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Message from the Chief Editor

India proudly celebrated 75 years of independence on 15th August 2022, which was the 76th Independence Day of this great nation, known for its rich tradition, culture and unity in diversity. Economic resilience and being on the path of consistent industrial development have made this nation an emerging economy of the future. AZADI KA AMRIT MAHOTSAV is being celebrated in a befitting manner where we are reflecting on the struggle for Independence alongside the path towards empowerment of the masses. Digital technology and innovation are widely in use as developmental models that will serve our growth aspirations. The unprecedented impact of technology, on not just industry, but all walks of human life is indeed phenomenal. Transforming challenges into opportunities and working under the emerging New Normal is what we need to learn and adopt.

Higher education in India is undergoing a shift in terms of reforms and Adoption of the National Curriculum frame- work. NEP 2020 seeks to make education holistic, trans- disciplinary and flexible. A host of innovative academic programmes and courses are being planned in terms of skill- embedded learning and tech-driven learning methodologies. A very pertinent question that emerges is how to stay relevant in terms of Academics and Research. A deeper and insightful understanding of the demanding environment and up-skilling and upgrading to meet the emerging needs is crucial.

There is need for quality education and very convincing research on issues of contemporary relevance as well as societal concerns

With the prime objective of showcasing pertinent research outcomes in the domains of Accounting, Finance and Financial services, as well as trans-disciplinary research, Indian Journal of Accounting is bringing out the next issue in the context of the up coming All India Accounting Conference at Gwalior in October 2022. We would love to disseminate vital research work in the identified domain in terms of its outcomes and implications.

I take this opportunity to thank all the contributors of research papers to this issue and sincerely request all my friends to come up with more research work and research pub-

lications, which we would gladly welcome. I also thank all our subscribers and the editorial team. I acknowledge with sincere gratitude the timely intellectual support from our reviewers. I request all our readers and well-wishers to kindly give us suggestions and valuable inputs on improving the journal.

Thank you

Gabriel Simon Thattil
Chief Editor
Indian Journal of Accounting

Message from the President

Dear Friends,

Greetings!

First of all, with great pride and honour on behalf of Indian Accounting Association I cordially welcome you all to the 44th Annual Conference of IAA to be held on October, 29-30, 2022 at Jiwaji University, Gwalior.

The Indian Accounting Association is an illustrious academic body in the field of Accounting and allied areas in India and working as interface between academicians, professional and practitioners from various Universities, Businesses, Industry and Government. Founded on March 15, 1969 and formally inaugurated on February 14, 1970, the Association crossed several milestones over a period of time and build a wide network of branches across the country. With addition of two new Branches at South Haryana and Motihari the total number of Branches across India reaches 59 with more than 7700 Life Members. The main function of IAA is to promote and disseminate the knowledge of accounting and the related subjects in India and abroad. Therefore, it is my humble request to all branch officials and fellow members to try to enrol more members from professional fraternity and government accountants for bridging the gap between theory and practice.

It is a matter of great satisfaction that despite difficulties posed by the pandemic, IAA has been successful in maintaining pace of its activities. Development of Model Curriculum based on NEP 2020, enriching IAA e-Content Bank, efforts for new collaboration are significant achievements for which we are very grateful to chairman of sub-committees namely Prof K R Sharma, Prof Ranjan K Bal, Prof K V Achalapati, Prof K Erasi and members of these committees for their selfless notable contribution. Efforts for collaboration with other professional bodies and national and international associations are in progress.

I wish to inform you that after marathon online meetings the IAA Constitution Amendment Committee has finalized the amended draft of constitution and by-laws of the IAA and submitted it to Executive for discussion and consideration. I am grateful to Prof M B Shukla and all the members of the constitution amendment committee for their efforts.

National Accounting Talent Search, the flagship activity of the association was held well on Feb 6, 2022 despite all difficulties and challenges in the present situation. The nation-wide competition was organized online. Good number of participation from different parts of the country was enrolled despite pandemic situation. My sincere gratitude to Prof Shurveer S Bhanawat, Coordinator and all other members of the organising committee, IAA Observers, and faculty members from all over the country who contributed as ever to ensure this great achievement. The increase in the award money by the NATS advisory committee will be a great source of motivation for all future participants indeed. The next NATS exam is proposed to be conducted of 23rd February 2023 and will provide an opportunity to overseas students also for participation.

Preparations for organising 44th All India Accounting Conference and International Seminar on Oct. 29-30, 2022 are at final stage at Jiwaji University, Gwalior with the efforts of the team led by Prof K S Thakur, Conference Secretary. Registration of more than 1100 delegates is record breaking and submission of more than 400 papers have resulted in number of parallel technical session to accommodate fruitful academic discussions. Let us all join hands to motivate quality participation of delegates in this important event of the association.

Further, IAA aims to undertake and encourage research in the field of accounting. The Accounting being an applied subject, good quality researches requires combined efforts from academic fraternity in collaboration with professional practitioners. For world class research in the field of accounting more concerted efforts are required by all of us. Indian Journal of Accounting, a biannual research journal, is an official publication of IAA to promote research in the field of accounting and finance. I congratulate Prof G Simon Thettil, Chief Editor of the journal and his team for their efforts for selecting good research papers and reviewing these for publication in this difficult situation.

At the last, I would like to thank you all for giving me an opportunity to serve the prestigious Indian Accounting Association (IAA) as a President. Today, IAA is one of the most vibrant association in the world of Accounting and Finance globally because of the dedicated efforts of our Past Presidents, Office Bearers, and Executive Council Members, Branch Chairpersons as well as Secretaries and all the members at large. I am grateful to all for their guidance and active support.

With warm regards,

Dr. M L Vadera

President, IAA
Former Professor & Director IES,
Jai Narain Vyas University, Jodhpur and
Former Professor & Director, School of Business and Commerce,
Manipal University Jaipur

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IMPACT OF POLITICAL-ECONOMIC EVENTS ON INDIAN STOCK MARKET

Gayathri L *

Maheen M **

ABSTRACT

The study considered a series of political-Economic events in India during the last decade to see whether the Indian Capital Market is efficient. An ideal market with totally efficient leaves no scope for generating an abnormal return from the price dislocation resulting from the information in the public domain. The instantaneous price adjustment will result in the new equilibrium price. In line with this objective, the publicly available information and its immediate response in the markets are tracked using the Event Study Methodology (ESM). We have used a five-, ten- and fifteen-day estimation framework to prove the Semi-Strong form of Market Efficiency. The abnormal return series and its cumulative values are derived using the risk-adjusted models to measure the performance trend after the event. The test statistics contribute to the existing literature that the Indian Market does not exhibit spontaneous equilibrium after the event and accepts the semi-strong form of market efficiency.

JEL: C12, C14, C15, G14, G15

***Keywords**:* Event Study Methodology, Efficient Market theory, Abnormal Returns

Introduction

The concept of efficient market theory explains the ability of the market to process information spontaneously (Fama, 1970). This theory contrasts with the technical and

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fundamental analysis; the analysts were excessively relayed on past performance to predict future direction. Usually, the markets behave drastically in response to the new information; thus, this, in turn, leads to the repulsion in the market price movement. The asymmetry in processing the information resulted in the market inefficiency leads to superior returns. The study intended to analyze the validity of efficient market hypothesis in the light of publicly available information (Fama E, 1969). The event study methodology is a convenient tool to analyze the impact of the market-wide announcements and macro-economic events in the stock markets.

India, a densely populated, emerging market economy with higher purchasing power, has witnessed a series of structural changing measures. The recent macroeconomic events shrink the capital market of the country severely. The study tries to address these macroeconomic events and their incidental impacts on the Indian stock markets. Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) are the two major Indian stock exchanges; with SENSEX and NIFTY are the respective market indices.

Madhu Iyengar (2017) examined the impact of the US election results on the Indian Stock Market; and found that the IT sector, BFSI, and logistics were greatly affected. They have applied an event study methodology (ESM) on a thirty days event window. Pandey (2015) performed an event analysis of dividend decisions of 103 companies listed in NSE and BSE. The data were extracted from the prowess database and applied GARCH Model to test the efficiency of the market. They found that the Indian market is inefficient and recommended stringent enforcement, transparency, and prudential disclosure practices. Pesakovic (2017) applied event study methodology to analyze the market performance of three MNC's using three historical events. They used CAPM to determine the expected return, and students t were applied. The study reveals a mixed response by Indian stocks to the macro-economic events. Kalimeris (2007) applied Brown and Warner's (1985) event study methodology to measure the impact of the acquisition announcement in Greek market. They applied the E- GARCH model for the pre-event period and reported a positive response to the good news and vice versa. All the studies mentioned here stressed the impact of various announcements and macroeconomic events on price volatility. Osborne, (2019)

examined abnormal return and the asymmetric information on financial acquisition for the US data.

Through this study, the impact of five popular macroeconomic events on the market performance of five listed firms in BSE; all the events are taken place during the last decade. The major events taken for the study are Demonetization of higher denomination currencies, implementation of Goods Service Taxes, NITI Aayog, SBT merging to SBI (merger of larger public sector banks), and the results of Parliament election.

From the literature, the price response to the market is measured using the ESM, which quantifies the impact of events by measuring the abnormal returns. The abnormal returns are calculated by subtracting the normal return from the actual returns. In this regard, the actual returns can be empirically observable, whereas the normal returns need to be forecasted. Further, the intended objective of the study is to check whether the theory of semi-strong form of efficiency holds in the Indian capital market. The significant contribution of this study comes with analyzing the impact of different political-economic events that happened in the ten years using one-sixth firms constituting the BSE-SENSEX, the most extensive index. The further study contributes to the existing literature that, the Indian Market does not exhibit spontaneous price equilibrium after the event and proves the Semi-Strong-Form of Efficiency.

Brief accounts of each event are discussed hereunder:

National Institution for Transforming India Aayog or **NITI Aayog** is a policy think tank of Govt of India that replaces the national Planning Commission after sixty-five years of its existence. The Government of India established the NITI Aayog on **January 1, 2015**. The governing council of NITI Aayog comprises the Chief Ministers of all States and Lt.

Governors of Union Territories and will foster a 'Co-operative federalism' to provide a "national agenda" to the Centre and States. The body comprises a Chief Executive Officer and a Vice-Chairperson under the Chairmanship of the Prime Minister, apart from the full-time and part-time members, while four Union Ministers would serve as ex-officio members. **The Demonetization** of high denomination currency was a controversial event in the history

of the Indian Economy. On **November 8, 2016**, the Government nullified the validity of high denomination currencies of Rupee five hundred and Rupee One thousand notes of Mahatma Gandhi series. The Central Bank of India (Reserve Bank of India-RBI) justifies the demonetization efforts to curb terrorism funding from external sources and the surgical strike towards the black money. The Annual Reports of RBI show that 15.28 Trillion rupees ($239 Billion) worth of currencies were cancelled. It was an unconventional monetary policy that was announced to gain stability in the Indian financial system.

The **merger of the State Bank of Travancore with the State Bank of India** (SBI) was a major event in the banking sector. The effective date of the merger is from **April 24, 2017**. SBI expected the merger to help reducing duplication and save on resources which drive synergies.

The nationwide implementation of **Goods and Service Tax (GST)** marks the stepping stone in the history of the Indian Indirect tax regime. It abolished the different indirect taxes such as the Value Added Tax (VAT), service tax, Octroi, Central Excise Duty to a single tax on supply of goods and services. The effective date of implementation is from **July 1, 2017**.

The 2019 Indian **general election** was held in seven phases between April and May, to constitute the 17th Lok Sabha (the house of commons of the Parliaments). The votes were counted, and the results were declared on **May 23, 2019**.

Methodology and Data

The impact of events on the Indian market is evaluated with the help of the following firms listed in the BSE SENSEX, the oldest index which holds a huge market capitalisation. The SENSEX constitutes 30 companies with the highest capitalization, and we have chosen five firms that constitute one-sixth of the index. The details are attached in the table 1.1.

Table 1.1: Details of firms

Name of Company	BAJAJ AUTO LTD	Hindustan Unilever Ltd	INFOSYS LTD	MARUTI SUZUKI INDIA LTD	RELIANCE INDUSTRIES LTD
Index	S&P BSE SENSEX	S&P BSE SENSEX	S&P BSE SENSEX	S&P BSE SENSEX	S&P BSE SENSEX
Industry	Automobile	Consumer goods	IT Consulting & Software	Automobile	Conglomerate
Date of Formation	29 November 1945.	17th October 1933	7 July 1981	February 24 1981	8 May 1973

Source: author

The event study methodology was applied to determine the impact of macroeconomic events on the Indian capital, with five events chosen from 2010 to 2020. The events are arranged chronologically and marked with E1, E2. E5, namely the implementation of NITI Aayog on 1st January 2015; Demonetization on 8th November 2016; SBT merged with SBI 24th April 2017; GST implementation 1st July 2017; General election results on 23rd May 2019 respectively. Here we considered a fifteen-day event window, i.e., fifteen days before and after the occurrence of events for the analysis. We have given a negative value to the returns during pre-occurrence periods; the post-occurrence period gives a positive return and a zero for the event occurrence day (with a total of 31 working days). The Cumulative Abnormal Return (CAR) was used for finding the true impact of an event on the performance of the market. The daily closing price was extracted from the official website of BSE. SENSEX was selected as the proxy for the market, and the data was extracted from the same source.

The simple returns are used for the analysis.

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} = \frac{P_{i,t}}{P_{i,t-1}} - 1 \qquad (1)$$

Here $P_{i,t}$,$P_{i,t-1}$ are the price of the day 't' and price of the 't-1'th day of the security 'i'. $R_{i,t}$

stands for the actual return of the security 'i' on the 't' th day. The market return is calculated using the following formula $R_{m,t} = \frac{P_{m,t} - P_{m,t-1}}{P_{m,t-1}} = \frac{P_{m,t}}{P_{m,t-1}} - 1$ (2).

The normal return ($NR_{(i,t)}$) is calculated using the risk adjusted return model developed by Brown and Warner (1985)

$$NR_{(i,t)} = \alpha + \beta R_{(m,t)} \quad (3).$$

The terms α and β are respectively the intercept and the slope regression equation. The abnormal Return ($AR_{(i,t)}$) is calculated by taking the difference between actual return and the normal return.

$$AR_{(i,t)} = R_{(i,t)} - NR_{(i,t)} \quad (4)$$

$$AR_{(i,t)} = R_{(i,t)} - (\alpha + \beta * R_{(m,t)}) \quad (5)$$

The cumulative abnormal return of 'i'th firm for 't'th period ($CAR_{(i,t)}$) is calculated by summating the values of the Abnormal returns. The study used to report the CAR of 5 days, 10 days and 15 days.

$$CAR_{(i,t)} = \sum_{t=1}^{n} AR_{(i,t)} \quad (6)$$

The CAR is computed for the five days, tenth days and fifteenth day's event window.

In order to understand the impact of events on the stock market, the Average Abnormal Returns were used. The fifteen days prior period average is calculated to find out the impact of event on the stock price.

$$AAR_{(i,t)} = 1/n \sum_{t=-15}^{+15} AR_{(i,t)} \quad (7)$$

Here AAR is the Average Abnormal Return; the average is calculated for the -15 to -1 days.

The study proposes t-statistics (Nikolaos, Koulakiotis, Pyrros, & Dimitrios, 2007) to test the hypothesis that the average abnormal return on the event date is significant or not. The t-statistic is given below:

$$t - value = \frac{AAR_{(i,t}}{S_{(i,t)}} \qquad (8)$$

here $S_{(i,t)} = \sqrt{\frac{\sum_{t=-15}^{15} (AR_{(i,t)} - \overline{AR_i})^2}{n-1}}$ (9)

The t-value is the relationship between average abnormal return and the standard deviation of abnormal return. $\overline{AR}$ stand for the average abnormal return.

Results and Discussion

From table 3.1, the impacts of different events are understandable from the values of CAR at the five, ten, and fifteen-day event windows. Here we used five days, ten days, and fifteen days event windows. The NITI Aayog implementation is marked as the E1; in Baja auto ltd, there is no change in the CAR of pre- and post-event periods for five days and ten days event window. CAR of Hindustan Unilever Ltd and Maruti-Suzuki Ltd becomes positive during the post-event period. The impact of demonetization is favourable in all the firms except Maruti Ltd's case for the fifteen-day event window.

The merger decision of SBT with the SBI has mixed evidence in the performance of stock price. In fifteen days of the event window, the HUL and Infosys negatively impact the cumulative abnormal return. The implementation of GST has a positive impact on all firms. It also reports that the parliament election results have a mixed response to all the firms except in Reliance in five and fifteen-day event windows.

Table 3.1: Cumulative Abnormal Return

	E1:-NITIAAYOG					
	CAR Pre-occurrence			CAR Post-occurrence		
	-5	-10	-15	5	10	15
Bajaj Auto	-0.02441	0.03193	0.011555	-0.0239	0.030117	-0.00656
Reliance Industries	0.013908	0.033915	0.015607	-0.02581	-0.01678	-0.01512
Hindustan Unilever	-0.0351	-0.06896	-0.12329	0.046976	0.138115	0.130328
Maruti Suzuki Ind	-0.03033	-0.02844	-0.01807	0.034004	0.050741	0.016184
Infosys ltd	-0.00806	-0.0137	-0.00269	-0.00229	0.051249	0.032726
	E2:-Demonetisation					
Bajaj	-0.0524	-0.06293	-0.0247	-0.00551	-0.03569	0.041442
Reliance	-0.0337	-0.0315	-0.0347	-0.0002	0.03475	0.03187
Hindustan Unilever	-0.00021	-0.00802	-0.01197	-0.03039	-0.00054	0.00928
Maruti Suzuki	-0.01984	0.023924	0.049318	-0.08577	-0.09882	-0.03338
Infosys	-0.01307	-0.02759	-0.02626	-0.00516	-0.01964	0.027926
	E3:- SBI-SBT Merger					
Bajaj	-0.03095	-0.0379	0.002485	0.022813	-0.00353	0.03763
Reliance	-0.02735	-0.04711	-0.07321	0.035975	0.026332	0.035992
Hindustan Unilever	0.002995	0.006018	0.01666	0.015321	0.009703	-0.00674
Maruti Suzuki	-0.02596	-0.04205	-0.0395	0.035913	0.02192	0.027524
Infosys	-0.00746	0.035272	0.042745	-0.04627	-0.0481	-0.04432

E4:- GST Implementation						
Bajaj	-0.05405	-0.06071	-0.05405	-0.01508	0.00969	0.06183
Reliance	-0.05054	-0.0475	-0.02529	0.047998	0.029341	0.039803
Hindustan Unilever	-0.01829	-0.03661	-0.03495	-0.00733	0.01794	0.025616
Maruti Suzuki	-0.00475	-0.00776	-0.02206	0.007506	0.011891	0.008779
Infosys	-0.00069	-0.02051	-0.01539	-0.02176	0.000425	0.005367
E5:- Parliament election results						
Bajaj	0.059914	0.090858	0.04473	-0.01756	-0.01973	-0.02978
Reliance	0.016473	0.017528	0.014003	-0.02097	-0.01308	0.006117
Hindustan Unilever	0.02065	0.013485	-0.00248	-0.00259	0.018438	0.008835
Maruti Suzuki	-0.00557	-0.00307	0.033373	-0.044	-0.02287	-0.04788
Infosys	-0.00883	-0.01193	-0.02504	0.033726	0.038185	0.03555

Source: calculation by author
Note: CAR is reported for the different event windows such as five-day, ten-day and the fifteen days respectively.

Table 3.2 shows that the test statistics of each event on the volatility of the market. The study applied the one-sample t-test with the hypothesis that the AAR on the event date is significant. The results rejected the null hypothesis in all the cases, which means that all other events were not affected the performance of securities. The results were exhibited the insignificance of the macroeconomic events in the performance of the market. In others words, the publicly available information does not contribute much to the decisions by the investors. The study accepts the Semi-strong form of efficiency.

Table 3.2: Test statistics

Events	Firm	AAR	Std: Dev: of AR	t-test
Niti Aayog	Bajaj	2E-07	0.02284393	8.75506E-06
	Reliance	2.33333E-07	0.012612951	1.84995E-05
	HUL	-4.3333E-07	0.022748085	-1.90492E-05
	Maruti Suzuki	1.66667E-07	0.011648274	1.43083E-05
	Infosys	0.000944069	0.015163107	0.062260919
Demonetisation	Bajaj	-1.0408E-18	0.035059912	-2.96873E-17
	Reliance	3.33333E-06	0.008849272	0.000376679
	HUL	1.33333E-06	0.010727803	0.000124288
	Maruti Suzuki	3E-07	0.021057822	1.42465E-05
	Infosys	-2E-07	0.01220474	-1.63871E-05
SBI-SBT Merger	Bajaj	0.000973733	0.01400249	0.069540015
	Reliance	3.33333E-07	0.015413471	2.16261E-05
	HUL	-1.6667E-07	0.00893273	-1.8658E-05
	Maruti Suzuki	-9E-08	0.010343789	-8.70087E-06

	Infosys	6.66667E-08	0.011479068	5.80767E-06
	Bajaj	-6.6667E-07	0.013177928	-5.05896E-05
	Reliance	6.66667E-08	0.013749609	4.84862E-06
GST	HUL	7.33333E-07	0.009431671	7.77522E-05
	Maruti Suzuki	-4E-07	0.006167633	-6.48547E-05
	Infosys	6.66667E-07	0.0102081	6.53076E-05
	Bajaj	4E-07	0.016598256	2.40989E-05
	Reliance	4E-07	0.011505835	3.4765E-05
Parliament Election	HUL	-8.3333E-07	0.010677744	-7.8044E-05
	Maruti Suzuki	6.66667E-07	0.009567888	6.96775E-05
	Infosys	-2.313E-19	0.011122638	-2.07951E-17

Source: Calculation by author

Conclusion:

The study applied event study methodology to analyze the impact of publicly available information on market volatility. We consider the macroeconomic events that happened in the last decade, and its impact was analyzed for five firms that constitute the BSE-SENSEX. The events are respectively arranged chronologically and marked with E1, E2....E5 such as

the implementation of NITI Aayog on 1st January 2015; Demonetisation on 8th November 2016; SBT merged with SBI 24th April, 2017; GST implementation 1st July 2017; General election

results on 23rd May 2019 respectively. The abnormal returns were calculated using the risk-adjusted model.

The Cumulative Abnormal Return for five, ten, and fifteen days was calculated to know the performance direction before and after the event occurrence date. The one-sample t-test was applied to know the significance of the events on the abnormal return. The study altogether accepted that the theory of Semi-strong form market efficiency. Meaning that, the publically available information does not contribute much to generating superior returns to the investors. The results contribute to the existing literature on semi-strong forms market efficiency. In the future, the study can investigate the long-term impact of political-economic events; instead, we followed short event window estimation.

References:

Fama E, F. L. (1969). The adjustment of stock price to new information. *International Economic Review* .

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of finance* .

Kalimeris, P. P. (2007). An Event Study Analysis of Stock Price Reaction to Mergers of Greek Industrial. *The International Journal of Business and Finance Research* · .

MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature* .

Madhu Iyengar, N. I. (2017). Impact of US election results on Indian stock market:. *International Journal of Applied Research* , 9-13.

Nikolaos, P., Koulakiotis, A., Pyrros, P., & Dimitrios, K. (2007). An Event Study Analysis of Stock Price Reaction to Mergers of Greek Industrial. *The International Journal of Business and Finance Research* , 125-132.

Osborne, S. (2019). Abnormal Returns and Asymmetric Information Surrounding Strategic and Financial Acquisitions, *Accounting and Finance*, 1-40. doi: 10.1111/acfi.12539

Pandey, J. K. (2015). Effect of Dividend Initiation and Omission on Share Prices in Indian Stock Market. *Advances in Economics and Business Management* , 255-259.

Pesakovic, A. N. (2017). Using Event Studies to Evaluate Stock Market Return. *Global Journal of Management and Business Research*

INTEGRATED REPORTING AND VALUE CREATION: A PANEL DATA ANALYSIS USING OHLSON MODEL

Dr. Ekta Kumawat *

ABSTRACT

Annual Reports provide investors and other stakeholders key insight into the performance of a company. Integrated Reports aim to disclose the complete information of a company and therefore, it contains significant financial and non-financial information such as the risk profile, strategy and future outlook of the company. The objective of this research is to analyze whether practical disclosure of content elements of Integrated Reporting by selected companies is value relevant and can create value. For the purpose of research, 90 companies were selected as research sample for the study period i.e. 2015 to 2019. This research is based on longitudinal data from secondary source. To assess whether disclosure of content elements of Integrated Reporting is value relevant in determining the market value Ohlson model (1995) was used with some modification. Panel Data Regression with Pooled OLS, Fixed and Random effect model was estimated and the most parsimonious model was chosen on the basis of some diagnostics. Results of diagnostic tests suggested that random effect model is the most robust model among the three. Results show that practical disclosure of content elements of Integrated Reporting of selected companies has no impact on market value and it cannot create value for the companies.

Keyword: Integrated Reporting, Value creation, Content element, DIS, Panel Data Analysis.

Introduction

"The world has changed – Reporting must too" (IIRC, 2011). Over the last decades, the amount of information disclosed by organization has increased whether it is financial or non-financial. Integrated Reporting is a newest way of corporate reporting. Integrated

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Reporting improves the inadequacies of current corporate reporting practice. It improve the quality of information disclose and helps stakeholder in better decision making. Integrated Reporting provides financial and non-financial information in a single document in a holistic manner. Integrated Reports aim to provide complete information of a company and therefore, it contains significant financial and non-financial information such as the risk profile, strategy and future outlook of the company. Its purpose is to provide interconnections between an organizations strategy, its financial performance and the social, environmental and economic context within which it operates.

The International Integrated Reporting Council (IIRC) defines an integrated report as "a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term" (IIRC, 2013b).

The concept of Integrated Reporting was set up through King III, the code of corporate governance in South Africa in 2009. Integrated Reporting was initiated by two separate bodies, the King Report on Governance for South Africa (King III) (IRCSA, 2011), and the International Integrated Reporting Council in the U.K. In December 2013, the International Integrated Reporting Council (IIRC) released the International Integrated Reporting Framework.

There are three basic dimensions of Integrated Reporting- fundamental concepts, guiding principles and content elements which are included in the Integrated Reporting Framework to govern the context of the integrated report. These have been shown in Figure 1:

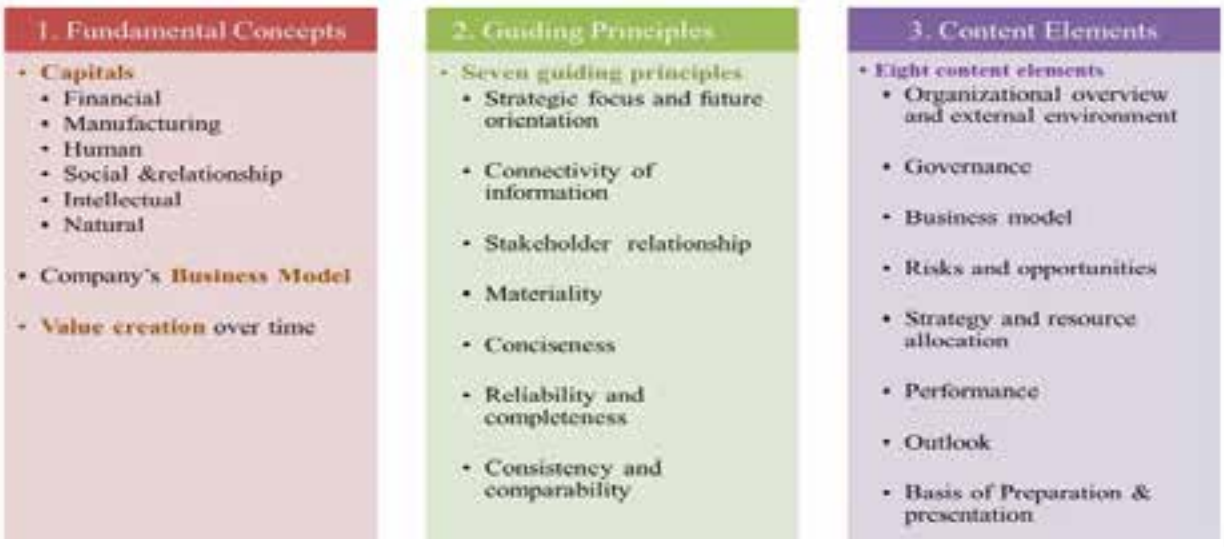

Figure 1: Basic dimensions of Integrated Reporting

Value Creation

"The creation of value is at the heart of Integrated Reporting" (PwC, 2013).

"Value is created through an organization's business model, which takes inputs from the capitals and transforms them through business activities and interactions to produce outputs and outcomes that, over the short, medium and long term, create or destroy value for the organization, its stakeholders, society and the environment" (IIRC, 2013b). Figure 2 shows the value creation process described by the Integrated Reporting Framework.

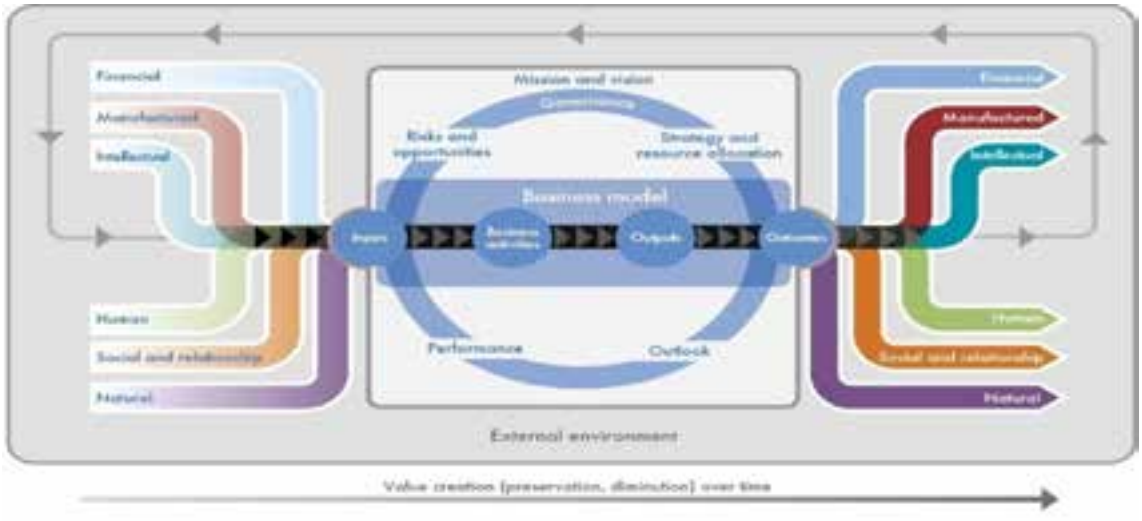

Figure 2: Integrated Reporting Process

Integrated Reporting is a relatively new area of practice and organizational practices in this area have therefore had to develop rapidly. Worldwide organizations started adopting the Integrated Reporting in some of the ways and made developments in their disclosure practices. South Africa was the first country to initiate Integrated Reporting. In South Africa, companies listed on the Johannesburg Stock Exchange are required to adopt integrated reporting, using the South African integrated reporting framework for its preparation (Villiers, Rinaldi & Unerman, 2014). Companies from the United Kingdom, Netherlands, Dutch and Australia made improvements in disclosing material non-financial information. Integrated Reporting is also increasing within other countries such as Japan, France, Germany and Brazil. In India, The Securities and Exchange Board of India (SEBI) circular dated 06th February,2017 has recommended voluntary adoption of 'Integrated Reporting' (IR) from 2017

- 2018 by the top 500 listed companies in India which are required to prepare Business Responsibility Report (BRR) (PwC, 2018).

Statement of Problem

Content elements guide about the information to be included in integrated reports and are linked to each other that are used by organizations to explain their unique value-creation process by presenting the connections between these elements. The market value of firms is a very important determinant of the ability of a firm's value created in the long term. In this research impact of disclosure of Integrated Reporting content elements on market value has been examined. Hence, this research provides empirical evidence of the value relevance or value creation of disclosure of content elements of Integrated Reporting.

Review of Literature

A summary of collected literature has been presented below on the basis of their objectives, tools and techniques used and findings of the research:

On the basis of Objectives

Islam (2020) examined the disclosure pattern of Integrated Reporting and investigated its relationship with a firm's operational, financial and market growth performance whereas Lopes et al., (2018) analyzed whether the market valuation of traditional accounting measures (book value of equity and net income) was higher for companies presenting an Integrated Report. Some researcher studied the factors affecting the quality of integrated reporting disclosure and how the disclosures affect firm value (Pratama et al. 2021 and Kaura, Bello & Sokoto, 2021) as well as Affan (2019) tried to determine the effect of integrated reporting towards corporate performance. Coelho (2016) analyzed characteristics and the association of Integrated Reporting on the perceived market value of the company. Loprevite, Rupo and Ricca (2018) investigated whether the adoption of the Integrated Reporting (IR) affected the value relevance of summary accounting information and Mervelskemper and Streit (2017) investigated the value-relevance of ESG performance. Some Researcher examined the value relevance of Integrated Reporting from an environmental and social aspect in terms of market value (Doni & Gasperini, 2015 and Kosovic & Patel, 2013).

On the basis of Tools and Techniques

In several prior literature on corporate social and environmental reporting and Integrated Reporting, content analysis has been used extensively as the method to gather data

on disclosures (Poignant & Stensiö, 2014). After review of literature, it indicates that several other reserchers (Islam, 2020; Kundu, 2017; Coelho, 2016; Dilling, 2016; Appiagyei, Djajadikerta & Xiang, 2016; Doni & Gasperini, 2015; Setia et al. 2015; Wijnhoven, 2014; Dragu & Tudor, 2013 and Kosovic & Patel, 2013) have used content analysis for Integrated Reporting.

The literature review illustrated enough indication to use the Ohlson Model (1995) for the value relevance of non-financial information. This model is frequently used in existing literature (Cortesy & Venay, 2019; Loprevite, Rupo & Ricca, 2018; Mervelskemper & Streit, 2017; Coelho, 2016; Doni & Gasperini, 2015; Kosovic & Patel, 2013; De Klerk & De Villiers 2012). Pratama et al. (2021) were used cluster analysis, and structural equation modeling path analysis.

After reviewing of the literature about the value relevance of corporate reporting found use of some control variables was found. The variables used and added by the prior researchers to the equation to control firm's market value are: Leverage, Size, Return on Equity and Profitability (EPS) (Coelho, 2016 and Lopes et al. 2018), company size, leverage and Age (Shanti, Tjahjadi & Narsa, 2018), Quality of Integrated Report (*QIR*), Firm age, Firm size, Industry and the Regulatory environment (Appiagyei, Djajadikerta & Xiang, 2018), ROA, ROE, return on sales, debt/asset ratio, net sales, total assets, equity and profit (Islam, 2020), Corporate Loss, Debt Ratio, ROE and Size (Fernando et al., 2017).

On the basis of Findings

Islam (2020) found that Integrated Reporting is positively and significantly related to ROA, ROE and market-to-book value ratio, likewise some researcher found that the book value of equity and operating income had a positive and statistically significant impact on the market value for companies presenting an Integrated Report (Lopes et al., 2017; Coelho, 2016). Loprevite et al. (2018) found that the degree of value relevance of earnings was significantly different for companies that published an Integrated Report compared to companies adopting traditional financial reporting. Mervelskemper and Streit (2017) found that ESG performance was valued more strongly and in a positive direction when firms published an ESG report, irrespective of its stand-alone. Some researcher found that the environmental and social aspects of Integrated Reporting were value relevant for a company's market value (Doni & Gasperini, 2015 and Kosovic & Patel, 2013). Dilling

(2016) found that disclosure quality on long-term value creation was still low while Berndt et al. (2014) found positive relation with profitability. Some researcher concluded that integrated reporting has significant effect toward corporate performance (Pratama et al. 2021; Kaura et al. 2021 and Affan 2019).

Research gap

Though there are a considerable number of studies in the area of Integrated Reporting, yet there is still little evidence that research has been done on value creation or value relevance of content elements of Integrated Reporting, who seek useful information to their decision making. Also, there were very a few researches using the Panel Data Analysis technique.

