payment of different bills *etc.* For getting these services, technology is considered as one of the most significant drivers to attract more customers and to provide better services to them. [Boon-itt (2015)]. Quality in services supportsto maintainthe customers' confidence [Berry *et al.* (1994)]. Gerrard and Cunningham (2005) opined that business firms providing betterservice must have high customer satisfaction, reduced defection, increased retention of customers and greater market share with high profitability. Thus, service quality plays a key role in any business. So, evaluation of service quality is an essential market strategy for the banks like any other type of business firms.The SERVQUAL model has been first developed by Parsuraman*et al.* (1988) to measure the service quality, afterward, several researchers used this model in various service sectors by modifying the dimension [Stafford (1996), Bahia &Nantel (2000), Woo and Ennew (2004), Tileng*et al.* (2013) etc.].In this studyan attempt has been made to evaluate the service quality in card banking.

2. Objectives of the Study

The objectives of the study are:

(i) To evaluate the service quality of card banking by using modified SERVQUAL model,
(ii) To examine the difference between expectations and perceptions of customers in different dimensions of service quality in card banking.

3. Review of Literature

Theresia and Tan (2021) have evaluated the quality of the services of the credit card with the help of e-SERVQUAL model. The model considers the dimensions of system availability, privacy, efficiency, fulfilment, compensation, responsiveness and contact. The authors have evaluated the experience of the customers by considering the areas of satisfaction, efficiency, learnability and effectiveness in card

banking. Using the usability testing scale the satisfaction of the customers has been obtained by the authors. With the use of House of Quality method, the authors have designed the improvement of the model. Aslam *et al.* (2019) have applied the structured equation model, exploratory factor analysis, confirmatory factor analysis in order to investigate the factors of ATM service quality of the customers in Pakistan. Some of the main components of ATM service quality are ease of use, privacy, security, reliability and fulfilment, moreover, convenience and responsiveness and these factors are positively related with the satisfaction level of the customers and the customers' satisfaction positively influences the loyalty of the customers. Wanninayake*et al.* (2019) have opined that there has been an immense competition among the banks now a days and this has paved the way for development of new technologies and improvement in the procedures for retaining the customers. However, in order to achieve the loyalty of the customers within the banking industries the service quality plays a vital role and it is considered to be one of the most remarkable factors. According to the authors, in the banking sector there is a key area called the credit card sector and the success of the credit card positively depends on the perceived customers' service quality and there has been a positive interconnection between the various aspects of the service quality and the loyalty of the customers. Out of the five factors tangible, assurance and responsiveness are the three key factors of the service quality which are the leading determinants of the loyalty of the customers. Narteh (2015, 2013) has examined the perceived service quality and satisfaction of self-service technology with the help of SERVQUAL. The author has identified ease of use, responsiveness, convenience, fulfilment, reliability, privacy and security as the dimensions of service quality. Khan (2010) has observed that reliability, efficiency,ease of use, privacy, convenience responsiveness and efficiency are the factors of ATM service quality. But the author didn't consider fulfilment as the important dimension of service quality. From the above mentioned literatures, it is observed that except few Indian studies most of the studies are associated with the service quality of card banking in the developed countries. In the present study an effort has been made to evaluate the service quality of card banking by applyingmodified SERVQUAL model.

4. Database

In this study the systematic sampling method has been applied to collect the sample data from 400 respondents who are availing card banking service in the districts of Burdwan, Purulia, Bankura and Birbhum.In this method every 2nd customer who set foot out of the bank branches of State Bank of India, Bank of Maharashtra, UCO Bank, Bank of Baroda, Bank of India, Punjab National Bank, Union Bank of India, Axis Bank, ICICI Bank, HDFC Bank, Kotak Mahindra Bank, IDBI Bank, YES Bank and IndusInd Bank, after getting their services from their respective branches, are approached on every 1st and 3nd Saturday during June 2021 to November 2021 from 11am to 2 p.m. and they were surveyed if they adopted card banking services for the last two years. These banks are selected on the basis of conveniences.Themodified SERVQUAL model has been used to collect the data on the different dimensions of service quality. Service quality perception and expectation are measured on a five-point Likert-type scale ranging from 1 'strongly disagree' to 5 'strongly agree.'

5. Methodology

On the basis of extensive literature review, in the present study the basic SERVQUAL model has been augmented by adding more additional dimensions and omitting few dimensions so that the Modified SERVQUAL Model is suitable to measure the service quality in card banking services. The modified SERVQUAL model consists of twenty eight attributes and seven dimensions: namely reliability, responsiveness, assurance, efficiency, empathy, security and system availability.After getting the perceived score and expected score of twenty eight attributes under seven broad service quality dimensions for all the respondents a gap score has been computed. After that mean gap score for each attribute has been computed for each of the seven dimensions of card banking. Then mean gap score of

each seven dimensions has been calculated and ultimately average unweighted SERVQUAL gap score and average weighted SERVQUAL gap score are computed for card banking. For finding out the weight of each seven dimensions, the normalized to scaled sum unity has been followed. Cronbach's Alpha test has been applied to test the reliability of the modified SERVQUAL model. To test the significant differences between perceived score and expected score of different attributes in modified SERVQUAL model, Mann-Whitney U test has been applied.

6. Analysis and Interpretation of the Results

The results of gap analysis of Modified SERVQUAL Model for card banking are presented in Table 1 to 7. Table 1 exhibitsthat the average gap score of reliability dimension is -1.31259. Among the attributes in this dimension, the highest gap score (-1.5657) is observed in the attribute, "Debit cards can be used universally to deposit money", and the lowest gap score (-1.2543) is observed in the attribute, "Debit cards can be used universally to withdraw cash". The values of Mann-Whitney Test are statistically significant at 1 % level and it implies that there is a significant difference between mean of perceived score and mean of expected score of all the attributes in the dimension of reliability.

Table 2 displays that the average gap score of responsiveness dimension is -1.21028. Among the attributes in this dimension, the highest gap score (-1.44768) is observed in the attribute, "Bank officers take the debit card related queries seriously", and the lowest gap score (-1.07469) is observed in the attribute, "Bank employees inform exactly when services will be performed". The values of Mann-Whitney Test are statistically significant at 1 % level and it implies that there is a significant difference between mean of perceived score and mean of expected score of all the attributes in the dimension of responsiveness.

Table 3 shows that the service quality on assurance dimension has a negative value (-1.26343) which implies that this dimension does not fulfil the expectation of the customers. Among the attributes in this dimension, the highest gap score (-1.50761) is observed in the attribute, "The behaviour of the bank employees increases the confidence of customers", and the lowest gap score (-1.11066) is observed in the attribute, "Customers feel safe for using debit cards in their transactions". There is also a significant difference between mean of perceived score and mean of expected score of all the attributes in the dimension of assurance as all Mann-Whitney Test statistics are statistically significant at 1 % level.

Table 4demonstrates that the service quality on efficiency dimension has a negative value (-1.33283) which infers that customers' perception of this service is still below the expected value. Among the attributes in this dimension, the highest gap score (-1.53665) is observed in the attribute, "The speed of login and logout is very fast", and the lowest gap score (-1.36588) is observed in the attribute, "The website is available in multi-language". There is also a significant difference between mean of perceived score and mean of expected score of all the attributes in the dimension of efficiency as all Mann-Whitney Test statistics are statistically significant at 1 % level.

Table 5 reveals that the service quality on empathy dimension has a negative value (-1.23721) which infers that customers' perception of this service is still below the expected value. Among the attributes in this dimension, the highest gap score (-1.43983) is observed in the attribute, "Continuous efforts are made to provide best debit card services", and the lowest gap score (-1.06224) is observed in the attribute, "Problems addressing mechanism in debit card provides 24*7 hours service". There is also a significant difference between mean of perceived score and mean of expected score of all the attributes in the dimension of empathy as all Mann-Whitney Test statistics are statistically significant at 1 % level.

Table 6 exhibits that the security dimension gets a negative value (-1.25934) which assumes that customers' perception of this service is still below the expected value. Among the attributes in this dimension, the highest gap score (-1.60443) is observed in the attribute, "Customers feel safe with online transactions", and the lowest gap score (-1.02905) is observed in the attribute, "The banks always send OTP for every transaction in registered mobile number and email". The mean of perceived score and mean of expected score of all the attributes in the dimension of security are significantly different.

Table 7 reveals that the system availability dimension has a negative value (-1.05325) which assumes that customers' perception of this service is still below the expected value. Among the attributes in this dimension, the highest gap score (-1.31674) is observed in the attribute, "After entering information, pages at the site do not freeze", and the lowest gap score (-0.93223) is observed in the attribute, "The server and website are supported by latest software". The mean of perceived score and mean of expected score of all the attributes in the dimension of system availability are significantly different.

Table 8 tells average unweighted and weighted SERVQUAL gap scores in card banking. The upper panel of this table shows that the average unweighted SERVQUAL gap score in card banking is negative (-1.23842) which indicatesthat the services provided by the card banking are not up to the expectation of the customers. Among the seven dimension, efficiency dimension showshighest gap score (-1.33283) and the lowest gap score (-1.05325) is observed in the system availability dimension. Average weighted SERVQUAL gap score in card banking is also negative (-0.17866) which is presented in the lower panel of Table 4.15. However, the ranking of dimensions of service quality changes in the weighted SERVQUAL gap score. In the weighted SERVQUAL gap score, assurance has the highest gap score followed by responsiveness, reliability, security, empathy and efficiency. The system availability dimension has the lowest gap score in card banking.

7. Major Findings and Conclusion

All the values of Mann-Whitney Test are statistically significant at 1 % level and it implies that there is a significant difference between mean of perceived score and the mean of expected score of all the attributes for all the dimensions of service quality of card banking. The average unweighted and weighted SERVQUAL gap score in card banking are negative which indicates that the services provided by the card banking are not up to expectation of the users. It may be concluded from the major findings of the study that according to the weighted SERVQUAL gap score, assurance has the highest gap score followed by responsiveness, reliability, security, empathy and efficiency and system availability dimension in card banking and the bank should give more attention to reduce these gap scores in the seven dimensions of service quality in card banking.

Acknowledgement

This research is a part of the ICSSR sponsored Major Research Project (File No.: 02/155/SC/2019-20/MJ/RP, dated 23/12/2019) entitled "Evaluation of Service Quality in Digital Banking Services: A Study in Western Part of West Bengal" under taken at the Department of Commerce, The University of Burdwan. The author thankfully acknowledge ICSSR for the financial support to carry out this work.