Hence, to fill the above research gap, the purpose of this research is to investigate the value relevance of content elements of Integrated Reporting for the market value of the selected sample companies that create value and also in this research Panel Data Analysis has been used for analysis of data.

Research Methodology

Objective

The objective of this research is to analyze whether practical disclosure of content elements of Integrated Reporting by selected companies is value relevant and can create value.

Hypothesis

The following hypothesis was tested:

H_{01}: There is no impact of practical disclosure of content elements of Integrated Reporting of selected companies on Market Value.

Sample and Data Collection

Population and Sample Selection

For the purpose of the research, as a population, annual reports of all organizations included in the IIRC Pilot Programme Investor Network and EY's Excellence in Integrated Reporting Awards were used. 204 organizations were found from these two. From this initial

list, annual reports were downloaded for the sample period from 2014 to 2019. For the purpose of the research, only those companies were selected, which aligned with the International Integrated Reporting Framework. Companies for which market data and/or accounting data that was not available, was excluded for the purpose of sample selection. For the research, the final sample consists of 90 companies, which remained the same over the study period, i.e., 2015 to 2019. This research is based on longitudinal data from the secondary sources. In this research, there are 90 cross-sections for 5 years. These companies were from 13 countries, i.e. Brazil, Germany, Italy, Japan, Netherland, South Africa, Spain, United States, Denmark, Russian Federation, Singapore, Sri Lanka and South Korea. The study covers 11 sectors, which include Financial, Consumer Discretionary, Consumer Staple, Metal & Mining, Industrial, Communication, Health Care, Chemical, Energy, Utilities and Technology sectors.

Tools and Techniques

The analysis techniques used includes Content analysis, Disclosure index score computation and Panel Data Analysis.

Disclosure Index Score (DIS)

To calculate the Disclosure Index Score (DIS), a checklist was prepared on the basis of the content element of the Integrated Reporting according to the Integrated Reporting Framework. The checklist was developed in accordance with the Integrated Reporting Framework (IIRC, 2013b) and previous studies (Proksch, 2015; Sofian & Dumitru, 2017; Akhter & Ishihara, 2018; Herath & Gunarathne, 2016). The disclosure index checklist includes a total of 42 items within 8 Content elements of the Integrated Reporting Framework.

The Disclosure Index Score was calculated by dividing the number of items disclosed to the maximum score of the disclosure, as follows (Kosovic & Patel, 2013):

$$DIS_i = \frac{T = \sum_{i=1}^{n} d_i}{M = \sum_{i=1}^{m} d_i}$$

T: Total number of disclosed items (di) by company i

M: Maximum number of disclosure items for the company i

DIS_i: Total disclosure index score for each company.

Ohlson model

Ohlson model is a market-based accounting research method that is used to investigate the value-relevance of non-financial variables. For the purpose of research, the Ohlson model was extended by a DIS to determine the value-relevance of content element of Integrated Reporting. To examining the hypothesis of this research, the following equation (1) was used:

$$MV_{it} = \alpha_0 + b_1 BVA_{it} + b_2 NP_{it} + b_3 DIS_{it} + \lceil_{it} \qquad \text{Equation (1)}$$

MV_{it}: Market value of a company i at the financial period (t)

BVA_{it}: Book value of the asset at the end of the financial period (t)

NP_{it}: Net profit after tax for the company for the financial period (t)

DIS_{it}: Disclosure index score for the company i for the financial period (t)

For data compilation and analysis MS-Excel and Eviews11 software packages have been used.

Analysis

To achieve the objective of the research, to test the model, Panel Data Regression with Pooled OLS, Fixed and Random effect model was estimated and the most robust model was chosen on the basis of some diagnostics. For this purpose, the panel data analysis process starts with a panel unit root test.

a) **Unit Root Test**

The problem of stationarity and the level of integrity of the variables were tested in this research using ADF-Fisher Test to avoid the unauthentic regression problem. The results of the ADF test have been shown in Table 1 and it is found that at level dependent variable MV and all independent variables, BVA, NP and DIS are having p-values higher than 0.05, hence the null hypotheses of no unit root cannot be rejected. It shows that all series at level contained unit root processes and thus they are non-stationary. Hence, the first differences were calculated and the new series was again checked for unit root. The results revealed that at the first difference, all series have p-value smaller than 0.05, it implies the rejection of the null hypothesis for unit root at first difference. The results indicated that the employed variables are stationary after first differencing.

Table 1: Panel Unit Root Test Results

Test Variable	Level	ADF-Fisher
Market Value	At Level	0.0831
	First difference	0.000*
Book Value of Assets	At Level	0.0617
	First difference	0.000*
Net Profit	At Level	0.0563
	First difference	0.000*
Disclosure Index Score	At Level	0.180
	First difference	0.000*

*Significant at 0.05 level of significance

(Source: Eviews Output)

a) **Co-Integration Test Results of Panel Data**

When series is stationary after the first difference, there is a need to perform a co-integration test of panel data to establish a long-run relationship (Zhu and Gao, 2019). For this Johansen Co-integration Test was performed using the Kao test (Engle-Granger Based) with the null hypothesis that the variables are not co-integrated. The results of the Kao test have been shown in Table 2. Results confirm the rejection of the null hypothesis at the significance level of 0.05 with p-value 0.000 and it can be concluded that there is a long-term stable relationship between market value and all other variables.

Table 2: Results of Co-Integration Test

Test Method	Statistic Name	t-statistic	P-value
Kao-test	ADF	-11.4263	0.000*

*Significant at 0.05 level of significance

(Source: Eviews Output)

b) **Estimation of Panel Data Models**

After performing the unit root test and co-integration test, various panel data models were estimated. After the log transformation of variables equation was framed as:

$$ln\ (MV)_{it} = \alpha_0 + b_1 ln\ (BVA)_{it} + b_2 ln\ (NP)_{it} + b_3 DIS_{it} + \lceil_{it} \quad \text{Equation (2)}$$

Here,

$ln(MV)_{it}$: Log transformation of Market value of a company i at the financial period (t)

$ln(BVA)_{it}$: Log transformation of Book value of asset at the end of the financial period

$ln(NP)_{it}$: Log transformation of Net profit after tax for company for financial period (t)

DIS_{it}: Disclosure index score for company i for financial period (t)

Table 3 displays the results of panel data regression with its three variants pooled OLS, fixed effects and random effects.

Table 3: Results of Panel Regression Models

Dependent Variable: MV	**Results**					
Variables	**Pooled OLS**		**Fixed Effect**		**Random Effect**	
	Coefficient	**t-statistic (p-values)**	**Coefficient**	**t-statistic (p-values)**	**Coefficient**	**t-statistic (p-values)**
C	3.5037	11.08803(0.0000 *)	3.4748	8.9392 (0.0000*)	3.4849	10.6320 (0.0000*)
BVA	0.1756	4.6013 (0.0000*)	0.2324	5.1652 (0.0000*)	0.1965	5.0836 (0.0000*)
NP	0.5872	14.1701 (0.0000*)	0.5224	10.4939 (0.0000*)	0.5661	13.4515 (0.0000*)
DIS	0.5674	2.0322 (0.0428*)	0.4508	1.3053 (0.1928)	0.5116	1.7779 (0.0762)
R-Squared	0.6570		0.7760		0.6406	
Adj. R-Squared	0.6544		0.7112		0.6379	
F	259.8374		11.9754		241.7625	
F (P-Value)	0.0000*		0.0000*		0.000*	

*Significant at 0.05 level of significance

(Source: Eviews Output)

It was noticed that all the three models were a good fit as significant F (p-value) = 0.0000 was found for all. Results revealed that Market Value is positively and significantly associated with Book Value of Assets and Net Profit, with a 0.05 significance level in all the three models. But Disclosure Index Score (DIS) is positively and significantly associated with the Market value in the Pooled model but not in the fixed and random effect models.

Adjusted R-squared was 0.6544, 0.7112 and 0.63.79 respectively for pooled, fixed effects and random effects model. Thus the fixed effect model provided the most parsimonious diagnostics. But the choice for the most robust model among pooled OLS, fixed effect and random effect model remains with some diagnostic tests which have been conducted as follows:

c) **Selection of model**

In order to determine an appropriate model for panel data analysis, diagnostic tests are performed. Table 4 shows the results of the F-test, LM test and Hausman test as follows:

Table 4: Summary for Panel Diagnostic Test

Test	Comparison	Statistic	Statistic Value	P-value	Result	Selection
Redundant Fixed Effects Test	OLS/Fixed	F Statistic	1.8989	0.000*	H_0, Rejected	Fixed
Omitted Random effects-LM test	OLS/Random	Chi-square Statistic	19.1854	0.000*	H_0, Rejected	Random
Correlated Random Effects - Hausman Test	Fixed/ Random	Chi-square Statistic	3.7012	0.296	H_0, Accepted	Random

*Significant at 0.05 level of significance

(Source: Eviews Output)

Table 4 reports that the Redundant Fixed Effects Test for comparison between fixed and pooled OLS models, has F statistic value of 1.8989 with p-value 0.000, which indicates

rejection of the null hypothesis at 5% level of significance. Hence, the pooled OLS model is not appropriate for the measures and results suggest to choose the fixed effect model.

Lagrange Multiplier (LM) test has been used to test whether the pooled OLS model was appropriate against the random effects model. Table 4 indicates, according to the LM test, the Chi-square value is 19.184 with p-value 0.000, which implies rejection of the null hypothesis at 5% level of significance and it was concluded that the random effect model is more appropriate than the OLS model.

At last, for choosing between fixed effect and random effect a Hausman Test has been performed. Table 4 presents the results of the Hausman test that the Chi-square value was 3.7012 with a p-value of 0.2956. As p-value is greater than 0.05, therefore, the null hypothesis cannot be rejected at 5% level of significance and it can be concluded that the random effect model is the most efficient one.

e) Discussion on Random Effect Model

According to Table 3, results of random effects model displays that the significance of the model fit was tested by ANOVA, which shows that the calculated value of F is 241.76 with a p-value of 0.000. Thus the null hypothesis at 5% level of significance is rejected and the model is found to be a good fit.

R^2 of 0.6406 says that this model accounts for 64.06 percent of the total variance in the market value of companies. It is possible to conclude that 64.06% of the total variation on MV (dependent variable) is explained by explanatory variables (BV, NP and DIS) for the sample being considered.

The regression equation is,

Market Value = 3.4849 + 0.1965*BVA+ 0.5661*NP + 0.5116*DIS

Further, Table 3 reveals that the coefficient came to be for BVA of 0.1965, which indicates that that the coefficient of BVA is significant at 5% level of significance with a p-value of 0.000. Net profit has a coefficient value of 0.5661, which implies the coefficient value is statistically significant at 5% level with a p-value of 0.000. Results display the coefficient value of DIS as 0.5116 which indicates that result is not statistically significant at 0.05 level of significance because the p-value is 0.0762.

Therefore, null hypothesis, which states, "There is no impact of practical disclosure of content elements of Integrated Reporting of selected companies on Market Value", is

accepted at 5% level of significance, as the p-value i.e. 0.0762 is greater than 0.05. It implies that practical disclosure of content elements of Integrated Reporting of selected companies has no impact on market value and it cannot create value for the companies.

f) **Ohlson Model with Control Variables**

Now the Ohlson Model is estimated using random effects with some control variable to see the effect of control variables and variation in results. Control variables included in this research are: Leverage, ROA, Industry, Age and Regulation. Regression Equation with control variables is as follows

$$ln\ (MV)_{it} = \alpha_0 + b_1 ln\ (BVA)_{it} + b_2 ln\ (NP)_{it} + b_3 DIS_{it} + b_4 LEV_{it} + b_5 ROA_{it} + b_6 IND_{it} + b_7 AGE_{it} + b_8 REG_{it} + \epsilon_{it}$$

Equation (2)

$ln(MV)_{it}$: Log transformation of Market Value of a company i at the financial period (t)

$ln(BVA)_{it}$: Log transformation of Book Value of Asset at the end of the financial period

$ln(NP)_{it}$: Log transformation of Net Profit after tax for company for financial period (t)

DIS_{it}: Disclosure index score for company i for financial period (t)

LEV_{it}: Leverage

ROA_{it}: Return on Assets

IND_{it}: Industry

AGE_{it}: Age in years

REG_{it}: Regulation

Table 5 displays the results of the random effect model of the Ohlson model with control variables:

Table 5: Random Effects Model Results with Control Variables

Dependent Variable: Market Value	**Random Effects Results**		
Variables	**Coefficient**	**t-statistic**	**P-value**
C	3.3445	9.8066	0.0000
BVA	0.2804	6.5824	0.0000*
NP	0.4955	11.1261	0.0000*

DIS	0.2444	0.8481	0.3969
LEV	0.0014	1.1466	0.2522
ROA	0.0263	2.8234	0.0050*
IND	0.0344	1.7041	0.0891
AGE	0.0005	-0.4481	0.6543
REG	-0.4235	-4.0791	0.0001*
R-Squared	0.6605		
Adj. R- Squared	0.6548		
F	97.7693		
F (P-Value)	0.0000*		

*Significant at 0.05 level of significance

(Source: Eviews Output)

Table 5 displays the results of the random effects model of the Ohlson Model with control variables. Results reveal that model fits the data well at the 5% significance level as calculated F is 97.7693 with a p–value of 0.000. Adjusted R^2 of 0.6548 says that this model accounts for 65.48 percent of the total variance in the market value of companies. It may be concluded that 65.48% of the total variation on MV (dependent variable) is explained by the variation of the explanatory variables (BV, NP and DIS) and control variables (LEV, ROA, IND, AGE and REG) of the sample being considered.

The regression equation is,

Market Value = 3.345+ 0.2804BVA+ 0.4955NP + 0.2444DIS+ 0.0014LEV +0.0263ROA+ 0.034IND + 0.0005AGE -0.4235REG

Further, Table 5 reveals that the coefficient value of BVA is 0.280, which indicates that value is significant at 5% level of significance as the p-value is 0.000. Net profit has a coefficient value of 0.496, which implies result is statistically significant at 5% level as the p-value is 0.000. Results show the coefficient value of DIS is 0.244 which indicates that result is not statistically significant at 5% level of significance since the p-value of 0.397.

It was also found that there is a wide variation in the effect of control variables. Although Leverage (with the coefficient of 0.0014), Industry type (with the coefficient of 0.034) and Age in year (with the coefficient of -0.0005) show no significant effect at 5% level of significance as their p-values are 0.252, 0.089 and 0.654 respectively. On the other hand, ROA with a coefficient value of 0.026 and it is statistically significant at 5% level with a p-value of 0.005. The regulatory compulsion is having a coefficient -0.423 with statistically significant at 5% level with a p-value of 0.0001.

Conclusion

As Integrated Reporting is a new way of corporate disclosure, Integrated Reporting describes the company's past and present performance with future plans, along with positive and negative impact of business operations in a balanced way. The main objective of the present research is to assess whether disclosure of content elements of Integrated Reporting is value relevant for sample companies and can create value. For the purpose of the research, 90 companies were selected as research sample for the study period i.e. 2015 to 2019. To examine value relevance, Ohlson Model with panel data regression was used with three types of the empirical models i.e. pooled OLS, fixed effect and random effect and perform necessary diagnostic test. Results concluded that in both the models, i.e., Ohlson model without control variables and Ohlson model with control variables, there were minor variations in the results. Ohlson model was able to explain 63.79 % of the total variance in the market value, whereas the Ohlson model with control variables was able to explain 65.48 % of the total variance in the market value of companies. Although DIS showed a positive relation with market value but it was not influencing market value as it was not statistically significant. It was also revealed that the BVA and NP displayed positive statistically significant relation with market value in both of the models. Leverage, Industry type and age do not affect the market value, whereas ROA and Regulatory compulsion had a significant effect on market value. Overall, it can be concluded that disclosure of the content element of Integrated Reporting is not value relevant for market value and cannot create value.

Limitations and Future Research Scope

There are some limitations of this research. One of the limitations of the research is that it is based only on secondary data, i.e., annual reports and websites of companies. Primary data could not be collected as perceptions of the actual preparer of Integrated Reports could not be collected. Another limitation is geographical coverage, although the

sample included worldwide companies, but there is no single Indian company included in the sample. The period of the study was limited to 5 years only, i.e., 2015 to 2019 and the sample size is limited to 90 companies only due to data constraints for market data and/or accounting data. Due to these limitations, the research can be expanded with large set of sample with more time period. Future researchers can collect opinion of prepares of Integrated Reports.

References

Affan, M. W. (2019). Integrated reporting and corporate performance: Empirical evidence of the iirc framework. *JEMA: Jurnal Ilmiah Bidang Akuntansi dan Manajemen,* 16(2), 181-186. doi: http://dx.doi.org/10.31106/jema.v16i2.2700

Akhter, T., & Ishihara, T. (2018). Assessing the gap between Integrated Reporting and current corporate reporting: A study in the UK. *International review of business, 18*, 137-157.

Appiagyei, K., Djajadikerta, H. G., & Xiang, E. (2017). Integrated Reporting and firm performance: A research framework. *In ECU Business Doctoral and Emerging Scholars Colloquium 2016*.

Coelho, A. M. C. (2016). *Towards the existence of Integrated Reporting: An international perspective (doctoral dissertation).* (Master in Management Dissertation), ISCTE Business School.

Cortesi, A., & Venay, L. (2019). Disclosure quality under Integrated Reporting a value relevance approach. *Journal of Cleaner Production*. doi: https://doi.org/10.1016/j.jclepro.2019.02.155

De-Klerk, M., & De-Villiers, C. (2012). The value relevance of corporate responsibility reporting: South African evidence. *Meditari Accountancy Research, 20*(1), 21-38. doi: 10.1108/10222521211234200

Dilling, P. F. A. (2016). Reporting on long-term value creation—the example of public Canadian energy and mining companies. *Sustainability, 8*(938). doi: 10.3390/su8090938

Doni, F., & Gasperini, A. (2015). *Sustainability reporting and value relevance. Empirical evidence from the Beverage industry in the European Union.* Paper presented at the In Global Cleaner Production and Sustainable Consumption Conference 1-4 November.

Dragu, I.-M., & Tiron-Tudor, A. (2013). The Integrated Reporting initiative from an institutional perspective: Emergent factors. *Procedia - Social and Behavioral Sciences, 92*, 275 – 279. doi: 10.1016/j.sbspro.2013.08.672

EY. (2014). *Integrated Reporting: Elevating value*. EYGM Limited. Retrieved from: https://www.ey.com/Publication/vwLUAssets/EY-Integrated-reporting/$FILE/EY-Integrated-reporting.pdf

Fernando, K., Dharmawati, R., Sriani, D., Shauki, E. R., & Diyanty, V. (2017). Does Integrated Reporting approach enhance the value relevance of accounting information?: Evidence from Asian firms. *Advances in Economics, Business and Management Research (AEBMR), 55*, 112-117.

Herath, R., & Gunarathne, N. (2016). *Assessing the gap between Integrated Reporting and current integrated corporate reporting practice: A proposed checklist.* Paper presented at the 11th Faculty of Management Studies and Commerce (FMSC) Research Symposium.

IIRC. (2011). *Towards Integrated Reporting – Communicating value in the 21st century*. International Integrated Reporting Committee. London. Retrieved from: www.theiirc.org/resources-2/framework-development/ discussion-paper/

IIRC. (2013a). Consultation draft of the International Framework. Retrieved from International Integrated Reporting Committee. London. Retrieved from: www.theiirc.org/wp-content/uploads/Consultation-Draft/Consultation-Draft-of-the-InternationalIRFramework.pdf

IIRC. (2013b). *The International <IR> Framework*. International Integrated Reporting Committee. London. Retrieved from: www.theiirc.org/wp-content/uploads/2013/12/13-12-08-THE-INTER NATIONAL-IR-FRAMEWORK-2-1.pdf

Islam, M. S. (2020). Investigating the relationship between integrated reporting and firm performance in a voluntary disclosure regime: Insights from bangladesh. *Asian Journal of Accounting Research.* doi: 10.1108/AJAR-06-2020-0039

Kaura, A. A., Bello, A., & Sokoto, S. S. (2021). Integrated reporting and firms' performance of listed ict companies in nigeria. doi: 10.21203/rs.3.rs-900392/v1

Kosovic, K., & Patel, P. (2013). *Integrated Reporting is it value relevant?: A quantitative study on Johannesburg stock exchange.* (Master thesis), Jönköping International Business School.

Kundu, B. (2017). Application of Integrated Reporting in Indian corporate scenario. *Prestige International Journal of Management & IT-Sanchayan, 6*(1), 99-110.

Lopes, A. I., Oliveira, J., & Coelho, A. M. (2018). How relevant is Integrated Reporting? *In XVI Congresso Internacional Contabilidade e Auditoria. Aveiro: Ordem dos Contabilistas Certificados*.

Mervelskemper, L., & Streit, D. (2017). Enhancing market valuation of ESG performance: Is Integrated Reporting keeping its promise? *Business Strategy and the Environment, 26*(536-549). doi: 10.1002/bse.1935

Poignant, A., & Stensiö, S. (2014). *The effect of Integrated Reporting on corporate environmental disclosure: A study on the implications of adopting the <IR> framework.* (Accounting and Financial Management Master thesis), Stockholm School of Economics.

Poole, V. (2019). *Value creation and disclosure: Integrated thinking, Integrated Reporting and integrated analysis*. International Corporate Governance Network (ICGN)

Pratama, A., Yadiati, W., Tanzil, N. D., & Suprijadi, J. (2021). Integrated reporting in southeast asia: Does value creation work? *Academic Journal of Interdisciplinary Studies,* 10(5). doi: https://doi.org/10.36941/ajis-2021-0123

Proksch, F. (2015). *The Integrated Reporting journey and the influence of sustainability reporting: Experiences and practices from Sweden and Germany* (Master of Science in Environmental Management and Policy Master Thesis), Lund University, Sweden.

PwC. (2013). *The value creation journey: A survey of JSE Top-40 companies' Integrated Reports*. PricewaterhouseCoopers www.pwc.de.

PwC. (2018). Integrated reporting: Corporate perspective in india. from PricewaterhouseCoopers Private Limited www.pwc.com.

Sahlan, R. (2016). *Econometric with applications: Unit root tests with Eviews (time series)*. Retrieve from: http://rizaudinsahlan.blogspot.com/2016/08/ unit-root-tests-with-eviews-time-series.html

Setia, N., Abhayawansa, S., Joshi, M., & Huynh, A. V. (2015). Integrated Reporting in South Africa: Some initial evidence. *Sustainability Accounting, Management and Policy Journal, 6*(3), 397-424. doi: 10.1108/SAMPJ-03-2014-0018

Shanti, Tjahjadi, B., & Narsa, I. M. (2018). The effect of Integrating Reporting on earnings quality: A study of family firms in Indonesia. *Journal of Finance and Banking Review, 3*(3), 34-40.

Sofian, I., & Dumitru, M. (2017). The compliance of the integrated reports issued by European financial companies with the International Integrated Reporting framework. *Sustainability 9*(1319). doi: 10.3390/su9081319

Villiers, C. d., Rinaldi, L., &Unerman, J. (2014). Integrated reporting: Insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal, 27*(7).

Zhu, C., & Gao, D. (2019). A research on the factors influencing carbon emission of transportation industry in "the belt and road initiative" countries based on panel data. *Energies, 12*(2405). doi: 10.3390/en12122405

AN EMPIRICAL STUDY ON THE IMPACT OF FINANCIAL PERFORMANCE ON THE STOCK PRICE OF TOP FIVE IT COMPANIES OF INDIA.

Dr. Butala C. Ajmera *
Frenki R. Chauhan **

Abstract

An attempt has been made to examine the impact of financial performance on stock price of five selected IT companies in India. The research study is based on secondary data and time period was of five years from 2017 to 2021. The data have been collected from annual reports of respective and money control.com site. The researcher has calculated descriptive statistics, correlation matrix, multiple regression and structural equitation model. The regression model suggests that EPS, ROCE and ROA have been significant determinants to the stock price.

***Keywords*:** Stock price, financial performance, Panel regression analysis, Coefficient correlation

Introduction

In today's highly volatile market without any strong support, the stakeholders and shareholders wants to identify that, what are the determinants that play a significant role in determining the stock price of the firm. They are generally the influencers of the stock price according to the swings of the market trend at the national and the international level. From, this empirical study the practitioner's burnings questions were satisfied from the research that, these determinants influence in this way and others are affects in that way.

For this empirical study, here we used the top 5 IT companies' data because of the now a day, the Information Technology plays a vital role for any other industry i.e. edtech, fintech, agro-tech, biotech etc. Also used the sample period of the March, 2017 to April, 2021 because of

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in this period the Stock market was highly volatile due to the Pandemic. The IT industry contributes 7.7% in the gross domestic product. According to the assumption it will touch 10% contribution in the year 2025.

The examiners can analyze any firm's SWOT analysis from their financial performance. They take distinct determinants of financial performance as a base source to do the analytical study. They take mainly six distinct determinants as an independent determinant and the stock price was the dependent variable. i.e. Earnings per share, Dividend per share, Dividend pay-out ratio, Return on capital employed, Return on assets, and Debt to equity ratio.

Clarify, one thing in our mindset is that why only the financial performance was taken to analyses the price of the stock. Because the various determinants play a vital role in the creation of the stock price. The determinants earning per share shows the capacity of earning means the profitability of the company, the dividend per share shows that the company can distribute their profit in which ratio and exactly what is the amount, the return on capital employed shows that the company is generating how many revenues from their capital, The return on assets shows that the company's management is how efficient to generate the revenue from their assets and the Debt to equity ratio shows the firm's leverage position means in simple language the firm how can pay debts from their funds.

Review of Literature

A number of researchers were done their research work on this topic because it is a highly required question of the investors. Remember that, many more researchers want to do the same work according to the upcoming swings of the market. Therefore, it is a wide scope for further research in this area. But note down, one thing is that anyone cannot predict the stock price with 100% surety because future events are uncertain and the market is fully certain with the uncertainties. We can mitigate our portfolio from the systematic risk but we cannot avoid the upcoming heavy Bull Run or bear trend.

The following table shows the researcher's result that in their work which determinants of financial performance of the firm influence significantly the stock price and others are insignificant and shows the relationship between the Determinants of Financial performance of the firm with its stock price. Overall this table shows the mixed result according to the empirical study.

No.	Author/s	Sample Size	Financial Performance Variables	Results
1	Abdulrahman Hashem, F. A. (2020)	15 Banks - commercial and Islamic	Dividend /Share ratio	Positive Significant
			Total assets/Firm size	Positive Significant
			Price to book ratio	Positive Significant
			Debt ratio	Negative Significant
			Return on equity	Insignificant
			Return on assets	Insignificant
			Price-earnings ratio	Insignificant
2	Mr. Kudakwashe HOVE, M. T. (2020)	5 Banking Financial institutions listed at the ZSE	Return on Investment	Positive Significant
			Return on equity	Insignificant yet negative influence
			Return on assets	Insignificant yet negative influence
			Earnings per share	Insignificant yet negative influence
3	Fatmasari Sukesti, I. G. (2021)	136 Manufacturing companies	Debt equity ratio	Positive Significant
			Net profit margin	Positive Significant
			Firm size	Insignificant

4	Puspitaningtyas, Z. (2017)	45 Non-banking registered companies	Market valuation	Significant
			Liquidity ratio	Insignificant
			Profitability ratio	Insignificant
			Growth ratio	Insignificant
5	Jailson Da Conceição Teixeira De Oliveira, F. H. (2016)	194 Companies distributed in 9 sectors	Earnings per share	Positive Significant
			Book value per share	Positive Significant
			Total assets/Firm size	Positive Significant
6	Vijaykumar, D. A. (2010)	Listed companies of the corporate sector	Book value per share	Positive association
			Earnings per share	Positive association
			Dividend cover	Positive association
			Growth rate	Positive association
			Dividend yield	Positive association
			Dividend per share	Negative association
			Earnings ratio	Negative association

7	Mohammad Mizenur Rahaman, M. A. (2014)	Listed NBFI in Dhaka Stock Exchange	Earnings per share	Strong positive correlation
			Net assets value	Medium positive correlation
			Total earnings (NIAT)	Weak positive correlation
			Dividend per share	Weak positive correlation
8	Olivia Christina, R. (2016)	143 listed companies from the 3 different manufacturing sectors	Return on equity	Positive Significant
			Total assets	Positive Significant
			Current ratio	Not Significant
			Debt to equity ratio	Not Significant
9	Edhi Asmirantho, O. K. (2017)	10 companies of Pharmaceutical Sub-sector (Industry of Consumer Goods)	Earnings per share	Significant
			Current ratio	Insignificant
			Return on equity	Insignificant
			Debt to equity ratio	Insignificant
			Total assets turnover ratio (TATO)	Insignificant
10	Al-Slehat, Z. A. (2020)	13 Banks and 10 Insurance companies	Financial decisions	Insignificant
			Investment decisions	Significant

Research Gap

After reviewing the literature, researcher has found that very few researches have been carried out on this topic and that too by foreign researchers. So researcher has taken this topic.

Research Methodology

Objectives of the study:

To identify the influence of the financial performance of the firm on its stock price.

To establish the relationships between the financial performance of the firm and its stock price.

Hypothesis:

There is a significant influence of earnings per share on the stock price.

There is a significant influence of return on capital employed on the stock price.

There is a significant influence of return on assets on the stock price.

Sample Selection:

The top five IT companies based on market capitalization listed in the S & P BSE Sensex 30 are selected for the study.

Period of the Study:

The study examined the data for the financial years of April 2017 to March 2021. The reason for the selection of the years was that there were high fluctuations in the financial performance of the firm were same as high volatility in the stock price due to the covid-19 pandemic.

Type of Data:

Secondary Data i.e. Annual Reports of the companies are taken for the analysis.

Data Collection:

The quantitative data required for the analytical study were collected from the Money control websites, annual reports, and Economic times. They proved the required evidence to test the hypotheses in this study is based on annual reports of the Top 5 IT companies of India.

Methods of Data Analysis:

SPSS (Statistical Package for Social Science) was utilized to analyse the informatics data to test the assumption. The appropriate devices were utilized to test the hypothesis and discover the influence. Following methods are utilized to approve the discoveries and to get the best arrangement. Correlation analysis is utilized to recognize the relationship of the financial performance of the firm on its stock price. Regression analysis is also utilized to distinguish how distinct determinants of financial performance affected the volatility of the stock price.

Variable Description:

Portrayed beneath are the factors used to operationalize the development. They incorporate the determinants of financial performance i.e. Earnings per share, Dividend per share, Dividend pay-out ratio, Return on capital employed, return on assets, and Debt to equity ratio.

Data Analysis

Conceptual model of variables

Independent Variable and Dependent variable

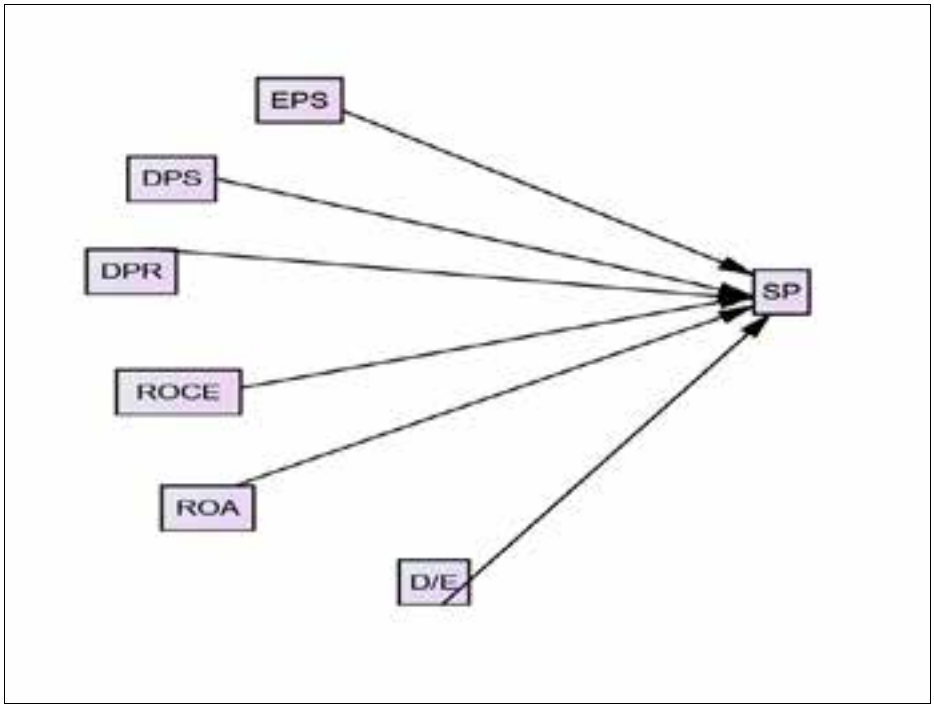


Table 1: Descriptive statistics

	EPS	*DPS*	*DPR*	*ROCE*	*ROA*	*D/E*	*SP*
Mean	55.14	21.89	0.35	28.70	16.62	0.06	842.20
Standard Error	6.33	3.82	0.05	1.68	1.11	0.02	137.66
Median	46.21	15.00	0.33	27.65	17.21	0.06	567.20
Mode	#N/A	1.00	0.06	#N/A	10.79	0.00	#N/A
Standard Deviation	31.67	19.10	0.23	8.38	5.55	0.08	688.31
Sample Variance	1003.04	364.65	0.05	70.29	30.83	0.01	473766.35
Kurtosis	1.30	0.48	0.18	0.12	-0.80	1.47	4.57
Skewness	1.14	0.99	0.70	0.98	0.66	1.35	1.97
Range	119.20	72.00	0.84	27.33	16.81	0.26	2984.34
Minimum	14.99	1.00	0.05	19.88	10.57	0.00	193.26
Maximum	134.19	73.00	0.89	47.21	27.38	0.26	3177.60
Sum	1378.48	547.25	8.72	717.47	415.55	1.59	21054.88
Count	25.00	25.00	25.00	25.00	25.00	25.00	25.00

In the above table, the dependent variable: The stock price has a mean of 842.20, whereas the independent variable: EPS has a mean of 55.14, DPS has a mean of 21.89, DPR has a mean of 0.35 and it is a good for the investors, ROCE has a mean of 28.70, ROA has mean 16.62, D/E ratio has mean 0.06.The minimum of EPS is Rs.14.99 and the maximum is

Rs.134.19 an indication that IT companies are posting good profits sufficient to attract investors and the volatility of EPS is 31%. The minimum DPS is Rs.1 and the maximum is Rs. 73 an indication that investors of IT companies gets handsome dividends on their investments and the volatility of DPS is 19.10 %. The minimum of ROCE is 19.88% and the maximum is 47.21% an indication that IT companies have a very good return on capital employed. The minimum ROA is 10.57% and the maximum is Rs.27.38 % an indication that IT companies generate a great return from their assets and the volatility of ROA is 5.55%. The minimum of D/E ratio is 0.00 and the maximum is 0.26 and the volatility of D/E ratio is 0.08 it indicated that a good debt-equity ratio in the IT companies of the India. The skewness of the dependent variable stock price is 1.97 that means greater than 1, it indicates that the distribution is highly skewed. The kurtosis of the dependent variable stock price is 4.57 that mean greater than 3, it indicates that the data has heavy tails and it is known as leptokurtic, it means there were more chances of outliers and the tails of the distribution is not around the mean.

	EPS	**DPS**	**DPR**	**ROCE**	**ROA**	**D/E**	**SP**
EPS	1.00						
DPS	0.77	1.00					
DPR	0.37	0.82	1.00				
ROCE	0.73	0.76	0.50	1.00			
ROA	0.82	0.77	0.46	0.97	1.00		
D/E	-0.60	-0.66	-0.64	-0.69	-0.73	1.00	
SP	0.60	0.69	0.52	0.84	0.73	-0.54	1.00
	EPS	DPS	DPR	ROCE	ROA	D/E	SP

In the above table, the data shows that strong positive correlation between the independent and the dependent variable. Table-No-2 shows that Stock price has positive correlation with EPS, DPS, ROCE and ROA whereas stock price has negative relationship with D/E ratio.