Table 1: SERVQUAL Score of Reliability Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
ATM has the ability to function all the time and provides error free and consistent services.	3.367911	4.662517	-1.29461	85232.50***
Debit cards can be used universally to withdraw cash	3.435685	4.69018	-1.2545	88624.50***
Debit cards can be used universally to deposit money	2.647303	4.213001	-1.5657	60798.00***
Debit cards are very reliable to use at any point of sale	3.493776	4.629322	-1.13555	121494.00***

Average Gap Score of Reliability Dimension	-1.31259

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 2: SERVQUAL Score of Responsiveness Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
Bank officers provide prompt solution to debit card related problems	3.427386	4.655602	-1.22822	10640***
Bank officers take the debit card related queries seriously	2.970954	4.418637	-1.44768	55707.5***
Bank employees are ready to deliver services at any time	3.065007	4.155556	-1.09055	101670.5***
Bank employees inform exactly when services will be performed	3.073306	4.147994	-1.07469	107957***
Average Gap Score of Responsiveness Dimension	-1.21028			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 3: SERVQUAL Score of AssuranceDimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
Customers feel safe in using debit cards in their transactions	3.495146	4.605809	-1.11066	116475***
Bank employees have adequate knowledge to handle debit card related queries	3.201936	4.410788	-1.20885	81470.5***
The behaviour of the bank employees increases the confidence of customers	2.777317	4.284924	-1.50761	53512.5***
Debit cards are blocked by the employees in case of emergency	3.381743	4.608333	-1.22659	84005.5***
Average Gap Score of Assurance Dimension	-1.26343			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 4: SERVQUAL Score of Efficiency Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
The speed of login and logout is very fast	3.001383	4.538036	-1.53665	60338***
Customers are able to complete their transactions quickly	3.071923	4.538036	-1.46611	66820***
The website is available in multi-language	2.900415	4.266297	-1.36588	81530***
It is very easy to navigate on the website	3.035961	3.998617	-0.96266	134671.5***
Average Gap Score of Efficiency Dimension	-1.33283			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 5: SERVQUAL Score of Empathy Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
Debit card related problems are addressed by personalized attention of the bank employees	3.330567	4.562932	-1.23237	84118.5***
Customers get personalized services from employees	3.056708	4.271093	-1.21438	100731.5***
Continuous efforts are made to provide best debit card services	2.769018	4.208852	-1.43983	57435.5***
Problems addressing mechanism in debit card provides 24*7 hours service	3.655602	4.717842	-1.06224	82466.5***
Average Gap Score of Empathy Dimension	-1.23721			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 6: SERVQUAL Score of Security Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
Card banking doesn't misuse customer's personal information	3.276625	4.609959	-1.33333	90084***
The banks always send OTP for every transaction in registered mobile number and email.	3.748271	4.777317	-1.02905	87767.5***
Customers feel safe with online transactions	2.82296	4.427386	-1.60443	66427.5***
Customers get transaction details through SMS service and email service	3.569848	4.640387	-1.07054	78915.5***
Average Gap Score of Security Dimension	-1.25934			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 7: SERVQUAL Score of System Availability Dimension in Card Banking

Statements	Mean of Perceived Score (P)	Mean of Expected Score (E)	Gap Score (P-E)	Mann-Whitney Test
After entering information, pages at the site do not freeze	3.121715	4.438451	-1.31674	66061***
The website is functioning technically correct	3.57953	4.609959	-1.03043	89284.5***
Customers always get server response during transactions	3.753804	4.687414	-0.93361	111769***
The server and website are supported by latest software	3.69018	4.622407	-0.93223	96528.5***
Average Gap Score of System Availability Dimension	-1.05325			

Note: ***implies significant at 1 % Level
Source: Survey evidences, 2021

Table 8: Average Unweighted and Weighted SERVQUAL Gap Scores in Card Banking

Dimensions			Average Gap Score
Average Gap Score of Reliability Dimension			-1.31259
Average Gap Score of Responsiveness Dimension			-1.21028
Average Gap Score of Assurance Dimension			-1.26343
Average Gap Score of Efficiency Dimension			-1.33283
Average Gap Score of Empathy Dimension			-1.23721
Average Gap Score of Security Dimension			-1.25934
Average Gap Score of System Availability Dimension			-1.05325
Average Unweighted SERVQUAL Gap Score in Card Banking			**-1.23842**
Dimensions	**Average Gap Score**	**Weight**	**Weight Score**
Reliability	-1.31259	0.15625	-0.20509
Responsiveness	-1.21028	0.1875	-0.22693
Assurance	-1.26343	0.21875	-0.27638
Efficiency	-1.33283	0.09375	-0.12495
Empathy	-1.23721	0.125	-0.15465
Security	-1.25934	0.15625	-0.19677
System Availability	-1.05325	0.0625	-0.06583
Average Weighted SERVQUAL Gap Score in Card Banking			-0.17866

Source: Survey evidences, 2021

References

Aslam, W., Tariq, A., &Arif, I. (2019). The effect of ATM service quality on customer satisfaction and customer loyalty: An empirical analysis. Global Business Review, 20(5), 1155-1178.

Bahia, K., &Nantel, J. (2000). A reliable and valid measurement scale for perceived service quality of bank. International Journal of Bank Marketing; Vol.18(2); Pp- 84-91.

Berry, L. L., Parasuraman, A., &Zeithaml, V. A. (1994). Improving service quality in America: lessons learned. Academy of Management Perspectives, 8(2), 32-45.Boon-itt, S. (2015). Managing self-service technology service quality to enhance e-satisfaction. International Journal of Quality and Service Sciences.

Dhingra, S. (2018). Measuring the service quality of automated teller machines: a study of banks of India. International Journal of Business Excellence, 15(4), 411-424.

Gerrard, P., & Cunningham, J. B. (2005). The service quality of e-banks: an exploratory study. International Journal of Financial services management, 1(1), 102-117.

Khan, M. A. (2010). An empirical study of automated teller machine service quality and customer satisfaction in Pakistani banks. European Journal of Social Sciences, 13(3), 333–344.

Narteh, B. (2013). Service quality in automated teller machines: an empirical investigation. Managing Service Quality: An International Journal.

Narteh, B. (2015). Perceived service quality and satisfaction of self-service technology: The case of automated teller machines. International Journal of Quality & Reliability Management.

Parasuraman, A., Valarie A. Zeithaml, & Leonard L. Berry (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality, Journal of Retailing, 64 (Spring), 12-40.

Stafford, M. R. (1996). Demographic discriminators of service quality in the banking industry; The journal of services marketing; Vol. 10 (4) ; Pp. 6-22.

Theresia, S., & Tan, H. S. (2021, July). Evaluation of service quality and user experience on credit card application using e-SERVQUAL model and usability testing. In IOP Conference Series: Earth and Environmental Science (Vol. 794, No. 1, p. 012095). IOP Publishing.

Tileng, M.Y.; Utomo, W. H. &Latuperissa, R. (2013); Analysis of Service Quality using Servqual Method and Importance Performance Analysis (IPA) in Population Department, Tomohon City; International Journal of Computer Applications; Vol.70(19); Pp-23-30.

Wanninayake, W. M. A. S., Mahakumbura, M. G. C. D., &Hapugoda, J. C. (2019) Perceived Service Quality and Customer Loyalty: An Application of SERVQUAL Model in Credit Card Segment of Sri Lankan Private Sector Banks. Management Issues, 11.

Woo, N. S. and Ennew, C.T. (2004) Measuring business-to-business professional service quality and its consequences, Journal of Business Research; 58 (2005); 1178 – 1185

****

Determinants of Sustainable Behaviour in Cross-Border Trades for Agricultural Sector Among 193 Nations

Sk Nasiruddin
Tarakeswar Degree College, Hooghly, India
sknasiruddin573@gmail.com

Santanu Kumar Ghosh
The University of Burdwan, Burdwan, India
shantanu.kaizen@gmail.com

Abstract

Sustainability has become an important issue in the twenty-first century. Practices of sustainability by the business are prescribed in the standards prepared by various standard-setting bodies. From among the available standards, the International Trade Centre (ITC) approves the appropriate ones for worldwide trade. All members of the UN and WTO are the governing members of the ITC which extend its technical assistance in support of the internationalization of SMEs. The present study makes a modest attempt to address the issue of diverse practices of sustainability of the agricultural sector across nations and their determinants. Results of this study provide a comparatively non-homogeneous set a nation has been explored to detect the other potential influencers in the matter of selection of standards..

Keywords: ITC, Environment, Social, Management, Quality, Ethics, Dimension Index, Diversity Index.

1. Introduction

Over the last decades the entire world has experienced hot discussions on the 'Sustainability' of human civilization and for that matter, our 'Mother Earth'. For developing the dissertation, the present study adopts the definition of sustainability from the report of the Brundtland Commission of the United Nations which was submitted in 1987.

According to Negi et al (2020), standards mean some common rules and policies which are met appropriately to achieve the level of acceptability and are implemented for the operation of a cross-border context.

Sustainable trade practices for the development of the nations, particularly of developing countries are encouraged by the ITC. In order to implement the requirements of sustainability it, among many initiatives, encourages the trade participants to follow norms suggested by various standard-setting bodies which are approved by it.

Diversity in the sustainability practices of SMEs is expected as the standards do not cover all sustainability issues equally. In order to identify the current state of sustainability practices of SMEs (Present case agricultural sector) across nations, a brief literature survey is prescribed in the following section.

2. Review of Literature

Varies of studies have been made on Sustainability practices around the globe. Several researchers have tried to address the issues relating to environmental practices, in the contexts of different countries. Ghosh et al (2021) have conducted among 55 Islamic nations which presumably follow the same set of cultural values. The selection of countries in this way has been made with a view to bringing down the probable contextual differences in the data set. It has also been taken into consideration that these nations are in the process of developing a common set of sustainability practices for them. Roome (1994) has shown that in the case of Canada R&D organizations is not only wanted to apply new administration techniques but also have to play a leading role in innovative organizational structures in order to fulfill the full potential of environmentally sensitive products and processes. In case of Hong Kong, Studer et al (2006) have analyzed the key barriers and incentives of voluntary environmental initiatives and have compared their relevance for companies of different sizes. In the Australian context, SMEs' participation is reported to be much lower in such environment-related activities than those of large firms. The participation of SMEs in Australia on average reduces hazardous waste generation to the extent of 48%, perchloroethylene consumption by 30%, and improved energy efficiency by 9% (Altham, 2007).

In India, Yadav et al (2018) reviewed 733 articles and display there are two drivers of sustainability practices in the SMEs background namely External drivers and Internal drivers. According to Gandhi et al (2018) upper administration obligation, technology up-gradation, current legislation, green brand image, and future legislation are the five important drivers of sustainability practices. upper administration obligation emerged as a key driver as per their study which is maintained by the initiatives taken by the government towards entrepreneurial and management development.

However, based on the foregoing discussions on the available literature it may be argued that no dedicated study is found to have identified the determinants which might have influenced the practices of sustainability of the 193 countries in respect of the agricultural sector. Hence, the present study tries to fill in this gap.

For international trades, every country may use Voluntary Sustainability Standards (VSS) according to their own choices and it is decided by the government of that particular country. Use of the practices of VSS may differ for imports (DM) and exports (PC). This difference may be influenced by one or more factors. Present study have been tried to identify the probable factor(s) from among the various variables which are arbitrarily selected and believed to represent the prevailing contexts of the 193 nations in respect of the agricultural sector.

3. Methodology

In order to conduct the study, every major sustainability issue is mentioned here as a 'dimension'. Altogether we will have five dimensions namely environmental, management, social, quality, and ethics. All sustainability performance indicators are grouped by the standards under these five dimensions and each of the available standard's scores relating to these dimensions (performance indicators) are noted. The present study has been developed for the agricultural sector and currently, 132 standards are available for this sector.

Here, diversity is measured at the standards level as well as at the country level. Measurement of diversity has been accomplished by pegging the observed variations with the help of an index which is named here as '**diversity index (ID)**' (standard level). In order to compute this index, the method suggested by Sharma (2008) has been adopted.

First, a 'dimension index (id)' (standard level) is computed for each of the five dimensions as under:

$$d_{i=} \frac{A_{i-} m_i}{M_i - m_i} \text{..... (1)}$$

Where A_i means actual score of the dimension of i^{th}, m_i stands for the minimum score of i^{th} dimensions, and M_i represents the maximum possible score of i^{th} dimensions. The index value of d_i falls between 0 and 1. A higher value of d_i will represent a higher degree of disclosure in the concerned dimension. Here d_i represents 'dimension index (id)' (id_1, id_2, …. id_n), and id_1, id_2, id_3, id_4, and id_5 stand for the dimension index of environment, social, management, quality, and ethics respectively.

The Diversity Index (ID) at the standards level is then measured by the normalized Euclidean distance of d_i from the aforesaid ideal point 1. For this following formula has been applied:

$$ID = \sqrt{\frac{(1-d_1)^2+(1-d_2)^2+\cdots+(1-d_n)^2}{n}} \ldots\ldots\ldots\ldots..(2)$$

In the above formula, the numerator represents the Euclidean distance of d_i from the ideal point-1. Here has been used for normalization purpose. The normalization is necessary to keep the derived value between 0 and 1. In the present case, the study is concerned with the value of the normalized distance which has been accepted as the measure of diversity. As the distance of the dimension value d_i represents the extent of diversity, a simple average of all five values (for five dimensions) could provide an average measure of diversity. Hence, a higher value of the normalized distance (ID) will represent a higher degree of diversity and vice-versa.

After the standard-level dimension index and diversity index, the country-level dimension index and country-level diversity index are computed. This is followed by grouping of standards as per the choices of the countries for both the Destination Market (DM) and Producing Country (PC). This process offers five country-specific dimension indexes (di) and one overall index i.e., country-specific diversity index (DI) for both sets separately. It is the simple average of the standard specific dimension indexes for di and the simple average of the standard specific diversity indexes for DI, i.e.

$$DI = \sum_{i=1}^{n} \frac{d_i}{n} \ldots\ldots\ldots\ldots (3)$$

The computed di varies between 0 and 1 such that a higher value of it represents a higher degree of practices relating to the concerned aspect of sustainability and vice versa. Similarly, DI also varies between 0 and 1. A high value of it naturally indicates high degree of diversity and vice versa. In this way the process offers five-dimension indexes and one diversity index of 193 countries separately for PC and DM.

Development of Independent Variables

All independent variables used in this study are grouped into three composite indexes in order to minimize the possibility of multicollinearity. These three groups are Group-1 (combined culture), Group-2 (combined economy), and group- 3 (combined innovation). The details of the variables included under each group are shown in table-1.

Table-1
List of combined variables

Group-1 (Combined Culture)	Group-2 (Combined Economy)	Group-3 (Combined Innovation)
Power Distance Individualism, Masculinity, Uncertainty Avoidance, Long Term Orientation, Indulgence.	Competitiveness Index, Aggregate Score of PR & CL, Score of Rule of Law and Happiness.	Human Capital Index, Global Innovation Index

The methodology adopted to formulate the composite value for each group is discussed below:

Step 1: We have employed exploratory factor analysis (principal component technique) to identify the factors. Before factor analysis, we checked the correlation structure to see whether factor analysis is appropriate or not for the given data set. We observed substantial correlation among the variables and additionally, the KMO test also indicates the appropriateness of the technique used in the present context. The total number of factors has been identified based on the criterion of eigenvalues greater than one.

Table 2
Factor loading and Square of factor loading for combined Culture

	Loading of Factor		Squared loading of factor (scaled to unity sum)	
	Factor-A	Factor - B	Factor A	Factor A
Power Distance	-.837	.201	.343	.035
Individualism	.870	.042	.370	.002
Masculinity	.025	.607	.000	.323
Uncertainty Avoidance	-.231	.658	.026	.379
Long Term Orientation	.506	.546	.125	.261
Indulgence	.525	-.016	.135	.000
Explained variation	2.043	1.142		
Exp/Total	.641	.359		

Step 2: After obtaining the factors, the second step is to compute the squares of factor loading. The results are shown in table-2 in case of combined culture.

Step 3: This step deals with the normalization of the factor loading by applying the following formula:

Normalization of the factor loading = $\frac{Square\ of\ factor\ loading}{Sumation\ of\ the\ square\ of\ all\ factors\ loading}$

Step 4: In this step, factors are aggregated by assigning a weight to each of them equal to the proportion of the explained variance in the data set. This is computed by applying the following formula:

$$weight = \frac{maximum\ normalized\ factor\ loading}{ratio\ of\ explaned\ to\ total\ variance}$$

Where, the ratio of explained to total variance = $\frac{explained\ variance\ in\ respective\ factor}{total\ explained\ variance}$

The results in case of combined culture are shown in table 3. In case of combined Economy and combined Innovation, only one factor for each group has been obtained. Results are shown in table 4 and 5 respectively for combined Economy and combined Innovation.

Table 3

Computation of weight for combined culture

	Weight	Weight (Normalized to unity sum)
Power - Distance	0.099	0.028
Individualism	0.578	0.162
Masculinity	0.900	0.252
Uncertainty Avoidance	1.057	0.296
Long Term Orientation	0.728	0.204
Indulgence	0.210	0.059
Total	3.572	1.000

Table 4

Computation of weight for combined Economy

	Factor A	Normalized by scaled to unity sum	Normalized Weight
Competitiveness Index	0.885	0.251	0.251
Avg. Score of PR & CL	0.836	0.224	0.224

Score of Rule of Law	0.933	0.279	0.279
Happiness	0.873	0.245	0.245
Explained variation	3.115		
Exp/Total	1		

Table 5

Computation of weight for combined Innovation

	Factor A	Squared factor loading	Weight
Human Capital Index	0.970	0.941	0.500
Global Innovation Index	0.970	0.941	0.500
		1.882	1.000

Step 5: In the last step composite value has been estimated by applying the following formula:

$$composite\ value = \sum_{i=1}^{n} (computed\ weight\ for\ each\ variable \times original\ value\ of\ the\ variable)$$

Where, n= number of variables Following the above procedure, the composite values for all the three groups have been computed. These composite values are used as the independent variables of the regression model. The following specific model has been used to examine the impact of combined culture (CC), Combined Economy (CE) and Combined Innovation (CI) on Index of Diversity (DI).

$$DI_i = \beta_0 + \beta_1 CC_i + \beta_2 CE_i + \beta_3 CI_i + \varepsilon_i$$

Where, ε_i represents the residual. Since, DI has been computed from two dimensions i.e., based on producing countries (PC) and destination market (DM), the above model has been run two times separately using PC and DM as dependent variable. Observed findings are analysed in the following few chapters.

4. Analysis and Interpretation

Before examining which of the selected determinants have impacted upon practices of sustainability, we have to check the multicollinearity, if any, present among the three groups of the variables. In this regard tolerance values, VIF (variance inflation factor), and coefficient of correlations have been used. If the values of tolerance are greater than .10, the VIF is less than 10

and the coefficient of correlations among all variables is low then it is argued that there are no problems of multicollinearity among the variables. Table-6 shows that for all variables the values for tolerance are greater than .10 and the same for variance inflation factors are less than 10. Also, coefficient of correlations among all variables as reported in table-7 not very high (less than 0.74 for all cases). Hence, these evidences may be considered as enough to argue that there are no problems of multicollinearity among the three group variables.

Table 6

Values of Tolerance (> .10) and VIF (< 10)		
Variables	Tolerance Value	VIF Value
Group- 1 (Combined Culture)	0.797	1.254
Group- 2 (Combined Economy)	0.435	2.299
Group- 3 (Combined Innovation)	0.440	2.272

Table 7

Coefficient of Correlations			
Variables	Group- 1 (Combined Culture)	Group- 2(Combined Economy)	Group- 3 (Combined Innovation)
Group- 1 (Combined Culture)	1	0.425	0.414
Group- 2 (Combined Economy)	0.425	1	0.740
Group- 3 (Combined Innovation)	0.414	0.740	1

The methodology applied to identify the determinants of country behaviour in respect of sustainability practices has been explained in the preceding section. It has also been mentioned that the attempt to identify the probable influencing factor (s) on the basis of designating the countries as 'Producing Country' (PC) and 'Destination Market' (DM). Hence, the role of a country and the influencers which determine the degree of diversity in sustainability practices have been addressed using two bases as mentioned above. It may be important to note here that due to the non-availability of data in respect of the selected explanatory variables number of countries has come down to 73 only. For the present purpose, only those countries have been retained in the analysis for which data on all selected variables are available. For this, the above-stated regression model in this chapter has been used to examine the impact of each of the five-dimension indexes (di) and the Diversity Index (DI) considering the nations as PC and DM separately for the agricultural sector.

Environment: - Regression results relating to the environment-related performance and its determinants are reported in table- 8. Under PC the observed findings do not speak in favour of any specific group which has significantly influenced the environmental performance except group-3 which is found to be significant; but unfortunately, its impact is found to be negative. This requires further investigation for an appropriate explanation. However, analysis of the nations as DM, identifies group-2 and group-3 as the significant influencer to shape the environmental performance in connection with sustainability practices. But in respect of group-3, the impact is also found to be negative. So, group-3 also requires further investigation.

Table- 8
Results of regression analysis between environment and three groups

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.
Constant	.158	.009	16.682	.000	.130	.005	28.458	.000
Group- 1	.000	.000	-0.183	.855	.000	.000	-0.097	.923
Group- 2	.000	.000	1.236	.221	.001	.000	**4.104**	**.000**
Group- 3	-.001	.000	-2.799	.007	-.001	.000	-2.842	.006
R^2	.127				.202			

Social: - In case of social performance (reported table-9) also no group is found to have a positive significant influence on the PC. And under DM shows that only group-2 significantly influences (positive) the selection of standards by the nations. A negative impact is seen for group-3, which is not generally expected. This certainly requires further investigation.

Table- 9
Results of regression analysis between social and three groups

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.
Constant	.254	.012	21.581	.000	.196	.007	29.903	.000
Group- 1	.000	.000	0.139	.890	.000	.000	0.424	.673
Group- 2	.000	.000	0.231	.818	.001	.000	**2.246**	**.028**
Group- 3	-.003	.001	-5.352	.000	-.001	.000	-2.275	.026
R^2	.465				.084			

Management: - According to the result of the test (shown in table- 10) in respect of management-related performance under PC no positive significant influencer could be found. However, analysis of the nations as DM, identifies group-2 as the significant influencer to shape the managerial performance in connection with sustainability practices. This finding seems to be important and encouraging in the sense that a country where the combined economy is upheld and is practiced by the citizens.

Table- 10
Results of regression analysis between management and three groups

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.
Constant	.165	.007	22.564	.000	.120	.004	26.955	.000
Group- 1	.000	.000	-1.826	.072	.000	.000	-1.185	.240
Group- 2	.000	.000	1.631	.107	.000	**.000**	**2.604**	**.011**
Group- 3	-.002	.000	-5.761	.000	-.001	.000	-2.846	.006
R^2	0.482				0.137			

Quality: - According to table-11 in case of Quality under PC only, group-3 appears to be the important contributor to determine the quality of the agricultural products produced by the country. This is an important finding to note, as trade partners generally appreciate high quality products. An innovation abiding nation can maintain the desired level of quality which is an important condition for the cross-border trade. On the other hand, for DM no such positive significant influencer is found.

Table- 11
Results of regression analysis between quality and three groups for agriculture

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.

Constant	.087	.009	9.514	.000	.128	.005	26.333	.000
Group- 1	.000	.000	1.227	.224	.000	.000	-3.132	.003
Group- 2	.000	.000	-1.029	.307	.000	.000	-1.600	.114
Group- 3	.001	.000	**1.850**	**.069**	-.001	.000	-3.536	.001
R^2	0.092				0.562			

Ethics: - Table-12 which brings out the regression results regarding the influence of the computed groups on the ethical dimension of the PC concerned. Here only group-3 significantly influences but this impact is found to be negative. In the case of DM, no such significant influencer is found.

Table- 12
Results of regression analysis between ethics and three groups for agriculture

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.
Constant	.110	.008	14.377	.000	.076	.003	26.604	.000
Group- 1	.000	.000	0.162	.872	.000	.000	0.900	.371
Group- 2	.000	.000	-0.843	.402	.000	.000	-0.930	.356
Group- 3	-.001	.000	-2.560	.013	.000	.000	-1.575	.120
R^2	0.251				0.131			

Diversity: -Table- 13 brings out the strength of the computed groups in explaining the observed diversity in the practices of sustainability in connection with cross-border trades. Under the PC-based analysis, no groups are seen to have positively influenced the countries to adopt diverse practices. On the other hand, DM-based analysis shows only group-2 has a positive significant influence upon the observed diversity in the sustainability practices.

Table- 13
Results of regression analysis between diversity and three groups for agriculture

Model	PC				DM			
	Coeff.	Standard Error	t-value	Sig.	Coeff.	Standard Error	t value	Sig.
Constant	.155	.007	21.097	.000	.130	.003	37.205	.000
Group- 1	.000	.000	-0.027	.978	.000	.000	-0.891	.376
Group- 2	.000	.000	0.286	.776	.001	**.000**	**1.982**	**.052**
Group- 3	-.001	.000	-3.662	.000	-.001	.000	-3.562	.001
R^2	.283				.196			

5. Conclusion

Trade for sustainable development is propagated by the United Nations. Hence, all conditions of sustainability become associated with international trade practices. With this end in view, the sustainability standards are expected to specify required practices which are in full conformity with the declared sustainable development goals (SDG). As signatories of the declaration relating to the SDG, all UN member nations are supposed to develop and implement such policies which will contribute to the declared goals.