To present the regression equation as:

SP =	B_0	+β1(EPS)	+β2(DPS)	+β3(DPR)	+β4(ROCE)	+β5(ROA)	+Error term

Explanation of selected variables

PS	Stock price as on 31st March	Dependent variable
EPS	Net profit o preference dividend/ No. of Equity shares	Independent variable
DPS	Dividend/ No. of equity shares	Independent variable
DPR	Dividend per share/ earning per share*100	Independent variable
ROCE	Earning before interest and tax/ capital employed*100	Independent variable
ROA	Ratio between net profit to total assets*100	Independent variable

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.944[a]	.890	.861	256.23542

a. Predictors: (Constant), ROA, DPR, EPS, DPS, ROCE

Table -3 shows model summary which explains R is 94.40%, R square is 89%and adjusted R square is 86.10%. R square is very important measure of combine effect of independent variables on dependent variable. Stock is affected by 89% by the independent variables like EPS, DPS, DPR, ROCE, ROA and D/E ratio. The gap between adjusted R square and R square is also less which means that model is appropriate.

Table 4: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10122917.156	5	2024583.431	30.836	<.001[b]
	Residual	1247475.263	19	65656.593		
	Total	11370392.419	24			

a. Dependent Variable: SP

b. Predictors: (Constant), ROA, DPR, EPS, DPS, ROCE

Table-4 shows ANOVA test of independent variables and dependent variable. The P value is less than 0.05 which means that result is significant. The significant result that shows that model is fit for regression.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1412.760	285.711		-4.945	<.001
	EPS	13.557	4.620	.624	2.934	.009
	DPS	-2.372	10.688	-.066	-.222	.827
	DPR	297.995	572.622	.101	.520	.609

ROCE	229.181	31.603	2.792	7.252	<.001
ROA	-308.132	55.585	-2.486	-5.543	<.001

a. Dependent Variable: SP

Table-5 shows coefficient of dependent variable and independent variable. Unstandardized coefficient and standardized coefficient of independent variable shows the effect on dependent variable. Independent variables like EPS, DPR and ROCE have positive effect on stock price. ROCE has positive and significant effect on stock price. ROA has negative and significant effect on stock price. Thus there are two variable ROCE and ROA are the determinants of stock price.

Following graph also indicates Unstandardized **Coefficients** of independent variable on dependent variable. Researcher has run structural equation model and following result is found.

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Table 6: Regression Weights: (Group number 1 - Default model)

Dependent variable		Independent variable	Estimate	S.E.	C.R.	P
SP	<---	EPS	13.216	1.467	9.006	***
SP	<---	DPS	-.812	2.434	-.333	.739
SP	<---	DPR	177.917	198.488	.896	.370
SP	<---	ROCE	230.461	5.543	41.577	***
SP	<---	ROA	-313.447	8.370	-37.451	***
SP	<---	DE	-318.855	599.183	-.532	.595

Diagram-1

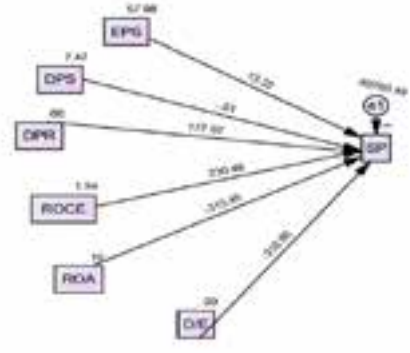


Table-6 shows the result of structural equation model run in SPSS AMOS-25. The result shows the maximum likelihood estimate. The Three independent variables EPS, ROCE and ROA show significant effect on stock price. The same result of estimates is reflected on diagrame-1.

Table 7: Standardized Regression Weights: (Group number 1 - Default model)

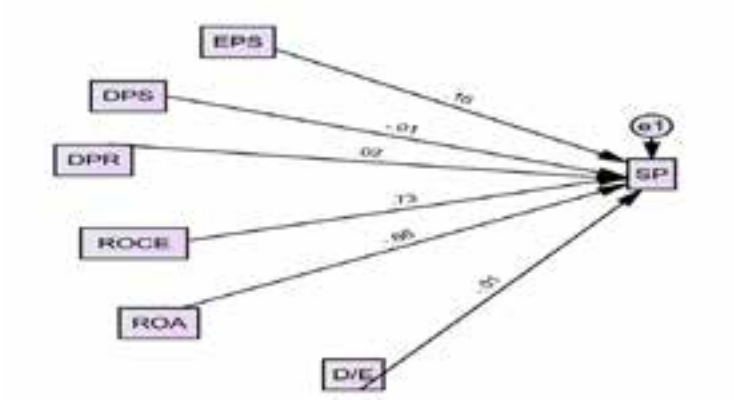
			Estimate	Diagram-2
P	<---	EPS	.158	
SP	<---	DPS	-.006	
SP	<---	DPR	.016	
SP	<---	ROCE	.731	
SP	<---	ROA	-.658	
SP	<---	D/E	-.009	

Table No-7 shows estimate of independent variables. The table shows estimate of EPS 0.158, DPS, -0.006, DPR 0.016, ROCE 0.731, ROA -0.658 and D/E -0.009. The estimates of selected variables are also reflected in Diagram no- 2.

Conclusion

Researcher has also calculated descriptive statistics which indicates that mean of EPS is very high which shows that Selected IT companies are earning very good. Average dividend per share is also very good. Whereas mean of dividend payout ratio is 0.35 which is also good. Other financial indicators like ROCE, ROA and D/E shows very good situation. From the empirical study, the researcher has identified independent variables like the earnings per share, return on

capital employed and the return on assets. Three variables are EPS ROCE and ROA significant to Stock price. Other variables like DPS and DPR are insignificant to stock price of selected IT companies.

References

Fatmasari SUKESTI, I. G. (2021). Factors Affecting the Stock Price: The Role of Firm Performance. Journal of Asian Finance, Economics and Business, 8(2), 165-173. doi:10.13106/jafeb.2021.vol8.no2.0165

Abdulrahman Hashem, F. A. (2020). Corporate Financial Performance Effect On Stock Prices : Empirical Evidence From A Small Market : A Study In Amman Stock Exchange Over The Period 2006- 2017. Journal Of Critical Reviews, 7(12), 4233-4240.

Al-Slehat, Z. A. (2020). Financial Performance as Mediator on the Impact of Investment and Financial Decisions on Stock Price and Future Profit: The Case of the Jordanian Financial Sector. International Journal of Economics and Financial, 10(2), 242-247. doi:https://doi.org/10.32479/ijefi.9520

Edhi Asmirantho, O. K. (2017). THE EFFECT OF FINANCIAL PERFORMANCE ON STOCK PRICE AT PHARMACEUTICAL SUBSECTOR. JIAFE (Jurnal Ilmiah Akuntansi Fakultas Ekonomi), 3(2), 94-107.

Jailson Da Conceição Teixeira De Oliveira 1, F. H. (2016). Relation Between Share Price And Financial Indicators In The Brazilian Stock Market. Acrn Oxford Journal Of Finance And Risk Perspectives, 5(3), 30-45.

Mohammad Mizenur Rahaman, M. A. (2014). Impact of Financial Performance on Stock Price of Non-Bank Financial Institutions (NBFI) in Bangladesh: Dynamic Panel Approach. Managerial Strategies and Solutions for Business Success in Asia. doi:10.4018/978-1-5225-1886-0.ch011

Mr. Kudakwashe Hove, M. T. (2020). Correlation Between Stock Price And Financial Performance Of Zse Quoted Banking Financial Institutions (December 2009-June 2018). Epra International Journal Of Economics, Business And Management Studies (Ebms), 7(3), 28-42. Doi:0.36713/Epra1013|Sjif

Olivia Christina, R. (2016). The Effect Of Financial Performance And Firm Size On Stock Prices Of Manufacturing Company In 2013-2016. 559-565.

Puspitaningtyas, Z. (2017). Is Financial Performance Reflected in Stock Prices? Advances in Economics, Business and Management Research, 40, 17-28.

Vijaykumar, D. A. (2010). Effect of Financial Performance on Share Prices in the Indian Corporate Sector: An Empirical Study. 35(3), 369-381. doi:https://doi.org/10.1177%2F0258042X1003500304

Websites:

https://www.moneycontrol.com/

https://economictimes.indiatimes.com/markets/stocks/news

https://www.statista.com/statistics/320776/contribution-of-indian-it-industry-to-india-s-gdp/

PERFORMANCE OF SUSTAINABLE RESPONSIBLE INDICES (SRI): AN EMPIRICAL STUDY

Dr. Subrata Roy *

Abstract

The present study seeks to examine the performance of sustainable responsible indices (SRI) by considering daily index data over a period from 1998 to 2019. The selected SRI indices belong to DJSI index group. The study applies various performance measurement approaches and statistical tools. It is observed that the risk-adjusted and relative risk-adjusted performance of the SRI indices is not satisfactory. ANOVA analysis indicates that the means of the SRI indices are equal and the result is same when conventional market index (DJSI World) is considered in the SRI group. Moreover, spanning test implies that there is an insignificant difference between the risk and return of the SRI and benchmark indices. Finally, ARIMA measure shows that the past return performance of the SRI indices has no significant impact in future return performance.

***Keywords*:** SRI, DJSI, MA(q), AR(p), ARIMA, Spanning test, ANOVA

Introduction

Sustainable investment is a new investment concept where economic (E), social (S) and governance (G) factors are incorporated at the time of investment decision. The idea of SRI is started in the year of 1960. The earliest empirical study on SRI was conducted by Moskowitz in 1972. After that, a large number of studies have examined the performances of SRI funds and compared their performances with their conventional benchmark indices. They observe that some of the SRI funds have shown superior performances and in some cases,

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they observe insignificant performances or sometimes they find indifference performances (see. Moskowitz 1972, Luck & Pilotle 1993, Hamilton et. al., 1993, Kurtz & Dibartolomeo 1996, Guerard 1997, Derwall et. al., 2005, Bauer et. al., 2005, Brammer et. al., 2006, Schroder 2007, Statman & Glushkov 2008, Ronneboog et al 2008, Hong & Kacperczyk 2009, Alam & Rajjaque 2010, GilBazo et. al., 2010, Manescu 2011, Edmass 2011, Climent & Soriano 2011, Humphery & Lee 2011 etc.). No doubt, those studies have contributed significant facts to the financial performances in the existing literature. Although, the previous studies have mainly focused on the comparison of performances of the SRI funds with the benchmark indices. They generally have ignored to examine the performance of the SRI indices. However, some of the studies have examined the performance characteristics of SRI indices and compared such performances with the conventional indices (see. Statman 2000, Kurtz & DiBartolomeo 1996 & 1999, Garz, Volk & Gilles 2002, Schroder 2005, Consolandi et. al., 2008, Managi 2012 etc.).

It is very much common to examine and compare performance of the SRI funds with the conventional indices and sometimes, SRI indices with the conventional indices. But, it is quite uncommon to analyse and compare the performance characteristics of the SRI indices with their SRI index groups and with their benchmark index. At this ground, the present study examines the performance characteristics of Dow Jones Sustainability Indices and compares such performances with the DJSI index group and finally, compares the SRI Indices performances with the conventional DJSI World index. The study also examines whether the past performance has any indication to occur in future.

The study is designed in many sections. In section 2 literature survey is described. Section 3 deals with objective and hypothesis. Section 4 describes data and study period. Section 5 provides methodology in detailed. Section 6 analyses the result and finally in section 7 conclusion and recommendation is given.

Literature Review

Theoretically, two opposite arguments have competed to explain the impact of incorporating social screens in the analysis of investment performance. The important argument is based on sustainability of portfolio theory that means construction of portfolio from a restricted universe of stocks that reduces the benefits of diversification (Rudd 1981).

Furthermore, an extra cost is allowed to maintain social activities that ultimately reduce returns and those funds are expected to provide lower returns with their conventional benchmarks. On the other hand, the proponents of SRI argue that social screens act like a filter that helps to identify and selection of firms with a superior management skills relative to their conventional funds that improves performance of the portfolios composed of socially responsible stocks in the long run (see Hill et. al., 2007, Kempf & Osthoff 2007).

Although, the prior studies have emphasised on the theoretical arguments and empirical findings on SRI stocks, SRI funds and SRI indices. There is a conflicting theoretical argument in the existing literature. The earliest one is Milton Friedman, who says that social responsibility helps to increase organisations' profits. But the organisation tries to avoid any social initiatives which lead to decrease shareholder value (New York times from 13th September 1970 cited in: Humphrey et. al., 2012). More recent argument in between 1980s and 1990s, i.e. theories such as instrumental stakeholders theory and the slack resource theory, expect a positive relationship between corporate social responsibility (CSR) and financial performance. IST (Instrumental stakeholder theory) assumes that organisation tries to satisfy various stakeholders that helps to establish a friendly stakeholder – management relationship which acts to serve monitor and enforce various mechanisms that leads to betterment of financial performances (Freeman & Evan 1990, Hill & Jones 1992, Jones 1995 and Clarkson 1995). On the other hand, slack resource theory (SRT) expects that satisfactory financial performance allows corporate to become more socially responsible because it provides additional resources to meet up the social responsibility that requires availability of excess funds (Ullmann, Mcguire et. al., 1988 and Waddock & Graves 1997).

There also exist arguments that SRI stocks may lead to poorer financial performance relative to the benchmark or conventional funds (see Brammer et. al., 2006, Renneboog et al 2008, Hong & Kacperzyk 2009, Manescu 2011). In summary, there are theories which predict a positive relationship between SRI and non SRI funds and financial performances. However, there exist also arguments that postulate certain barriers (SRI funds are restricted to a subset of the total investment universe) on performance of SRI stocks in the stock market.

The research on SRI performance dates back from 1960s and improves significantly during the recent years. The first well known study on SRI performance is Moskowitz (1972). Although, the performance of SRI can be divided into four groups namely assessing individual stocks and construction of portfolios, assessing performance on screening policies,

assessing SRI funds with conventional funds and finally assessing SRI indices with conventional indices.

The empirical findings of some key studies in this area are discussed here. One of the earliest renowned works is conducted by Vance (1975) regarding SRI stocks on US data. He finds negative relationship between CSR and stock prices. Later, Margolise & Walsh (2003) and Orlitzky et al (2003) review a large number of studies which were started in 1970s (see Vance 1975, Abbottt & Monsen 1979, Shane & Spicer 1983, Patten 1990, Blackburn et al 1994, Rudd 1981, Guerard 1997 and others) in respect of SRI stocks and SRI portfolios. Kempf & Osthoff (2007) observe that remarkably a high additional return may be achieved by the investors following the simple long-short strategy. They also report best-in-class screening policy remain significantly profitable. Hill et. al., (2007) examine SRI performance across three regions of the world and observe that the European portfolios outperform the conventional benchmark in the short runandthe US and European portfolios outperform in the long run. A large number of studies around the world have examined SRI performance with conventional funds and benchmarks covering data period from 1984 to 2007 and observe neutral performance (see Hamilton et al US 1993, Luther & Matatko UK 1994, Gregory et. al., UK 1997, Kreandar et. al., Belgium & Germany 2000, Bauer et. al., Germany, UK & US 2005, Geczy et. al., US 2005, Kreander et. al., Germany, UK & Netherland 2005, Bauer et. al., Canada 2007, Gregory & Whittaker UK 2007, Stenstrom & Therell US 2007, Galema et. al., US & UK 2008, Cortez et. al., Europe 2009, and many others). All those studies have applied index benchmarks, matched pair methods and constructed fund benchmarks for the evaluation of SRI funds with the conventional fund as well as indices. But few UK studies have reported weak evidence of positive performance (see Luther et. al., 1992, Mallin et. al., 1995 and others).

Goldreyer & Diltz (1999) examine the performance of SRI funds with the conventional funds in USA over a period from 1981 to 1997 and observe conventional funds outperform the SRI funds. Cummings (2000) observes insignificant difference in performance of SRI funds in Australia as compared to the conventional market indices over a period from 1986 to 1990 (see Bauer et. al., 2007, Asmundson & Foerster 2001, Statman 2000 etc). Scholtens (2005) in Netherlands observes insignificant difference in the risk-adjusted returns between SRI funds and conventional funds. Moreover, it is also found that SRI funds outperform to the conventional funds although the difference is not significant.

Bello (2005) finds identical performance between SRI funds and conventional funds. Most of the earlier studies use Jensen's alpha, i.e. single index measure (see Luther et. al., 1992, Hamilton & Statman 1993 and White 1995) to evaluate SRI performance. Luther & Matatko (1994) is the first who consider broad market index along with small cap stock index and report indifference performance of SRI funds.

Now, some recent studies have applied multi factor models to evaluate investment performance beside the single factor model. Bauer et. al., (2005) evaluate the performance of German, UK and US SRI funds and observe that SRI funds of German and US underperform both their relevant indices and conventional funds whereas, UK funds out-perform slightly but the difference is insignificant. They also observe differences between SRI and conventional funds after controlling investment style which is similar to the earlier evidences of Luther & Matatko (1994). Mill (2006) observes that the risk-adjusted performance of UK conventional funds when they adapt to SRI principles remain unchanged as compared to the similar funds. In 2006 Bauer et al examine the performance of 25 Australian SRI Funds with 281 conventional funds by using a four-factor and single factor conditional measures. They report insignificant alpha values produced by the SRI and conventional funds (see Cortez et. al., 2009). Gregory & Whittaker (2007) also find significant underperformance between SRI and conventional funds in UK based on risk-adjusted basis. They also observe that performance seem to be time varying if a static or time varying model is applied and observe evidence in favour of performance persistence difference between SRI funds and conventional funds in US market. Jones et. al., (2008) observe that SRI funds underperform than the conventional funds in Australia based on alpha value both for single factor and multi-factor measures. Similarly, Ronneboog et. al., (2008) examine the performance of SRI funds in 17 countries in between 1991 and 2003 and observe that SRI funds underperform their conventional benchmarks. Although, the risk-adjusted returns of SRI funds and conventional funds are not statistically different with the exception of some countries like France, Japan and Sweden. Cortez et. al., (2009) analyse the performance of SRI funds in 7 European countries over the period from 1996 to 2007 by using conditional and unconditional measures. They report insignificant performance differences between SRI funds and conventional funds but the SRI funds exhibit higher performances when they compared to the SRI indices. Gil-Bazo et. al., (2010) observe that SRI funds may obtain higher risk-adjusted performance after excluding management fees relative to the

conventional funds. They also find the performances of both types of funds don't differ significantly if they managed by the same company. Humphrey & Lee (2011) observe insignificant performance difference in returns between SRI funds and conventional funds in Australia and the evidence is same for Stenstrom & Thorell (2007). Climent & Soriano (2011) examine the performance of environmental funds with the conventional funds in USA over the period from 1987 to 2009. The divided the whole period in two sub periods (1987 – 2009 & 2001 – 2009) and report that environmental funds provide lower performances in between 1987 and 2009 but in the next sub periods there is found no difference for both types of funds (see also Naturvardsverket et. al., 2000, 2001).

Recently, matching approach is so popular to evaluate and compare SRI funds performance with the conventional funds with similar characteristics like fund size, investment universe and fund age etc. The objective of this approach is to consider correctly the management and transaction costs for SRI and conventional funds that serve as benchmark (see Mallinet et. al., 1995, Gregory et. al., 1997, Statman 2000, Kreander et. al., 2002, Stone et. al., 2001, Naturvardsverket 2001, Bauer et al 2005, Kreander et. al., 2005 and Gregory & Whittaker 2007 and many more). They report that the performance of SRI funds and Non-SRI Funds are quite same.

Some of the studies have also analysed and compared the performances of SRI equity indices with the benchmark indices. Sauer (1997) examines the performance of Domini Social Index (DSI) with the S & P 500 and CRSP Value-Weighted indices over a period from 1986 to 1994. He reports that the performance of DSI is lower than the performances of both the indices on a risk-adjusted basis during the period from 1986 to 1990. But when he combines the earlier result with DSI's live performance during the period from 1990 to 1994 then the aggregate risk-adjusted returns exceed than the conventional indices. However, Statman (2000) observes that the performance of DSI (Domini Social Index) is similar to the performances of S & P 500 Index over the period between 1990 and 1998 (see Kurtz & DiBartolomeo 1996, 1999, Garz, Volk & Gilles 2002). However, DiBartolomeo & Kurtz (1999) report a small insignificant outperformance by the Domini 400 Index. Similarly, Garz et al (2002) observe a little significant out performance as compared to the DJSI STOXX 600 Index. In 2007, Sauder examines the performance of 29 SRI indices around the globe and observes that the performances of SRI indices are similar to the performances of conventional indices. Consolandi et. al., (2008) examine the performance of Dow Jones Sustainability

Stoxx Index (DJSSI) over a period from 2002 to 2006 and exhibit that the performance of DJSSI slightly out-performs than the benchmark index. In 2012, Managi et. al., examine the performance of SRI index with the conventional stock indices in UK, US and Japan based on Markov switching regression measure and report indifference performance offer by both types of indices.

Objective of the study

The study is designed to achieve the following objectives:

i. To examine and compare the risk and return performance of the SRI indices
ii. To compare the risk and return performance of the SRI indices with the benchmark indices
iii. To examine whether past performance happens in future

Data & Study Period

The study considers 11 SRI indices that cover up almost all the developed as well as developing markets in the world economy. The indices operate their activities in US, Europe, Euro zone, Asia-Pacific, Australia and 20 emerging markets including India. Here, daily closing index value has been used. The data is collected from the official websites of those indices and sometimes from the suppliers companies. The study uses DJSI World and DJ World US indices as market surrogates. The SRI indices are based on best-in-class approaches as well as long term economic, environmental and social criteria. The study also considers US 1 month interbank offer rate as the market surrogate of the risk free rate of return. The study period ranges between December 1998 and March 2019.

Hypothesis Formulation

The following hypotheses are formulated for testing:

H_1: SRI indices don't have any differences with benchmark indices in terms of risk

H_2: SRI indices have the same returns like benchmark indices

H_3: SRI indices jointly have the same risks and returns similar to the benchmark indices

H_4: Average returns of the SRI indices are equal

H_5: Average returns of the SRI indices including benchmark index returns are equal

Methodology

The study is free from effects of small cap bias because the sample equity indices deals with the stocks have a large market capitalisation that assume to be represent market capitalisation of the stock market. Thus, the composition of the SRI indices are rarely adjusted and don't follow specific investment style and hence, multi-factor models such as Fama-French (1993) three factor model and Carhart four factor (1997) model are not necessary to use. Consequently, the use of single factor measure with a close approximation of the benchmark index for each SRI indices is sufficient.

The return is computed as the first differences of the daily time series in logarithm both for SRI indices and benchmark indices as under:

$$R_{SRI,t} = \log \frac{R_{SRI,t}}{R_{SRI,t-1}} \quad (1)$$

$$R_{marketindex,t} = \log \frac{R_{marketindex,t}}{R_{marketindex,t-1}} \quad (2)$$

Where, $R_{SRI,t}$ and $R_{marketindex,t}$ are the logarithm returns of the SRI and benchmark indices at time t.

The risk-adjusted performances of the SRI indices and benchmark indices have been computed based on Sharpe and Treynor measures. The Sharpe ratio indicates the risk-adjusted excess return performance per unit of total risk.

$$S_{SRI} = \frac{R_{SRI} - R_f}{\delta_{SRI}} \quad (3)$$

Where, S_{SRI} is the Sharpe ratio and δ_{SRI} is the standard deviation of the logarithm SRI index return. Similarly, the Treynor ratio measures the risk-adjusted excess return performance per unit of systematic risk.

$$T_{SRI} = \frac{R_{SRI} - R_f}{\beta_{SRI}} \quad (4)$$

Where, T_{SRI} is the Treynor ratio and β_{SRI} is the systematic risk of the SRI index. R_f is the US 1 month interbank offer rate that acts as a risk free rate of return.

The study has compared the performance and measured the risk of the SRI indices as well as the conventional index based on characteristics differences in the time series data.

Here, single index benchmark has applied to measure the relative risk-adjusted performance. The study has also examined the performance comparison, differences in risk exposures and spanning test for individual SRI indices separately and multi-equation test for group of indices.

Jensen measure (1968) has been used to (single index measure) examine the relative performance of the SRI equity indices. It is a linear regression equation of the excess return of the benchmark index ($R_{marketindex,t}$) on the excess return of the SRI index ($R_{SRI,t}$) that can be written as:

$$R_{SRI,t} = \alpha_{SRI,t} + \beta_{SRI} R_{marketindex,t} + e_{SRI,t} \quad (5)$$

The performance of SRI indices has been measured by applying the Jensen measure (α_{SRI}) i.e. extra return which is not explained by the risk exposure with respect to the benchmark index. $\beta_{SRI,t}$ is the coefficient of systematic risk at time t which is used to compare the relative risk of the SRI index and $e_{SRI,t}$ is the error term with zero mean and constant standard deviation. According to the CAPM if $\beta > 1$ that indicates the SRI investment is riskier than conventional benchmark and vice versa ($\beta < 1$). The study has also used spanning test, a test of joint hypothesis H_0: ($\alpha_{SRI} = 0$ and $\beta_{SRI} = 1$) between SRI indices and conventional index with the objective of whether SRI equity indices can be replicated by the benchmark index. Acceptance of null hypothesis of the spanning test indicates, risk and return performances of the SRI and benchmark indices are almost equal ($R_{SRI,t} = R_{marketindex,t} + e_{SRI,t}$). In addition, the study has also been appliedone-way ANOVA technique to test the sample means of the SRI indices. The variance and co-variance matrices of the residuals (Equation 5) have been corrected for autocorrelation and heteroscedasticity by using Newey-West approach.

However, the SRI market is not well organised in the world and the investors don't aware about SRI. But, like SRI funds, SRI indices are getting so much importance in today's investment. Whether the SRI indices provide satisfactory performances? Whether the past return performance may be used to predict the future performance? To answer this question dynamic econometric time series models are needed. When we deal with time series data it is assumed that the time series would be stationary that means its mean, variance and covariance are time invariant. But in reality, it is not so happened due to changes of time. To examine the future return performances of the SRI indices Box-Jenkins (BJ) methodology has been used that is popularly known as ARIMA technique (Auto regressive integrated moving

average). The first assumption of the model is stationarity of the time series data (the study deals with univariate time series). If the time series is non-stationary, transformation method is used to make the series stationary. Generally, differencing technique is applied to transform the time series into stationary. If the time series is differentiated by 'd' times to make the series stationary, we can apply ARIMA(p,d,q) process where p denotes number of autoregressive term, d denotes the number of times the series has to be differentiated before it becomes stationary and q denotes number of moving average terms. Thus, for best forecast, optimal parameters have to be chosen for the ARIMA model. There are several ways to fix the optimal parameter (p,d,q) for the proposed ARIMA model.

Now first to analyse whether the time series is stationary or not that can be done by examining the behaviour of the auto correlation function (ACF) and partial auto correlation function (PCAF) of the transformed time series. In general if the auto correlation function of the time series dies down immediately after first differencing then the time series is considered non seasonal stationary and if it is not happened then the time series is non stationary. After obtaining a non seasonal time series, then SACF and PACF have to be checked as per Box-Jenkins methodology. Here, two types of Box-Jenkins measures are used namely AR(p) and MA(q) models.

We can start with the following model.

$$R_t = c + e_t + \lambda_1 e_{t-1} + \lambda_2 e_{t-2} + \ldots\ldots\ldots + \lambda_q e_{t-q} \quad (6)$$

The above model is a non seasonal moving average measure of order q. Where, c is constant term. e_t, e_{t-1}, e_{t-2} ..... e_{t-q} are the random shocks which are assumed to have been randomly selected from a normal distribution with the properties of zero mean and constant variance. λ_1, λ_2 ..... $\lambda_q$are the unknown parameters which are to be estimated from the regression equation. R_t is the time series return of SRI indices.

On the other we can write this model below.

$$R_t = \alpha + \alpha_1 R_{t-1} + \alpha_2 R_{t-2} + \ldots\ldots\ldots\ldots\ldots + \alpha_p R_{t-p} + e_t \quad (7)$$

Model 7 is a non seasonal autoregressive measure of order p. Where, α is constant. α_1, α_2.....α_p are the coefficients of the model. R_{t-1}, R_{t-2}.....R_{t-p} are the autoregressive terms of order p and e_t is the error term of zero mean and constant variance.

Finally, we develop the ARIMA (p,d,q) model which has the characteristics of both AR and MA process. It can be written as under:

$$R_t = \alpha + \alpha_1 R_{t-1} + \alpha_2 R_{t-2} + \ldots\ldots\ldots\ldots\ldots + \alpha_p R_{t-p} + e_t + \lambda_1 e_{t-1} + \lambda_2 e_{t-2} + \ldots\ldots\ldots + \lambda_q e_{t-q} \quad (8)$$

Where, α is constant term. R_{t-1}, R_{t-2}.....R_{t-p} and e_t, e_{t-1}, e_{t-2} ..... e_{t-q} are the autoregressive and moving average terms of order p and q. α_1, α_2.....α_p and λ_1,λ_2 ..... λ_q are the parameters to be estimated. Generally, the behaviour of the ACF and PACF has been used to identify which model is the best to forecast time series data. The following chart shows the pattern of ACF and PACF which are produced by various non seasonal models.

Model	**ACF**	**PACF**
ARIMA(p,d,0) or Auto regressive of order p	Dies Down	Cuts off after lag p
ARIMA(0,d,q) or Moving average of order q	Cuts off after lag q	Dies Down
ARIMA(p,d,q) or Auto Regressive Integrated Moving Average of order (p,q)	Dies Down	Dies Down

Now, the task is diagnostic checking for adequacy of the model. This can be done by analysing the residual obtained from the model through Box-Pierce Q statistic and Ljung-Box (LB) statistic.

$$Q = n\sum_{k=1}^{m}\hat{\rho}^{2}{}_{k} \tag{9}$$

Where, n is sample size and m is the lag length. $\hat{\rho}_k$is the sample autocorrelation of the residual at lag k. Generally, in large samples, it is approximately distributed as the chi-square distribution with m degree of freedom. If the computed value Q exceeds the critical Q value from the chi-square distribution at the chosen significance level α then reject H_0 (H_0: $\rho_k = 0$). Similarly the Ljung-Box statistic that can be defined as

$$LB = n(n+2)\sum_{k=1}^{m}\left(\frac{\hat{\rho}^{2}{}_{k}}{n-k}\right) \sim \chi^2 m \tag{10}$$

According to the LB statistic, if LB is greater than $\chi^2{}_{\alpha}$ (m-p-q) or if "p" value is less than the chosen significance level α, we can reject the null hypothesis. In spite of this, we can also check the model adequacy by examining the sample autocorrelation function (SACF) of the residual (RSAC) and sample partial autocorrelation function (SPACF) of the residual (RSPAC). We can conclude that the model is adequate if there are no spikes in the RSAC and RSPAC (see Bowerman et. al., 2005 & Sulaiman et. al., 1997). Finally, we estimate the

parameters of the ARIMA model for each SRI indices and interpret their results accordingly.

Result & Discussion

The descriptive statistics of the daily SRI returns are reported in table 1. It is observed that the return distribution of the SRI indices during the study period ranges between -19.707 and 11.900 that indicate wide fluctuation of the daily returns. The mean return of the SRI indices is 0.020482 which is very close to zero. Here, most of the SRI indices provide negative skewness that indicates long left tail as compared to the right one. Similarly, some of the indices provide positive skewness that means a relatively right tail as compared to the left one. The kurtosis of the SRI indices are excess of 3 means heavy tails and turns the series of the SRI indices into leptokurtic. Moreover, the JB test statistics of the return distribution are very large and the probability of obtaining such statistics under the normality assumption is significantly zero. Therefore, one can reject the null hypothesis (H_0: Normally distributed) that stands for that the return series of the SRI indices is not normally distributed. Similarly, the JB statistic also prompts us that the return distribution of the market index is not normally distributed.

Table 1: Descriptive Statistics

SRI Indices	OB	Mean	Median	Max	Min	Std. Dev.	Skew.	Kurt.	JB	Prob.
DJSI World	5040	0.0084	0.0000	9.2402	-7.480	1.029	-0.091	12.4645	18814.57	0.0000
DJSI World ex All	5040	0.0081	0.0000	9.2145	-7.349	1.024	-0.083	12.449	18751.29	0.0000
DJSI US	5042	0.0146	0.0000	10.0770	-8.449	1.145	0.083	11.559	15393.35	0.0000
DJSI North America	5066	0.0153	0.0000	9.9084	-8.608	1.134	-0.009	11.484	15191.76	0.0000
DJSI World Enlarged	2478	0.0340	0.9767	10.824	-19.599	4.985	-0.793	4.816	27.8587	0.0000
DJSI Europe	3519	0.0170	0.0439	9.7390	-8.170	1.287	0.091	9.091	5443.86	0.0000
DJSI Euro zone	3520	0.0175	0.0086	10.612	-7.771	0.179	0.274	8.274	4098.67	0.0000
DJSI World enlarged ex All	2478	0.0336	0.9370	10.997	-19.707	5.004	-0.803	4.842	28.6102	0.0000
DJSI Asia Pacific	2937	0.0226	0.0297	11.448	-9.809	1.358	-0.115	10.363	6638.746	0.0000
DJSI Korea	2429	0.0261	0.0078	11.900	-9.157	0.193	-0.184	9.830	4733.24	0.0000
DJSI Emerging Market	652	0.0281	0.0124	3.819	-2.520	0.923	0.218	3.812	23.0694	0.0000
DJ World US (Benchmark)	5070	0.0267	0.0517	10.9329	-7.7833	1.1714	0.117	8.312	5972.481	0.0000

**Source: Author's own Calculation*

Table 2 presents the risk and return performances of the SRI indices. It is observed that the return performances of the SRI indices are lower as compared to the benchmark index (DJ World). The conventional index provides satisfactory return to the investors as compared to the SRI indices. In spite of maintaining best-in-class approach by the SRI indices have failed to provide satisfactory returns. Sometime it is found that the SRI indices provide higher risk exposures as compared to the benchmark index (DJSI World Enlarged, DJSI Europe, DJSI World enlarged ex all &DJSI Asia Pacific) and the returns for those indices are lower than the market index. The risk-adjusted performances of the SRI indices are measured and compared with the benchmark index. Here the Sharpe ratios of all the SRI indices are positive but 6 SRI indices (DJSI World, DJSI World ex All, DJSI US, DJSI North America, DJSI Eurozone, & DJSI Korea) outperform the conventional benchmark index. Similarly, the Treynor ratios of 6 SRI indices are found to be negative and the remaining is positive. According to the Treynor ratio, the SRI indices can't outperform the benchmark index positively. Here, the study also considers DJSI World as market surrogate. It is observed that the return performance of the 9 SRI indices is higher than DJSI World benchmark. Moreover, the risk exposure of 6 SRI indices is higher than their SRI benchmark index (DJSI World).The Sharpe ratios of 5 SRI indices (DJSI World enlarged, DJSI Euro Zone, DJSI World enlarged ex all, DJSI Korea & DJSI Emerging Market) are higher as compared to the SRI benchmark index (DJSI World). Similarly, the Treynor ratios of 7 SRI indices are higher than the Benchmark SRI index. In addition, the relative risk-adjusted performance of the SRI indices is measured (Alpha) and depicted in column six. It is found that the relative risk-adjusted performances of the SRI indices are positive but statistically insignificant.