On the whole, the above discussions prompt that in case of agricultural sector group-2 (combined economy - Competitiveness Index, Average Score of Political Rights and Civil Liberties, Score of Rule of Law and Happiness) significantly positive influences upon the dimensions of environment (PC), social (PC) & management (PC) and diversity (PC). Group-3 (Combined Innovation - Human Capital Index, Global Innovation Index) is found to have significant positive influences only on quality dimension (DM). On the other hand, group-3 significantly negative influences upon the dimensions of environment (PC and DM both), social (PC and DM both), management (PC and DM both), quality (DM) & ethics (PC) and diversity (PC and DM both). Group-1 significantly negative influences upon the dimensions of management (PC) and quality (DM). This requires further investigation for an appropriate explanation.

References:

Abraham, M., Kaliannan, M., Mohan, A. V., & Thomas, S. (2015). A review of SMEs recruitment and selection dilemma: Finding a'fit'. *The Journal of Developing Areas*, *49*(5), 335-342.

Altham, W. (2007). Benchmarking to trigger cleaner production in small businesses: drycleaning case study. *Journal of Cleaner Production*, 15(8-9), 798-813.

Aragón-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of environmental management,* 86(1), 88-103.

Cambra-Fierro, J., & Ruiz-Benítez, R. (2011). Sustainable business practices in Spain: a two-case study. *European Business Review*, 23(4), 401-412.

Collins, E., Dickie, C., & Weber, P. (2009). A New Zealand and Australian overview of ethics and sustainability in SMEs. *African Journal of Business Ethics*, 4(2).

Font, X., Garay, L., & Jones, S. (2016). Sustainability motivations and practices in small tourism enterprises in European protected areas. *Journal of Cleaner production*, 137, 1439-1448.

Gadenne, D. L., Kennedy, J., &McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics*, 84(1), 45-63.

Gandhi, N. S., Thanki, S. J., & Thakkar, J. J. (2018). Ranking of drivers for integrated lean-green manufacturing for Indian manufacturing SMEs. *Journal of Cleaner Production*, 171, 675-689.

Ghadge, A., Kaklamanou, M., Choudhary, S., &Bourlakis, M. (2017). Implementing environmental practices within the Greek dairy supply chain. *Industrial Management & Data Systems*, 117(9), 995-2014.

Ghosh, S. (2020**),** Conformity With the Standard Sustainability Practices for Trades in Agricultural Produce and Its Determinants: A Study on the UN Member Countries, *Working Paper*, downloaded from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3739292.

Ghosh, S. K. & SK, N. (2020). Sustainability Practices in Agriculture and International Trade: A Study on Select Islamic Nations. *Business Insight*, 7, 6-21.

Ghosh, S. K. & SK, N. (2021). Determinants of Sustainable Behaviour in Cross-Border Trades: Evidences from Select Islamic Nations. *Business Insight*, 8, 54-66.

Gray, R. (2002) The social accounting project and accounting, organizations and society: Privileging engagement, imaginings, new accountings and pragmatism over critique. *Accounting, Organizations and Society*, Vol. 27 (7), 687-708.

Hörte, S. Å., Barth, H., Chibba, A., Florén, H., Frishammar, J., Halila, F., ... & Tell, J. (2008). Product development in SMEs: a literature review. *International Journal of Technology Intelligence and Planning (IJTIP)*, 4(3), 299-325.

Hoffman, A. J. (1999). Institutional evolution and change: Environmentalism and the US chemical industry. *Academy of management journal*, 42(4), 351-371.

Jansson, J., Nilsson, J., Modig, F., &HedVall, G. (2017). Commitment to sustainability in small and medium-sized enterprises: The influence of strategic orientations and management values. *Business Strategy and the Environment,* 26(1), 69-83.

Johnson, M. P. (2015). Sustainability management and small and medium-sized enterprises: Managers' awareness and implementation of innovative tools. *Corporate Social Responsibility and Environmental Management,* 22(5), 271-285.

Koe, W. L., Omar, R., & Sa'ari, J. R. (2015). Factors influencing propensity to sustainable entrepreneurship of SMEs in Malaysia. *Procedia-Social and Behavioral Sciences*, 172, 570-577.

Lawrence, S. R., Collins, E., Pavlovich, K., & Arunachalam, M. (2006). Sustainability practices of SMEs: the case of NZ. *Business strategy and the environment*, 15(4), 242-257.

Lee, S. Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply chain management: an international journal*, 13(3), 185-198.

Masurel, E. (2007). Why SMEs invest in environmental measures: sustainability evidence from small and medium sized printing firms. *Business Strategy and the Environment*, 16(3), 190-201.

Macve, R. & Carey, A. (1992). Business, accountancy and the environment: A policy and research agenda, London; ICAEW.

Malthus, T. (1998[1798]). An essay on the Principle of Population, Prometheus Books, Amherst, NY.

Meadows, D.H., Meadows, D.L., Randers, J. and Behrens W. (1972). The Limits to Growth, New American Library, New York., Mill, J. *Principles of Political Economy*, with some of their applications to social philosophy, Longmans, Green and Co., London.

Menale Kassie, Precious Zikhali, John Pender, and Gunnar Köhlin (2009) "Sustainable Agricultural Practices and Agricultural Productivity in Ethiopia --Does Agroecology Matter?", Environment for Development : Discussion Paper Series, EfD, 9-12, 47.

Miller, P. (1994) Accounting as a Social and Institutional Practice: An Introduction, in Miller, P and A.G.Hopwood. Accounting as a Social and Institutional Practice, Cambridge University Press, pp. 1-39. Mineral Policy Institute (2004). www.mpi.org.au.

Miles, S. (2002), "Corporate Motivation for Voluntary Social Disclosure: UK Evidence", Conference Proceedings, *British Accounting Association Conference, Jersey*, April 3 – 5.

Mitchell, R.K., Agle, B.R. and Wood, D. (1997), "Toward a Theory of Stakeholder Identification and Salience", *Academy of Management Review*, Vol. 22, No. 4, pp. 853 – 886.

Moerman, L. and Van Der Laan, S. (2005) "Social Reporting by the Tobacco Industry: All Smoke and Mirrors?"*Accounting, Auditing and Accountability Journal*, Vol. 18, No. 3, 374 – 389.

Neu, D., Warsame, H. and Pedwell, K. (1998), "Managing public impressions: environmental disclosures in annual reports", *Accounting, Organizations and Society*, Vol 23, No. 3 pp. 265-282.

Negi, A., Pérez-Pineda, J. A., & Blankenbach, J. (2020). Sustainability standards and global governance: experiences of emerging economies. *Springer Nature*. (p. 224).

Painter-Morland, M., & Dobie, K. (2009). Ethics and sustainability within SMEs in sub-Saharan Africa: Enabling, constraining and contaminating relationships. *African Journal of Business Ethics*, 4(2).

Paramanathan, S., Farrukh, C., Phaal, R., & Probert, D. (2004). Implementing industrial sustainability: the research issues in technology management. R&D Management, 34(5), 527-537.

Revell, A., Stokes, D., & Chen, H. (2010). Small businesses and the environment: turning over a new leaf?. *Business strategy and the environment*, 19(5), 273-288.

Reyes-Rodríguez, J. F., Ulhøi, J. P., & Madsen, H. (2016). Corporate environmental sustainability in Danish SMEs: A longitudinal study of motivators, initiatives, and strategic effects. *Corporate Social Responsibility and Environmental Management*, 23(4), 193-212.

Roome, N. (1994). Business strategy, R&D management and environmental imperatives. R&D Management, 24(1), 065-082.

Sarma, M. (2008, June). Index of Financial Inclusion", *Working paper 215*, *Indian Council for Research on International Economic Relations (ICRIER)*mandira@icrier.res.in .

Sáez-Martínez, F. J., Díaz-García, C., & González-Moreno, Á. (2016). Factors promoting environmental responsibility in European SMEs: The effect on performance. *Sustainability*, 8(9), 898.

Studer, S., Welford, R., & Hills, P. (2006). Engaging Hong Kong businesses in environmental change: drivers and barriers. *Business Strategy and the Environment*, 15(6), 416-431.

Thanki, S. J., & Thakkar, J. (2018). Interdependence analysis of lean-green implementation challenges: a case of Indian SMEs. *Journal of Manufacturing Technology Management*, 29(2), 295-328.

Testa, F., Gusmerottia, N. M., Corsini, F., Passetti, E., &Iraldo, F. (2016). Factors affecting environmental management by small and micro firms: The importance of entrepreneurs' attitudes and environmental investment. *Corporate Social Responsibility and Environmental Management*, 23(6), 373-385.

Wahga, A., Blundel, R., & Schaefer, A. (2018). Understanding the drivers of sustainable entrepreneurial practices in Pakistan's leather industry: a multi-level approach. *International Journal of Entrepreneurial Behaviour& Research*, 24(2), 382-407.

Wattanapinyo, A., & Mol, A. P. (2013). Ecological modernization and environmental policy reform in Thailand: the case of food processing SMEs. *Sustainable Development*, 21(5), 309-323.

Williams, B. R., & O'Donovan, G. (2015). The accountants' perspective on sustainable business practices in SMEs. *Social Responsibility Journal*, 11(3), 641-656.

Yu, J., & Bell, J. N. B. (2007). Building a sustainable business in China's small and medium-sized enterprises (SMEs). *Journal of Environmental Assessment Policy and Management*, 9(01), 19-43.

Yadav, N., Gupta, K., Rani, L., & Rawat, D. (2018). Drivers of Sustainability Practices and SMEs: A Systematic Literature Review. *European Journal of Sustainable Development*, 7(4), 531-531.

Zhang, B., Bi, J., & Liu, B. (2009). Drivers and barriers to engage enterprises in environmental management initiatives in Suzhou Industrial Park, China. *Frontiers of Environmental Science & Engineering in China*, 3(2), 210-220.

****

Business Spectrum (ISSN: 2249-4804) Volume XI, No.2 July-December 2021

An Open Access Fully Referred Peer Reviewed Journal (Online): IAA (South Bengal Branch)
www.iaasouthbengalbranch.org

Panchyati Raj to e-Gram Swaraj: Steps towards Governance at Gram Panchyat in India with Special Reference to Major States in India

Dr. Kajalbaran Jana

Associate Professor

Tamralipta Mahavidyalaya

Tamluk: Purba Medinipur

Abstract

The Panchyati Raj is a specific term that resembles the rule of 'Panch' or five. That particular thing indicates an organized democratic structure where decisions will be taken by not a single ruler but by a collective decision of 'Panch' or five or all the people in a Gram or representative people of the Gram. This type of Governance of Gram symbolizes the Panchyati Raj system in India.

In this particular paper, in view to find out governance level through Panchayati Raj in India five basic things are considered, the administrative structure of Panchyati Raj, Women's representations in the Panchayats, basic infrastructure and service provisions at Panchayat levels, Gram Panchayat Development Plan(GPDP) through e-gram SWARAJ (the electronic way of governance of Panchayat to ensure transparent Governance at Panchyat level) and electronic Public Finance Management System (eGSPI) at GP level. In consideration of all of the above parameters in our country, we have found that the Indian Panchayati Raj system is in a transitional period from traditional operations to digital operations. The so-called states that were doing well with traditional methods are found to be reluctant in the new system. Again, the states which are found reluctant in the traditional system are doing well in a new system of digitalization. Thus, it can be said that Panchayati Raj in India is doing well although it is a very beginning still to be done lot towards the journey of g-gram SWARAJ.

Key Words: Panchayati Raj, 'Panch', e-gram SWARAj, GPDP, Governance.

Introduction:

The term **Panchayati Raj** means 'Council of five officials' i.e. a committee represented by 'five' or ' Pancha' members from the society to look after the governance of local people. It is the organizational setup for local self-governance of rural people in India.

The Panchayat is entrusted with "economic development, strengthening social justice and implementation of the Central and State Government Schemes including those 29 subjects listed in the Eleventh Schedule."(Wikipedia)

In the Indian constitution, Part IX has discussed the structure, composition, duties, and responsibilities of Panchayats. It is mentioned that for a state or Union territory having more than two million populations or inhabitants, there should be a three-stage PRI likely,:

1. Gram Panchayats at the village
2. Panchayat Samity at block
3. Zila Parishad at the district

The Union Territories with less than two million inhabitants are only two levels of institutions, they are as follows-

1. Gram Panchayats at Village
2. Panchyat Samity at block

The Gram Sabha is consisting all registered voters under the area of said Gram Panchayat by direct participation in the governance of Gram. The elections for the members of the Gram Panchayats at every level are held every five-year term. The participation of backward communities, including SC, ST would be proportional to the general population in the representation of the Gram Panchayats and its' post also. There is one-third of all seats and the post of chairperson must be reserved for women. According to XVth Finance Commission and earlier planning commission e-gram SWARAJ is a step toward an electronically operated system for benefit transfer to the citizens of India. It is aiming for Public Finance Management System in GP level in India.

Objectives of Study

a. To Evaluate Governance Level on the basis of Administrative Structure of Panchayati Raj in India
b. To Find out Governance Level in the Essence of Women Representation in Panchayat System
c. To Identify Governance Level by Providing Basic Infrastructure and Services Provided at GP levels in India
d. To Identify the Gram Panchyat Development Plan (GPDP) through e-Gram SWARAJ in India
e. To Identify the Public Finance Management System (PFMS) through e-Gram Swaraj in India

f. To offer suggestions and Conclusions

Database & Methods of Study

The data collected for the purpose of this particular study are secondary in nature. The majority of the data are collected from the Annual Report, Ministry of Panchayati Raj, Government of India. Other literature and qualitative data are also sorted from various web-based sources, like Wikipedia, the Finance Commission's website, etc.

This is one kind of review based on some empirical inputs on the parts of literature reviewed and methods like percentages applied in order to extract some valid conclusions to level out the objectives of the study. The study has been earmarked on the basis of data for major fifteen (15) states in India as a representative sample for the study.

Limitation of the Study

As this has been done on purely secondary base sources and on the basis of 2020-21 data only, inference and conclusions are confined to the observations obtained from the major sixteen states represented as samples for the study. Some of the small states and UTs are doing well but did not consider in this frame as population percentages are not as representative according to researchers' point of view. But studies, like Governance, may have some qualitative representation from some area, segment by region in India, which will be surely a significant contribution to the governance structure in our country. But at present that could not be possible within a limited scope for a brief study. That will be taken care of further study covering all these qualitative aspects of regional governance pattern at GP level.

a. Evaluation at Governance Level of Panchayati Raj in India

When the Panchayat Raj is established, public opinion will do what violence can never do. — **Mahatma Gandhi**

The present Panchayati Raj system was introduced in 1993 after the 73rd constitutional amendment in India. Although there was a history of Panchyati raj in Indian subcontinents long back to medieval history, but the modern Panchayati Raj systems were introduced in India following the proposal of the L M Singhvi in the year 1986 that made some necessary changes in the framework and organizations so that it can cope with the necessity of the 20th century's urgency.

In India, the Panchayati Raj is functional as the basic administration of local governance. Currently, the presences of PRIs are in all states except Mizoram, Nagaland, and Meghalaya and in all UTs except Delhi.

The main sources of finance in the PRIs are coming from three sources. They are

a. Central Finance Commission for local body grant,
b. Centrally Sponsored Schemes and inherent fund allocations therein,
c. State Finance Commission's fund as recommended by State Govt in related issues.

As already mentioned earlier that the present Panchayati Raj system is coming into force according

to the 73rd amendment act, 1992 which was enacted in 1993. This has provisions for the powers and responsibilities of the Panchayats in view to economic upbringing and social justice. It also included the matters related to the implementation of 29 subjects listed in the eleventh schedule of the constitution and exercising the power of collecting appropriate taxes and levies. The representation in Panchayats take- place regularly through elections of members every five years which provides pivotal stones the organizations according to their need and realization of self contents. The reservations for backward classes, including SCs and STs and Women are key configurations for strengthening the power of the weaker section of the society. Eight committees, namely; Balwant Raj Mehta (1957), V.T. Krishnamachari (1960), Takhatmal Jain Study Group(1966), Asoke Mehta Committee(1078), G.V.K. Rao Committee(1985), Dr. L.M. Singhvi Committee (1986), P.K. Thunghon Commiittee (1989) and S. Moninder Singh Committee (2013) recommended various provisions and acclamations regarding the constitutions of PRIs and power and responsibilities of the same from time to time.

The features of PRIs

The Gram Panchayats or Gram Sabha

The Pradhan or Sarpanch is the elected head of this institution at the Gram level. The members are elected directly by the voters as per provisions of constitutions 243B for the period of five years.

The GP organizes the day-to-day activities as part of the governance of self and as well as part of the implementing authority of various programs of the State and Central Govt in procuring income-

a. by collecting the tax locally for water supply, places of pilgrimage, local temples and markets

b. by a grant from State Govt, in proportion to the land revenue and money grant for various works and schemes,

c. Donations from various stakeholders of the society

The Panchayat Samity or Block Level Panchyat

The Panchayat Samity or Tehsil or Taluka or various other name or nomenclature persisting all over India, comprises the members of elected members of Panchayat Samity with Gram Pradhan/ Sarpanchs from every Gram Panchayats under the block or Panchyat Samity, the MP and the MLAs of the area, BDO of the Block as Chairman, co-opted members from SC/STs/Women, associate members from various communities like farmers, co-operative societies, marketing services etc. The Panchayat Samity has various departments as follows-

a. General Administration

b. Public Works

c. Agriculture

d. Finance

e. Health

f. Education

g. Social Welfare

h. Information Technology

i. Water Supply Department

j. Animal Husbandry and Others

With the activities of the above-mentioned departments, the Panchyat Samity is entrusted with the following functions like

1. Implementation of various schemes for agriculture and infrastructure development

2. Establishment of the primary health center and primary schools

3. Supply of clean drinking water, drainage, construction and repair of roads

4. Establishment and development of Cottage and Small Scale Industry and Co-operative society

5. Development of youth activities and organizations for them

The Zilla Parishad

The elected members of Zilla Parishad and various Presidents from Panchayat Samity, the DM, MP, MLAs of the district, and District Panchayat officers are the ex-officio members of this structure. The membership comprises 50 to 60 members according to the compositions of various districts all over India.

The Zilla Parishad has a similar structure/department to like Panchyat Samity. The functions are almost likely in terms of Panchayat Samity, better to say a little wider span and activities.

a. to provide essential service to rural populations in the district,

b. to supply improved seeds to the farmers and new technology for farming in the district,

c. to set up and run schools and libraries in the district,

d. to set up primary health centers and hospitals in the rural base and start a vaccination program against the epidemic in that district,

e. to execute the various plan and programs for the SC and STs and free hostel for the students from these communities,

f. to encourage entrepreneurship in the field of Small and Cottage industries in the rural areas and provision for rural employment,

g. to construct and maintain roads, bridges, and public conveyance,

h. to enhance employment in the rural populations

i. to make sure of sanitation in the rural area.

As many as 2.5 lakh Gram Panchayats in the country provide basic necessary services in the villages and plan for economic development for populations. Having discussions on various issues in the Gram Sabha, various plans, undertake under the Gram Panchayat Development Plan (GPDP). In this way, GPDP creates various developmental activities and thus improves public services with greater efficiency and validity. Despite having constitutional empowerment there is a problem of inadequate finance in implementing GPDPs. The Fourteenth Finance Commission (FFC) has increased the grants to the local bodies by a substantial amount for the planning year 2015-16 to 2019-20. Likewise, the 15th Finance Commission has further increased the grants for the year 2020-21 (Panda, April,2021)

Panchayats are now entrusted with digitized operations under National e-Governance Programme (NeGP). The Digital India Movement ensures such a program to a high end so that transparency and promptness of action can be ensured. E-Panchayat is a 'mission mode project' which enables authenticity in activities as well as quick access all around.

The Governance Structure of Panchayat in the Major States in India

In Table 1, a structural representation of panchayati raj in major states of present India has been trying to notify in taking notes from the annual report (2020-21) of the Ministry of Panchayati Raj. Although district and block level panchyats have been almost represented fully or near fully but in village level panchayats are found to be non-represented either due to non-information or due to non construction of panchayat bodies under the representative act. In West Bengal, it is very much evidence. It is 8.15% of village panchayat has been constituted among total panchyat in the state, followed by Odisha(13.04%), Karnataka(13.34%), Bihar(18.47%) and Rajasthan(24.22%) are the back bencher in this particular frame. In Telengana(113.73%) and Punjub(102.27%), there is more than one panchayat in a village. As a whole, the picture is not so well according to the construction of village panchyat in the country. We have taken only 15 major states in this frame out of which

Andhra Pradhesh, Gujrat, Hariyana, Kerala, Maharashtra, Tamilnadu & Uttar Pradhesh have crossed over fifty percent of total village panchyat construction. Madhya Pradhesh and Uttarakhand are slightly below the fifty percent mark.

Table1: The Structure of Administrative Panchayati Raj Functioning in Major States in India during 2020-21

State/UT	No. Districts	No of District Panchayats	No. of Blocks	No. of Intermediate Panachayats	No of Villages	No. of Village Panchayats	% Village Panchayat	No. of Traditional Bodies
Andhra Pradhesh	13	13	668	660	17950	13371	74.49	NA
Bihar	38	38	534	534	45413	8387	18.47	NA
Gujrat	33	33	250	248	19034	14257	74.90	NA
Hariyana	22	21	142	126	7652	6197	80.99	NA
Karnataka	30	30	227	227	32712	4364	13.34	NA
Kerala	14	14	152	152	1664	941	56.55	NA
Madhyapradesh	52	51	313	313	55910	22812	40.80	NA
Maharashtra	36	34	352	351	44345	27884	62.88	NA
Odisha	30	30	314	314	52141	6798	13.04	NA
Punjub	22	22	150	150	12968	13263	102.27	NA
Rajasthan	33	33	352	352	46737	11320	24.22	NA
Tamilnadu	37	36	388	388	18478	12525	67.78	NA
Telengana	33	32	589	540	11227	12769	113.73	NA
Uttar Pradesh	75	75	827	824	107256	58752	54.78	NA
Uttarakhand	13	13	95	95	17053	7791	45.69	NA
West Bengal	23	22	344	342	41002	3340	8.15	NA

Source: Annual Report, Ministry of Panchayati Raj 2020-21, (Percentage of Village Panchayat Calculated)

Interpretation: Although the district and block level panchayats have been almost represented fully or near fully but in village-level panchayats are found to be non-representational either due to non-information or due to non-construction of Panchayat bodies under the representative act. A few well-reputed states in terms of panchayati raj in the history of panchayati raj in India, like West Bengal, Karnataka are found well behind them.

B. Women Representation in Panchayat System

Under the seventh schedule of the Indian Constitution, clause 3 and article 243D, the representation of Women in the total no of seats in a panchayats will be one third of the total seats. This was done in purview of women empowerment as well as empowerment of weaker sections in the society. The women are the all about fifty percent of our total population as a whole, still it was neglected in terms democratic representation of society in the power. In this essence article 243D ensure some protection for the women representing the structure of governance of society as well as administration.

In Table 2, it is evident that almost every major state, taken into consideration under discussion in India, are represented more than one third of total seats under panchayat in terms of total representation. Excepting Uttar Pradhesh(UP) , all other major states are either nearby fifty percent or over fifty percent of total representation of women in the panchayat levels have been ensured. In UP it is just 33.34%, which is the minimum benchmark to follow the constitutional referendum. Among other major states Uttarakhand has been represented as highest(56.54%) by women, followed by Rajasthan(56.07%), Maharashtra(53.47%),Tamilnadu(52.99%), Kerala(52.42%), Bihar(52.02%), West Bengal(51.42%), Karnataka(50.05%), Andhara Pradesh(50%), Madhya Pradesh (50%) and Telengana (50%) are either cross fifty percent marks or touch fifty percent mark of total representation of women in total seats in Panchayat in these states. Gujrat (49.99%) and Odisha(49.82%) are very close to the fifty percent mark. Punjub (43.36%) and Haryana (42.12%) are found to be quite well behind to the fifty percent mark but crossed the forty percent of total representation of women in the panchayat.