Table 2: Risk-Adjusted Performance of the SRI Indices

SRI Indices	Market Return (DJ World)	SRI Std. Dev	Std. Dev. Market	Beta	Alpha	SRI Sharpe Ratio	Market Index Sharpe Ratio	SRI Treynor Ratio	Market Index Treynor Ratio
DJSI World	0.0269	1.029	1.1818	-0.015	0.005	0.0403	0.0351	-2.7621	-3.9997
DJSI World Ex All	0.0269	1.024	1.1818	-0.019	0.004	0.0402	0.0348	-2.1648	-3.1577
DJSI US	0.0269	1.145	1.1714	0.040*	0.004	0.0386	0.0377	1.0767	1.3755
DJSI North America	0.0269	1.134	1.1714	0.036**	0.009	0.0394	0.0382	1.2421	1.5624
DJSI World Enlarged	0.0672	4.985	0.6028	-0.003	0.017	0.0816	0.6747	-7.6743	-2.5234
DJSI Europe	0.0357	1.287	1.1645	-0.010	0.012	0.0326	0.0361	-4.2018	-6.0753
DJSI Euro Zone	0.0177	0.179	1.4757	-0.011	0.012	0.2376	0.0288	4.7247	4.7484
DJSI World Enlarged Ex All	0.0672	5.004	0.6028	-0.003	0.017	0.0804	0.6672	-7.8863	-2.6224
DJSI Asia Pacific	0.0338	1.358	1.1314	-0.019	0.023	0.0284	0.0341	-2.0311	-2.6211
DJSI Korea	0.0374	0.193	1.2090	0.050**	0.023	0.5056	0.0807	1.9516	2.1779
DJSI Emerging Market	0.0473	0.923	0.6959	-0.017	0.031	0.0831	0.1102	2.4741	3.0950

** Significant at 1% level & ** Significance at 5% level.*

Source: Author's own calculation

One way ANOVA technique is applied to observe the differences among the means of the SRI indices by examining the amount of variation within the SRI indices (Table 3). It is found that the computed value of F statistic is (0.186927) lower than the table value (3.24) at 5% level of significance with degree of freedom (DF) being v_1 = 10 and v_2= 38190 that means acceptance of null hypothesis (H_0: Means of SRI = 0) or in other words, there is no difference among the sample means and the difference is just a matter of chance.

Table 3: Analysis of Variance (ANOVA) of the SRI Indices

Source of Variation	Sum of squares (SS)	Degrees of Freedom (DF)	Mean square (MS)	F - Ratio	
				Observed	Tabulated
Between Samples	2.5802	(11-1) = 10	0.258022	0.186927	**$F_{.05}$ = 3.24**
Within Samples	52724.76	(38201 – 11) = 38190	1.380338		**$F_{.01}$ = 5.29**
Total	**52727.34**	**38200**			

Source: Author's own calculation

Similarly, the study also examines the differences of means of the SRI indices when conventional benchmark index is considered. It is found (Table 4) that the calculated value of F statistic is lower (0.136126) than the table value of F (3.24) at 5% level of significance with degree of freedom (DF) being $s_1 = 11$ and $s_2 = 42276$ that means acceptance of null hypothesis (H_0: Means of SRI including benchmark = 0) of no differences among the sample means.

Table 4: Analysis of Variance (ANOVA) of the SRI and Benchmark Index

Source of Variation	Sum of squares (SS)	Degrees of Freedom (DF)	Mean square (MS)	F - Ratio	
				Observed	Tabulated
Between Samples	2.0661	(12-1) = 11	0.187827	0.136126	**$F_{.05}$ = 3.24**
Within Samples	58332.5526	(42288 – 12) = 42276	1.379803		**$F_{.01}$ = 5.29**
Total	**52727.34**	**42287**			

Source: Author's own calculation

Equation 5 is estimated through the ordinary least square method. The Newey-West approach is used to correct the autocorrelation and heteroskedasticity problems of the variance-covariance matrix of the residuals. The estimated parameters and parameter tests are exhibited in Table 5. It is observed that the estimated relative risk-adjusted performance (Jensen Alpha) of the SRI indices is positive but they are not significantly different from zero as suggested by the t values in parenthesis. Hence, it may be concluded that there is a clear signal that the relative risk-adjusted performance of the SRI indices don't systematically deviate from their conventional counterpart (DJ World Index) and therefore, accept the null hypothesis H_0: $\alpha = 0$. Similarly, it is found that the beta coefficients of 3 SRI indices are positive and the remaining is negative and hence we reject the null hypothesis H_0: $\beta = 1$ for those 3 SRI indices and conclude that the risk exposure of 3 SRI indices systematically deviate from their conventional benchmark and in remaining cases we accept the null hypothesis and conclude that the risk performance of the remaining SRI indices don't systematically deviate from their conventional counterpart. In the last column spanning test (H_0: ($\alpha = 0$ & $\beta = 1$)) is presented. It is observed that the spanning of DJSI US, DJSI North

America and DJSI Korea is statistically significant that means rejection of null hypothesis and concludes that the risk and return performance of the 3 SRI indices are systematically different from their conventional counterpart. On the other hand, the spanning of the remaining (8 SRI) SRI indices is accepted that implies acceptance of null hypothesis and concludes that the risk and return performances of 8 SRI indices don't systematically deviate from their conventional counterpart. In this situation the investors who are interested only for the financial outcome of the investment and don't consider SRI screening process can equally invest in the benchmark index with the assumption of no difference between risk and return between SRI indices and benchmark index.

Table 5: SRI Index &DJ World (Benchmark Index) Performance

SRI Index	**Alpha** $H_0: \alpha = 0$	**Beta** $H_0: \beta = 1$	**Spanning Test** $H_0: (\alpha = 0 \ \& \ \beta = 1)$
DJSI World (Benchmark)	0.005(0.285)	-0.015 (-0.923)	0.853
DJSI World ex All	0.004(0.263)	-0.019 (-1.159)	1.343
DJSI US	0.007(0.209)	0.040* (2.600)	6.744*
DJSI North America	0.009(0.468)	0.036** (2.309)	5.331*
DJSI World Enlarged	0.017(0.760)	-0.003 (-0.186)	0.033
DJSI Europe	0.012(0.527)	-0.010 (-0.573)	0.328
DJSI Euro zone	0.005(0.486)	-0.011 (-0.670)	0.448
DJSI World enlarged ex All	0.017(0.753)	-0.003 (-0.182)	0.033
DJSI Asia Pacific	0.023(0.902)	-0.019 (-1.034)	1.070
DJSI Korea	0.023(0.791)	0.050** (2.433)	5.918*
DJSI Emerging Market	0.031(0.841)	-0.017 (-0.320)	0.103

***Significance at 1% level & **Significance at 5% level.**

Source: Author's own calculation

The study examines the risk and return performance of the SRI indices when DJSI World index is considered as benchmark. It is observed (Table 6) that the estimated relative risk-adjusted performance (Jensen Alpha) of the SRI indices is positive but they are not significantly different from zero as given by the t values in parenthesis. Hence, it may be concluded that there is a clear indication that the relative risk-adjusted performance of the SRI indices don't systematically deviate from their DJSI World (Benchmark) and hence null hypothesis H_0: $\alpha = 0$ is accepted. It is also observed that the beta coefficient of 5 SRI indices is positive but they are lower than the benchmark index (DJSI World Index). However, the beta coefficients of 2 SRI indices (DJSI World ex all & DJSI Emerging Market) are statistically significant that means rejection of null hypothesis (H_0: $\beta = 1$) and conclude that the risk exposure of the 2 SRI indices systematically deviate from DJSI World index and in remaining cases we accept the null hypothesis of no difference in risk. The outcome of spanning test (H_0: ($\alpha = 0$ & $\beta = 1$)) is shown in the last column of the table and found that the spanning of DJSI World Ex All and DJSI Emerging Market is statistically significant that means rejection of null hypothesis and concludes that the risk and return performance of the 2 SRI indices are systematically different from their DJSI World index. On the other hand, the spanning of the remaining (8 SRI) SRI indices is accepted and conclude that the risk and return performances of 8 SRI indices don't systematically deviate from the benchmark index (DJSI World).

Table 6: SRI Index & DJSI World (Benchmark Index) performance

SRI Index	**Alpha** H_0: $\alpha = 0$	**Beta** H_0: $\beta = 1$	**Spanning Test** H_0: ($\alpha = 0$ & $\beta = 1$)
DJSI World ex All	0.000(0.116)	0.993* (588.880)	346779.6*
DJSI US	0.015(0.903)	-0.003 (-0.185)	0.034
DJSI North America	0.015(0.935)	-0.014 (-0.978)	0.957
DJSI World Enlarged	0.336(0.717)	0.009 (0.091)	0.008
DJSI Europe	0.017(0.777)	0.008 (0.481)	0.231
DJSI Euro zone	0.018(0.728)	-0.032 (-1.904)	-1.904
DJSI World enlarged ex All	0.331(0.703)	0.010 (0.111)	0.012

DJSI Asia Pacific	0.023(0.902)	-0.003 (-0.142)	0.020
DJSI Korea	0.026(0.945)	-0.020 (-0.977)	0.954
DJSI Emerging Market	0.015(0.436)	0.274* (7.267)	52.816*

Significance at 1% level & **Significance at 5% level.

Source: Author's own calculation

Before going to estimate the ARIMA parameters, the study first identifies the optimal values of p, d and q where p is an auto-regressive term, d is the number of differencing and q is the moving average term of the residuals. Next, we have checked the stationarity problem of the daily return series of the SRI indices with the help of correlogram analysis which is followed by the application ADF and PP tests with an alternative (H_a) hypothesis that the return series is stationary. It is observed from the correlogam analysis (table is not here due to space problem. Only the result is interpreted) that the ACF series of all the SRI indices has a significant spike at lag 1 and after that point there is no significant pattern of spikes. Similarly, the PACF contains significant spikes at lag 1 and thereafter no significant pattern of spikes has been observed. Hence, it may be concluded based on the patterns of ACF and PACF that the return series of the SRI indices is stationary after 1 period lag and finally, accept the alternative hypothesis (H_a) of stationarity. The stationary test is confirmed by the ADF and PP tests. It is observed that the absolute computed tau statistics of ADF and PP tests for AR(1) process are higher than the critical values for all significance levels (1%, 5% & 10%) with their corresponding probabilities that confirms rejection of alternative hypothesis (H_a) or in other words the time series is stationary.

Now, the study again checks the stationarity by examining the ACF and PACF of the residual series to fix up the optimal value of q with the help of MA(q) process. It is observed from the correlogram analysis that the ACF and PACF series of the residuals of three indices (DJSI World ex all, DJSI North America & DJSI Asia Pacific) have a significant spike at lag 1 and thereafter no significant spikes are observed. But the ACFs and PACFs of the residuals of the remaining indices die down at the level form. Hence, we may conclude that the residual series of the SRI indices is stationary and we can easily reject the null hypothesis (H_0). Now the study confirms the stationarity issue with the help of ADF and PP statistics. It is found that the computed values of tau statistics for the tests (ADF and PP) are lower than the critical values of all significance level (1%, 5% & 10%) with their corresponding

probabilities that confirms rejection of null hypothesis (H_0) of non-stationarity of the residuals series. On the other hand, the autocorrelation problem of the residuals of the SRI indices is tested with the help of Box-Pierce Q statistic and with a variant of Ljung-Box LB statistic (Only result is interpreted and the table is not given here due to restricts pages) and found that the Q statistics of the squared residuals of the SRI indices up to 24 lags are lower than the critical values (insignificant) at any significance level (1%, 5% & 10%) and the probability of obtaining such an LB value under the null hypothesis is practically different from zero in all cases that means rejection of null hypothesis (H_0: $\rho_k = 0$) and conclude there is no autocorrelation problem in the time series data of the SRI indices.

Table 7: Test of Stationarity of time series data of the SRI indices

ꓡI Index	ADF	Prob.	PP Test	Prob.	Residual		
					ADF	Prob.	PP Test
SI World	-63.8904	0.0001	-63.5428	0.0001	-23.6407	0.0001	-1980.879
SI World ex All	-26.2403	0.0000	-1085.759	0.0001	-28.9503	0.0000	-2324.241
SI US	-76.9605	0.0001	-77.9670	0.0001	-70.9679	0.0001	-71.3033
SI North America	-75.8823	0.0001	-76.7235	0.0000	-71.2787	0.0001	-71.6185
SI World Enlarged	-8.8602	0.0000	-9.0159	0.0000	-10.4734	0.0000	-10.5062
SI Europe	-28.9525	0.0000	-61.1901	0.0000	-28.8971	0.0000	-59.7418
SI Euro zone	-60.5815	0.0001	-61.0320	0.0001	-59.3668	0.0001	-59.6927
SI World enlarged ex All	-8.8043	0.0000	-8.9508	0.0000	-10.4716	0.0000	-10.5007
SI Asia Pacific	-56.2220	0.0001	-56.6447	0.0001	-54.1729	0.0001	-54.3957
SI Korea	-49.4470	0.0001	-49.5312	0.0001	-49.2193	0.0001	-49.2913
SI Emerging Market	-21.0510	0.000	-21.0603	0.0000	-25.3417	0.0000	-25.3419

Source: Author's own calculation

The estimated coefficients of the ARIMA model are shown in table 8. It is observed that the estimated constant terms of the SRI indices are statistically insignificant (t-statistic in parenthesis) that confirms acceptance of null hypothesis (H_0: Constant = 0). Moreover, the estimated coefficients of the AR(1) terms of the SRI indices and the MA(1) terms for 3 SRI indices are statistically significant and the probability of obtaining such values are practically

zero that means rejection of null hypothesis ((H_0: AR(1) & MA(1) = 0)) that means that the past return performance of the SRI indices strongly don't happen in future. Here, all the ARIMA models are free from the autocorrelation problem as disclosed by the DW values which are almost around two and the models are fit based on low AIC and SIC criterion.

Table 8: Timated Results of ARIMA(p,d,q) Model

SRI Index	Constant	Prob.	AR(1)	Prob.	MA(1)	Prob.	R^2	AIC	SIC	DW
DJSI World ARIMA(1,0,0)	-9.00E-05 (-0.00735)	0.9941	-0.430 (-33.88)	0.000			0.1857	3.272	3.275	2.0034
DJSI World ex All ARIMA(1,0,1)	8.22E-06 (0.04753)	0.6345	0.1125 (8.033)	0.000	-0.999 (-3166.03)	0.000	0.4430	2.874	2.878	1.9917
DJSI US ARIMA(1,0,0)	-2.82E-05 (-0.0021)	0.9983	-0.525 (-43.78)	0.000			0.2756	3.559	3.562	2.0052
DJSI North America ARIMA(1,0,1)	1.40E-05 (0.8795)	0.3792	-0.065 (-4.597)	0.000	-1.0008 (-1450.08)	0.000	0.5327	3.086	3.089	2.0024
DJSI World Enlarged ARIMA(1,0,0)	0.006213 (0.01554)	0.9876	-0.396 (-4.541)	0.000			0.1567	6.416	6.465	2.0008
DJSI Europe ARIMA(1,0,0)	-0.000284 (-0.0157)	0.9875	-0.495 (-33.79)	0.000			0.2452	3.779	3.783	2.0083
DJSI Euro zone ARIMA(1,0,0)	-0.000351 (-0.0170)	0.9864	-0.496 (-33.83)	0.000			0.2456	4.049	4.053	2.0026
DJSI World Enlarged ex All ARIMA(1,0,0)	0.007404 (0.01845)	0.9853	-0.393 (-4.497)	0.000			0.1541	6.419	6.467	2.0066
DJSI Asia Pacific ARIMA(1,0,1)	-1.28E-05 (-0.3690)	0.7121	-0.037 (-2.014)	0.000	-0.999 (-2410.53)	0.000	0.5183	3.451	3.458	2.0027
DJSI Korea ARIMA(1,0,0)	-0.000268 (-0.0115)	0.9908	-0.492 (-27.78)	0.000			0.2417	3.902	3.906	2.0073
DJSI Emerging Market ARIMA(1,0,0)	0.002906 (0.0965)	0.9231	-0.407 (-11.31)	0.000			0.1651	2.992	3.006	2.0022

Source: Author's own calculation

Table 9 presents whether the forecast is satisfactory or not. It is observed that the Root Mean Squared Error (RMSE) of the SRI indices is found to be lower based on AIC and SIC criterion. Generally, the forecast will be satisfactory if the bias and variance proportions are small so that most of the bias is concentrated on the covariance proportion. The bias proportion means how far the mean of the forecast is from the mean of the actual series. Similarly, the variance proportion conveys how far the variation of the forecast is from the variation of the actual series and finally, covariance proportion measures the remaining unsystematic forecasting error. It is observed that the bias and variance proportions of the SRI indices are lower than the covariance proportions in all cases that mean, forecast is satisfactory.

Table 9: Return forecasts of SRI Indices

RI Index	Root mean squared error	Mean abs. error	Mean absolute percent error	TIC	Bias Propor.	Variance prop.
JSI World	1.0853	0.7410	8.24E+09	0.7968	0.0839	0.0847
JSI World ex All	1.0243	0.6357	1.87E+09	0.9787	0.0007	0.0061
JSI US	1.1501	0.7245	8.16E+16	0.9366	0.0056	0.0227
JSI North America	1.2335	0.8716	5.82E+10	0.7702	0.1159	0.2331
JSI World Enlarged	5.1441	3.7830	342.1730	0.7787	0.0581	0.0629
JSI Europe	1.3948	0.9882	241.8264	0.7632	0.0994	0.3141
JSI Euro zone	1.6165	1.1659	240.6922	0.7539	0.1152	0.3789
JSI World Enlarged Ex All	5.1933	3.8188	272.0210	0.7693	0.0690	0.0797
JSI Asia Pacific	1.3587	0.9488	2.32E+08	0.9915	0.0004	0.0037
JSI Korea	1.4412	1.0307	3.52E+11	0.8085	0.0709	0.1819
JSI Emerging Market	1.3455	1.0710	530.7394	0.6883	0.3958	0.0796

Source: Author's own calculation

Conclusion

It is observed that SRI indices provide to the investors lower returns as compared to the conventional benchmark. Some of the SRI indices outperform the benchmark index based on Sharpe ratio but fail to outperform based on Treynor ratio. But when DJSI World is considered as benchmark index then 9 SRI indices provide higher returns to the investors. But Sharpe ratio of 4 indices and Treynor ratio of 7 indices cross the benchmark index. However, ANOVA test shows that the returns of the SRI indices are same and the evidence is same when benchmark index is considered in the SRI family. The relative risk-adjusted performance of the SRI indices is positive but insignificant and statistical test indicates that there is no difference between the SRI indices and benchmark index (DJ World). Similarly, the beta coefficients of 3 indices are different from their benchmark index. But spanning test indicates only 3 SRI indices are different in terms of risk and return from their benchmark index. But when DJSI world is considered as benchmark index then the risk and return performance of 2 SRI indices is different from the DJSI World index. Finally, ARIMA technique is applied and found that the forecasted alpha of the SRI indices is insignificant. But the parameters of the AR(1) and in some cases MA(1) are significant that means past

performance has no indication to happen in future. Although, the forecast is satisfactory and this is confirmed jointly by the lower bias and variance proportions as compared to the co-variance proportion.

References:

Ali, S., and A. Szyszka (2006), Ethical Factors in Capital Market: Socially Responsible versus Unscrupulous Investment, Argumenta Oeconomica, 18, No. 1-2, 63-87.

Brown, S.J., W. Goetzmann, R.G. Ibbotson and S.A. Ross (1992), Survivorship bias in performance studies, The Review of Financial Studies, 5, No. 4, 553-580.

Baks, K.P. (2003), On the performance of Mutual Fund Managers, Working paper, http://goizueta.emory.edu/faculty/KlaasBaks/.

Barnett, M.L., and R.M. Solomon (2006), Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance, Strategic Management Journal, 27, 1101-1122.

Brammer, S., and S. Pavelin (2006), Voluntary Environmental Disclosures by Large UK Companies, Journal of Business Finance & Accounting, 33(7) & (8), 1168-1188.

Bauer, R., K. Koedijk and R. Otten (2005), International evidence on ethical mutual fund performance and investment style, Journal of Banking and Finance, 29, 1751-1767.

Bello, Y. (2005), socially responsible investing and portfolio diversification, The Journal of Financial Research, 28, 41-57.

Cochran, P.L., and R.A. Wood (1984), Corporate social responsibility and financial performance, The Academy of Management Journal, 27(1,) 42-56.

Clarkson, M. (1995), A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance, Academy of Management Review, 20(1), 92-117.

Cohen, Mark A., Scott A. Fenn, and S. Konar (1997), Environmental and financial performance: Are they related?, Working paper, http://sitemason.vanderbilt.edu/files/d/dlwFkQ/Environmental%20and-%20Financial%20Performance.pdf.

Carhart, M.(1997), On persistence in mutual fund performance, The Journal of Finance, 52, 57-82.

Chatterji, A. K., D. Levine and M.W. Toffel (2009), How well do social ratings actually measure corporate social responsibility?, Journal of Economics and Management Strategy, 18(1), 125-169.

Chatterji, A. K., and D. Levine (2008), Imitate of differentiate? Evaluating the validity of corporate social responsibility ratings, Centre for Responsible Business, University of California Berkeley, Working Paper series, Paper 37.

Christmann, P. (2000), Effects of "best practices" of environmental management on cost advantage: The role of complementary assets, Academy of Management Journal, 43(4), 663-680.

Davis, K. (1973), The Case for and Against Business Assumption of Social Responsibilities, Academy of Management Journal, 16(2), 312-322.

Derwall, J., N. Guenster, R. Bauer and K. Koedijk (2005), The Eco-efficiency Premium puzzle, Financial Analyst Journal, 61, 51-63.

Diltz, J. David. (1995), Does social screening affect portfolio performance?, The Journal of Investing, 4, 64-69.

Fombrun, C., and M. Shanley (1990), What's in a Name? Reputation Building and Corporate Governance Strategy, Academy of Management Journal, 33(2), 233-258.

Fama, E., and K. French (1993), Common risk factors in the returns on stocks and bonds, Journal of Financial Economics, 33, 3-56.

Freeman, E., and E. Evan (1990), 'Corporate Governance: A Stakeholder Interpretation', Journal of Behavioural Economics, 19(4), 337-359.

Guerard, John B. (1997), Additional evidence on the cost of being socially responsible in investing, The Journal of Investing, 6, 31-36.

Goldreyer, E.F., P. Ahmed and J.D. Diltz (1999), The Performance of Socially Responsible Mutual Funds: Incorporating socio-political information in portfolio selection, Managerial Finance, 25(1), 23-36.

Gerde, V. W., and J.M. Logsdon (2001), Measuring environmental performance: use of the toxics release inventory (TRI) and other US environmental databases, Business Strategy and the Environment, 10(5), 269-285.

Geczy, C., R. Stambaugh and D. Levin (2005), Investing in Socially responsible Mutual Funds, Unpublished working paper, available at: http://ssrn.com/abstract=416380.

Hill, C., and T. Jones (1992), 'Stakeholder-agency Theory', Journal of Management Studies, 29(2), 131-154.

Hamilton, S., H. Joand M. Statman (1993), Doing well while doing good? The investment performance of socially responsible mutual funds, Financial Analysts Journal, 49, 62-66.

Herremans, A., and McInnes (1993), An investigation of corporate social responsibility reputation and economic performance, Journal of Accounting, Organisations and Society, 18(7-8), 587-604.

Heinkel, R., A. Kraus and J. Zechner(2001), The Effect of Green Investment on Corporate Behavior, Journal of Financial and Quantitative Analysis, 36(4), 431-449.

Humphrey, J.E. and D.D. Lee (2011), Australian socially responsible funds: performance, risk and screening intensity, Journal of Business Ethics, 102(4), 519-533.

Humphrey, J.E., D.D. Lee and Y. Shen (2012), 'Does it Cost to be Sustainable?', Journal of Corporate Finance, 18(3), 626-639.

Jones, T. (1995), Instrumental Stakeholder Theory: A synthesis of Ethics and Economics, Academy of Management Review, 20(2), 404-437.

Koedijk, K., and R. Otten (2002), International evidence on ethical Mutual Fund performance and Investment Style, LIFE working paper No. 02.59.

Kreander, N., R.H. Gray, D.M. Powerand C.D. Sinclair (2005), Evaluating the performance of ethical and non-ethical funds: A matched pair analysis, Journal of Business Finance and accounting, 32, 1465-1493.

Kempf, A., and P. Osthoff (2007), SRI funds: Nome nest Omen, Journal of Business Finance & Accounting, 35(9-10), 1276-1294.

Luther, R., J. Matatko and D. Corner (1992), The investment performance of UK ethical unit trust, Accounting Auditing &Accountability Journal, 5, 57-70.

Luther, R. and J. Matatko (1994), The performance of ethical unit trust: Choosing an appropriate benchmark, British Accounting Review, 26, 77-89.

Moskowitz, M. (1972), Choosing socially responsible stocks, Journal of Business and Society, 1, 71-75.

McGuire, J., A.Sundgren and T. Schneeweis(1988), Corporate Social Responsibility and Firm Financial Performance, Academy of Management Journal, 31(4), 854-872.

Mallin, C., B. Saadouni, and R. Briston (1995), The Financial Performance of ethical investment trusts, Journal of Business Finance & Accounting, 22, 483-496.

Matatko, G., and Luther (1997), Ethical unit trust financial performance: small company effects and fund size effects, Journal of Business Finance & Accounting, 24(5).

Moore and Roson (2002), The UK supermarket industry: an analysis of corporate social and financial performances, Business Ethics: A European Review, 11(1).

Minor, D. (2007), Finding the Financial Cost of Socially Responsible Investing, Journal of Investing, 16(3), 54-70.

Renneboog, L., J. Ter-Horstand C. Zhang (2008), Socially responsible investments: Institutional aspects, performance and investor behaviour, Journal of Banking and Finance, 32, 1723-1742.

Renneboog, L., J. Ter-Horst and C. Zhang (2008), The price of ethics and stakeholder governance: The performance of socially responsible mutual funds, Journal of Corporate Finance, 14(3), 302-322.

Spicer, B.(1978), Investors, Corporate Social Performance and Information Disclosure: An Empirical Study, Accounting Review, 53(1), 94-111.

Sauer, David A.(1997), The impact of social-responsibility screens on investment performance: Evidence from the Domini 400 Social Index and Domini Equity Mutual Fund, Review of Financial Economics, 6, 137-149.

Statman, M.(2000), Socially responsible mutual funds, Financial Analysts Journal, 56, 73-82.

Scholtens, B. (2005), Style and Performance of Dutch socially responsible investment funds, The Journal of Investing, 14, 63-72.

Ullmann, A. (1985), Data in Search of a Theory: A Critical Examination of the Relationship among Social Performance, Social Disclosure and Economic Performance of U.S. Firms, Academy of Management Review, 10(1-2), 540-557.

Verschoor, C.C. (1998), A study of the link between a corporation's financial performance and its commitment to ethics, Journal of Business Ethics, 17, 1509-1516.

Yamashita, M., S. Sen, and M.C. Roberts (1999), The rewards for environmental conscientiousness in the US capital markets, Journal of Financial and Strategic Decisions, 12, 73-82.

Waddock, S., and S. Graves (1997), The Corporate Social Performance-Financial Performance Link, Strategic Management Journal, 18(4), 303-319.

White, M. (1995), The performance of environmental mutual funds in the United States and Germany: Is there economic hope for Green Investors?, Research in Corporate Social Performance and Policy, Supplement 1, 323-344.

DETERMINING THE FACTORS INFLUENCING THE TAX LITERACY: AN EMPIRICAL EVIDENCE FROM THE RESIDENTS OF UTTAR PRADESH

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Abstract

In terms of tax law compliance, tax planning, and tax management, the taxpayer's proficiency plays a critical and significant role. A person with a thorough understanding of the tax system and laws will be able to effectively manage personal financial obligations while also saving for the future. The purpose of the study here is to ascertain factors influencing the Tax Literacy among residents of Agra and Ghaziabad and to assess the relationship between the factors of tax literacy. The present study considers primary source of data. A total sample from 405 residents of Agra and Ghaziabad were selected by way of purposive sampling method to ascertain the tax literacy. The study's findings demonstrated that tax literacy is determined by tax-related tax awareness, knowledge, attitude, and behaviour, along with tax management behaviour. As per the findings, there is a strong relation between tax literacy and other parameters. The findings clearly demonstrated that administrative actions in the field of tax literacy, based on module-based programmes that aid in the enhancement of tax literacy, are urgently needed.

Keywords: Tax Literacy, Tax Awareness, Tax Knowledge, Tax Attitude, Tax Management Behaviour, Agra, Ghaziabad.

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Introduction

To evaluate and ascertain the ability to compute the personal tax obligation, tax liability, saving for tax, tax filing and tax payment procedure is termed as tax management. And for the proper tax management it is imperative that an individual should be completely aware and knowledgeable related with the concepts of personal taxation or in simple terms tax literate. Because tax literacy not only helps in tax management but also it is one of the foremost steps towards the tax accounting. The term Tax accounting can be defined as "a structure of accounting methods focused on taxes rather than the appearance of public financial statements. Tax accounting is governed by the Internal Revenue Code, which dictates the specific rules that companies and individuals must follow when preparing their tax returns." Tax accounting is the branch of accounting that transact with formation for tax return and tax payments. Tax accounting is pre-owned by individuals, business house, companies and several other entities. For an individual Tax accounting primarily emphasized upon "income, qualifying deductions, donations, and any investment gains or losses." Therefore, it can be said that for the effective management of issues related with individuals personal taxation Tax literacy is of utmost importance. Without having profound knowledge regarding the tax literacy or being tax literate proper usage and implementation of Tax Accounting cannot take place.

In, Indian context the taxation system is bit complex to understand, yet the government is taking several policy measures to make it simplified, the tax payer's generally observed it difficult to realize and manage the matters related to tax liability finalization, filling for taxes and saving with regard to taxes. Moreover with regard to tax related obligations no formal training programs are also offered at present. And resultantly it ultimately leads to low tax collection. This leads to the growing emergent need towards making the citizens tax literate.

The term Tax literacy is defined as the ability of a person to fill correctly tax form and calculate tax liabilities at its own (Bardai, 1992; Razman and Ariffin, 2000). Tax literacy can also be defined as the competency which an individual possess to handle the issues related with personal taxation in an effective and efficient way (Bhushan, Medury, 2013). In the present study, the term Tax Literacy has been defined as the concept which consists of the combination of tax awareness, tax related knowledge, tax related attitude and tax management behaviour which helps an individual to make sound personal tax related decision and ultimately achieve welfare in tax management perspective.

Under this study an attempt has been made to assess the factors influencing tax literacy among residents of Agra and Ghaziabad district of Uttar Pradesh. And also focus will be given to

find the factors which significantly affect the level of tax literacy and to assess relation between them.

Literature Review

Latiff, Noordin, Omar and Harjito (2005) conducted study to ascertain the Malaysian taxpayer's literacy and knowledge. The result from the study revealed that the tax literacy among professional taxpayer group was found highest. The result also revealed that the respondent group which consists of businessmen take help from tax professionals for filing tax related obligations and have highest incidence of error in filing return. The overall result showed that more than six percent of respondent found tax literate. The result from the study also suggested that tax authorities should come up with measures to increase the tax related knowledge of taxpayer.

Cvrlje, D. (2015) in a study performed discussed about the importance of tax literacy and how it will help in reduction of complexities related with the tax and building tax morale and compliance with tax. The study conducted suggested that there is a need to come up with varied tax literacy initiatives and programmes which help in lessening the low tax morale of individuals as well as increased tax compliances. The study also emphasized upon providing tax related and public expenditure related knowledge so that the individual can better manage their public finance as well as timely comply with the tax related obligations.

Moučková and Vítek (2018) conducted study to measure tax literacy of bachelor degree students in University of Economics, Prague. The tax literacy of students is assessed on the basis of personal income tax and VAT. The result from the study showed that more than half of the students were found having profound knowledge regarding the tax related matters. The result from the study also revealed that the students VAT related knowledge depends upon the completion of advance courses of consumption tax.

Kaur, A. (2018) conducted study to ascertain the tax literacy of taxpayers. The data for the study was collected from 60 respondents from Derabassi, Punjab. The study revealed that the respondents possessed sound knowledge related with varied tax provisions of "basic tax exemptions, slab rate etc." The result from the study showed that respondent unable to comply with the tax related provisions due to low level of tax knowledge and low level of tax awareness.

Jusoff, K. (2020) conducted study to assess the level of tax literacy among the taxpayers of Sabah and Sarawak. The study was conducted to assess the how much the taxpayers were tax literate in computation of their tax liability with the introduction of Self Assessment System. The result from the study revealed that Sarawak taxpayers were found to be more tax literate in comparison with Sabah. The findings of the study also revealed that overall the taxpayer from

both Sabah and Sarawak were not found prepared for the Self Assessment System introduced in 2004 and serious efforts for improvement.

Kumar, M. and Tanwar, N. (2020) conducted study on 121 individual investors from different parts of Delhi. The result from the study revealed that the sound tax related knowledge helps investors in taking right decisions regarding opting correct investment instrument. The findings of the study also showed that the tax literacy plays a crucial role towards building high tax morale; meeting tax related compliances and increased tax ethics.

Objective

The study's major goal is to determine the elements that influence Agra and Ghaziabad residents' tax literacy. To be specific:

(i) To assess the factors influencing the Tax Literacy among residents.

(ii) To see if there's a linkage between the factors that affect tax literacy.

Hypothesis

HO_1: There is no linkage between tax awareness and tax knowledge among people of the districts of Agra and Ghaziabad.

HO_2: There is no linkage between Tax Awareness and Tax Attitude among people of the districts of Agra and Ghaziabad.

HO_3: There is no linkage between Tax Awareness and Tax Management Behaviour among people of the districts of Agra and Ghaziabad.

HO_4: There is no linkage between Tax Knowledge and Tax Attitude among people of the districts of Agra and Ghaziabad.

HO_5: There is no linkage between Tax Knowledge and Tax Management Behaviour among people of the districts of Agra and Ghaziabad.

HO_6: There is no linkage between Tax Attitude and Tax Management Behaviour among people of the districts of Agra and Ghaziabad.

Research Methodology

The research design used for the present study is descriptive and empirical in nature. For the study, purposive sampling method has been used. The present study has been done using primary data. A total sample of 405 residents from Agra and Ghaziabad districts of Uttar Pradesh were chosen to ascertain the factors influencing the tax literacy. For data collection purpose structured online questionnaire was used. More than 700 questionnaires were sent to respondents out of which 405 questionnaires were found useful. The data collection period was from July, 2021 to August, 2021. A five-point Likert scale ranging from “strongly disagree (= 1) to strongly

agree (= 5)" was used to ask questions on Tax Literacy. Mean, Percentage, Weighted Average, Factor Analysis, Pearson Correlation statistical tool were used for the data analysis purpose.

Table 1: Reliability of Data

Reliability Statistics	
Cronbach's Alpha	No. of Items
.923	22

Source: Primary Data

The 22 items have a Cronbach's alpha coefficient of.923, indicating that they have a high level of internal consistency. The questionnaire is deemed reliable because it has a reliability coefficient of.70 or above, which is regarded "acceptable."

Data Analysis and Findings

The data analysis section has broadly divided into three main parts. In the first section, demographic Profile of residents of Agra and Ghaziabad has been discussed. In the second section, the factor influencing the tax literacy has been discussed and in the third and last section relation between tax literacy has been discussed.

I- Demographic Profile

Table 2: Demographic Profile of Residents of Agra and Ghaziabad Districts

	Options	**Frequencies**	**%**
Age	Below 25	90	22.20
	25-40	115	28.40
	40-55	100	24.70
	55 & Above	100	24.70
Gender	Male	168	41.50
	Female	237	58.50
City	Agra	201	49.63
	Ghaziabad	204	50.37
Marital Status	Married	164	40.50
	Unmarried	203	50.10
	Separated	38	09.40

Qualification	School Level	97	24.00
	Undergraduate	104	25.70
	Post Graduate	53	13.10
	Professional	96	23.70
	Diploma	55	13.60
Occupation	Salaried	287	70.86
	Business/Profession	85	20.99
	Other	33	08.15
Annual Income (INR)	Below 400000	40	09.88
	400001-800000	229	56.54
	800001 & Above	136	33.58

Source: Primary Data
N=405

- The above table shows the demographic profile of respondents. It shows that, 22.20 percent of the respondents were in the age group of Below 25 years, 28.40 percent in the age group of 25-40, 24.70 percent in 40-55 years age group and 24.70 percent in the age group 55 and above.
- The table shows that 41.50 percent of the respondents were male and 58.50 percent respondents were female.
- The table shows that 49.63 percent of the respondents were from Agra district and 50.37 percent respondents were from Ghaziabad district.
- The marital status of the respondents revealed that 40.50 percent of them were married, 50.10 percent of them were unmarried, 2.8 percent of them were widow and 09.40 percent of them were separated.
- 24.00 percent of the respondents has completed school level education, 25.70 percent possessed Under Graduate degree and 13.10 percent possessed Post Graduate degree, 23.70 percent possessed Professional degree and 13.60 percent were Diploma holder.
- More than half of the respondents possessed (70.86 percent) were salaried class worker, 20.99 percent were engaged in business or profession and 8.15 percent belongs to other occupation sector.
- The table shows that 09.88 percent of the respondents were earning an income below Rs. 400000 annually, 56.54 percent were earning between Rs.400001-800000 annually and 33.58 percent were earning Rs.800001 & above annually.