Table 2: Elected Women Representation in the Major States in India during 2020-21

State/UT	Total ERs	Total EWRs	%EWRs
	ER-Elected Repretative	EWR-Elected Women Representative	
Andhra Pradhesh	156050	78025	50
Bihar	136573	71046	52.02
Gujrat	144016	71988	49.99
Hariyana	70035	29499	42.12
Karnataka	101954	51030	50.05
Kerala	18372	9630	52.42
Madhyapradesh	392981	196490	50
Maharashtra	240635	128677	53.47
Odisha	107487	53551	49.82
Punjub	100312	43500	43.36
Rajasthan	126271	70802	56.07
Tamilnadu	106450	56407	52.99
Telengana	103468	51735	50
Uttar Pradesh	886427	295526	33.34
Uttarakhand	62220	35177	56.54
West Bengal	59229	30458	51.42

Source: Compiled from Annual Report, Ministry of Panchayati Raj, 2020-21

Interpretation: The governance in panchayat in India is now on the way representative participation of population gender wise. The states are not only following constitutional provision of representation of women in the penchant by ensuring one third reservation, but also trying to fulfill the participation norm in terms of population nature in our country. Although this table does not represent a true sense of governance of women in the society, but at least representing the basic structural requirement of the society has been tried to fulfill. The majority of major sample states are earmarked fifty percent seats for women in panchyats. This is truly a delightful matter in our country.

C. Governance Level by Basic Infrastructure and Services at GP levels in India

In Table 3 it is tried to understand the level of basic infrastructure to put governance in village level under the Panchayati system in our country by taking simple view of the data available in the Govt. data store. We can easily find that Tamilnadu & Odisha are two states where every Panchayat has its own building, followed by Kerala where only 0.32% Panchayats have without own building. There after Gujrat(0.56%), Madhya Pradhesh(0.72%), West Bengal(0.93%) and

Karnataka (7.66%) GP having without own building. Among all other states running very laggard Bihar has been found in very worst condition where 86.13% GP has no own building,

followed by Hariyana (61.77%), AP(43.84%), UP(41.67%), Telengana (37.46%) and Punjab(39.15%). Other states under study have found GP having without own building within 10-20%. These states are Rajasthan (11.27%), Maharashtra (14.43%) and Uttarakhand (17.47%).

State/UT	Gram Panchayats/RLBs/ Village Council updated on 19.01.2021 as per LGD	GP without Own Building	% of GP without Own Building	GP without Computers	% GP with out Computer	Total Service Ready (incl.BHQs)	%Total Service Ready (incl.BHQs)	CSC Co-located in Panchayat Bhavan	%CSC Co-located in Panchayat Bhavan
Andhra Pradhesh	13317	5838	43.84	8218	61.71	1681	12.62	0	0
Bihar	8387	7224	86.13	4143	49.40	8819	105.15	4619	55.07
Gujrat	14253	80	0.56	0	0.00	13115	92.02	0	0
Hariyana	6196	3827	61.77	4832	77.99	6198	100.03	1180	19.04
Karnataka	6009	460	7.66	0	0.00	6247	103.96	150	2.50
Kerala	941	3	0.32	0	0.00	1129	119.98	0	0
Madhyapradesh	22798	164	0.72	9440	41.41	14584	63.97	5011	21.98
Maharashtra	27884	4025	14.43	918	3.29	18058	64.76	26597	95.38
Odisha	6798	0	0.00	0	0.00	5281	77.68	3800	55.90
Punjub	13263	5193	39.15	0	0.00	12795	96.47	6	0.05

Rajasthan	11341	1278	11.27	0	0.00	8928	78.72	0	0
Tamilnadu	12525	0	0.00	0	0.00	0	0.00	0	0
Telengana	12769	4783	37.46	11507	90.12	2047	16.03	0	0
Uttar Pradesh	58753	24482	41.67	0	0.00	30937	52.66	0	0
Uttarakhand	7791	1361	17.47	5852	75.11	1536	19.72	662	8.50
West Bengal	3340	31	0.93	0	0.00	2430	72.75	590	17.66

Table3: Governance level in terms of Basic Infrastructure and Service Provided at Panchayat Level in Major States in India during 2020-21

Source: Compiled from Anuual Report, Ministry of Panchayati Raj,2020-21

We are running under digital era as our Govt. propagates Digital India movement. To have such idea in reality we should need at least internet and computer accessibility at basic level. In Table 3 we find that there are so many major states that have not provided computer facility in all GP levels. Among those Telengana has on the top level where 90.12% GP has without computer, followed by Hariyana (77.99%),Uttarakhand (75.11%),AP(61.71%),Bihar(49.40%),MP(41.41%) and Maharashtra (3.29%). All other states are having computer in all of their GPs.

Total Service Ready including block level headquarters is one of the parameter of efficient panchyati system. The GP which are undertaking all the centrally approved activities in panchayat level are in ready mode to provide service to the general rural population are called Total Service Ready GPs. Some of the GPs are undertaking more than centrally approved activities, likewise in Kerala(119.98%),Karnataka(103.96%) and Hariyana(100.03%) where more than 100% centrally approved activities are taking places In Tamil Nadu it is found at 0% in this service providing facility followed by AP(12.62%),Telengana(16.03%) and Uttarakhand(19.72%) .All other major states are found more than 50% level in this category.

The CSC (Common Service Centre) facility at Panchayat bhavan level is one of the best servicing provider activities from the Govt. level to general people. In this category Maharashtra has taken top level where 95.38% GP has such service providing capacity followed by Odisha (55.90%), Bihar(55.07%), MP(19.04%) and WB(17.66%). All other states are running either at zero level or less than 10% level. AP, Gujrat, Kerala,Rajasthan, TamilNadu, Telengana, Uttarpradhesh have zero level activities in this particular functioning. Uttarakhand has 8.50% and Karnataka has 2.50% GP has CSC facility at Panchayat Bhavan.

Interpretation: It is evident from the above discussion that the basic infrastructure at the GP level is far beyond the desire capacity level. Even in the so called states who were termed as having well organized panchyati raj system are clearly find here having far backward in infrastructural development and in self sustaining service providing activities at panchayat level itself, although I personally apprehend that the information exchange system at Ministry of Panchyati raj department may be not so organized way so that every information may not be available in time

to the desk of department. It may be either way lapses or lapse on the part of the state authority concern in their system in this particular level. Majority of big states are found to have running well behind in this particular level whoever even found well established in term as discussed in the earlier section. State like Punjab, Hariyana, West Bengal, Andhra Pradesh, Telengana , Kerala were found other way proactive in the previous parameter of discussion but in this particular level they are found to be less active. I am once again utter my apprehension that it may be non-availability data either way or may be true fact which is not at all desirable picture for that states as well as for our country itself.

D. e Gram Panchyat Development Plan (GPDP) through e-Gram SWARAJ in India

Gathering data from the Ministry of Panchayati Raj in India, this researcher is trying to have a quick look on the gram panchayat development plan 2019-20, to find how many GPs in major states are submitting their plan for e-gram SWARAJ. In Table 4 it is found that almost every major state in the country are touching 100% level except Kerala(80.2%). But as per facilitator's report is concerns Uttarakhand is find well behind, it was 15.4% that time followed by Kerala (30.5%) and Odisha (67.7%). All other states are found to have submitted facilitators report more than 80% of total GPs in the states.

Table 4: Gram Panchayat Development Plan (GPDP) through e-gram SWARAJ in India

State	Total GPs	Facilitators feedback report		GPDP Approved as per facilitator's report		Plan uploaded on e-gram SWARAJ	
		Total Report	%	Total Report	%	Total Plan	%
Andhra Pradhesh	13371	12355	92.4%	12351	92.4%	13159	98.4%
Bihar	8387	7638	91.1%	7637	91.1%	8387	100.0%
Gujrat	14308	14261	99.7%	14260	99.7%	14165	99.0%
Hariyana	6197	5916	95.5%	5904	95.3%	6125	98.8%
Karnataka	6016	5993	99.6%	5993	99.6%	5980	99.4%
Kerala	941	287	30.5%	253	26.9%	755	80.2%
Madhyapradesh	22812	20221	88.6%	20215	88.6%	22762	99.8%
Maharashtra	27879	27791	99.7%	27791	99.7%	27876	99.9%
Odisha	6798	4599	67.7%	4576	67.3%	6744	99.2%
Punjub	13263	13243	99.8%	13243	99.8%	13256	99.9%
Rajasthan	11316	9737	86.0%	9736	86.0%	10448	92.3%
Tamilnadu	12524	12102	96.6%	12102	96.6%	12524	100.0%
Telengana	12769	11574	90.6%	11574	90.6%	12764	99.9%
Uttar Pradesh	58768	56987	97.0%	56979	97.0%	58626	99.8%
Uttarakhand	7791	1201	15.4%	1200	15.4%	7788	99.9%
West Bengal	3340	3226	96.6%	3226	96.6%	3224	99.9%

Source: Compiled from Annual Report,Ministry of Panchayati Raj, GOI, 2020-21

Another parameter in this table 4 is the rate of Gram Panchayat Development Plan approval by facilitators. In this particular case, it is once again found that Uttarakhand (15.4%) is well behind followed by Kerala (26.9%) and Odisha(67.3%). All other states are found more than 80% level approval rate. In terms of percentage of total no of report placed and no approval obtained are found identical in most of the cases still in physical term it is seen a few difference which can be negligible in terms of percentage calculation up to the approximation of decimal terms.

Interpretation: In terms of GPDP through e-gram SWARAJ programme, almost every states under study are obeyed the programmme except Kerala, Uttarakhand and slightly Odisha did not follow this programme properly. Although Kerala and Odisha have been found established states where Panchayati Raj scheme should be implemented with utmost care.

E. Public Finance Management System (PFMS) through e-Gram Swaraj in India

In order to efficient, effective and transparent transfer of benefit to the citizen from the Govt. stakeholder and thus ensure the accountability of Government system is the main objective of Public Finance Management System (PFMS). Thus the Public Finance Management System (PFMS) is most important measure in terms of governance is concern. If PFMS is not appropriately done then whole system will be under question and total system will ultimately be jeopardized. As a major stakeholder of public finance, Govt. should take care of it with proper intricacies and in transparent manner. Thus every stakeholder like banking institutions, Govt enterprises, private enterprises are to be fully entrusted with the well organized PFMS bounded by some rule and regulations. E-transaction is the most valuable thing which can establish the PFMS in justifiable manner according to its main objectives. The PFMS at GP level is thus essential to corroborate its essence towards governance in a fruitful manner. Thus e-gram SWARAJ can be established. Though this initiatives has been taken according to 15th Finance Commission (XV FC) which was constituted during Nov, 2017 but its full fledged work is not yet been started fully. Still, in order to find out the extent of Public Finance Management System under e-gram SWARAJ (eGSPI) initiative at GP level, I have no other option to go with this type of discussion. According 15th Finance Commission almost every state has created scheme code except Kerala. The on- boarded eGSPI for GPs are concerns, Bihar has yet to be initiated. Kerala itself has no message in this regard as well. Bihar has not opened its account in this particular area. West Bengal has started just, only 11 GPs in the state has taken that initiative to be on boarded in eGSPI. It is very negligible amount to the total 3340 GPs in the state. Same for Telengana, where 13 out of 12769 GPs has been boarded. Karnataka, Gujrat has only attained 8%, Maharashtra has 9% and Rajasthan has 19% only for onboarded eGSPI. Odisha, Uttarakhand has reached to 100% level. MP and UP almost have almost attained 100%. Punjab has attained 99% in this case. In Haryana 84% GPs have been boarded for eGSPI. Percentage of GPs in the state having online payment system under

same directives, UP has attained 84% level in this case, which is highest in the country, followed by MP(57%),Karnataka(24%),Hariyana(19%),Odisha(9%)and Uttarakhand(8%). Maharashtra and WB have only 12 and 2 no. of GPs having online payment system during 2020-21.