II- **Objective: 1 To assess the factors influencing the Tax Literacy among residents.**

Table 3 shows the result of KMO and Bartlett's Test. The general assumption for using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is that the KMO Sampling Adequacy should be greater than 0.5 (Malhotra and Das, 2010). In Table 3 KMO Sampling Adequacy value is .843 from which it can be inferred "that the sample size is sufficient to perform factor analysis. In the Bartlett's Test of Sphericity the significant value is 0.000 which less than 0.05 indicates that sufficient correlation exists among variables (Hair.et.al; 2014)". Hence the data is appropriate for conducting factor analysis.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.843
Bartlett's Test of Sphericity	Approx. Chi-Square	1.483E4
	df	231
	Sig.	.000

Source: Primary Data

Table 4 shows Communalities values. The term communalities can be defined as the degree to which one variable is correlated with the other variables. The designated value for a variable in communalities is more than 0.4. In Table 4 Communalities value for the entire variable is more than 0.4 which indicates "that the entire variables are appropriate for conducting factor analysis."

Table4: Communalities

	Initial	**Extraction**
Talked with peers regarding tax issues	1.000	.938
Heads of Income	1.000	.768
Tax Exemption Limit	1.000	.614
Tax Management	1.000	.903
Knowledge about Taxable amount	1.000	.939
Goods and Service Tax	1.000	.726

Income Tax Department	1.000	.733
PAN Card	1.000	.859
Tax Authority	1.000	.808
Income Tax Exemptions	1.000	.969
Tax Computation	1.000	.967
Read to enhance tax knowledge	1.000	.752
Use legal ways to lessen tax burden	1.000	.704
Competent in Tax return filing	1.000	.912
Tax Evasion	1.000	.689
Tax issues under control	1.000	.937
Agricultural Income	1.000	.866
Assessment Year	1.000	.948
ITR Form	1.000	.951
Total Income	1.000	.898
Invest and save in instrument that provide tax relief	1.000	.732
Preserve adequate income tax return file records	1.000	.879
Extraction Method: Principal Component Analysis.		

Source: Primary Data

The amount of variance related to the factor is called as Eigen value. The optimal Eigen value is 01. Factors with Eigen value greater than 01 are considered and factors with value less than 01 are not taken into consideration (Hair.et.al; 2014). Normally in social science researches the cumulative variance solution of 60 percent or more is considered satisfactory (Hair.et.al; 2014).

In Table 5 four factors were extracted with 84.053 % of cumulative variance which is above the threshold value of 60 percent. In factor 1 Eigen value is 9.627 and 43.760 percent of variance, in factor 2 Eigen value is 3.656 and 16.617 percent of variance, in factor 3 Eigen value is 2.870 and 13.044 percent of variance and in factor 4 Eigen value is 2.339 and 10.632 percent of variance.

Table 5: Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.627	43.760	43.760	9.627	43.760	43.760	7.305	33.206	33.206
2	3.656	16.617	60.377	3.656	16.617	60.377	4.368	19.854	53.060
3	2.870	13.044	73.421	2.870	13.044	73.421	3.742	17.011	70.070
4	2.339	10.632	84.053	2.339	10.632	84.053	3.076	13.983	84.053
5	.782	3.557	87.610						
6	.516	2.346	89.956						
7	.420	1.908	91.864						
8	.377	1.715	93.579						
9	.319	1.450	95.029						
10	.299	1.360	96.389						
11	.211	.961	97.350						
12	.160	.728	98.078						
13	.100	.455	98.533						
14	.079	.358	98.891						
15	.061	.276	99.167						
16	.050	.226	99.392						
17	.041	.188	99.580						
18	.034	.155	99.735						
19	.021	.097	99.832						
20	.019	.085	99.918						
21	.009	.042	99.960						
22	.009	.040	100.000						

Extraction Method: Principal Component Analysis.

Source: Primary Data

In Table 6 Rotated Component Matrix has been performed using Principal Component Method of Factor Extraction and Varimax with Kaiser Normalization rotation method. Once the rotation of factors is done a factor loading point generally above 0.5 for each variable is selected (Malhotra and Dash, 2010). Here in Table 6 all the 22 variables factor loading is above 0.50 and are to be taken into consideration for four factors extracted.

Table: 6

Rotated Component Matrix[a]				
	Component			
	1	**2**	**3**	**4**
Tax Management	.930			
Total Income	.930			
Agricultural Income	.915			
Income Tax Department	.843			
PAN Card	.834			
Tax Authority	.800			
Tax Evasion	.798			
Goods and Service Tax	.791			
Tax Exemption Limit	.705			
Heads of Income	.690			
Tax Computation		.941		
Income Tax Exemptions		.935		
ITR Form		.928		
Assessment Year		.919		
Knowledge about taxable amount			.968	
Tax issues under control			.966	
Talked with peers regarding tax issues			.961	
Competent in Tax return filing			.950	
Preserve adequate income tax return file records				.922
Read to enhance tax knowledge				.863
Use legal ways to lessen tax burden				.832
Invest and save in instrument that provide tax relief				.820
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

Source: Primary Data

Table 7 shows the Factor Analysis result for Tax Literacy factors determined, in the second column factor name are shown, in the third column variable under the same factor are shown, in the fourth column number of items in each factor are shown, in the fifth column Croanbach's Alpha Coefficient Value of the four factors obtained is shown. The Croanbach's Alpha Value obtained for the first factor is .963, for the second factor .980, for the third factor .974 and for the fourth and last factor .892.

Table 7

SNo.	Factor Name	Variable	No. of Items	Cronbach's Alpha Reliability
1	**Tax Awareness**	Tax Management	10	.963
		Total Income		
		Agricultural Income		
		Income Tax Department		
		PAN Card		
		Tax Authority		
		Tax Evasion		
		Goods and Service Tax		
		Tax Exemption Limit		
		Heads of Income		
2	**Tax Knowledge**	Tax Computation	04	.980
		Income Tax Exemptions		
		ITR Form		
		Assessment Year		
3	**Tax Attitude**	Knowledge about Taxable amount	04	.974
		Tax issues under control		
		Talked with peers regarding Tax issues		
		Competent in Tax return filing		
4	**Tax Management Behaviour**	Preserve adequate income tax return file records	04	.892
		Read to enhance tax knowledge		
		Use legal ways to lessen tax burden		
		Invest and save in instrument that provide tax relief		

Source: Primary Data

III- **Objevtive: 2 To ascertain the relationship between the factors influencing tax literacy.**

Table 8: Descriptive Statistics

	Mean	Std. Deviation	Tax Awareness	Tax Knowledge	Tax Attitude	Tax Management Behaviour
Tax Awareness	4.2136	.86807	1	.560**	.123*	.225**
Tax Knowledge	3.8488	1.18199	.560**	1	.073	.156**
Tax Attitude	3.4556	1.10839	.123*	.073	1	.063
Tax Management Behaviour	4.1154	.77482	.225**	.156**	.063	1

Source: Primary Data
**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
N=405

HO_1: There is no linkage between tax awareness and tax knowledge among people of the districts of Agra and Ghaziabad.

The Table 8 reveals positive linkage between tax awareness and tax knowledge ($r = 0.560$, $p < 0.01$). Hence the hypothesis gets rejected and it can be inferred that there is a linkage between Tax Awareness and Tax Knowledge among the people of Agra and Ghaziabad.

HO_2: There is no linkage between tax awareness and tax attitude among people of the districts of Agra and Ghaziabad.

The Table 8 reveals linkage between tax awareness and tax attitude ($r = 0.123$, $p < 0.05$). Hence the hypothesis gets rejected and it can be inferred that there is a linkage between Tax Awareness and Tax Attitude among the people of Agra and Ghaziabad.

HO_3: There is no linkage between Tax Awareness and Tax Management Behaviour among people of the districts of Agra and Ghaziabad.

The Table 8 reveals positive linkage between tax awareness and tax management behaviour ($r = 0.225$, $p < 0.01$). Hence the hypothesis gets rejected and it can be inferred that there is a linkage between Tax Awareness and Tax Management Behaviour among the people of Agra and Ghaziabad.

HO_4: There is no linkage between Tax Knowledge and Tax Attitude among the people of the districts of Agra and Ghaziabad.

The Table 8 reveals no linkage between tax knowledge and tax attitude ($r = 0.73$, $p >0.05$). Hence we fail to reject the null hypothesis and it can be inferred that there is no linkage between Tax Knowledge and Tax Attitude among the residents of Agra and Ghaziabad district.

HO_5: There is no linkage between Tax Knowledge and Tax Management Behaviour among the people of the districts of Agra and Ghaziabad.

The Table 8 reveals linkage between tax knowledge and tax management behaviour ($r = 0.156$, $p < 0.01$). Hence the hypothesis gets rejected and it can be inferred that there is a linkage between Tax Knowledge and Tax Management Behaviour among the people of Agra and Ghaziabad.

HO_6: There is no linkage between Tax Attitude and Tax Management Behaviour among the people of the districts of Agra and Ghaziabad.

The Table 8 reveals no linkage between tax attitude and tax management behaviour ($r = 0.63$, $p >0.05$). Hence we fail to reject the null hypothesis and it can be inferred that there is no linkage between Tax Attitude and Tax Management Behaviour among the people of Agra and Ghaziabad.

Table 9: Summary of Findings of the Relation between Tax Literacy Factors

Hypothesis	Statistical Tool	P value	Null Hypothesis	Findings
Result for linkage between the factors that affect tax literacy				
HO_1: There is no linkage between tax awareness and tax knowledge among people of the districts of Agra and Ghaziabad.	Pearson Correlation	Less than 0.01	Rejected	Linkage found between Tax Awareness and Tax Knowledge
HO_2: There is no linkage between Tax Awareness and Tax Attitude among the people of the districts of Agra and Ghaziabad.	Pearson Correlation	Less than 0.05	Rejected	Linkage found between Tax Awareness and Tax Attitude
HO_3: There is no linkage between Tax Awareness and Tax Management Behaviour among people of the districts of Agra and Ghaziabad.	Pearson Correlation	Less than 0.01	Rejected	Linkage found between Tax Awareness and Tax Management Behaviour
HO_4: There is no linkage between Tax Knowledge and Tax Attitude among the people of the districts of Agra and Ghaziabad.	Pearson Correlation	More than 0.05	Fail To Reject	No linkage found between Tax Knowledge and Tax Attitude
HO_5: There is no linkage between Tax Knowledge and Tax Management Behaviour among the people of the districts of Agra and Ghaziabad.	Pearson Correlation	Less than 0.01	Rejected	Linkage found between Tax Knowledge and Tax Management Behaviour
HO_6: There is no linkage between Tax Attitude and Tax Management Behaviour among the people of the districts of Agra and Ghaziabad.	Pearson Correlation	More than 0.05	Fail To Reject	No linkage found between Tax Attitude and Tax Management Behaviour

Source: Primary Data

Conclusion

The current study examines the factors that influence tax literacy among citizens of Uttar Pradesh's Agra and Ghaziabad districts. Furthermore, the relationship between the tax literacy factors of tax awareness, tax-related knowledge, tax attitude, and tax management behaviour. The findings of the study demonstrated that tax literacy is influenced by tax awareness, tax

related knowledge, tax attitude, and tax management behaviour among people of Uttar Pradesh's Agra and Ghaziabad districts. It was discovered that tax awareness, tax related knowledge, tax attitude, and tax management behaviour are all positively associated and significant. The link between tax awareness and tax knowledge was discovered to be extremely positive and significant. The result from the study showcasing the four factors determined with the help of factor analysis is definitely encouraging to better understand the concept of tax literacy. Overall it can be concluded that tax literacy depends upon different factors and there relation with each other. There is a serious need to come up with policy measures and efforts to improve the tax literacy with the help of different module based and segment need based programmes. Therefore, the Government as well as the other concerned members in the area of tax education initiatives should come up with need based and properly planned effective policy measures which help to enhance the tax literacy as well as increasing the tax friendly and educated population.

Scope for further research

The study can be further extended to the geographical area, finding relation with various demographic factors with of tax literacy factors and assessing the tax literacy level among the respondent group.

Reference

Bardai, B. (1992). Tax Illiteracy in Malaysia: Problems Solutions. Journal of ACCAMADIA 2 (2): 7-31.

Bhushan, P.; Medury, Y. (2013). Determining Tax Literacy of Salaried Individuals - An Empirical Analysis. IOSR Journal of Business and Management: 76-80.

Cvrlje, D. (2015). Tax Literacy as an Instrument of Combating and Overcoming Tax System Complexity, Low Tax Morale and Tax Non-Compliance. The Macrotheme Review, 4(3), 156-167.

Joseph F. Hair Jr., Barry. J. Babin, A. H. Money, & P. Samouel. Essential of business research methods. United Stated of America: John Wiley & Sons. 2003.

Joseph F. Hair Jr., William. C. Black, Barry. J. Babin, R.E. Anderson & R. L. Tatham. Multivariate Data Analysis (7th ed.). New Delhi: Pearson Education. 2014.

Kaur, A. (2018). A study on tax literacy level among taxpayers (A case study of Derabassi City), International Journal of Commerce and Management Research, 4(6), pp. 137-140.

Kumar, M. and Tanwar, N. (2020). Study of Factors Affecting Tax Literacy of Individual Investors, Sambodhi, Vol-43, No.-4, (IV), pp.: 85-95.

Latiff, Ahmed Razman Abdul; Noordin, Bany Ariffin Amin; Omar, Mohamad Raflis Che; dan Harjito, Dwipraptono Agus. 2005. Tax Literacy Rate Among Taxpayers: Evidence from Malaysia. Jurnal Akuntansi dan Auditing Indonesia, 9(1): 1–11.

Madi, N, Kamaluddin, A, Janggu, T, Ibrahim, MBA, Samah, ABA, Jussof, K. (2010). Tax literacy among employees. Intl J Econ Finance. 2:218-223.

Moučková Michaela, Vítek Leoš. (2018). Tax Literacy. Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis, 67(2): 553 – 559.

Naresh. K. Malhotra and Satyabushan Dash, Marketing Research: An Applied Orientation (6th ed.). New Delhi: Prentice-Hall India Ltd. 2010.

Razman, A. A. L .; Ariffin A. N. (2000). Tax Literacy among Taxpayers in Klang Valley. From: Madi, N.; Kamaluddin, A.; Janggu, T., Ibrahim, M.B.A.; Samah, A.B.A. (2010). Tax Literacy among Employees: Sabah and Sarawak's Perspective. International Journal of Economics and Finance 2 (1): 218-223.

A PILOT STUDY ON THE EFFECT OF UNDERSTANDING, TAX EVASION ENVIRONMENT AND TAX KNOWLEDGE ON ETHICAL PERCEPTION AND TAX COMPLIANCE

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Dr. Hemant Kaduniya **

Abstract

This study examines the factors of ethical perception of tax evasion. We also examine the effect of ethical perception of tax evasion on voluntary tax compliance level. For this study data was collected through primary and secondary source both. Structured questionnaire with 5 point Likert scale was used to collect the primary data. The survey was conducted with 60 participants consist of taxpayers and return fillers from various background. Out of these 60 only 56 responses are finalized for data analysis procedure. In this study the data is processed with PLS-SEM method. The findings show a positive & significant impact of tax evasion environment toward the ethical perception of tax evasion and insignificant positive influence of understanding of tax evasion conditions, negative insignificant impact of tax knowledge on ethical perception of tax evasion. We find that ethical perception of tax evasion has a significant negative influence on voluntary tax compliance level.

***Keywords*:** Voluntary tax compliance, tax evasion environment, tax knowledge, ethical perception of tax evasion.

Introduction

In developing countries taxation is the major source of revenue of the government. Tax collection is carried out with the purpose of meeting the expenditure for the supply of public goods and services and fulfillment of basic infrastructures. For tax compliance the perception

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and attitude of taxpayers play an important role. We can say that if a person has a positive attitude and perception regarding tax compliance they voluntarily pay the tax amount without any force. In the present scenario evading taxes is a main issue that the developing countries have been facing. Therefore policymakers need to determine the causes behind tax evasion to minimize the effect of tax evasion. In this study we are analyzing the voluntary tax compliance level of taxpayers' and impact of ethical perception of tax evasion on tax compliance.

Voluntary tax compliance means the willingness of taxpayers to pay taxes. Previous researches done on ethics and tax compliance issues finds that tax compliance would be higher when taxpayers are confident that tax evasion is unethical. Studies on tax evasion explained that there are many factors that affect tax evasion and the attitude of taxpayers towards tax evasion like socio- economic factors, institutional factors and individual factors. In our study we take understanding of tax evasion conditions, tax evasion environment and tax knowledge as factors those effect ethical perceptions. We take these factors on the basis of theory of planned behavior because a person's behavior depends on the attitude, social norms and subjective norms in easy language we can say that person's behavior depends on the environment surrounding them and the understanding of them on that particular point. Findings of the previous study explained that tax knowledge have a negative impact on ethical perception of tax evasion because if a person have higher level of tax knowledge they are not involved in the tax evasion activities.

Objectives of the study:

The general objective of this study was to investigate taxpayers' perception of tax evasion.

The following are the specific objectives of the study.

1. To assess the effect of understanding level of tax evasion conditions of the taxpayers' on their ethical perception of tax evasion.
2. To examine the influence of tax evasion environment on taxpayers' ethical perception of tax evasion.
3. To examine the effect of tax knowledge on the ethical perception of taxpayers' of tax evasion.
4. To examine the effect of ethical perception of tax evasion of taxpayers' on their voluntary tax compliance level.

Literature Review:

(Kenno, 2020) The Author concluded in this study that our understanding of the issue related to tax evasion environment and the perception of the taxpayers' are also included as factors that affect attitude of tax payer's toward tax evasion. Results show that majority of the respondents are agree with the tax evasion conditions and the tax evasion environment statement which that both has a significant effect on the perception of taxpayers' towards tax evasion.

(**Mitu, 2016**) Author concluded that a better understanding of attitudes and behavioural motivations of taxpayers against taxation may improve both voluntary compliance and tax administration efficiency, because if the behaviour of taxpayer regarding tax compliance is positive than it is good for the tax authorities. A modern healthy tax system does not mean exclusively a series of norms and the increase or decrease of the amount of taxes, duties and contributions, but it also entails a long history in which it was created and stratified, in which a certain behavioural culture of taxpayers has been shaped in order to facilitate the proper operation and compliance with the norms and the consolidation of good practices in the field.

(**Redae and Sekhon, 2015**) In this article the authors examined how taxpayers' compliance behaviour affected by tax knowledge. Results have indicated that, Tax knowledge as one of the factors in compliance is correlated to the taxpayers‟ ability to understand taxation laws, and their willingness to comply. According to this article if tax payers know about why they are paying tax and what will be the penalty if they don't pay it and how they save tax by following tax laws and rule, also affect their tax compliance behaviour.

(**Machogu and Amayi, 2013**) The authors concluded that taxpayer education has an effect on voluntary tax compliance. It indicates that tax knowledge is essential in promoting voluntary tax compliance, means that if a taxpayer has knowledge about tax laws and provisions than they can save their tax by tax planning under tax rule and if the tax payment is not a big amount than taxpayers not thought about tax evasions which is a good sign for tax revenue. It is necessary for the taxpayer to acquire the tax knowledge which will enable them to make right compliance decisions. The taxpayer can make rational decisions of complying with the tax laws, as he/she is certain of the outcome. Therefore, these findings support the application of prospect theory to the tax compliance decisions.

(**Pickhardt and Prinz, 2013**) In this article the authors focus on the behavioral dynamics of tax evasion and compliance. After reviewing the literature related to tax compliance and tax evasion authors revealed that for the dynamics of personal attitudes, norms and justifications, interactions between taxpayers, taxpayers and tax authorities as well as taxpayers and tax practitioners are crucial. To detect tax fraud, audits and punishment is required and less complexity of tax codes; more service-oriented tax authorities and a nicer attitude of tax authorities to taxpayers appear very helpful for reducing tax evasion. Trust is also the main element for cooperative tax behavior because if tax authorities distrust people, taxpayers start to distrust tax authorities.

(**Eriksen and Fallan, 1996**) The authors revealed that specific tax knowledge improves tax ethics and tax compliance attitude of taxpayers. When the attitude of taxpayers towards taxation is improved, this will increase tax compliance and reduce the tendency to evade taxes. Authors carried out this study as a quasi-experiment with pre-testing and post-testing of two groups of student and Principal component analysis (varimax) was applied. The result shows that increase in tax knowledge influences the respondents' perceptions for fairness of the tax system.

(**Reckers, Sanders and Roark, 1994**) In this study the authors' main objective was to examine the influence of ethical beliefs on the tax compliance decisions. For this data was collected through questionnaire method and analyzed by using regression method. The Results of this study indicate that ethical beliefs are highly significant in tax evasion decisions.

Conceptual framework

The latent variables relationship in this study is described as follows:

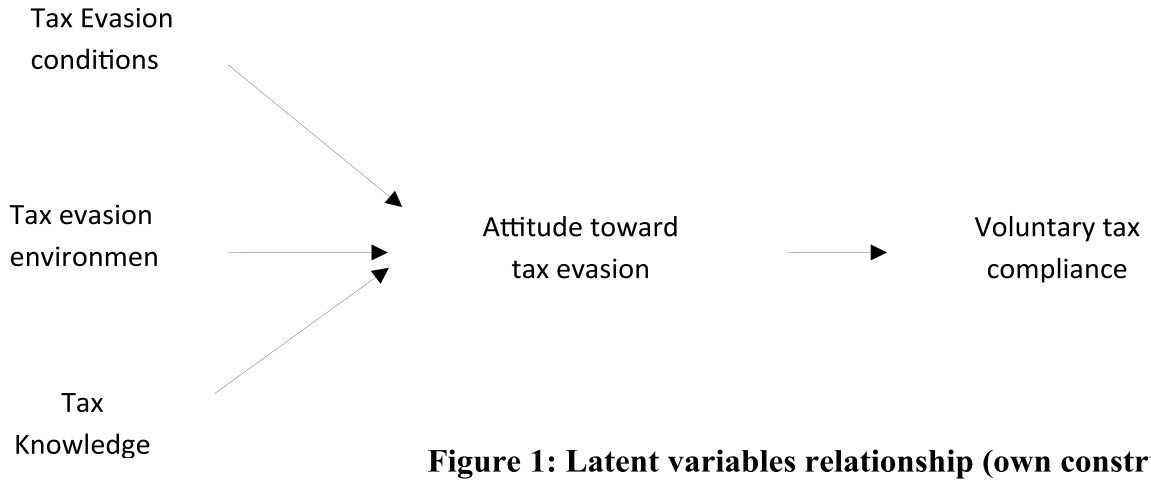

Figure 1: Latent variables relationship (own construct)

Research Hypotheses:

- H1: Ethical perception of tax evasion negatively affects voluntary tax compliance.
- H2: Understanding of tax evasion conditions positively affects ethical perception of tax evasion
- H3: Tax evasion environment positively affect ethical perception of tax evasion
- H4= Tax knowledge negatively affect ethical perception of tax evasion.

Research method

This research is quantitative in nature and a pilot study. It mainly uses primary data obtained from surveys. The survey was done in February 2022. Individual taxpayers and return fillers are selected to be survey respondents. For choosing the respondents convenience sampling method was used. Convenience sampling was used due to the limited time and cost. However, the results of this study cannot represent the population.

The survey is conducted through online and offline mode by giving a questionnaire to the target sample then filled out independently by the respondents. This pilot study was done to check the understandability of the questionnaire which will be use for the final study. For this pilot study data was collected through primary and secondary source. In the questionnaire 5 point Likert scale is used, 1= strongly agree; 2= Agree; 3= Neutral; 4= Disagree; 5= Strongly Disagree. Out of the 60 questionnaire 56 were finalized for data analysis procedure 4 was left due to the incompleteness. The respondents profile is described in table 1.

Table 1: Demographic Descriptive

Variable	Frequency	Percentage
Gender:		
Male	37	66.1
Female	19	33.9
Total	56	100

Age:		
21 to 30 year	32	57.1
31 to 40 year	16	28.6
41 to 50 year	8	14.3
Above 50 year	0	0
Total	56	100
Level of education:		
Higher secondary	4	7.1
Graduate	14	25.0
Post graduate	24	42.9
Professional	14	25.0
Total	56	100
Occupation :		
Government employee	12	21.4
Private employee	26	46.4
Professional	18	32.1
Total	56	100
Marital status:		
Married	36	64.3
Unmarried	20	35.7
Other	56	100
Income level:		
Below 250000	12	21.4
250000 to 500000	21	37.5
500001 to 1000000	20	35.7
More than 1000000	3	5.4
Total	56	100

Table 2: Measurement of the latent variables

Variable	Items	Source
Ethical perception of tax evasion	1. Tax evasion is ethical even if most of the money collected is spent wisely. 2. Tax evasion is ethical if the probability of getting caught is low. 3. Tax evasion is ethical if everyone is doing it. 4. Tax evasion is ethical even if a large portion of the money collected is spent on worthy projects. 5. Tax evasion is ethical if a large portion of the money collected is spent on projects that do not benefit you. 6. Tax evasion is ethical if I can't afford to pay 7. Tax evasion is ethical if tax system is unfair. 8. Tax evasion is ethical if the money collected is wasted	(McGee. R.W.,2012)
Tax Evasion Environment	1. Trend of tax evasion is high 2. Tax system is unfair 3. Government spends tax revenue improperly 4. 4.People pay beyond their ability to pay 5. The risk of getting caught is low. 6. The potential consequences (e.g. fines and penalties, public naming, prosecution) of getting caught are not serious enough to stop people evading paying their taxes.	(Bijiga Gerba Kenno, 2020)

Tax Evasion Conditions	1. Majority of taxpayers do not report all of their income 2. Taxpayers evade tax if possible 3. The current tax audit is strong 4. Tax evasion is less considered as a serious crime among the society.	(Bijiga Gerba Kenno, 2020)
Tax Knowledge	1. I know that in which income bracket (slab) I have been paying tax 2. I know the penalty for breaking the tax rules 3. I know that the highest rate of personal income tax in India is currently 30%. 4. I know about the deductions and exemptions available to me	(Saragih and Putra, 2021)
Voluntary tax compliance	1. I pay my taxes as required by the regulations because I want to pay my taxes voluntarily 2. I pay my taxes as required by the regulations without spending a long time thinking about how I could reduce them 3. I pay my taxes as required by the regulations to support the Nation and other citizens	(Saragih and Putra, 2021)

Data Analysis

In this study for testing the formulated hypotheses and analyzing data, partial least square- structural equation modeling (PLS-SEM) was adopted. PLS-SEM is a statistical method that bears some relation to principal components regression. PLS is used to find the fundamental relations between two matrices (X and Y), i.e. a latent variable approach to modelling the covariance structures in these two spaces. In this study PLS-SEM version 3 is used to process with data. After building SEM-PLS model based on figure 1, we measure both the measurement and structural model. Data analysis will be explained more in the next section.

Results and discussion:

Before presenting the hypothesis results, both measurement and structural model must be assessed with several procedures. The assessment is shown below.

Measurement model: reflective model assessment

In PLS-SEM the first step in testing reflective model is to see the loading factor values. Recommended loading value is above 0.708 (Hair et al.) .Deleting item may affect the content validity, therefore items with loading value between 0.4 and 0.7 are still tolerated (Hair et al.).

Table 3: Convergent Validity Assessment

Latent construct	Items	Loading	CA	CR	AVE
Ethical perception of tax evasion (EPTE)	EPTE 1	0.885			
	EPTE 2	0.884			
	EPTE 3	0.874			
	EPTE 4	0.841	0.934	0.945	0.684
	EPTE 5	0.836			
	EPTE 6	0.784			
	EPTE 7	0.786			
	EPTE 8	0.710			
Understanding of Tax evasion conditions (TEC)	TEC1	0.864			
	TEC2	0.902	0.884	0.919	0.740
	TEC3	0.856			
	TEC4	0.818			
Tax evasion environment (TEE)	TEE1	0.842			
	TEE2	0.789			
	TEE3	0.867	0.906	0.927	0.681
	TEE4	0.852			
	TEE5	0.847			
	TEE6	0.746			

Tax knowledge(TK)	TK1	0.897			
	TK2	0.915	0.927	0.948	0.820
	TK3	0.930			
	TK4	0.880			
Voluntary tax compliance (VTC)	VTC1	0.762			
	VTC2	0.652	0.714	0.831	0.627
	VTC3	0.935			

Table 3 show the loading value of each indicator. All indicators meet the loading value criteria>0.5 (EPTE, TEC, TEE, TK, VTC). Step two is reliability assessment. For the reliability assessment of a construct Cronbach's alpha and Composite reliability are measure. A high value indicates a high level of reliability. The good Cronbach's alpha and composite reliability value is in the range of 0.70-0.90 (Hair et al.). Table 3 shows the composite reliability value and Cronbach's alpha of ethical perception of tax evasion. Tax evasion conditions, tax evasion environment, tax knowledge and voluntary tax compliance each variable holds the value which is more than 0.70.

Convergent validity testing is performed by looking at AVE (average variance extracted), at least 0.5 for reflective latent variables (Kock, N., & Lynn, G.S.). All reflective variables (EPTE, TEC, TEE, TK, VTC) have an AVE value >0.50.

Table 4 shows the confirmation of the convergent validity, the Discriminant validity was examined using Fornell-Larcker's criterion, as recommended by hair et al. (2014). The Discriminant validity of the latent constructs was confirmed through the comparison of the AVE square roots and the variables' correlation coefficients. Table 4 shows that the AVE square roots exceeded the diagonal values in the respective rows and columns, which is indicative of the presence of the Discriminant validity among the variables. It can be stated that the measurement model achieved the requirements in light of the validity and reliability (reliability, convergent and Discriminant validity) at the level of the indicators and variables.

Table 4: Discriminant validity assessments

Variables	EPTE	TEC	TEE	TK	VTC
EPTE	**0.827**				
TEC	0.635	**0.860**			
TEE	0.766	0.772	**0.825**		
TK	-0.348	-0.288	-0.206	**0.906**	
VTC	-0.332	-0.369	-0.362	0.353	**0.792**

Structural Model Assessment

Figure 2 show the structural model and the path coefficient values of the latent variables. The structural model testing is described in the following sections. Figure 2 show that the tax evasion environment and tax evasion conditions have the positive path coefficients whether the tax knowledge and ethical perception of tax evasion have negative path coefficients values.

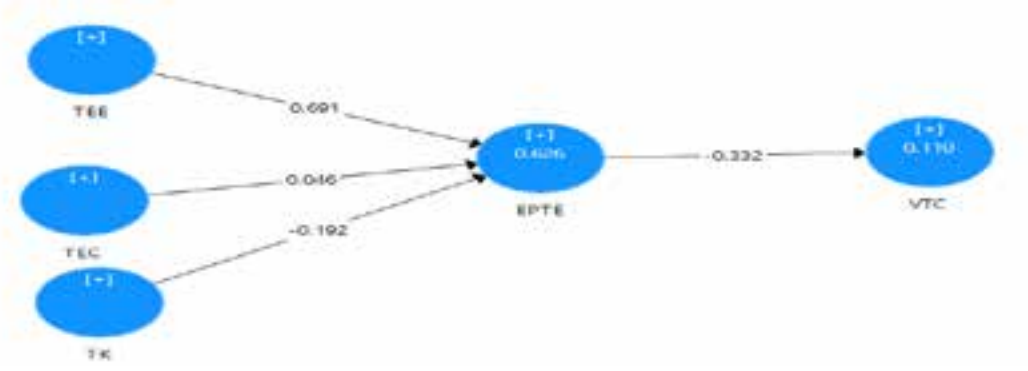

Figure 2: Structural model

Collinearity testing needs to be done to ensure there is no bias in the regression results (Hair et al.). A Collinearity issue in the predictor variable occurs if the VIF value is more than 5. Table 5 shows the VIF values of all the predictor variables (TEC= 2.590, TEE= 2.480, TK= 1.091, EPTE=1.000, VTC= 1.000) explain that all the values are <5 means there is no Collinearity issue exist in the study.

Table 5: VIF and R^2 Values

	TEC	TEE	TK	EPTE	VTC
VIF	2.590	2.480	1.091	1.000	1.000
R^2 Values				0.626	0.110

In the structural model R^2 or the determination coefficient is a value that reflects the ability level of an independent variable in describing dependent variable (Mooi & Sarstedt). (Hair et al., 2019) explained that the value of R^2 will differ in each discipline, so there is no definitive standard in classifying the value of R^2. Human behavior cannot precisely predict, so the R^2 value may be low. (Van tonder & Petzer, 2018) explains that a value more than 0.1 was appropriately considered adequate. In this study we have two R^2 value. One for the EPTE (dependent variable) and second for the VTC (as dependent variable). The three construct show an R^2 value of 0.626, which means that tax evasion conditions understanding , tax evasion environment and the tax knowledge explained 62.6% of the variance in the ethical perception of tax evasion. The value of $R^2 = 0.11$ means that the construct ethical perception of tax evasion explained 11% of the variance in the voluntary tax compliance.

Table 6: Results of the hypothesis testing

Hypothesis testing	Relationship	Path coefficients	T-Value	P-Value	Decision	F^2
H1	EPTE ->VTC	-0.332	2.440	0.015	Supported	0.124
H2	TEC-> EPTE	0.046	0.499	0.618	Not supported	0.002
H3	TEE-> EPTE	0.691	6.641	0.000	Supported	0.515
H4	TK-> EPTE	-0.192	0.103	0.061	Not Supported	0.091

Note: *p<0.05, **p<0.01

Hypothesis testing

In this study hypothesis testing is performed by looking at the path coefficients or coefficients of the path as well as P-value of the coefficient of the path. The coefficient and P-value paths are not only able to reflect the strength of the relationship between variables, but also the strength of the test performed. The path coefficient values are in range of -1 to 1. Based on the table 6, the path coefficients for EPTE> VTC is -0.332 with a P-value of 0.015, which means that ethical perception of tax evasion has a significant negative influence on the voluntary tax compliance level. The path coefficients for TEC>EPTE is 0.046 with a P-value of 0.618, indicates that understanding of tax evasion conditions has a positive but insignificant influence on the ethical perception of tax evasion. The path coefficient for TEE>EPTE is 0.691 with a P-value of 0.000 explains that tax evasion environment has a significant positive influence on ethical perception of tax evasion. TK>EPTE has a path coefficient value of -0.192 with the P-value of 0.061, indicates that tax knowledge has an insignificant negative influence on ethical perception of tax evasion. Hypothesis testing can also be done by looking at T-ratios as well as confidence intervals. The hypothesis is accepted if the T-ratios > critical value. With the P- value >0.05 H2 and H4 are not supported.

Table 7: Construct cross validated redundancy (Q^2)

Endogenous latent variable	SSO	SSE	1-SSE/SSO
EPTE	448.000	273.355	0.390
VTC	168.000	159.964	0.048

Predictive Relevance of the model

In this study, the predictive relevance of the model was tested using the Stone-Geisser test, through the blindfolding approach (Geisser 1974; Stone 1974). The blindfolding techniques was applied to determine the predictive relevance of the model, as suggested by Sattler et al. (2010), because they stated that the "blindfolding procedure is only applied to endogenous latent variable that have reflective measurement model operationalization". The premise behind reflective measurement is that a latent construct produce a variation on observable items.

Henseler et al. (2009) explained that a Q^2 statistic exceeding zero represent predictive relevance. Table 7 presented the cross –validated redundancy Q^2 value for this study which is 0.390 for EPTE and 0.048 foe VTC both the values are > zero indicates the predictive validity.