Interpretation: Though eGSPI initiative has taken places during 2019 onwards still many states did not take initiative yet to be boarded in this particular line. The PFMC under e-gram SWARAJ scheme (eGSPI) is aiming for direct benefit transfer to the citizen of India. Still majority of the states could not take this opportunity under utilization. There are missing data for the state like Kerala may be due to lack of representation of data on the part of the state or either way of the both parties i.e., state and central body collecting data. State like West Bengal has not yet been stepped in fully in this process. The states which has reputation in earlier parameter discussed in this article have found to be laggard in this case. On the contrary state like UP has taken ambitious measure in this case.

Table 5: The Public Finance Management System through e-gram SWARAJ (eGSPI) in India

State	No. of GPs	State Scheme code created for XV FC	No of GPs onboard eGSPI	% On boarded	No of GPs with online payments for XV FC	% GPs with online payment
Andhra Pradhesh	13371	yes	205	2%	0	0%
Bihar	8387	yes	0	0%	0	0%
Gujrat	14308	yes	1193	8%	0	0%
Hariyana	6197	yes	5234	84%	1166	19%
Karnataka	6009	yes	6016	100%	1466	24%
Kerala	-	-	-	-	-	-
Madhyapradesh	22812	yes	22797	99.9%	12906	57%
Maharashtra	27879	yes	2528	9%	12	0%
Odisha	6798	yes	6798	100%	620	9%
Punjub	13263	yes	13085	99%	3	0%
Rajasthan	11316	yes	2201	19%	523	5%
Tamilnadu	12525	yes	12154	97%	0	0%
Telengana	12769	yes	13	0%	0	0%
Uttar Pradesh	58767	yes	58747	99.9%	49173	84%
Uttarakhand	7791	yes	7755	100%	643	8%
West Bengal	3340	yes	11	0%	2	0%

Source: Annual Report, Ministry of Panchyati Raj, GOI, 2020-21, XV FC=15th Finance Commission

Conclusions

This study has designed on the basis five basic parameters like, basic administrative framework, women representation, basic services provided in GP level, GPDP approval through e-gram SWARAJ and PFMS interface under e-gram SWARAJ(eGSPI) for online payment. This has been designed consciously to identify the level of Governance at GP level or rather say self governance of local people at GP level. This study has been done on the basis of sixteen major states as representational portray for the whole India as they consist altogether more than the ¾ th of total populations of our country and area also. The union territories and small states have not been included due to avoid vastness of the study although it has been agreed that the qualitative governance could be represented from such states or UTs.

In the study it is found that no states has done their job in satisfactory manner at least for the year 2020-21 is concern. In some areas few states like Punjub, MP, Kerala, Odisha, West Bengal, Karnataka, Rajasthan are doing well in other areas they are doing not well or say doing worst. The Panchayati Raj is a system to frame local government by the local people for the local people. This has been pivotal democratic framework in India to fulfill the dream of our father of nation Mahatma Gandhi. In some of the studies that have reviewed, pointed out importance and success of our Panchayati Raj in our country. But in the purview of e-gram SWARAJ and eGSPI the well enlightened states are found glooming by not taking appropriate measure in this context very promptly. States like UP who is found laagered in providing basic administrative structure, women representation and basic service providing capacities under single umbrella at GP level, has now earmarked well advance in adopting e-gram SWARAJ and eGSPI approaches. Whereas states like Punjub, WB, Kerala,MP, Karnataka and Telengana etc. who have good basic infrastructure , good women representation and well basic service providing ability under single umbrella at GP level to earmark well advanced governance level are now found to be in back bencher due to inability to cope with the modern approach of e-governance. Although this is not the time to have a solid conclusion because the e-governance has just started in our country and the states who have good infrastructure will surely cope with this situation in future and will surely to be found out in front runner position. Governance is now in a state of transition from traditional governance to e-governance. So we have to wait for giving valid conclusion at this outset, but it can be said that the prospect of governance in GP level in India is very bright if we can adopt the transitional concept aptly and quickly.

Suggestions:

1. Quick and apt adoption of e-governance in the major states who were doing in traditional framework in Panchayati Raj
2. There should be both way solid information exchange system between states and central depositories ,

3. Centre should have uniform understanding to every state in our country in adopting new approach; otherwise, a well-managed liaison should be maintained to have this understanding.
4. The Data for every state should be reached in the national depository in time

Reference:

1. Ministry of Panchayati Raj,GOI(June,2021), Annual Report,2020-21
2. Ministry of Panachayti Raj,GOI,(2018)Best Practices in Panchayats on Management and Service Delivery Retrived from https://www.panchayat.gov.in/en/web/guest/home
3. Ministry of Panchayati Raj,GOI,(October,2014), Governance in Gram Panchayat,retrived at file GP ENGLISH Governance.pdf
4. Ministry of Panchayti Raj,GOI(2021), Report of Standing Committee on Rural Development 2020-21 retrived fromhttps://www.panchayat.gov.in/en/web/guest/home
5. Neil Webster(October,2008),Panchayat Raj in West Bengal: Popular Participation for the People or Party?,Development and Change, Retrived from https://www.researchgate.net/publication/229445930
6. Panda, Monoj(April,2020),Panchayat as Instrument of Social and Economic Progress, *Business Line*, Retrived from file:///E:/Panchayati%20Raj/Panchayats%20as%20instruments%20of%20social%20and%20economic%20progress%20-%20The%20Hindu%20BusinessLine.html
7. Wikipaedia

Business Spectrum (ISSN: 2249-4804) Volume XI, No.2 July-December 2021

An Open Access Fully Referred Peer Reviewed Journal (Online): IAA (South Bengal Branch)
www.iaasouthbengalbranch.org

Measuring the Uniformity of Liquidity and its Financial Health: A Case Study of Housing Development and Infrastructure Ltd

Atul Kumar Paul
Assistant Professor
Department of Commerce
Karimganj College, Karimganj.
and

Dr. Manas Naskar
Associate Professor
Department of Commerce
Raiganj University, Raiganj, Uttar Dinajpur

ABSTRACT

The real estate business is one of the most recognized sector from the view point of the scope of generation of employment and fiscal development of the nation. This sector is made up of four sub-sectors, such as, retail, housing, hospitality and trade. After agriculture, the real estate is recognized as the second-largest job creation sector. Profitability and liquidity are two important factors of any company which interpret the profitability position of the company. If implemented in an effective, efficient and consistent manner, this will ensure the company's financial health. Housing Development and Infrastructure Ltd, one of the growing real estate company has been taken for the study considering the data from 2011-12 to 2018-19. The present study of the paper aims to show the impact of profitability on the uniformity of the liquidity and its effects on the financial health of Housing Development and Infrastructure Ltd. Return on Capital Employed (ROCE) has been used as an indicator of enterprise profitability where as the Liquidity management is treated (C.R, ATR, ITR, DTR and ICR) as separate variables (Independent variables). In the empirical analysis, multiple regressions, F-test, t-test and Altman Z score model have been used. The result of the analysis concludes that Kendall's coefficient of concordance (W) among the given seven ratios are found to be statistically significant at the 5 % level, while, ROCE has a insignificant impact on liquidity management (C.R, L.R, ITR, and DTR). In addition, one sample t-test portray a remarkable difference in the Altman's Z-score of Housing Development and Infrastructure Ltd during the study period. The study leads to significant conclusion based on the study's result.

Keywords: Housing Development and Infrastructure Ltd, ROCE, Altman Z score model, Liquidity

Introduction

In India, real estate is the second most important source of employment after agriculture. This sector is also expected to invest more non-resident Indian in the short and the long term. Bengaluru is probably one of NRI's most popular real estate investment destinations, followed by Ahmadabad, Chennai, Pune, Delhi, Goa, and Dehradun.

One of the most important real estate development companies in India is Housing Development and Infrastructure Ltd and it actively performs with the activities of housing and slum rehabilitation projects in the Mumbai metropolitan region. This real estate development company is attached to the development of residential building, commercial properties, infrastructure and all related activities. Retail, trade, hotels and commercial housing building are also growing rapidly, providing essential infrastructure in India.

Liquidity is the term used to describe the liquid assets in order to cover current and future liabilities, including others, like expenditure on goods and services. Liquid assets can be readily available whenever it is required. But other types of assets, like long-term investments can take more time to convert to cash. If such an asset is to be sold very quickly because of an unexpected shortfall, there is a risk that the company will lose some of its value.

Profitability indicates the profit earning capacity of the business enterprise in the process of business. This capacity is expressed in relation to investments or level of operation (sales). Profitability analysis is employed to measure the organizational efficiency during the year. In some cases, the technique of cost-benefit analysis may also be used. It is helpful for the purpose of planning and control. Critical analysis of the profitability is also required to test the viability of the company.

In this background, the present study concentrates on the measuring of the uniformity and liquidity position of Housing Development and Infrastructure Ltd. The effects of profitability on the liquidity have also been analyzed in the study.

Review of Literature:

Abdul Ghafoor Awan (et.al) (2014) has attempted to determine whether financial ratios affect company's performance regarding the working capital of cement industry in Pakistan. The study revealed that the ROE is negatively correlated with Stock Turnover Ratio, Cash Conversion Ratio and Current Ratio while ROCE is positively correlated with firm's size..

Adedeji, E. A (2014) has reviewed the performance of business enterprises with the help of ratio analysis. The paper confirms that the analysis of ratios is closely linked to the company's performance and financial ratios, which emphasize the importance of effective business management.

Aggarwal & Chaudhary (2015) investigated 364 companies listed on Bombay Stock Exchange during 2010-2014. This study has analyzed the effect of working capital on the financial performance of the Indian companies. The analysis suggest that, for increasing the profits, the cash conversion cycle, limited inventory periods and rapid recovery of assets received are the important factor.

B. Rabi Kumar (2015) analyzed the financial soundness of the company using the selected ratios such as the Reserve to Equity Share capital Ratio, Fixed assets Shareholders Fund Ratios, Return on Investment Ratio, Productivity Ratios. The findings show that the company's financial health is not consistent enough.

Naskar, A & Guha, P (2017) studied the relationship between the financial performance and working capital management of the listed Indian company. The findings indicate that profitability has an important impact on the management of working capital. In addition, Debtors Turnover Ratio (Days), Creditors Turnover Days (Days), Inventory Turnover Ratios, Current ratios, Quick ratio, Cash cycle has a strong negative relationship with the prosperity of the company.

Kalaivani, A (2019) studied the Profitability and consistency of selected Ceramic Companies in India. In this article, Multivariate Discriminate Analysis (MDA) is used. The study revealed that the KCL Company achieved better results, which is followed by OCL and KCL companies

Swarankar, J & Jain, O.P (2020) conducted a study on the measurement of the fiscal situation of Rajasthan's Dairy Co-Operative firm. The aim of this article is to ascertain the financial conditions of the Kota dairy in Rajasthan for a period of eight years from 2011-12 to 2018-19 by using Altman Z score model along with one sample t-test. But the findings of the study portray that the financial performance of the selected dairy co-operative firm was in the gray zone in the year 2011-12 and 2018-2019 was stabled as per financial health.

Objectives of the Study

The study aims:

- To examine the uniformity on the liquidity management of Housing Development and Infrastructure Ltd
- To study the financial health of the Housing Development and Infrastructure Ltd .
- To study the impact of profitability (financial performance) on the liquidity management of Housing Development and Infrastructure Ltd

Research Methodology

The impact of profitability on the liquidity and its uniformity on Housing Development and Infrastructure Ltd. has been analyzed based on the secondary data. The company's yearly accounting statement from 2011-12 to 2018-19 have been considered for the study. Kendall's coefficient of concordance (W) has been adopted to examine the extent of association between the variables and to show the uniformity of the liquidity position of the company. For examining the significance of the value of W, Chi-square ($\chi^{2)}$), regression analysis, Altman's Z-score Model applied by Altman's has been used to check the company's monetary position.