Conclusions

From the results of the study, it can be concluded that tax evasion environment has significant positive influence on the ethical perception of tax evasion. Understanding of tax evasion conditions and tax knowledge do not significantly influence ethical perception but Ethical perception has a significant negative effect on voluntary tax compliance. The discussion of each construct is explained below.

The results of this study show that the tax evasion conditions has a positive influence on ethical perception but not significant. The influence is based on the path coefficient value of 0.046, p-value 0.618. Positive value in the path coefficients mean that the higher understanding of tax evasion conditions will lead to an increase in ethical perception. Mean respondent with higher score (show the disagreement if they are disagree with the conditions they take evasion as an unethical act) in tax evasion conditions consider tax evasion as an unethical act.

Tax evasion environment is found to have a positive significant influence on ethical perception of tax evasion with a path coefficient value of 0.691, p-value 0.000. The positive path coefficient indicates that the higher score of tax evasion environment means individuals consider tax evasion to be an unethical act.

There is a negative but not significant influence of tax knowledge on ethical perception with path coefficient value -0.192, p-value 0.061. The negative effect means the higher the level of tax knowledge, the more the individual will consider tax evasion to be an unethical act. People with higher tax knowledge have a better understanding of the tax system, tax rates, allowances and other facilities available to them.

The results find that there is a significant negative influence of ethical perception of tax evasion on voluntary compliance with the path coefficient value -0.332, p-value 0.015. This means individuals who consider tax evasion as an ethical act have lower level of voluntary tax compliance and those who consider evasion as an unethical act have higher level of compliance.

Limitation of this study:

This study is inseparable from some limitations. First, a small sample in this research, which is selected with convenience sampling method, could not represent the overall population, so further research with a more adequate and representative sample is needed. Second, we only take tax evasion environment, tax knowledge and understanding of tax evasion conditions to predict the ethical perception. There are also other factors available those affect tax evasion so further research with the other construct is needed.

References:

Bornman, M., & Ramutumbu, P. (2019). A conceptual framework of tax knowledge. *Meditari Accountancy Research*, 27(6). 823-839. Doi: 10.11108/MEDAR-09- 2018-0379.

Cechovsky, N.(2018). The importance of tax knowledge for tax compliance: A study on the tax literacy of vocational business students. *European Conference on Educational Research (ECER), Vocational Education and Training Network (VETNET)* (September), 113-121. Doi:10.5281/zenodo.1319718.

Devos, K. (2016). A comparative study of compliant & non-compliant individual taxpayers in Australia. *Journal of Business and Policy Research*, 2(2), 180-196.

Eriksen K. & Fallan. (1996). Tax knowledge and attitudes towards taxation; A report on a quasi- experiment. *Journal of Economic Psychology*, 17, 387-402.

Hair, J.F., Risher, J.J., Sardtedt, M., & Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. *Emerald Group Publishing Ltd*, 31, 2-24.

Kock, N., & Lynn, G. S. (2012). Lateral Collinearity and misleading results in variance- based SEM: An illustration and recommendations. *Journal of the Association for information Systems*, 13(7), 546-580. Doi:10.17705/1jais.00302.

Khalid, T.B., Alshirah, A. F., & Alshirah, M. H. (2022). Determinants of tax compliance intention among Jordanian SME's: A focus on the theory of planned behavior. *Economics* 10:30. http:// doi.org/10.3390/economies 10020030.

Kenno, B.G. (2020). Factors affecting perception of taxpayers towards the seriousness of tax evasion in Bale Robe Town Administration, Oromia, Ethiopia. *International Journal of Finance and Accounting*, 9(2), 21-30.

Mitu, N.E, (2016). Taxpayer behaviour: Typologies and influence factors. Retrieved from https://www.researchgate.net/publication/303819759.

Machogu, C. G. & Amayi, J. B. (2013). The effect of taxpayer education on voluntary tax compliance, among SMES in mwanza city- Tanzania. *international journal of marketing, financial service & management research, 2(8),* Retrieved from www.indianresearchjournal.com

McGee R.W. & Smith S. (2007). Ethics, tax evasion, gender and age: An empirical study of Utah opinion. Online available on http://ssrn.com/abstract=955973.

McGee, R. W.,The Ethics of Tax Evasion: Perspectives in Theory and Practice (pp. 125- 132), Attitude on the Ethics of Tax Evasion: A Survey of Philosophy Professors, *Springer*., New York, 2012. Doi: 10.1007/978-1-4614-187-8

Mooi, E., & Sarstedt, M. (2011). A Concise Guide to Market Research: The Process, Data and Methods Using IBM SPSS Statistics, *Springer Heidelberg Dordrecht London*., New York,

Pickhardt, M. & Prinz, A. (2013). Behavioral dynamics of tax evasion – A survey. *Journal of Economic Psychology.*

Reckers P. M. J., Sanders D.L., & Roark S. J. (1994). The influence of ethical attitudes on taxpayer compliance. *National Tax Journal*, 47(4), 825-836.

Ritsatos, T. (2014). Tax evasion and compliance: rom the neo classical paradigm to behavioural economics, a review, *Emerald Group Publishing Ltd*, 10, 244-262.

Redae, R. B., & Sekhon, S. (2015). Taxpayers' knowledge and tax compliance behavior in Ethiopia: A study of tigray state. *International Journal of Management and Commerce Innovations, 3*(2), 1090-1102. Retrieved from www.researchpublish.com.

Saragih, A. H., & Purta, D. N. S. (2021). Ethical perception of tax evasion in Indonesia: determinants and consequences on voluntary tax compliance. *Journal of Accountancy and Finance*, 23(1), 1-14, ISSN 2338-8137 online.

Somani, S.A. (2016). Steps in research process (Partial Least Square of Structural Equation Modeling (PLS-SEM)). *International Journal of Social Science and Business*, 1(2).

Van Tonder, E., & Petzer, D. J. (2018). The interrelationship between relationship marketing constructs and customer engagement dimensions. *Service Industries Journal*, 38(13-14), 948-973. Doi: 10.1080/02642069.2018.1425398

INDIAN IT COMPANIES PATH FORWARDS (USING ALTMAN Z SCORE)

Dr. Gautam Prasad *

Ms. Ankita Rajput **

ABSTRACT

The pivotal Indian IT solution corporation (utmost among them are TCS, Infosys, Wipro and HCL Technology) flourished for more than a decagon. They all furnish low priced value, peak standard commerce and IT deployment solutions. The study aimed to obtain factual confirmation about the condition of monetary distress forecasting using Altman's Z Score for IT Companies (TCS, Infosys, Wipro and HCL Technology) for the financial period from 2015-2016 to 2019-2020. The data is processed through statistical tools. Monetary distress occurred only in Wipro for the year 2017-2018. It is instituted in this paper that Altman Z score is a good forecaster of coming outcomes.

KEYWORDS : Altman Z Score, Monetary, Prediction, TCS, Infosys, Wipro, HCL Technology, Financial, Information Technology

INTRODUCTION

Financial statements are the final accounts of a concern. These are made at the end of the accounting period through which the financial results (Income Statement or Profit and Loss Account) and financial position (Statement of Financial Position or Balance Sheet) of the concern can be known. Financial statement analysis is done to review the performance of a concern over the past period, to assess current position and financial and operational efficiency, to predict growth and profitability prospects and to take loan decisions by financial institutions and banks to determine credit risk.

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The origin of IT industry in India can be traced to 1974, when the mainframe manufacturer, Burroughs, asked its India sales agent, Tata Consultancy Services (TCS), to export programmers for installing system software for a U.S. client. The IT industry originated under unfavorable conditions. Local markets were absent and government policy towards private enterprise was hostile. The industry was begun by Bombay – based conglomerates which entered the business by supplying programmers to global IT firms located overseas.

During that time Indian economy was state controlled and the state remained hostile to the software industry through the 1970s. Import tariffs were high (135% on hardware and 100% on software) and software was not considered an "industry", so that exporters were ineligible for bank finance. Government policy towards IT sector changed when Rajiv Gandhi became Prime Minister in 1984. His new computer policy (NCP-1984) consisted of a package of reduced import tariffs on hardware and software (reduced to 60%), recognition of software exports as a "delicensed industry", i.e., henceforth eligible for bank finance and frees from license- permit raj, permission for foreign firms to set up wholly- owned, export- dedicated units and a project to set up a chain of software parks that would offer infrastructure at below- market costs. These policies laid the foundation for the development of a world class IT industry in India.

Today, Indian IT companies such as Tata Consultancy Services (TCS), Wipro, Infosys, HCL Technologies et al are renowned in the global market for their IT prowess. The Indian education system places strong emphasis on mathematics and science, resulting in a large number of science and engineering graduates. Mastery over quantitative concepts coupled with English proficiency has resulted in a skill set that has enabled India to reap the benefits of the current international demand for IT. Indian programmers are known for their strong technical and analytical skills and their willingness to accommodate clients. India also has one of the largest pools of English speaking professionals. The cost of software development and other services in India is very competitive as compared to the west.

Established in 1968, Tata Consultancy Services a member of the Tata Group has grown to its current position as the largest IT services firm in Asia based on its record of outstanding service, collaborative partnerships, innovation, and corporate responsibility. It was founded by Jamsetji Tata in 18481 and it is one of India's most respected institutions today. Their mission reflects the Tata Group's longstanding commitment to providing excellence. They are world's first organization to achieve an enterprise- wide Maturity level 5 on both CMMI and P-CMM, using the most rigorous assessment methodology – SCAMPISM. Additionally, TCS' Integrated Quality Management System (iQMS) integrates process, people and technology maturity through various established frameworks and practices including IEEE, ISO 9001:2000, CMMI, SW – CMM, P – CMM and 6 – Sigma.

Infosys Limited (formerly Infosys Technologies Limited) is an Indian multinational corporation that provides business consulting, information technology and outsourcing services. It has its headquarters in Bengaluru, India. Infosys was established by 7 engineers in Pune, India with an initial capital of $250 in Graffiti 2000 S.r.L. was registered as Infosys Consultants

Private Limited on Jul 2, 1981. In 1983, it relocated its office to Bengaluru. The company changed its name to Infosys Technologies Private Limited in April 1992 and to Infosys Technologies Limited when it became a public limited company in June 1992. It was later renamed to Infosys Limited in June 2011.

This all started in 1943 when founder clan of Premji's family setup the vegetable oil refinery company. It was named as Western India Vegetable Products Limited (WIPRO). However, the company diversified the overall business and ventured into information technology, consulting, consumer care and lighting, infrastructure and medical systems. During the formative years of Indian IT industry in 1977, the name was shortened to Wipro Products Limited. Over the years, the company has transformed in several ways from type of product to the service offerings. Due to this shift in product and industry focus the traditional "sunflower" logo has been changed to more live and diversified logo on May 2, 2017.

Shiv Nadar, Arjun Malhotra, Subhash Arora, Badam Kishore Kumar, T.V. Bharadwaj and Arun Kumar H all were colleagues at Walchand's cooper at Pune. Where, in 1976 they decided to start a company called Microcomp that makes and sells teledigital and scientific calculators. Later the company was renamed as Hindustan Computers Limited started with mere investment of rs. 1,87,000). HCL Technologies Ltd is a leading global IT services company that helps global enterprises re-imagine and transform their businesses through digital technology transformation. It was incorporated in the year 1991 as HCL Overseas Ltd. The company received the certificate of commencement of business on February 10, 1992.

Altman Z score was developed by Edward Altman. It outputs credit strength of a company and likely hood of bankruptcy. Its based out of 5 ratios, profitability, liquidity, leverage, solvency and activity to predict whether a company has high probability of being solvent. Z scores are transformations that can be made to the values or scores of a normal distribution, with the purpose of analyzing their distance from the mean, expressing them in units of standard deviation. A Z score indicates the direction and degree to which an individual value obtained is far from the average, on a scale of standard deviation units.

The blueprint of Altman Z score is X1 multiplied by 1.2 add X2 multiplied by 1.4 add X3 multiplied by 3.3 add X4 multiplied by 0.6 and add X5 multiplied by 1.0. The meaning of X1 is current liabilities subtraction from current assets which is also known by working capital division by total assets. The meaning of X2 means the total assets dividing retained earnings. The X3 is total assets dividing earnings before interest and tax also popularly known as EBIT. The meaning of X4 here is total liabilities dividing book value of equity is received by total assets subtraction total liabilities and X4 denotes total assets dividing total sales. These ratios can be easily calculated by getting detail from balance sheet and this is more reliable approach because third party website has no guarantee. So do self analysis that is better for active investor. The categorization of model is – if the Z score is exceeding 2.9, it is considered that the company is all right and if the Z score is beneath 1.23, then the company is considered that it is insolvent. Practicalities between 1.23 to 2.9 constitute the area called grey and it is said that in this zone there is no understandable forecasting.

REVIEW OF LITERATURE

The significance of Z score has been foreground by a quantity of researchers. A study conducted by **Price Water Coopers (2002)** on 1,200 publicly owned manufacturing companies (data from 1998 – 2001) concluded that the Z – score remains a viable measure of financial distress. It has been used to predict viability in a number of sectors like telecommunications **(Permatasari, 2006)**, wood industry **(Muhammad, 2008)**, pharmaceuticals **(Ambarsari, 2009)**, etc. In all these situations, it was found that the respective industries were in distress financial situation, which was later proved correct. The studies thus proved that Altman model of Z – score would provide accurate prediction of financial distress. Observed outcomes constructed by studies such as **Andrade and Kaplan (1998)**, **Kaplan and Stein (1993)** and **Whitaker (1999)** furnished proofs on firms related to elements of monetary loss. **Jacobi (2010)**differentiated variations of Altman replicas in knowing monetary failures and concluded that most replicas are similarly good at forecasting affliction. The theory implicating the monetary loss is not new **(Graham & Dodd, 1934)**.**Devi and Shaik (2012)** constructed that an effectual coaching is furnished keeping in mind the intention. **Alareeni and Branson (2013)** studied 71 break down and 71 non break down companies in Jordan to know the effectiveness of Altman's mode(1998 – 2008) and found that model was productive and forecasting was correct. **Odipo and Sitati (2008)** evaluated Altman's monetary condition could be helpful in predicting loss in Kenya using 10 firms sample (Nairobi Stock Exchange 1989 – 2008).**Kpodoh (2009)** studied Altman's Z score utilizing the data from Ghana's industry and founded that Z score is strong enough to find the distress. **Moghadem et al. (2010)** studied Altman and Ohlson models on Iranian companies (1998 – 2005) and found that both the models are strong enough to know the insolvency conditions.

OBJECTIVES OF THE STUDY

- To review and investigate the commercial position of four IT (Information Technology) companies by taking into consideration the Altman's Z score to forecast the companies condition of insolvency.
- To know whether there is need of internal reconstruction or not. Internal reconstruction of retained earnings, current assets, current liabilities, total assets, earnings before interest and tax, book value of equity and total sales.

The companies taken for study are Tata Consultancy Services (TCS), Infosys, Wipro and HCL Technologies. The period of the study is 2015 – 2016 to 2019 – 2020.

LIMITATION OF THE STUDY

- The study is restricted to only the selected four IT companies.
- The facts and figures possessed and calculated are sub ordinate in nature.
- The contemplation of only the five varying is studied (Altman version only).
- The subjective part is not taken into consideration.

HYPOTHESIS

H01 : There is no notable influence of working capital to total assets on companies taken for study.

H02 : There is no notable influence of retained earnings to total assets on companies taken for study.

H03 : There is no notable influence of earnings before interest and tax to total assets on companies taken for study.

H04 : There is no notable influence of book value of equity to total liabilities on companies taken for study.

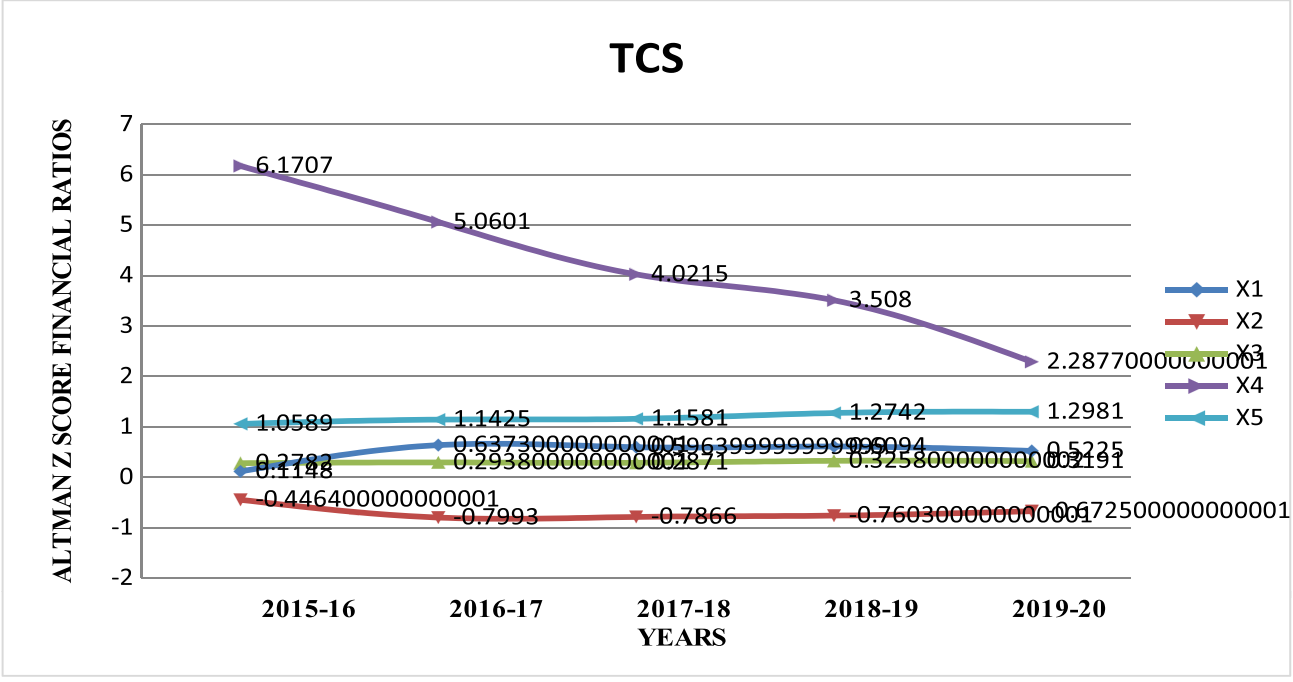
H05 : There is no notable influence of total sales to total assets on companies taken for study.

RESEARCH METHODOLOGY

The research is fundamentally fact – finding in nature and pauses on only four selected IT companies. The statistics is collected from sub ordinate sources like annual reports (TCS, Infosys, Wipro and HCL Technology) and various websites (Economic Times, moneycontrol, etc.). The period taken in this study is from the financial year 2015 - 2016 to 2019 - 2020. Our option of the representative time is determined. The observed data in the study requires two steps to be completed. First, is the calculation and then forecasting. The varying elements used in the study are working capital, retained earnings, earnings before interest and tax, book value of equity, total sales, total assets and total liabilities.

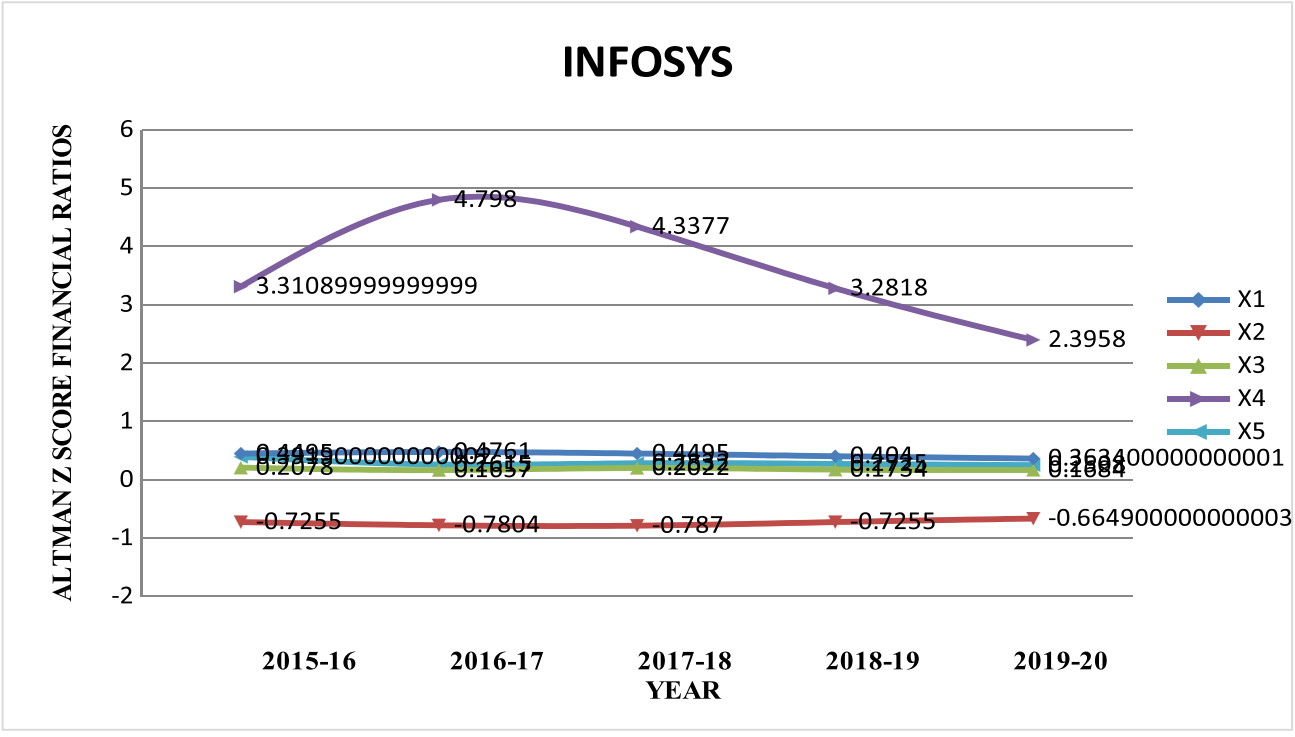
DATA ANALYSIS AND INTERPRETATION

ANALYSIS CHART 1: TCS



On X axis the years taken for study are taken and Y axis the Altman ratios are shown. The X1 is computation is working capital divided by total assets. The X2 is computed by dividing retained earnings to total assets. The X3 is computed by dividing earnings before interest and tax to total assets. The X4 is computed by dividing book value of equity to total liabilities. The X5 is computed by dividing total sales to total assets. X1 ratios initially increased and later in the last year of study decreased but more than the first year (0.1148 – 1st year, 0.6373 – 2nd year, 0.5964 – 3rd year, 0.6094 – 4th year and 0.5225 – 5th year). X2 ratios of TCS for 1st year taken for study is -0.4464, 2nd year -0.7993, 3rd year -0.7866, 4th year -0.7603 and 5th year -0.6725. These ratios changed from -0.4464 to -0.6725. X3 ratios moved in a zig zag position (0.2782 – 1st year, 0.2938 – 2nd year, 0.2871 – 3rd year, 0.3258 – 4th year and 0.3191 – 5th year). X4 ratios decreased from 6.1707 in 1st year, 5.0601 in 2nd year, 4.0215 in 3rd year, 3.5080 in 4th year and 2.2877 in 5th year. X5 ratios improve and are increasing throughout (1.0589 for 1st year, 1.1425 for 2nd year, 1.1581 for 3rd year, 1.2742 for 4th year and 1.2981 for 5th year).

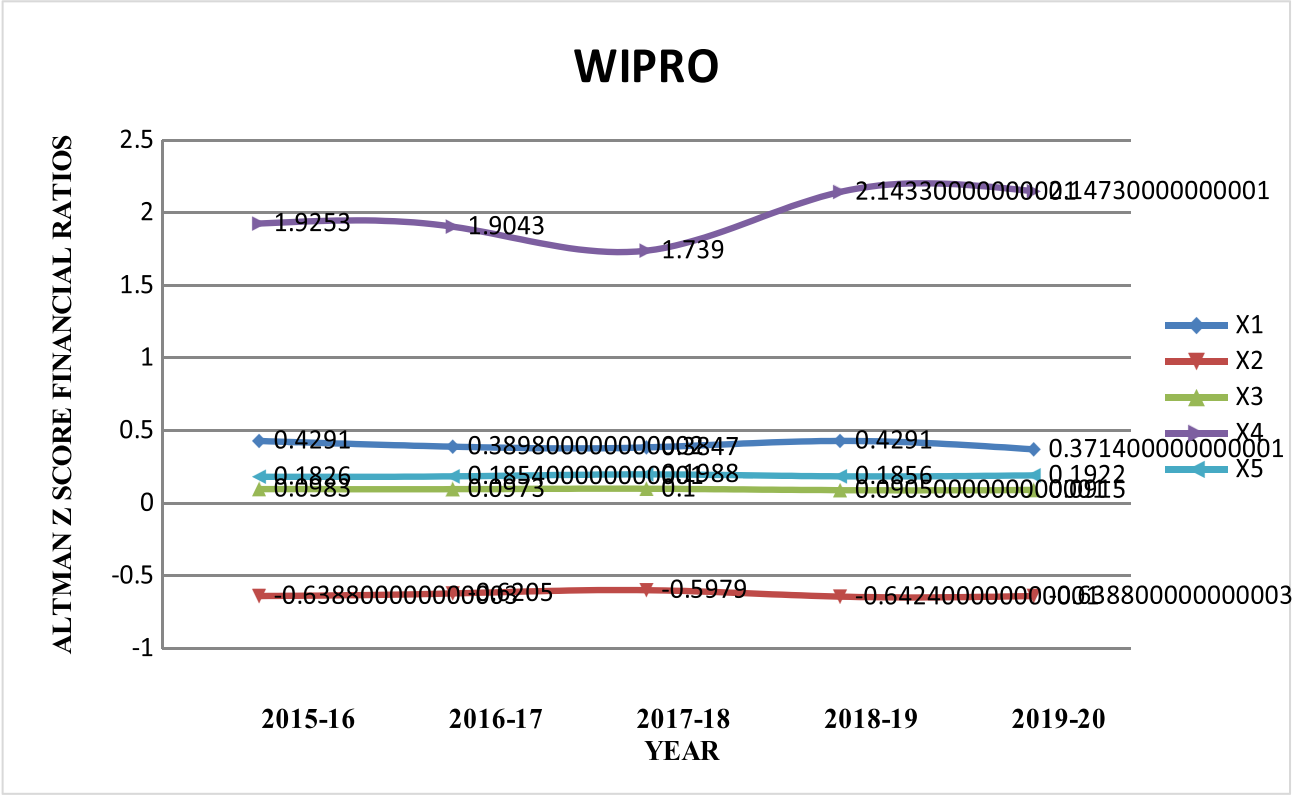
ANALYSIS CHART 2 : INFOSYS



On X axis the years taken for study are taken and Y axis the Altman ratios are shown. The X1 is computation is working capital divided by total assets. The X2 is computed by dividing retained earnings to total assets. The X3 is computed by dividing earnings before interest and tax to total assets. The X4 is computed by dividing book value of equity to total liabilities. The X5 is computed by dividing total sales to total assets. The X1 ratios decreases at slow speed (0.4495 – 1st year, 0.4761 – 2nd year, 0.4495 – 3rd year, 0.4040 – 4th year and

0.3634 – 5th year). All X2 ratios are in negative for Infosys because of retained earnings (-0.7255 for 1st year, -0.7804 for 2nd year, -0.7870 for 3rd year, -0.7255 for 4th year and -0.6649 for 5th year). The X3 ratios initially decreases and then move upwards and later decreases (1st year – 0.2078, 2nd year – 0.1657, 3rd year – 0.2022, 4th year – 0.1734 and 5th year – 0.1684). X4 in the first year increases and then starts decreases (3.3109 in 1st year, 4.7980 in 2nd year, 4.3377 in 3rd year, 3.2818 in 4th year and 2.3958 in 5th year).The X5 ratios moves in a zig zag position in a decreasing way (0.3919 – 1st year, 0.2615 – 2nd year, 0.2832 – 3rd year, 0.2725 – 4th year and 0.2508 – 5th year).

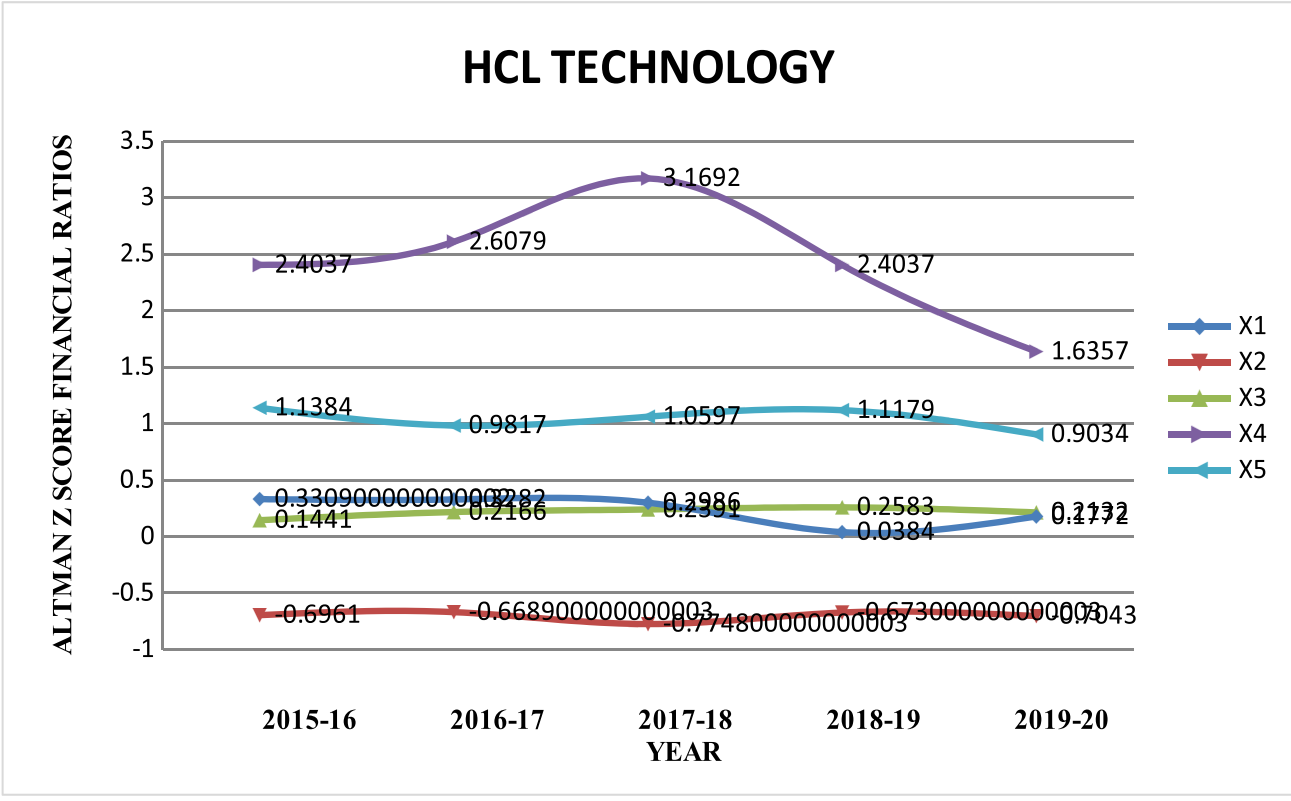
ANALYSIS CHART 3 : WIPRO



On X axis the years taken for study are taken and Y axis the Altman ratios are shown. The X1 is computation is working capital divided by total assets. The X2 is computed by dividing retained earnings to total assets. The X3 is computed by dividing earnings before interest and tax to total assets. The X4 is computed by dividing book value of equity to total liabilities. The X5 is computed by dividing total sales to total assets. The X1 ratios moves in a decreasing way in a zig zag position (0.4291 for 1st year, 0.3898 for 2nd year, 0.3847 for 3rd year, 0.4291 for 4th year and 0.3714 for 5th year). The X2 ratios are negative and same for first and last year taken for study (-0.6388 – 1st and 5th year, -0.6205 – 2nd year, -0.5979 – 3rd year and -0.6424 – 4th year). X3 ratios moved in a meandering way (0.0983 in 1st year, 0.0973 in 2nd

year, 0.1000 in 3rd year, 0.0905 in 4th year and 0.0915 in 5th year). X4 ratios have improved a lot in the years taken for study (1.9253 – 1st year, 1.9043 – 2nd year, 1.7390 – 3rd year, 2.1433 – 4th year and 2.1473 – 5th year). The X5 ratios moved in a increasing way (0.1826 in 1st year, 0.1854 in 2nd year, 0.1988 in 3rd year, 0.1856 in 4th year and 0.1922 in 5th year).

ANALYSIS CHART 4 : HCL TECHNOLOGY



On X axis the years taken for study are taken and Y axis the Altman ratios are shown. The X1 is computation is working capital divided by total assets. The X2 is computed by dividing retained earnings to total assets. The X3 is computed by dividing earnings before interest and tax to total assets. The X4 is computed by dividing book value of equity to total liabilities. The X5 is computed by dividing total sales to total assets. The X1 ratios moved downwards (0.3309 for 1st year, 0.3283 for 2nd year, 0.2986 for 3rd year, 0.0384 for 4th year and 0.1772 for 5th year). X2 ratios for all five years are in negative (-0.6961 – 1st year, -0.6689 – 2nd year, -0.7748 – 3rd year, -0.6730 – 4th year and -0.7043 for 5th year). The X3 ratios increased for first four years and then decreased in last year but it is more than first year (0.1441 in 1st year, 0.2166 in 2nd year, 0.2391 in 3rd year, 0.2583 in 4th year and 0.2132 in 5th year). The X4 ratios initially increased and then decreased (1st year – 2.4037, 2nd year – 2.6079, 3rd year – 3.1692, 4th year – 2.4037 and 5th year – 1.6357). X5 ratios moved in a meandering position (1.1384 in 1st year, 0.9817 in 2nd year, 1.0597 in 3rd year, 1.1179 in 4th year and 0.9034 in 5th year).

COMPARATIVE ANALYSIS OF Z SCORE

TABLE:1

YEAR	Z SCORE TCS	Z SCORE INFOSYS	Z SCORE WIPRO	Z SCORE HCL TECHNOLOGY
2015-16	5.19218	2.58788	1.28277	2.47869
2016-17	4.79384	3.16587	1.24813	2.71860
2017-18	4.13287	2.99068	1.19678	3.02385
2018-19	4.12100	2.28290	1.38579	2.51639
2019-20	3.40925	1.74922	1.33389	1.81500

FINDING REMARKS

TABLE: 2

YEAR	CATEGORIZATION FOR TCS	CATEGORIZATION FOR INFOSYS	CATEGORIZATION FOR WIPRO	CATEGORIZATION FOR HCL TECHNOLOGY
2015-16	SAFE ZONE	GREY ZONE	GREY ZONE	GREY ZONE
2016-17	SAFE ZONE	SAFE ZONE	GREY ZONE	GREY ZONE
2017-18	SAFE ZONE	SAFE ZONE	DISTRESS ZONE	SAFE ZONE
2018-19	SAFE ZONE	GREY ZONE	GREY ZONE	GREY ZONE
2019-20	SAFE ZONE	GREY ZONE	GREY ZONE	GREY ZONE

Z scores above 2.99 are considered safe and companies are not likely to be insolvent soon. The Z scores of TCS for all the years are in safe hands which means that scores are above 2.99 and are in “Safe” zone. The Z scores for Infosys fluctuate between 1.74922 and 3.16587. It means that it moves between grey and safe zone. The Z scores for Wipro moves between grey zone and distress zone i.e., between 1.38579 to 1.19678. HCL Technology Z scores are between grey zone and safe zone. They move between 1.81500 to 3.02385.

CONCLUSION

In this research, we evaluated the communal failures of four IT companies i.e., of TCS, Infosys, Wipro and HCL Technology. The empirical technique involves two step processes.

First, the Altman Z score is used and then the prediction is done. A sensible lender finds Z scores as a way to know the financial soundness. From this research it is known that Wipro company is likely to be insolvent. It can be concluded from the study that there is no notable influence of X1 ratios, there is notable influence of X2 ratios because of negative retained earnings, there is no notable influence of X3 and X4 ratios and there is notable influence of X5 ratios. It is evident from the study that Wipro is facing financial distress.

REFERENCES

Agarwal, V. and Taffler, R. J. (2007), "Taffler Z-Score Model : Predictive Ability", Accounting and Business Research, 37(4), pp. 286-299.

Alareeni& Branson (2013), "A Case Study : Jordon Listed Companies Failure Prediction", International Journal of Business and Management, 8(1), pp. 113-117.

Allayannis et al. (2003), "East Asia Foreign Debt : Capital Structure and Financial Risk", The Journal of Finance, 58(6), pp. 2669-2707.

Altman, E. I. (1993), "Corporate Financial Distress and Bankruptcy", 2, wiley, New York.

Altman, E.I. (1968), "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", Journal of Finance, pp. 191-205.

Aziz, M. A. (2006), "Corporate Bankruptcy Prediction", Corporate Governance, 6(1), 18-33.

Beaver, W.H. (1966). "Financial Ratios as Predictors of Failure", Journal of Accounting Research, 4, pp. 72-107.

Begley, J., Mining, J. and Watts, S. (1996), "An Analysis of Altman's and Ohlson'sModels: 1980's Bankruptcy Classification Errors", Review of Accounting Studies, 1(4), 268-283.

Bellovary, J. and Akers, M. (2007), "A Review of Bankruptcy Prediction Studies", Journal of Financial Education, 33, pp. 538-563.

Blum, M. P. (2015), "Failing Company Discriminant Analysis", Journal of Accounting Research, 12(1), 1-25.

Blume, L. (1994), "The Volume Role : Market Statistics and Technical Analysis", Journal of Finance, 49, pp. 153-180.

Calandro, J. (2007), "Altman's Z Score as a Strategic Assessment and Performance Management Tool", Strategy and Leadership, 35(5), pp. 38-42.

Chaudhry, S. (2016), "The analytical study of Altman Z score on NIFTY 50 Companies", International Journal of Management & Social Sciences, 3(3), pp. 2455-2667.

Chung, K. C., Tan, S.S., and Holdsworth, D. K. (2008), "Multivariate Discriminant Analysis and Artificial Neutral Network : Insolvency Prediction Model", International Journal of Business and Management, 3(1), pp. 20-28.

Denis. (1995), "Performance Changes : Top Management Dismissals", The Journal of Finance, 50(4), pp. 1030-1056.

Dichev. (1998), "Is the Risk of Bankruptcy a Systematic Risk", The Journal of Finance, 53(3), pp. 1132-1145.

https://www.moneycontrol.com

https://www.valueresearchonline.com/stocks/4094/thomas-cook-india-ltd#snapshot

https://www2.deloitte.com/us/en/insights/topics/talent/business-performance-improvement/process-redesign.html

Hull, John C. (2015), "Risk Management and Financial Institutions", John Wiley & Sons Inc., 4thedn., Hoboken, New Jersey.

Kusewitt, B. (1985), "A Study of Strategic Acquisitions Factors", Strategic Management Journal, 6, pp. 152-168.

Lang and Stulz. (1992), "An Empirical Analysis : Competitive and Contagion Intra – Industry Effects of Bankruptcy", Journal of Finance Economics, 32, pp. 46-59.

Malcolm, J. and Michael, J. (2001), "An Application to Corporate Failure Prediction : Variable Precision Rough Set Theory", Omega, Elsevier, 29(6), pp. 562-575.

Mohammed, A. A. and Mostafa, R. M. (2014), "Predicting Financial Problems of Companies Listed in Trading Sector Stock Exchange Through Altman's Z Score", Australian Journal of Basic and Applied Sciences, 8, pp. 380-383.

Molina, C.A, (2005), "An Examination of the Effect of Leverage on Default Probabilities", Journal of Finance, 60(3), pp. 1428-1457.

Opler and Titman. (1994), "Corporate Distress and Financial Distress", The Journal of Finance, 49(4), pp. 1016-1039.

Sudarshan, S. (2001), "An Empirical Analysis : Corporate Financial Distress", British Journal of Management, 12(3), pp. 183-197.

Shockley. (2003), “Equlibrium Anomalies”, The Journal of Finance, 58(6), pp. 2667- 2580.

Zeytmoglu, Emin&Akarun, Yasemin, D. (2013), “An Empirical Application on Istanbul Stock Exchange : Prediction of Financial Failure”, Journal of Applied Finance & Banking, 3(3).

BLOCKCHAIN TECHNOLOGY ADOPTION IN ACCOUNTING AND AUDITING: BENEFITS AND CHALLENGES

Himalaya Singh *
Dr. Shilpa Vardia **

Abstract

Blockchain technology identified as a digital ledger which the records cannot be deleted or changed is considered to have significant advantages that will replace of the traditional accounting system. It provides significant advantages such as minimizing the risks of fraud and corruption, operational simplification by means of accounting transaction. Blockchain facilitates accounting, provides real-time reporting and real-time audit. However it is a new technology so there are many challenges. There is a lot of discussion about blockchain, but people do not know the true value of blockchain. The main challenge associated with blockchain is a lack of awareness of the technology. This study aims to identify the benefits and challenges of using blockchain technology adoption in accounting and auditing.

For this, we did an opinion survey through a questionnaire at 5 points Likert scale. The questionnaire has been divided into two parts one is demographic profile and the other is benefits challenges-related questions. We used descriptive statistics and a non-parametric Kruskal Wallis test to analyze the non-probabilistic sample of 75 respondent's data set.

The respondents of our survey are quite aware about this technology and the source of getting information regarding this advanced technology is both electronic and non-electronic

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sources. The result of our study discovered that the Better transparency between internal and external user of accounting is the only benefit on which all respondents possess the same opinion but on the rest of the benefits significant difference in the opinion of the respondent was found. And in respect of challenges only Blockchain technology Consumes high energy on which all respondent posses the same opinion but on rest of the challenges the significant difference in opinion of the respondent was found.

Keywords: Blockchain, technology, Real-time reporting, Benefits, Challenges, Accounting & Auditing.

Introduction

Blockchain technology is a distributed transactional database, a kind of general ledger or registry, in which transactions and details of these transactions "(date, place, amount, anonymized participants and their encrypted signatures)" are recorded and verified through consensus algorithms. Blockchain technology is an accounting technique that helps in assets ownership transfer, and maintaining of precise financial information. It is a technology that mostly entails measuring, analyzing and communicating of financial information.

Since the internet, blockchain has been viewed as one of the most important disruptive technologies (Liu, Wu, and Xu 2019). Immutability, Security, Decentralization, Transparency, Traceability, Speedy and Efficient are the potential benefits of blockchain technology in accounting (Pugna & Dutescu 2020) it is also significantly altering the face of traditional accounting and bookkeeping. Here is a description of the benefits of adopting blockchain technology in accounting.

The immutability means the blockchain ledgers are permanent and it keeps the data unaltered and unchanged. Security denotes that the data is sensitive and important, and blockchain can significantly change how your critical information is viewed. Decentralization/Distributed ledger system refers to a procedure in which no single authority is in control of any transaction that occurs within the system, whereas blockchain prevents fraud and unauthorized activity.

Blockchain can potentially be applied in accounting, auditing professions in the following ways:

A. Commence and execute smart contracts or transactions just as payment of account receivable after all the condition in the agreements is met.

B Blockchain technology can authorise, verify, and record accounting business transactions in near real-time and without human intervention.

C. Provide transactions traces and history, which is necessary for audit and assurance purposes for verification of business transactions, incomes, expenses, assets, and liabilities etc.

D. Blockchain can be used in continuous accounting. Blockchain ledgers can be used to store and audit information which can be easily shared with relevant stakeholders such as government, creditors, and business partners to provide an ongoing assurance.

In this research, we did an opinion survey through a questionnaire at 5 points Likert scale. The questionnaire has been circulated through various social media platform via mail, linked-in, WhatsApp, Facebook, instagram etc. and we divide our questionnaire into two parts one is the demographic part in which questions related to age, gender, and qualification has been asked. In the second part, we asked questions to respondents regarding their opinion on benefits and challenges from using this technology and the from which sources they are enhancing their knowledge regarding this technology.

We identified several benefits of blockchain technology irrespective of accounting & Auditing which mainly helps in Simple & Straight forward, Better transparency between internal and external user, Reduces Fraudulent Activity, secure record of proof, Less laborious & less time consuming, Possibility of frauds and errors is not maximum , Simple to get the full financial statements , Enable non-reversible transactions and all participants in a blockchain had transparency and accessibility over transactions, provide transparent and complete transaction very fast and Better transparency between internal and external user of accounting. On these benefits, we took the opinion of respondents.

We identified several challenges of blockchain technology irrespective of accounting & Auditing which mainly unhelps in difficult to edit transaction details afterward, Can Be Slow

when there is a fault in the network, a physical attack or failure that cuts off the pear to pear network, Realize inexpensive system, Consumes high energy,Make falsification is extremely hard etc.

This study prove the potential of this technology to improve accounting and auditing considers the challenges of adoption blockchain – lack of knowledge, use of nature and minimum number of capable institution and lack of encouragement from the govt. and public sector. This study contributes to indentify the perception of respondents about blockchain. The research addresses its potential to promote security in data storage and recording, processing and summarizing.

The research uses quantitative data collected through a questionnaire with both open and close ended question 15 in total. The non- probabilistic sample was composed 75 respondents. The closed ended questions were analyzed with descriptive statistics.

Review of Literature

Numerous studies have been done on the subject at the national as well as international level. Some of which are as follows:

Atanasovski, Trpeska & Lazarevska (2020) their research analyzed the technology's disruptive potential for current accounting information systems and accounting practitioners. They explored the overall benefits and impact of blockchain technology in accounting and auditing, as well as the consequences for professional careers. The most key benefits are improved accounting information trust and reliability, a continuous more efficient, and effective audit of financial statements, and a decreased risk of financial statement fraud. Despite the obvious advantages, they addressed the technology's primary problems, also as scalability, interoperability, confidentiality, and security.

Bizarro, Garcia, & Moore (2019) they stated in their analysis that the Blockchain is an opportunity, not a threat and that forthcoming accounting and auditing services will almost certainly contain some blockchain consideration. They described a few of the products in the marketplace that attempt to integrate blockchain technology. Blockchain still is relatively new, and software development is somewhat vibrant; moreover, they mentioned some of the products available in the market that tries to incorporate blockchain technology.

"CpaCanada, et al. (2018) in their investigation talked about a blockchain is a type of database used to register transactions through a distributed system. All participants such as individuals or companies using the shared database are "nodes" connected to the blockchain, each keeping an identical copy of the ledger. Each entry into a blockchain is a transaction that represents a value change between participants. In practice, many varied types of blockchains are being developed and examined. Nevertheless, most of blockchains track this common frame and approach .

Bansal, Batra, & Jain (2018) talked about the fundamentals of blockchain technology and how it affected accounting and auditing. They claimed that these new technology transaction tools provide the most chances for change in various accounting mechanisms, as well as establishing a new platform to restructure the business world and alter the accounting and auditing profession. Its potential impact on the accounting field should not be underestimated. Various prior innovations, such as the introduction of computers, ERP systems, and cloud computing, have just altered the auditing profession rather than rendering it redundant. Auditors will need to adopt a more data-centric approach that is focused on the future rather than the past.

Hambiralovic & Karlsson,(2018) in their study explained about the Bitcoin was first suggested by unknown the person or people who used the pseudonym Satoshi Nakamoto. The blockchain technology suggested for Bitcoin is a innovatory protocol that handles transaction past using a decentralized ledger and verifies transactions by cryptography.

Icaew, et al. (2018) in his study talked about the most basic features of blockchain technology which are make different from today's known ledgers are as follow**s**

Propagate: There is no single 'master' copy of a blockchain ledger, contrary there are many copies. All participants can access an exact copy of the ledger and all copies are same and equivalent. None of parties can control the ledger. New transactions can be saved rapidly and propagate to copies of all participants.

Permanence: When each user has own copy of the ledger, reality is designated by unanimity. Older transactions cannot be changed without consensus, meaning that blockchain registers are persistent. The whole ledger is stored by all participants and can be controlled and substantiated.

Programmability: Some blockchains permit for storage of program code as well as ledger

records – generating automatic daily entries that automatically run when started. These are called smart contracts.

Taylor, et al. (2017) in his study talked about whereas a conventional database records all data on single servers, blockchain databases are copied and stored on all computers that join the network. A blockchain is a digital ledger distributed to multiple locations to provide security and ease of global access. Currently, the primary use of this technology is bitcoin and other cryptocurrencies. However, it is expected to completely stop accounting operations of block chain technology in the very near future.

Nakamoto and Bystrom,(2016) in their examination centered about the Bitcoin which is a cash-like currency and offers a way to exchange property at peer to peer, is not based on a central clearing house such as financial institution. Instead, each ancient bitcoin operation is stored in a globally distributed digital ledger called blockchain that follow entire bitcoin transaction historically.

RESEARCH GAP:

After study of above literature, it has found that most of work done on blockchain technology. No work has been done on the benefits and challenges of using blockchain technology adoption in accounting and auditing because all the researchers worked on the secondary data. This would therefore be worth-wide to examine various respondents' opinion regarding the benefits and challenges of using blockchain technology adoption in accounting and auditing. The present research is humble attempt in this direction.

This study aims to identify the benefits and challenges of using blockchain technology adoption in accounting and auditing.

OBJECTIVES OF THE STUDY

1. To know the awareness of respondents regarding blockchain technology.
2. To know the opinion of respondents about benefits of blockchain technology in accounting and auditing
3. To explore the challenges of blockchain technology in accounting and auditing

RESEARCH METHODOLOGY

The study is based on primary data which was collected through a closed-ended structured questionnaire. We received 75 filled questionnaires through various sources.

The respondents for the present study were graduate, Post-graduate and research scholar. Personal interviews also taken for to know the problem facing by them. Likert scale of 5 points (5 being strongly agree, 4 being agree, 3 being neutral, 2 being disagree and 1 being strongly disagree) has been used to analyze the opinion regarding the benefits of using blockchain technology in comparison to traditional accounting. The period of study was 2021. **The statistical techniques like mean, Standard Deviation, Coefficient of Variance (CV), Smirnov & Shapiro-Wilk test and Kruskal-Wallis H Test were used for analysis.**

For the testing of normality of data set, we applied the Kolmogorov-Smirnov and Shapiro-Wilk test and we found in both tests the significance value is less than 0.05 which means data is not normally distributed hence we applied non-parametric Kruskal-Wallis test.

HYPOTHESIS

1. H_1 -- There is no significance difference between the opinions of various respondents regarding benefits of Blockchain Technology in accounting and auditing.

2. H_2 -- There is no significance difference between the opinions of various respondents regarding challenges of Blockchain Technology in accounting and auditing.

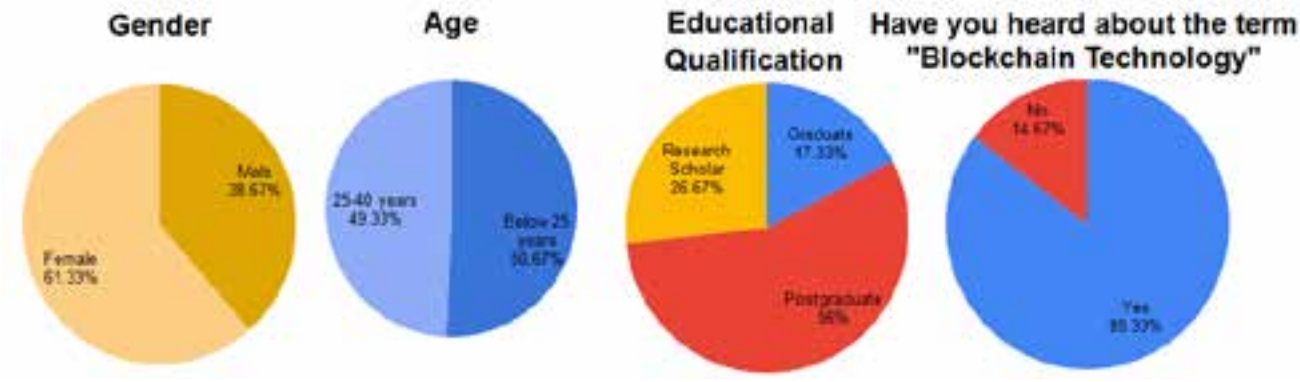
DEMOGRAPHIC PROFILE OF THE RESPONDENTS:

The following table describes the demographic picture of the 75 respondents. In the present study the social and economics profile of the respondent which includes gender, age, and education qualification.

Table 1: Demographic profile of the respondents

Social Factors	Classification	Frequency	Percentage (%)
Gender	Female	46	61.33
	Male	29	38.67

Age	Below 25 years	38	50.67
	25-40 years	37	49.33
	40 and above	-	-
Educational Qualification	Graduate	13	17.33
	Post-Graduate	42	56
	Research Scholar	20	26.67
Have you heard about the term "Blockchain Technology"	Yes	64	85.33
	No	11	14.67



The table 1 indicates 61.33% of female respondents and 38.67% of female respondents. Finally, the majority of respondents are female. 53.30% of respondent are highly in age group of below 25 years. Therefore, the young generations are aware about blockchain technology. 56% of respondent are majority in postgraduate. Out of 75 respondents are 17.33% of graduate, 56% of Postgraduate, 26.67% of Research Scholar. Most of important things in this questionnaire out of 75 respondents are 85.33% of know about the term "Blockchain Technology" and remaining respondent are not know about the term "Blockchain Technology".

Descriptive Statistics

For this research responses are collected through Google form and it was found that majority of respondents opinion regarding benefits of blockchain technology in accounting and auditing are on agreement side because the value of the arithmetic mean found in various statements of questionnaire is greater than 3.

Table 2: Descriptive statistics of opinion of respondents regarding benefits of blockchain technology in accounting and auditing

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
1	Q.1	Blockchain technology is Simple & Straight forward	75	4.57	0.841	18.39
2	Q.13	Better transparency between internal and external user of accounting	75	4.56	0.740	16.22
3	Q.15	Reduces Fraudulent Activity in the business accounting.	75	4.55	0.684	15.04
4	Q.9	A secure record of proof that the transaction occurred	75	4.53	0.684	15.10
5	Q.2	Less laborious & less time consuming as compared to manual accounting	75	4.51	0.891	19.77
6	Q.7	Blockchain accounting has reduced cost of maintain accounts books	75	4.45	0.741	16.63
7	Q.14	provides clarity over ownership of assets and existence of obligations	75	4.43	0.791	17.88
8	Q.5	Possibility of frauds and errors is not maximum	75	4.41	0.807	18.28
9	Q.6	Simple to get the full financial statements of companies	75	4.41	0.807	18.28
10	Q.4	Reconciliation of accounts and auditing is possible	75	4.37	0.712	16.29
11	Q.8	The requirement of employee has reduced after Blockchain accounting	75	4.36	0.671	15.38

12	Q.3	Blockchain technology is suitable for small businesses and big companies also	75	4.29	0.802	18.67
13	Q.10	Enable direct transactions without the need for trusted third parties	75	4.27	0.859	20.14
14	Q.11	Enable non-reversible transactions	75	4.23	0.815	19.28
15	Q.12	Prevent double-spending	75	3.96	0.936	23.65

Standard deviation along with coefficient of variation (C. V.) shows that there is not much variation in the responses for all statements. The highest C. V. value is 23.65% which is for "Prevent double-spending".The lowest value of C. V. is 15.04 % which is for "Reduces Fraudulent Activity in the business acoounting." Overall mean score for this statement shows agreement of respondents and variation is responses is very low. In general, C. V. ranges between these two extreme points.

The above table no. 2 respondents the priority about different perceived benefits of blockchain technology on traditional accounting and auditing. As per the study we can be said that the respondents given priority to Blockchain technology is Simple & Straight forward. Second most priority given to Better transparency between internal and external user of accounting than blockchain technology as it helps them to complete whole procedure of accounting and auditing. The third most priority given by respondents for Reduces Fraudulent Activity in the business accounting which help them in which they can easily maintain financial statements .Then after they gave priority to A secure record of proof that the transaction occurred, Less laborious & less time consuming as compared to manual accounting etc. are very simple. Here, we can say that respondents are giving most important about benefits like Less laborious, reduced cost of maintain accounts books, provides clarity over ownership of assets and existence of obligations, Possibility of frauds and errors is not maximum, and blockchain technology compliance is not easy because of sometimes Technical glitches on the cloud storage delay the submission process.

Table 3: Descriptive statistics of opinion of respondents regarding challenges faced in adoption of Blockchain technology in accounting and auditing

S.No	Q.No	Particular	N	Mean	Standard deviation	C.V.
1	Q.5	Is it difficult to edit transaction details afterward	75	4.27	0.935	21.19
2	Q.14	Blockchains Can Be Slow when there is a fault in the network	75	4.25	0.871	20.49
3	Q.6	A blockchain may fork in the event of a physical attack or failure that cuts off the pear to pear network	75	4.24	0.898	21.18
4	Q.1	Realize inexpensive system	75	4.23	1.110	26.26
5	Q.12	Blockchain technology Consumes high energy	75	4.20	1.065	25.37
6	Q.7	Record transactions based on fundamental principles (Scientific System)	75	4.17	0.760	18.21
7	Q.11	A high skill training set is required to maintain computerized accounting & auditing	75	4.15	0.865	20.86
8	Q.4	Make falsification is extremely hard	75	4.12	0.885	21.47
9	Q.13	Blockchain technology won't be able to work with sensitive information until anyone solves the problem	75	4.05	1.012	24.97
10	Q.3	Developing policy guidelines for encouraging Accounting and auditing to utilize the technology in the future	75	4.03	0.930	23.09
11	Q.8	Errors can be carried forward and compounded without anyone noticing	75	4.03	1.065	26.45

12	Q.2	Traders and transaction details are disclosed and privacy may not be protected	75	4.01	0.966	24.06
13	Q.10	Does Blockchain accounting involves the high risk of data loss	75	4.00	1.040	25.99
14	Q.9	Does not suit with companies that complete business transaction on a different dates	75	3.91	1.068	27.33

Standard deviation along with coefficient of variation (C. V.) shows that there is not much variation in the responses for all statements. The highest C. V. value is 27.33% which is for "Does not suit with companies that complete business transaction on a different date". The lowest value of C. V. is 18.21 % which is for "Record transactions based on fundamental principles (Scientific System)." Overall mean score for this statement shows agreement of respondents and variation is responses is very low. In general, C. V. ranges between these two extreme points.

The above table no. 3 respondents the priority about different perceived disadvantage of blockchain technology on traditional accounting and auditing. As per the study we can be said that the respondents given priority to it is difficult to edit transaction details afterward.Second most priority given to Blockchains Can Be Slow when there is a fault in the network than blockchain technology as it does not help them to complete whole procedure of accounting and auditing. The third most priority given by respondents for A blockchain may fork in the event of a physical attack or failure that cuts off the pear to pear network which not help them in which they can't easily maintain financial statements .Then after they gave priority to Realize inexpensive system, Blockchain technology Consumes high energy and A high skill training set is required to maintain computerized accounting & auditing etc. Here, we can say that respondents are giving most important about challenges faced in adoption of blockchain technology like Blockchain accounting involves the high risk of data loss, Traders and transaction details are disclosed and privacy may not be protected, Developing policy guidelines

for encouraging Accounting and auditing to utilize the technology in the future, Possibility of frauds and errors is maximum, and blockchain technology compliance is not easy because of sometimes Technical glitches on the cloud storage delay the submission process.

Hypothesis Testing:

$H0_1$: There is no significance difference between the opinions of various respondents regarding benefits of Blockchain Technology in accounting and auditing.

Opinion on Benefits of Blockchain technology

In this section, opinions of respondents have been analyzed on the basis of their qualification. There are three qualification groups and it was earlier found that respondents from PG group are higher as compared to other qualification. Results have been analyzed using Kruskal-Wallis H Test and have been presented in Table 4 and 5.

Table 4: Results of Kruskal-Wallis H Test for Qualification-wise opinion of respondents regarding opinion of respondents regarding benefits of blockchain technology in accounting and auditing.

	Kruskal- Wallis H Test	
Benefits	**Chi-Square**	**P Value**
Blockchain technology is Simple & Straight forward	5.849	0.54
Less laborious & less time consuming as compared to manual accounting	2.493	0.288
Blockchain technology is suitable for small businesses and big companies also	0.393	0.822

Reconciliation of accounts and auditing is possible	1.936	0.380
Possibility of frauds and errors is not maximum	2.565	0.277
Simple to get the full financial statements of companies	5.794	0.055
Blockchain accounting has reduced cost of maintain accounts books	4.436	0.109
The requirement of employee has reduced after Blockchain accounting	2.596	0.273
A secure record of proof that the transaction occurred	0.539	0.764
Enable direct transactions without the need for trusted third parties	2.501	0.286
Enable non-reversible transactions	1.199	0.549
Prevent double-spending	4.058	0.131
Better transparency between internal and external user of accounting	7.659	0.022*
provides clarity over ownership of assets and existence of obligations	5.003.	0.082
Reduces Fraudulent Activity in the business accounting	3.757	0.153

Results reveal that opinions of respondents of different qualification group are significantly different for "Better transparency between internal and external user of accounting" Results of Kruskal Wallis H Test reveal that opinion of respondents of different qualification - groups is significantly different for 1 out of 15 statements. Thus it can be said that qualification is an not important factor in influencing opinion of respondents for various Convenience.

Opinion on Challenges faced in adoption of blockchain technology

$H0_2$ There is no significance difference between the opinions of various respondents regarding challenges of Blockchain Technology in accounting and auditing.

Table 5: Results of Kruskal-Wallis H Test for Qualification-wise opinion of respondents regarding challenges of Blockchain Technology in accounting and auditing.

	Kruskal- Wallis H Test	
Challenges	**Chi-Square**	**P Value**
Realize inexpensive system	2.335	0.311
Traders and transaction details are disclosed and privacy may not be protected	4.521	0.104
Developing policy guidelines for encouraging Accounting and auditing to utilize the technology in the future	1.313	0.519
Make falsification is extremely hard	4.992	0.082
Is it difficult to edit transaction details afterward	2.243	0.326
A blockchain may fork in the event of a physical attack or failure that cuts off the pear to pear network	2.874	0.238

Record transactions based on fundamental principles (Scientific System)	3.633	0.163
Errors can be carried forward and compounded without anyone noticing	2.266	0.322
Does not suit with companies that complete business transaction on a different dates	2.630	0.268
Does Blockchain accounting involves the high risk of data loss	4.181	0.124
A high skill training set is required to maintain computerized accounting & auditing	4.750	0.093
Blockchain technology Consumes high energy	6.165	0.046*
Blockchain technology won't be able to work with sensitive information until anyone solves the problem	3.417	0.181
Blockchains Can Be Slow when there is a fault in the network	1.837	0.399

Results reveal that opinion of respondents of different qualification group are significantly different for "Blockchain technology Consumes high energy"

Results of Kruskal Wallis H Test reveal that opinion of respondents of different qualification - groups is significantly different for 1 out of 14 statements. Thus it can be said that qualification is not important factor in influencing opinion of respondents for various challenges faced in adoption.

CONCLUSION

This study aimed to identify benefits and challenges of using blockchain technology in accounting and auditing based on the perception of expert in accounting and auditing. The results demonstrated that Graduate, Post-graduate and research scholar were of the concepts and usability of the technology, which may be explained by the profile of the sample obtained.

Among the technology benefits, the respondents mentioned the elements of trust and control, information security and control against fraud and corruption.

According to the sample there are challenges to invest in blockchain within accounting and auditing, including the lack of information about the technology. Nowadays, digital technologies have become one of the main agenda topics of business World. Blockchain technology which is one of these technologies draws attention as an important area where enterprises are rapidly investing due to their potential usage areas in all business functions. Technology and innovation will continue to evolve and impact the auditing and accounting process.

It is an emerging technology that can generate more transparency, reliability, security, fairness in monetary transaction and optimization of accounting records and processes. Among its main challenges stand out the need for more use cases in the accounting and auditing, legal regulation, cultural resistance, the lack of knowledge etc. Finally, future research on accounting and auditing should work to verify benefits and challenges with a special look at the areas of monetary transaction, auditing and transfer of assets etc. As a globally distributed digital ledger that records cannot be changed and never destroyed, blockchain can be useful as a reliable ledger for a company's accounting records.

The security, validity and clarity provided by the blockchain will facilitate the auditor's tasks and ensure that the audit is performed in real time. As a result, it may be necessary to apply new policies and standards compatible with block chain technology by taking steps to enable to prepare the necessary regulations and infrastructure of the professional organizations in accordance with the change.

The research also revealed that accountant and auditor are satisfied about blockchain technology adoption in accounting and auditing It is found that most of accountant, auditor and research scholar are satisfied in majority of cases.

The results would benefit the blockchain technology to develop better and relevant information for 'accounting and auditing '.

REFERENCES:

Atanasovski, A., Trpeska, M., & Lazarevska, Z. B. (2020). The BlockChain Technology and Its Limitations for True Disruptiveness of Accounting and Assurance. *Journal of Applied Economic Sciences*, 15, 738-748.

Bizarro, P. A., Garcia, A., & Moore, Z. (2019). Blockchain Explained and Implications for Accountancy. *ISACA Journal*, 1.

Alarcon"John", J.L. & Ng, C. (2018). Blockchain and the Future of Accounting. *CPA Journal, Vol. 88(4) PP.26-29*

Aslan, U. & Turun, C.Ş. (2018). New Trends in Economics and Administrative Science *International Congress on Economics and Administrative Science (pp.2559-2568)*

CpaCanada (2018), Blockchain Technology and Its Potential Impact on theAudit and Assurance profession. *https://www.cpacanada.ca/en/business-and-accounting-resources/audit-and-assurance/canadian-auditing-standards-cas/publications/ impact-of-blockchain-on-audit (Accessed: 20.12.2018)*

Hambiraloyic, M & Karlsson R. (2018). Blockchain Accounting in triple entry system. *lup.lub.lu.se/luur/download?func=downloadFile&recordOId=8953732&fileOId=8953736 (Accessed: 06.01.2019)*

ICAEW (2018). Blockchain and the future of accountancy. *https://www.icaew.com/-/media/corporate/files/technical/information technology/technology/blockchain-and-the-future-of-accountancy.ashx (Accesed 12.02.2019)*

Bansal, S. K., Batra, R., & Jain, N. (2018). Blockchain the Future of Accounting. *The Management Accountant.* 53(6), 60-65.

Dai, J. & Vasarhelyi, M.A. (2017). Toward Blockchain-Based Accounting and Assurance. *Journal Of Informatıon Systems, 31(3), 5-21. DOI: 10.2308/isys-51804*

Tysiac, K. (2017). "Blockchain: An opportunity for accountants Or a threat" *https://www.journalofaccountancy.com/news/2017/nov/blockchain-opportunity-for-accountants -201717900.html. (Accessed: 15.12.2018)*

Simoyama, F.O.; Grigg, I.; Bueno, R.L.P & Oliveira, L.C. (2017). "Triple Entry Ledgers With Blockchain For Auditing" *International Journal of Auditing Technology, 3 (3), 163-183.*

Nakamoto, S. (2016).Bitcoin: A Peer-to-Peer Electronic Cash System *https://bitcoin.org/bitcoin.pdf (Accessed: 28.12.2018)*

Appendix:

Questionnaire

Blockchain Technology Adoption In Accounting And Auditing : Benefits And Challenges

Email id:

Name:

Gender: Female ( ) Male ( )

Age: Below 25 Year ( ) 25 - 40 Year ( ) 40 and above ( )

Qualification: Graduate ( ) Post Graduate ( ) Research scholar ( )

Have you heard about the term "Blockchain Technology": Yes ( ) No ( )

Give your opinion about the following as benefits of using blockchain technology (where the scale represents):

5. Strongly Agree, 4. Agree, 3. Neutral, 2. Disagree, 1. Strongly Disagree

Sr.no	Q.No.	Particular	5	4	3	2	1
1	Q.1	Blockchain technology is Simple & Straight forward					
2	Q.2	Less laborious & less time consuming as compared to manual accounting					
3	Q.3	Blockchain technology is suitable for small businesses and big companies also					
4	Q.4	Reconciliation of accounts and auditing is possible					
5	Q.5	Possibility of frauds and errors is not maximum					
6	Q.6	Simple to get the full financial statements of companies					
7	Q.7	Blockchain accounting has reduced cost of maintain accounts books					
8	Q.8	The requirement of employee has reduced after Blockchain accounting					

9	Q.9	A secure record of proof that the transaction occurred					
10	Q.10	Enable direct transactions without the need for trusted third parties					
11	Q.11	Enable non-reversible transactions					
12	Q.12	Prevent double-spending					
13	Q.13	Better transparency between internal and external user of accounting					
14	Q.14	provides clarity over ownership of assets and existence of obligations					
15	Q.15	Reduces Fraudulent Activity in the business acoounting					

Give your opinion whether the following are challenges faced in adoption of blockchain technology. (Where the scale represents)

5. Strongly Agree, 4. Agree, 3. Neutral, 2. Disagree, 1. Strongly Disagree

Sr.no	Q.No.	Particular	5	4	3	2	1
1	Q.1	Realize inexpensive system					
2	Q.2	Traders and transaction details are disclosed and privacy may not be protected					
3	Q.3	Developing policy guidelines for encouraging Accounting and auditing to utilize the technology in the future					
4	Q.4	Make falsification is extremely hard					
5	Q.5	Is it difficult to edit transaction details afterward					
6	Q.6	A blockchain may fork in the event of a physical attack or failure that cuts off the pear to pear network					

7	Q.7	Record transactions based on fundamental principles (Scientific System)					
8	Q.8	Errors can be carried forward and compounded without anyone noticing					
9	Q.9	Does not suit with companies that complete business transaction on a different dates					
10	Q.10	Does Blockchain accounting involves the high risk of data loss					
11	Q.11	A high skill training set is required to maintain computerized accounting & auditing					
12	Q.12	Blockchain technology Consumes high energy					
13	Q.13	Blockchain technology won't be able to work with sensitive information until anyone solves the problem					
14	Q.14	Blockchains Can Be Slow when there is a fault in the network					

Suggestion for blockchain technology adoption in accounting and auditing of benefits and challenges. If any Explain it.

Ans: ……..

……..

A COMPLIANCE STUDY OF REQUIREMENTS FOR RECOGNITION OF DEFERRED TAX ASSETS AND LIABILITIES

Yathish Kumar *

Dr. B. Mahadevappa **

Abstract

Deferred tax accounting acts as an important instrument in presenting tax expenses and the effects of economic activity in financial statements. The accrual and precautionary principles, the profit-saving policy, and the idea of financial analysis objectivity are some of the most essential principles and regulations behind the incidence of deferred taxes. The presence of deferred tax assets and liabilities is important for understanding the transitional aspects of reporting. Studying a financial report of the company, an investor can get fooled by looking at the net income of the company while without looking effect of deferred tax assets and liabilities. The main aim of this paper is to observe whether the current practices of companies concerning the recognition of deferred tax assets/liabilities. The study is based on content analysis method. The recognition information disclosed in the annual report of the sample companies forms the basis for the study. The compliance level shows Accounting for deferred tax ensures the matching principle. The expense reported in regards to each period is recorded according to the consequence reported in the period. Compliance level is highest in case of Infosys company recognized the deferred tax assets and liabilities for the period. There was a statistically significant difference at the p<001.So the study reveals there was diversion in the Recognition compliance among the companies. The concept of reversal, unused losses and tax credit in the company's annual reports shows the effectiveness of accounting policy. While, the compliance level of IT companies is above 80% providing the coverage of information and clarity over reporting.

***Keywords*:** Ind AS 12, Deferred tax assets and liabilities. Recognition

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Introduction

Accounting for deferred taxes is a challenging topic that is frequently discussed in accounting classes. Income taxes are dealt with in accounting in the form of a tax payable and deferred taxes. They are a crucial instrument for accurately presenting tax expenses as well as the consequence of economic activity in financial statements. The accrual principle and the precautionary principle, the policy of profits conservation, and the idea of objectiveness of financial analysis are among the most fundamental principles and regulations underlying the incidence of deferred taxes.