Data Analysis

The ratios considered in the study have been used as the financial indicators of Housing Development and Infrastructure Ltd. C.R (Current Ratio) measure the Company's liquidity. ATR (Asset Turnover Ratio) indicates the effectiveness in managing its wealths. ITR (Inventory Turnover Ratio) measures the level of inventory management. DTR (Debtors Turnover Ratio) measures the effectiveness of the management of the debtors of the enterprise. ICR (Interest Coverage Ratio) shows the company's capacity to repay interest on its long term debt. ROCE (Return on Capital Employed) signify the total productivity of the enterprise during.

To learn whether there is any uniformity among the different aspects of liquidity management of the Housing Development and Infrastructure Ltd. the different financial ratios of Housing Development and Infrastructure Ltd .for the years 2011-12 to 2018-19 have been calculated, which is shown in table 1.1.

Table-1.1: Financial Ratios

Year	C.R	L.R	ATR	ITR	DTR	ICR	ROCE
2018-19	3.117	.564	1.94	.028	.976	-125.153	-1.175
2017-18	2.962	.462	2.631	.037	1.34	1.614	.008
2016-17	3.492	.603	1.67	.025	1.225	1.222	.008
2015-16	4.061	.859	2.886	.051	2.646	1.695	.016

2014-15	3.016	.731	9.602	.088	3.789	1.777	.032
2013-14	3.193	.782	4.324	.079	2.592	1.795	.021
2012-13	2.981	.853	3.285	.062	.92	1.501	.024
2011-12	3.022	.921	4.103	.083	1.114	1.291	.014

Kendall's Coefficient of Concordance:

Kendall's Coefficient of Concordance (W) is a suitable formula to examine the extent to which more than two classes of the series are associated. It is usually denoted by W. W may be computed by:.

Kendall's Coefficient of Concordance (W) = $\frac{S}{[\frac{1}{12}*K^2*(n*n*n-12)]}$**, where**

$S = \sum (R_i-R)^2$, R stands for the Sum of grades allocated to each case, R_i is the average value of R, K is the number of groups of rankings, N stands for the number of cases graded (Rank).in the case of equality of ranks, the amended formula used for the study is:

Kendall's Coefficient of Concordance (W) = $\frac{S}{[\frac{1}{12}*K^2*(n*n*n-12)]} - K\sum T$**, where,**

$\sum T = \sum(t^2-t)/12$ and it refers to how many items or cases are involved in a tie

The Kendall's Coefficient of Concordance, the most preferred formula for assessing liquidity management for the years 2011-12 to 2018-19 using the financial indicators shown in table no 1.2.

Table-1.2: Kendall's Coefficient

Name	Variable	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13	2011-12	Total
Housing Development and Infrastructure Ltd	C.R(R_1)	4	8	2	1	6	3	7	3	
	L.R(R_2)	7	8	6	2	5	4	3	1	
	A.T.R(R_3)	7	6	8	5	1	2	4	3	
	I.T.R(R_4)	7	6	8	5	1	3	4	2	
	D.T.R(R_5)	7	4	5	2	1	3	8	6	
	I.C.R(R_6)	8	4	7	3	2	1	5	6	
	ROCE(R_7)	8	7.5	7.5	4	3	2	6	7	
	Sum=R_i	48	43.5	43.5	22	19	18	37	28	259
	$(R_i-R)^2$	244.14	123.76	123.76	107.64	178.89	206.64	21.39	19.14	1025.36

		Table Value=14.067(at 5% level)				Computed Value= 16.2477				

The calculated value of X^2 = k (n-1)*W = 7(8-1)*.33158 = 16.2477 and table value of X^2 with (n-1) d.f.i.e.7 d.f. at the 5 % level of significance =14.067 Therefore, the computed value of X^2 is greater than the table value of X^2 at the 5 % level of significance.
Kendall's Coefficient of Concordance (W) calculated by considering important seven ratios which indicate the liquidity management different is. 33158. It is established to be statistically significant at the 5 % level.

Analysis of the financial position of Housing Development and Infrastructure Ltd

For the purpose of verifying the financial position, Z-score Model proposed by Prof. Edward Altman in 1968 has been used. The Z - score may be calculated considering the five ratios as stated for predicting the possibility, when a business can go bankrupt. The discrimination function is set out as below:

Z=1.2x1+1.4x2+ 3.3x3+.6x4 + .999x5

Where, X1=Working Capital/ by Total Assets

X2=Retained Earnings/Total Assets

X3=EBIT/Total Assets

X4=Market Value of Equity/Book value of Total Debt

X5=Sales/Total Assets

Table- 2.1: Z-Score

Critical values of Altman's Model Score	**Zone**	**Result**
Z less than1.81	Distress	Risk of going bankrupt
Z less than2.99 and greater than1.81	Gray Zone	Stable
Z less than 2.99	Save Zone	Save

Table-2.2 shows the financial ratio to be used for applying Altman's Z-score Model to identify the financial position of the Housing Development and Infrastructure Ltd. It can be concluded that the critical value more than 1.81 is the stable situation of the company and more than the value of 2.88 is the safest position of the company.

Table – 2.2: Financial Ratios for Altman's Z-score Model

Year	WC/TA*1.2	RE/TA*1.4	EBIT/TA*3.3	MV/TD*.6	Sales/TA*.999	Z-score
2018-19	0.7999	0.8781	-2.547	0.1364	0.0234	-0.7092
2017-18	0.7789	0.8421	0.021	0.1148	0.0324	1.7891
2016-17	0.8403	0.8455	0.0107	0.1053	0.022	1.8238
2015-16	0.8868	0.8508	0.039	0.0888	0.0423	1.9077
2014-15	0.7861	0.8253	0.0536	0.0929	0.0676	1.8255
2013-14	0.806	0.8407	0.0601	0.0907	0.0645	1.862
2012-13	0.7768	0.8056	0.0487	0.0801	0.0543	1.7654
2011-12	0.781	0.8022	0.0316	0.0917	0.0668	1.7732

Table no 2.1 makes it clear that the value of Z-score is above 2.99, then the business is likely in safe in regards the financial conditions. In this particular case, it is observed that the Z score value for the year 2011-12, 2012-13, 2017-18 and 2018-19 is lower that 1.81. The financial position of the company is not good enough to show its ability. The financial condition is stable in 2013-14 to 2016-17, which looks better financial position as the Z score value is more that 1.81. To measure the significance level of the company Altman' Z score is analyzed with the help of one sample t-test shown in table 2.3.

Table- 2.3: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Z-score	8	1.5047	.89579	.31671

	Test Value = 3.0				
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference

					Lower	Upper
Z-score	-4.721	7	.002	-1.49531	-2.2442	-.7464

A significant difference in the value of Altman's Z score, shown in table 2.3 of the company is $p<0.01$.

To study the impact of profitability on the liquidity management of the Housing Development and Infrastructure Ltd, it is assumed that there is no significant impact of profitability (ROCE) on liquidity management (C.R, L.R, ITR and DTR).

Table 3.1 shows the impact of profitability (ROCE) on liquidity (C.R, L.R, ITR, and DTR). Again, F-test was applied to find out the magnitude of the difference.

Table- 3.1: Table showing the analysis of selected ratios and its Impact on Profitability

Regression Statistics	
Multiple R	0.60409428
R Square	0.3649299
Adjusted R Square	-0.48183024
Standard Error	0.51335623
Observations	8

	Df	**SS**	**MS**	**F**	**Significance F**
Regression	4	0.454304	0.113576	0.430972	0.78313
Residual	3	0.790604	0.263535		
Total	7	1.244908			
	Coefficients	**Standard Error**	**t Stat**	**P-value**	
Intercept	-3.40356882	3.580342	-0.95063	0.411926	
Current Ratio	1.22705533	1.649581	0.743859	0.510924	
Liquid Ratio	-2.72960056	4.682583	-0.58293	0.600868	
Inventory Turnover Ratio	33.031651	41.08652	0.803953	0.480228	
Debtor Turnover Ratio	-0.32429544	0.572051	-0.5669	0.610427	

From the table no 3.1, it seems that

ROCE =.-3.40356882+ 1.22705533(C.R) – 2.72960056 (L.R) + 33.031651(ITR) -.32429544(DTR) where C.R, L.R, ITR and DTR are the explanatory variable. Table 3.1 also gives

the value of R^2 = 0.3649299, adjusted R^2 = -0.48183024, Thus the model doesn't satisfy the assumption because the p> 0.05. So it may be concluded that the Current Ratio, Liquid Ratio, Inventory Ratio, Debtor Turnover Ratio is insignificant here in the study.

Findings

Following are the important findings of the study**:**

1. It is observed that the financial ratio (liquidity management) using Kendall's coefficient of concordance (W) considering all seven ratios is .33158, whereas the tabulated value at the 5% level is 14.067 (table no. 1.2). The result is significant at the 5 % level. There is a strong relationship among the financial ratios, which indicates that there is a uniformity of the liquidity among the selected financial ratios.
2. The miserable situation is found during the year 2017-18 , 2018-19 and 2011-12, 2012-13, which indicates that the financial health of Housing Development and Infrastructure Ltd has gone down during the periods. The financial condition of the company is comparatively better during the period from 2013-14 to 2016-17.
3. One sample t-test portrays that there is a significant difference in the financial health of Housing Development and Infrastructure Ltd in several years, calculated using the Altman's Z-score during the eight year period (table no 2.3), since the p-value<0.01.
4. The correlation (table no 3.1) between the liquidity management and the Return on Capital Employed (ROCE) is positive (0.60409428) and have an insignificant (p-value>05) impact on liquidity management (C.R, L.R, ITR, and DTR) during the entire period.

.

Conclusions

The housing industry plays a very crucial role in the economy, contributing 6-7% to the GDP. This sector is a significant source of employment generation. Housing Development and Infrastructure Ltd, one of India's leading property development companies is dynamically attached to the development work in the field of real estate business. Profitability and liquidity are interlinked with each other that are useful in measuring a company's financial soundness. Profitability measures the financial performance and liquidity to measure the cash flow position of the company, primarily in response to its short term obligation. The study implies that the uniformity among the financial ratios is sustained as proved by using the Kendall's Coefficient of Concordance. On the other side, the economic strength of the company is not a remarkable one as

analyzed by applying Altman's Z-score. It also implies that there was a close and significant association among the different aspects of financial performance of Housing Development and Infrastructure Ltd. It is also found that the Return on Capital Employed (ROCE) has an overall positive influence on the four independent variables i.e. C.R, L.R, ITR and DTR, which is insignificant. A significant difference in the financial soundness of the company is noticed. The study also reveals that there is needed a remarkable improvement in the overall profitability of Housing Development and Infrastructure Ltd in the coming years.

Reference:

1. Annual Reports of Housing Development and Infrastructure Ltd
2. **Abdul Ghafoor Awan(et.al)(2014), in their article, "** Impact of working capital management on profitability of cement sector in Pakistan." International Journal of Business and Management Review Vol.2, No.4, pp.1-20
3. **Adedeji,E.A(2014)** in his paper, "A Tool for Measuring Organization Performance using Ratio Analysis" Research Journal of Finance and Accounting, Vol.5, No.19, pp-16-22
4. **Aggarwal,A & Chaudhary, R(2015), "**Effect of Working Capital Management on the Profitability of Indian Firms". IOSR Journal of Business and Management (IOSR-JBM), Volume 17, Issue 8.Ver. IV , PP 34-43
5. **B.Rabi Kumar (2015)**. In his article, " Financial performance evaluation-A case study of Bharat Heavy Electrical Ltd, EPRA International Journal of Economic and Business Review, Vol-3, Issue-11,pp-207-211
6. **Naskar,A & Guha,P(2017),** in their article, "Working capital management and firm profitability: a study of listed companies in India" International Journal of Management (IJM), Volume 8, Issue 6, pp. 152–162
7. **Kalaivani,A (2019**)," Profitability and Consistency of Ceramics Industry- A Financial and Statistical Analysis of Selected Ceramic Companies of India". Journal of Emerging Technologies and Innovative Research, Volume 6, Issue 12,pp-745-751
8. **Swarnakar.J & Jain.O.P (2020),** "Measuring Financial Health of Dairy Co-Operative in Rajasthan: A Case Study of Kota Dairy" , *Purakala* (UGC Care Journal), Vol-31-Issue-34-May-2020 (online)