A company recognizes deferred tax when recovering an asset or settling a liability in the future will have tax consequences. While, the presence of deferred tax assets and liabilities is important for understanding the transitional aspects of reporting. The probability and time of realization of deferred tax assets (DTA) and deferred tax liabilities (DTL) are used in the estimation during reporting process (1). Studying a financial report of the company, an investor can get fooled by looking at the net income of the company while without looking effect of deferred tax assets and liabilities. An accurate and fair view of assets and liabilities in financial statements, accounting for deferred taxes typically follows the balance sheet approach (2).

Understanding and applying deferred tax assets or liabilities, it is important for companies and investors to analyze and understand the future cash flow effect of it. Future cash flow can be affected by deferred tax assets or liabilities. If a deferred tax liability is increasing, that means it is a source of cash and vice versa. So, by analyzing this deferred tax helps in assessing where the balance is moving forward.

Thus, the main aim of this paper is to observe whether the current practices of companies concerning the recognition of deferred tax assets/liabilities.

Literature Review

Rick C. Laux(2013) examined the deferred taxes and future tax payments have an unbalanced relationship. Deferred taxes on temporary differences that are reflected in GAAP income before taxable income, for example, are linked to future tax payments. Deferred taxes related to transient differences that are included in GAAP income after taxable income on the other hand, are not linked to future tax payments. Finally, the research shows that increasing deferred tax balances does not delay future tax payments.

Azmi & Mahzan N (2009) in their article suggested that Malaysian firms are consistent in recording the deferred tax assets on their balance sheet. ANOVA and t-tests were used to examine the significant changes in the practice of recognition of deferred tax assets among industries and auditors. The unabsorbed tax losses and allowances are categorized into two categories. The rate of recognition of deferred tax assets in Category

I is more diverse than in Category II. For Category I more corporations are willing to recognize deferred tax assets to varying degrees of recognition. But for Category II more companies prefer not to recognize deferred tax assets. Second, corporations are more careful in recognizing deferred tax assets for both categories as not recognizing deferred tax assets is the most typical practice for companies. While the auditors indicated the levels of conservatism in the plantation, property and construction industries varied significantly.

Poterba J Rao N & Seidman J (2007) in their article examined the significance of deferred tax assets and liabilities. Property, Plant & Equipment, and Leases are the major components of deferred tax obligations. In 2004, total deferred tax assets for sample firms with net deferred tax assets were $61.9 billion while total deferred tax liabilities for sample firms with net deferred tax liabilities were $223.8 billion. A five-point reduction in the federal statutory corporation tax rate might reduce net income at sample firms with net deferred tax assets by as much as $8.8 billion because a statutory rate reduction reduces the value of deferred a tax asset which is represented on income statements.

GAEREMYNCK & L. VAN DE GUCH (2004) in their paper outlined the determinants of recognizing the deferred tax assets/liabilities. The study analyze between early adopters & previous adopters of deferred tax accounting. Both decisions are influenced by changes in the balance sheet structure. Firms with recent debt increases are less likely to recognize deferred taxes but currently well-performing firms that increase their future debt level are less likely.

Requirements of Ind AS 12 Income taxes

Indian Accounting Standard (Ind AS) 12 focus on treatment of accounting of taxes including the recognition, measurement & disclosure issues of Income tax.

The matching concept of accrual accounting drives the income statement. It emphasis expenses are matched to the accounting period in which the corresponding income is made rather than the accounting period in which the cash is paid or received. On the other hand, Tax accounting incorporates cash-basis. If an estimate expense is appropriately recorded in the income statement, the tax authorities may be more inclined to grant a deduction for the expense in calculating taxable profits only when the cash is paid. Because the expense will eventually be reported in both the income statement and the tax account but not in the same time period the resulting disparity between tax expense and taxes paid will reverse in the future. The difference is compensated for on the balance sheet by a deferred tax item.

The tax on temporary differences which results in a disparity between the income statement expense and the tax to be paid is known as the deferred tax. The Standard mandates that an entity account for the

tax implications of transactions and other events in the same way that it accounts for the transactions and other occurrences in the financial statements.

The Recognition, Measurement & Disclosures requirements are:

1. Recognition of unpaid current tax for current/prior period is a liability. The standard states the amount paid exceeds the tax due to be treated as asset & used to recover the tax loss recognized in the current period.
2. Recognition of deferred tax liability is made in respect to all taxable temporary differences except the initial recognition of goodwill & any expense treated as accounting profit in one period and taxable profit in another period.
3. Recognition of deferred tax asset for all deductible temporary difference to the extent of taxable profit available and are expected to reverse of the taxable entity.
4. Recognition of deferred tax assets only to the extent that it is probable that future taxable profit will be available against which the unused tax losses and unused tax credits can be utilized.
5. Measure the current deferred tax liability or asset at the amount expected to be paid or recovered in the reporting period.
6. Measure the deferred tax assets or deferred tax liabilities at the tax rates that are expected to apply to the period in which the asset is realized or liability is settled based on the tax rates of the reporting period and reflects the management's intention over the recovery/settlement of asset and liability. While the deferred tax assets and liabilities are not discounted.
7. A proper offset of deferred tax assets and liabilities and present tax expense as ordinary activities under statement of profit and loss.
8. Disclosed separately the major components of tax expense (income) as: current tax expense; adjustments during the reporting period; deferred tax reversal; benefits of unrecognized tax credits & tax loss etc.
9. Disclosure of temporary difference arrived on equity & business combination or not part of ordinary activity are disclosed under the head Other Comprehensive income and reflected in the concerned notes to financial statements.
10. Disclosure under footnotes relating to unrecognized temporary difference and differences those are not eligible for reversal to be reflected in the reporting period.

Research Objective

The study aims to examine compliance level of recognition of deferred tax assets and deferred ta liabilities under Ind AS 12 by Information Technology Companies.

Hypothesis

H_0: There is no difference in the level of compliance with requirement of recognition of deferred tax asset/liability under Ind AS 12

H_1: There is difference in the level of compliance with requirement of recognition of deferred tax asset/liability under Ind AS 12

Research Methodology

a) Population

Population for the study includes NIFTY 50 companies listed in National Stock Exchange as on 1.1.2020.

b) Sample

A random of sample of five information technology companies has been chosen for this study. It includes Infosys Technologies, Tata Consultancy Service, Wipro Limited, Tech Mahindra Limited and HCL Technologies.

c) Research Instrument

A reliable and valid research instrument has been constructed to collect data through collective data using content analysis method. Research Instrument consists of 14 questions relating to recognition of deferred tax asset and liability. It is based on requirements for recognition under Ind AS 12 –Income Taxes. The binary scoring pattern of 1-compliance and 0-non compliance has been used in this study.

d) Content Analysis Method

The study is based on content analysis method. The recognition information disclosed in the annual report of the sample companies forms the basis for the study. The study adopts the "Yes and No" approach identified by various accounting studies as a more reliable method in analyzing annual reports of firms tax accounting practices because it avoids the element of subjectivity. Using these criteria, a score of 0 mean's that no meaningful information was provided on the specific evaluation item while a score of 1 indicated that the report included that information to

some degree. That is, if there was evidence of the criteria then a Yes rating was given for that element, otherwise No. While, yes indicates 1 and No indicates 0. This criterion is used for assessing the compliance level of the companies.

e) Data Collection & Analysis

The secondary data using research instrument has been collected for the study. The data was collected from the notes of annual reports of the companies, journal articles and the research books are the sources of information. The data were analyzed by calculating descriptive statistics and hypothesis was tested using ANOVA etc.To seek for significant differences between the variables, a simple analysis of variance (ANOVA) was utilized. For in-depth data analysis, the SPSS (Statistical Package for Social Sciences) software package was employed. Tables were then used to present the analyzed data. The level of significance was 0.05.

Results & Discussion

Table 1: The Results of Recognition of Deferred Tax Asset's& Deferred Tax Liabilities among Information Technology companies

Sl. No	ITEMS	INFOSYS	HCL	TCS	TECH MAHINDRA	WIPRO	MEAN	S.D
1	Current income tax for current and prior period is recognized at the amount expected to be paid or recovered from tax authorities using the tax rates and tax laws that have been Enacted	1	1	1	1	1	1	0
2	Income tax expense comprises of current & deferred income Tax	1	1	1	1	1	1	0
3	Income tax expense is recognized in Profit & Loss Statement	1	1	1	1	1	1	0
4	Unpaid current income tax for current & prior periods is recognized as liability	1	1	1	1	1	1	0

5	Deferred income tax assets & liabilities recognized for all temporary Differences	1	1	1	1	1	1	0
6	The recognized deferred tax asset with respect to all deductible temporary differences is utilized by the companies.	1	1	1	0	1	0.8	0.4
7	DTA are reviewed at each reporting date and realized to extent that it is no longer probable that related tax benefits will be realized	1	0	1	1	1	0.8	0.4
8	The effect of changes in deferred income tax assets/liabilities is recognized as income tax expense in the period that covers extent of law	1	1	1	1	1	1	0
9	Deferred income tax asset is recognised to that extent that is probable that future taxable profit will be available against be utilized.	1	1	1	1	1	1	0
10	Deferred tax liability is recognised to that extent as probable that future foreseeable will arise.	1	1	1	1	1	1	0
11	The companies offsets deferred tax assets & liabilities	1	1	1	1	1	1	0
12	The reconciliation of provision for Income tax to the actual income tax liability computed by applying statutory income tax rate	1	1	1	1	1	1	0
13	The foreign tax expenses due to income tax payable in foreign companies is recognized	1	0	0	0	0	0.2	0.4
14	The entity recognizes previously unrecognized deferred tax assets	0	1	0	1	0	0.4	0.4
	Total	**13**	**12**	**12**	**12**	**12**		

Compliance Level	92.85%	85.7%	85.7%	85.7 %	85.7 %

(Source: Author's Calculation)

Table 2: Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.086	4	.021	.199	.938
Within Groups	7.000	65	.108		
Total	7.086	69			

Table 1 presents compliance scores of Ind AS requirements for recognition of DTA /DTL by five Information Technology companies of Nifty 50 companies. The study has identified 14 Ind AS requirements. Infosys Technologies Ltd has a highest compliance score of 92.85% followed 85.75% by all the remaining sample companies.

The mean score of 10 items is equal to 1,that means full compliance while for the remaining 4 items compliance level is partial, wherein the score varies from 0.2 to 0.8.The standard deviation for the items having mean standard deviation is 0 while for the remaining items standard deviation is 0.4.

The results of ANOVA is presented in the **Table 2,** ANOVA results accepts the null hypothesis as the P-value associates with F value of 0.195 is greater than 0.05.The ANOVA accepts the null hypothesis and rejects the research hypothesis as there is no difference in the compliance level of Ind As 12 requirements for recognition of DTA/DTL by Information Technology Companies is same. There is no significant deviation.

Findings of the study

- The Current income tax and prior periods speaks about the liability recognised as per the current rates i.e. 34.94%.considering the adjustments expense of current and prior periods. Majorly all the companies have depicted effective tax expense and prior period tax expenses such as the profit of other branch, reversal of temporary difference, unrecognized deferred tax assets etc are adjusted with the current chargeable tax. The current tax asset/liability is properly recognized under profit and loss statement and the working depicts the adjustment of previous years.

- Income tax expense comprises of current & deferred income tax. The company's current tax expense is based upon current earnings and the current year's permanent and temporary differences. The deferred tax calculation, which focuses on the effects of temporary differences and other tax attributes over time. It offers management and shareholders a better outlook on the company's future tax obligations. The provision can provide useful predictive information when planning for significant corporate transactions. The companies followed the current and deferred tax providing the prior period expenses

effect on the company's accounting information. The portion of deferred tax under income tax expense is related to prior periods and the reversal made by the companies.

- Income tax expense is recorded income based on the tax expenses in the period during which they were incurred. Income tax expense is the company's calculation of how much it actually pays in taxes during a given accounting period. So the companies that income tax expense of Rs.6,429 cr (Infosys),Rs.11,198 cr (TCS),Rs.4,684 cr (HCL),Rs.26,239cr(WIPRO)& Rs.12,875 cr(Tech Mahindra).While the HCL company does not provide the information over adjustments made to income tax expense in the present year. Movement in the deferred tax liability in the year is recorded in the Statement of Profit or Loss.
- Unpaid current income tax for current & prior periods is recognised as liability shows the excess/deficit amount paid in the current year is considered as liability/asset for the current year. All the companies majorly have shown the unpaid taxes under liabilities.
- The positive/negative temporary difference helps in ascertainment of Deferred Tax Asset/Liability. In case of HCL Rs.6 crore is capitalized leading to increase in the carrying amount of asset result in deferred tax liability.SEZ Re-investment Reserve is a negative temporary difference resulting to the deferred tax asset of Rs.531 cr.
- Deferred Tax Asset are reviewed by all the companies at each reporting date and realised to extent that it is no longer probable that related tax benefits will be realised. Infosys Company DTA of Rs.1386 cr is provided in footnotes and through additional information.
- A deductible temporary difference is one that will result in amount that can be deducted in the future for calculating taxable profit or loss. The utilisation of deferred tax asset has major impact on the financial statements. In case of four companies the reversal temporary difference and relation of taxable temporary difference is been depicted in the additional notes. While, Tech Mahindra unutilised tax exemption is assessed and extent of DTA utilisation is not appropriate.
- Company is allowed to offset the deferred tax assets and liabilities in current period on certain permissible transactions. Recognition made under notes to accounts represents the total deferred tax liabilities are allowed to offset against deferred tax assets. In the annual reports of Infosys Ltd in the year 2020 around 55 % of the DTL were offset against DTA.
- Changes in deferred tax assets/liabilities are recognised under income tax expense. All the companies have shown the increase or decrease in deferred tax for the period is shown in income tax expense indicating the effect of deferred tax for the current period.
- Review of Deferred tax assets are necessary to understand the use of deductible temporary difference utilization and the reduction of profit and all the companies have reviewed properly.
- Deferred tax liabilities is the obligation to pay to the authorities and exhibits the burden on the stakeholders are analyzed using the change in deferred tax liability. All the companies have shown the liabilities but Infosys have shown the changes of deferred tax liabilities are depicted properly.

- The foreign tax expenses due to income tax payable in foreign companies are recognized. The taxable profits include the foreign tax incurred and it is qulaitivately and quantitavely disclosed by the Infosys Company alone stating the burden off obligation of nation and foreign tax is shown separately.

  The compliance level shows Accounting for deferred tax ensures the matching principle. The expense reported in regards to each period is recorded according to the consequence reported in the period. Compliance level is highest in case of Infosys company recognised the deferred tax assets and liabilities for the period.

Conclusion

Financial information about the reporting entity is used by present and potential investors, lenders, and other creditors to decide whether to commit resources to the entity. The emphasis is on the reporting entity's consolidated performance. Tax regimes on the other hand, are often not as narrowly focused and frequently incorporate components of tax policy that seek to incentivize specific activities.

A deferred tax is the frequency of mathematical difference between the book carrying value and the actual carrying value. The deferred tax model allows the enterprise's present and future tax effects of book revenue or loss to be recognized during the same reporting period, providing a complete measure of net earnings. The concept of reversal, unused losses and tax credit in the company's annual reports shows the effectiveness of accounting policy. While, the compliance level of IT companies is above 80% providing the coverage of information and clarity over reporting.

References

Patrik S.,et.al.(2017). Importance of Deferred Tax Reporting for External Users – Case of Czech Republic. *International Journal of Business Tourism and Applied Sciences*,5(2),10-17.

Kim Marie. (2011). Deferred Tax –The Effect of the Implementation of NZ IAS 12:Income Taxes (Doctoral dissertation,Massey University), *Massey University* ,Albany,New Zealand.

Laux, R. (2013). The Association between Deferred Tax Assets and Liabilities and Future Tax Payments. *The Accounting Review*, *88*(4), 1357-1383. doi: 10.2308/accr-50417.

Che Azmi, A., & Mahzan, N. (2009). Recognition of Deferred Tax Assets Practices and Conservatism. *Asian Journal of Accounting Perspectives*, *2*(1), 22-35. doi: 10.22452/ajap.vol2no1.2.

Krishansing Boolaky, P. (2006). Measuring De jure Harmonisation: A content analysis of the accounting standards of three countries: South Africa, Mauritius and Tanzanian and International Financial Reporting Standards. *Journal of Applied Accounting Research*, *8*(2), 110-146. doi: 10.1108/96754260680001051

Gaeremynck, A., & Van De Gucht, L. (2004).The Recognition and Timing of Deferred Tax Liabilities. *Journal of Business Finance & Amp; Accounting*, *31*(7-8), 985-1014. doi: 10.1111/j.0306-686x.2004.00564.x

https://www.nseindia.com/companies-listing/corporate-filings-annual-reports

https://www2.deloitte.com/content/dam/Deloitte/us/Documents/Tax/us-tax- sampledisclosures-ait-022315.pdf

https://www.accaglobal.com/in/en/student/exam-support-resources/fundamentals-exams-study-resources/f7/technical-articles/deferredtax.html#:~:text=IAS%2012%20defines%20a%20deferred,is%20payable%20in%20the%20f future.

https://cleartax.in/s/deferred-tax-asset-deferred-tax-liability-dta-dtl

https://www.pwc.com/us/en/services/tax/library/demystifying-deferred-tax-accounting.html

https://www.mca.gov.in/Ministry/notification/pdf/AS_22.pdf

E-GOVERNANCE IN INDIA: A STUDY OF E-GOVERNANCE MODELS OF STATES OF PUNJAB & HARYANA AND UNION TERRITORY, CHANDIGARH

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ABSTRACT

The Computerization and extensive use of Information Technology has made a significant impact on the working of the organizations, private as well as public. Leveraging the use of Information Technology tools, the Government has also put in serious efforts to rationalize the procedures and processes involved in service delivery to the citizens. This paper traces the e-Governance initiatives of the Government ever since the formulation and adoption of the National e-Governance Plan (NeGP) by the Government of India. Within the broad framework of the National e-Governance Plan, various State Governments have planned and initiated e-Governance projects. Although each State Government draws its e-Governance policy perspective from the umbrella national plan, yet, the implementation structure and e-Governance models of each State differ. In specificity, this paper examines the models of e-Governance of States of Punjab & Haryana and Union Territory Chandigarh.

***KEYWORDS*:** Governance, e-Governance, Good Governance, Information Technology, Information and Communication Technology, Citizen Services

Introduction

Ever since the onset of the Information Technology (IT) revolution in India, in the mid-nineties, there has been a constant endeavor of the Government to optimally use IT tools in

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rendering various governmental services to its citizens for better service delivery, transparency, and accountability. The preliminary efforts were essentially directed towards the adoption of IT-based office functions and processes, i.e., computerization of day-to-day office work. Sooner than later, the intervention of Information Technology was perceived as an important tool to minimize the citizen's interaction with the various government offices with the aim & objective of providing faceless and paperless efficient and timely services to the citizens in a transparent manner. As far as the Citizen-Government interaction with respect to service delivery is concerned, the local administration (that includes various offices of State Govt., Local Govt, Corporations, etc.) renders a predominantly large number of services to the public as compared to the Central Government offices. Therefore to gainfully use the IT tools, there was a felt need to devise an overarching plan, policy and structure, supplemented with appropriate IT infrastructure, embracing all the limbs of the Central as well as State Governments and their instrumentalities involved in the service delivery to the citizens.

The objective of the Study

The paper aims to study the e-Governance initiatives of the Government of India and in specificity the models of e-governance of States of Punjab & Haryana and Union Territory Chandigarh.

Research Methodology and Limitation of the Study

The present study is descriptive and expressive in nature to understand and analyze the contours of the national e-governance plan and its implementation models on the ground.

The limitations of this study are, i) no primary data has been collected and the study uses only the secondary and published data/information ii) e-governance models of States of Punjab, Haryana and Union Territory Chandigarh have been examined.

National e-Governance Plan (NeGP):

For the smooth implementation of e-Governance in India, the Ministry of Electronics and Information Technology (MeitY), the Government of India formulated and notified a comprehensive policy framework namely The National e-Governance Plan (NeGP) in 2006. The vision statement of NeGP is *" Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man"* The NeGP envisaged 31 Mission Mode Projects (MMPs) which were classified into three categories, as follows:

Table 1: Mission Mode Projects of NeGP

Center MMPs	State MMPs	Integrated MMPs
Banking	Agriculture	Common Service Center
Central Excise and Custom	Commercial Tax	e-Biz (Govt. to Business Services)
Insurance	e-District	e-Courts
MCA 21	Employment Exchange	e-Procurement
Passport, Immigration, Visa & Foreigners' Registration	Land Records	Electronic Data Interchange (EDI) for eTrade
Pension	Municipalities	National e-Governance Service delivery Gateway
e-office	e-Panchayats	India Portal
Post	Police	
Unique Identification UID	Road Transport	
	Treasuries Computerization	
	Public Distribution System	
	Education	
	Health	

As the name suggests, the Center MMPs covered the services falling in the domain of Centre Government, State MMPs for State-specific services and Integrated MMPs for common services. Besides domain-specific projects, the NeGP chalked out a detailed project implementation methodology as well as its management structure.

To provide an enabling ecosystem for seamless implementation of e-Governance project across all levels of Citizen-Governmental interfaces, it was imperative for the Government to develop a state-of-the-art core IT infrastructure supplemented by robust standard policy guidelines to be followed by the Implementing agencies, that includes Central Government offices as well as the offices of State Government or their respective agencies. Uniformity of architecture of core IT infrastructure and interoperability of various IT operations across all states were considered to be the backbone of a technology-driven e-Governance ecosystem. Therefore, in order to promote e-Governance in a holistic manner, the NeGP included the following components also:

Table 2: Critical Components of NeGP

IT Infrastructure	Subjects covered under Policy & Guidelines
State Data Centres (SDCs)	Information Security
State Wide Area Networks (S.W.A.N)	Human Resource Deployment
Common Services Centres (CSCs)	Standards relating to Metadata
Middleware gateways i.e National e-Governance Service Delivery Gateway (NSDG)	Standards relating to interoperability
State e-Governance Service Delivery Gateway (SSDG)	Citizen Engagement
Mobile e-Governance Service Delivery Gateway (MSDG)	

Within the above broad framework, various State Governments and Union Territories of India adopted and implemented the e-Governance models.

e-Governance and COVID

In the year 2020, the world witnessed an unprecedented lock down in the wake of COVID pandemic. The prescribed COVID protocols restricted Physical movements and physical contact. In the given circumstances, a new culture of online working evolved worldwide including in India. The steps taken by the Government in the past to promote e-governance enabled and helped the Government immensely in providing services to citizens through digital mode and also to overcome the challenges of COVID restrictions. In fact, it proved to be an opportunity for the Government to evolve new strategies to strengthen and widen the scope of e-service delivery to the citizens. In this background, the respective State Governments also geared up their endeavors to further push the idea of paperless working and minimization of physical interaction between citizens and Government officials.

The implementation strategy, structure and model of e-Governance vary from State to State depending upon the local conditions, priorities and policy perspectives of the respective States. The models of the States of Punjab & Haryana and Union Territory, Chandigarh are discussed as follows;

e-Governance Model of State of Punjab:

The Punjab is one of the leading states in implementing various e-Governance projects by creating a robust and dynamic online Citizen-Government interface. The State of Punjab has set up an independent Department namely 'Department of Governance Reforms and Public Grievances', which is under the direct control of the Chief Minister, Punjab. The objective of this department is to optimize the use of Information Technology in day-to-day governance, so that the quality-of-service delivery to the citizens can be improved and the larger agenda of the government, i.e., Governance Reforms, can be achieved. Apart from that, there is a separate Department of Information Technology (DoIT), which provides necessary technical support for the use of IT tools in the effective implementation of e-Governance in the State.

To achieve this goal the Government of Punjab adopted a multi-pronged approach. It created various specialized agencies/organizations with an aim to promote, regulate and monitor the e-Governance implementation.

Table 3: Specialized agencies of Punjab

Sr. No	Organizations
1	Punjab State e-Governance Societies (PSeGS)
2	District Sukhmani societies (DSS)

The above two agencies with the active support of DoIT formulated and implemented various e-Governance projects. All those projects can broadly be classified into two categories, namely, i) Domain-Specific Projects, ii) Common service Portal/window. As the names suggest, the domain-specific projects were formulated to cater to the specific set of citizens requiring services for one specific subject or domain. Whereas the other projects provide a common platform to deliver multi-department services through a single portal/window.

Table 4: Selected e-Governance Projects of Punjab

Domain-Specific Projects	Common Service Portal/window
VAHAN (regarding registration of vehicles & related services)	SUWIDHA (Single User-friendly Window Disposal Helpline for Applicants)
SARATHI (regarding issue of learner/driving licence & related services)	SSDG (State portal and Service Delivery Gateway)
PRISM (Property Registration Information System Module)	e-Districts
Unified State Admission Portal	Sewa Kendra/e-Sewa
	Digital Punjab (One Unified Platform)

e-Governance Model of State of Haryana:

The State of Haryana is one of the prosperous states of India. In sync with the Government of India's initiative 'Digital India', the State of Haryana is committed to provide a Governance model which ensures a contactless and paperless citizen service delivery mechanism. The responsibility to realize this goal has been entrusted to the Electronics and Information Technology Department of the Government of Haryana (DoE&IT). Taking cognizance of the significance of the use of Information Technology in creating an enabling eco-system for the implementation of e-Governance, the Government of Haryana has inducted a specialized cadre of IT Professionals into the Government Service.

An effective e-Governance system inevitably requires continuous interaction and sharing of data through a common IT interface across various departments to provide a seamless service to

the stakeholders. Therefore there was a need to have specialized monitoring and coordinating agencies to fulfill these goals. In this background, the Government has set up the following specialized agencies for efficient planning, promotion, implementation and management of inter-departmental e-Governance initiatives.

Table 5: Specialized agencies of Haryana

Sl. No	Organizations
1	Society for IT Initiative Fund for e-Governance
2	State e-Governance Mission Team (SEMT)

Following the vision of 'Digital India' the DoE&IT, the Government of Haryana in its vision and mission statement vowed for the digital empowerment of citizens and ensuring governance and services on demand. To realize this vision the DoE&IT, the Government of Haryana developed and launched various IT projects aiming to promote e-Governance for the empowerment of citizens.

Table 6: Selected e-Governance Projects of Haryana

Domain-Specific Projects	Common Service Portal/window
VAHAN (regarding registration of vehicles & related services)	Antyodaya-SARAL (Simple, All Inclusive, Real Time, Action Oriented, Long lasting portal)
SARATHI (regarding issue of learner/driving licence & related services)	JanSahayak m-Governance Initiative (State level Mobile platform for all G2C services in all departments through a single point of interface to citizens)

Web-HALRIS (Haryana Land Records Information System)	e-DisHa
Entrance Test Portal	Atal Seva Kendra/Common service center/Saral Kendra
Unified Civil Engineering Portal	

e-Governance Model of Union Territory Chandigarh:

Chandigarh is the common capital of the States of Punjab and Haryana. After the reorganization of the State of Punjab, it was declared as a Union Territory under the administrative control of the Ministry of Home Affairs, Government of India. The Department of Information Technology mainly steers the e-Governance initiatives of the Chandigarh Administration. The e-Governance model of Chandigarh broadly has two main constituents, namely, i) Sampark Project and ii) Department-specific online services.

The 'Sampark Project' is the flagship project of the Chandigarh Administration for the promotion of e-Governance. The vision of this project is "to *create a knowledge-based society through extensive use of Information Technology as a medium for effective interaction between the Administration and the Public*". Initially under the Sampark Project, the Administration has set up various centers across the city to provide services related to various departments through a single window under one roof. Later on the Administration launched the 'eSamparak project' which in addition to physical centers, offers to the public the opportunity to avail of online services of various departments of Chandigarh Administration through a common online portal. The eSampark project is an initiative to ensure an effective paperless and faceless citizen service delivery mechanism.

Table 7: e-Governance Model of Chandigarh

Department Specific Online Services	Common Service Portal/window
Higher Education (Admission Portal Fees Payment)	Sampark Centers (Jan-Sampark, Gram-Sampark and Sampark kiosks)

Excise & Taxation (Liquor License application Online Permit & Passes)	eSampark (online portal)
DC Office (Jamabandi, Building Plan Approval System, Appointment for Sub Registrar Office)	
Labour and welfare (Registration and application for various welfare schemes)	
Others (online RTI, Visitor's Appointment, Grievances)	

In order to promote the application of IT tools in the day to day administration in commensuration with the national agenda of 'Digital India' a specialized agency of Chandigarh Administration, namely, Society for promotion of IT in Chandigarh (SPIC) is actively engaged in providing required IT solutions and training to the staff involved in e-Governanvce projects.

Conclusion and way forwards:

Prima facie, there is no dearth of initiatives on part of the Government of India to push the idea of Good Governance, i.e., providing transparent, fair, cost-effective and hassle-free services to the citizens through the means of e-Governance projects. To create an enabling ecosystem, the Government has put in place an overarching e-Governance structure supplemented with state-of-the-art IT infrastructure. In sync with the 'digital India' vision, all the State Governments have shown their unshakable commitment to adopt and implement e-Governance projects to improve service delivery to its citizens. In fact, e-Governance is not an end itself rather it is a means to achieve the larger goal of Good Governance. Its effectiveness depends upon a number of factors, which inter alia include; i) how efficiently the Governmental processes and procedures have been reengineered to facilitate the use of IT tools in a most user-friendly manner? ii) the level of penetration of digital networking in the given territorial jurisdiction and its access to citizens, iii) awareness of the citizens about the online services and use of technology, iv) level of digital literacy of the citizens, v) Local bureaucratic flexibility. Therefore, depending upon the factors discussed above, the effectiveness of e-Governance and its impact may vary from state to state and territory to territory. It suggests that appropriate empirical research needs to be carried out to study, examine and analyze various e-Governance models of State governments and other factors responsible for such differences. It is anticipated that such empirical research shall provide significant inputs and suggestions for bringing in improvements in the e-Governance models in the future to achieve the larger objective of good governance.

References

WEBSITES:

http://sampark.chd.nic.in/Epayment/index.aspx

https://dgrpg.punjab.gov.in/sewa-kendras/

https://haryana.gov.in/project/saral-haryana/index.html

http://unescap.org/sites/default/files/good-governance.pdf

https://www.unescap.org/sites/default/files/E-Government%20Survey%202018_FINAL.pdf

Published Work:

Vaidya, M. (2018). *Technology led Monetary Transactions and e-governance - a case study of Chandigarh city (India), Management of Financial Services, India: Bharti Publications*. ISBN:978-93-86608-22-2

Nag, Shankar.Ninad(2018), *Government, Governance and Good Governance,* The Indian Journal of Public Administration, Vol. 64(1), pp122-130, retrieved from weblink https://journals.sagepub.com/doi/full/10.1177/0019556117735448

Kumar, V (2015) *Policy and administration of e-governance in Haryana*, Unpublished Ph. D thesis, Department of Public Administration, Panjab University, Chandigarh.

Gian , C (2014) *E governance in Haryana, Measured and effectiveness*, Unpublished Ph. D thesis, Department of Public Administration, Kurukshetra University, Kurukshetra.

Banerjee, S.,Katare, J.,(2015). *A quality assessment index for evaluation of district e-governance websites*. International Journal of Electronic Governance, 2016 Vol.8, No.2, pp.140 – 158.

Kiran, Yadav and Sanatan, Tiwari (2014), *E-governance in India: Opportunities and Challenges, Advances in Electronic and Electric engineering*, Vol. IV, No. VI, pp. 675-680.

Poonam Malik, Priyanka Dhillon and Poonam Verma (2014), *Challenges and Future Prospects for E-governance in India*. International Journal of Science, Engineering and Technology Research, Vol. III, Issue. 7, July, pp. 1964-1972.

Kumar, S (2013) *Design of framework to improve effectiveness of e governance in the state of Punjab*, Unpublished Ph. D thesis, Department of Computer Science, Punjabi University, Patiala.

Pardeep, Millal and Amandeep, Kaur (2013), *For Implementing of e-governance in Rural area of Punjab*, IJIRCCE, Vol. I, Issue. VI, August, pp. 1337-1340.

Vaidya, M (2013) *E-Governance initiatives in Chandigarh: Perspectives and Perceptions of end users*, Unpublished Ph. D thesis, School of Management studies, Punjabi University, Patiala.

Bhavneet Dhindsa, Malika Narang, Kavita Choudhary (2013), *Benefits and Challenges of Egovernance Portal,* Internation Journal of Soft Computing and Engineering, Vol. III, Issue. 5, November, pp. 121-132.

Sushil Kumar Singla and Himanshu Aggarwal (2012), *Impact and Scope of E-governance Initiatives in The State of Punjab (INDIA),* International Journal of Computer Applications, Vol. XXXXIV, No. 14, April, pp. 5-9

Gupta (2011). *Empirical Study of the Performance and Issues in G2C Projects in Indian Scenario.* Ph.D thesis .Retrieved from http://shodhganga.inflibnet.ac.in:8080/jspui/handle/10603/19278

Kalsi, N.S., Kiran, R. and Vaidya S.C.,(2009).*Effective e-Governance for Good Governance in India, International Review of Business Research Papers*, 5(1): 212-229 retrieved from http://www.bizresearchpapers.com/ attachments_2009_01_13 /18..Ravi-edited.pdf.

Subash Bhatnagar (2009), *Unlocking E-Governnment Potential*, Saga Publication, New Delhi

Mahajan, P(2009). E-Governance initiatives in India with special reference to Punjab, *e- journal Asia-Pacific Journal of Social Sciences, Vol. I (1)*:142-155.

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Dr. Kajalbaran Jana, South Bengal	Dr. Varsha Sukhadeve, Akola	Aamir Khan, NCR
Prof. Pradip Kumar Samanta, South Bengal	Prof. Vashishtadhar J. Dwivedi, Saurashtra	Abdul Aziz Ansari, NCR
Dr. Rabindra Kumar Swain, Bhubaneswar		Prof. Anil Kumar, Delhi
		Dr. Surender Singh, Delhi
South Zone	**Central Zone**	
Dr. Gangadathan Nair D., Alappuzha	Dr. Kaustubh Jain, Sagar	
Prof. V. Ushakiran, Hydrabad	Prof. Shailendra Singh, Amarkantak	
Jodhpur Elected		
East Zone	West Zone	**North Zone**
Dr. Dharen Kumar V Pandey, Patna	Prof. Shiv Prasad, Ajmer	Result Not Declared due to technical issue
Prof. Satyajit Dhar, Kolkatta	Dr. Shivraj Singh, Jaipur	
South Zone	**Central Zone**	
Dr. G. Naresh Reddy, Hyderabad	Dr. Ashish Mathur, Amarkantak	
Dr. Ajesh S. R., Thiruvananthapuram	Dr. Anshu Gupta, Gorakhpur	

Hyderabad Elected		
East Zone	West Zone	**North Zone**
Prof. Ashish Kumar Sana, Kolkata	Prof. Abhay Upadhyay, Jaipur	No Any Nomination Received
Dr. Sabat Kumar Digal, Bhubaneswar	Dr. Ashish Mathur, Jodhpur	
South Zone	**Central Zone**	
No Any Valid Nomination Received	Dr. Gautam Prasad, Sagar	
	Prof. Entesham Ahmad, Lucknow	
Hyderabad Co-opted		
East Zone	West Zone	**North Zone**
Prof. Arindam Das, South Bengal	Dr. Manguram, Jodhpur	Dr. J. K. Sharma , Shimla
Dr. Samira Patra, Bhubaneswar	Dr. Manish Vadera, Jodhpur	Dr. Sunil Gupta, Delhi
	Dr. Shilpa Vardia, Udaipur	Dr. Kamal Kant, Chandigarh
South Zone	**Central Zone**	**44th IAA Conference Secretary**
Dr. Indrakanti Sekhar, Hyderabad	Dr. Neeraj Kumar Shukla, Lucknow	Prof. K. S. Thakur, Gwalior
Prof. Ramchandra Gowda , Karnataka		
Mr. Venkatesh Maddeni, Hyderabad		
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Prof. M Sulochana, Hyderabad	Prof. Shurveer Bhanavat, Udaipur (NATSE)	
Dr. Shailesh N. Ransariya, Saurashtra		

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