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RESEARCH BULLETIN

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

Statutory Body under an Act of Parliament

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Vision Statement

The Institute of Cost Accountants of India would be the preferred source of resources and professionals for the financial leadership of enterprises globally.

Mission Statement

The CMA professionals would ethically drive enterprises globally by creating value to stakeholders in the socio-economic context through competencies drawn from the integration of strategy, management and accounting.

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Foreword

In a move that can prove beneficial for India's tech ecosystem, the Centre is focusing on enhancing India's digital infrastructure in the coming financial year. The Union Government introduced some initiatives to boost digital infrastructure in the domains of agriculture, finance and education. The Indian tech industry unswervingly accepted these proposals as they open many opportunities for Indian IT giants, MSMEs and startups in the tech space. The government's vision for the Indian economy is to create a technology-driven and knowledge-based economy leveraging on digital tools and platforms. The Government also announced the establishment of three centres of excellence for AI to promote the creation and use of AI in India. The government's focus on AI is aimed at encouraging the growth of the technology and ensuring that it benefits the country. As rightly said by finance minister Smt. Nirmala Sitharaman *'Make AI for India' and 'Make AI work for India'*. The digitisation trend will bring new opportunities for businesses and individuals of the nation and for the global community at large.

The last few years we found technological advances that assure to disrupt the modern information technology landscape in a way not seen since the advent of cloud computing. The metaverse is not the only new frontier of technology that has to be accounted for by data laws. In the past few years, impressive advancements have been made in the field of blockchain and crypto tokens, and more recently, "Generative AI", i.e., AI that can produce text and images based on human prompts, with next to no human intervention. ChatGPT, for instance, can converse at a near-human level and draft complex code and documents which would have been unthinkable a mere few years ago.

Thus, the Government should focus on an enabling law, that promotes and incentivizes innovation, experimentation and growth. In doing so, we can set the path and define the IT landscape for the next decade and beyond. This should be backed with adequate infrastructure support and the budget to empower regulators and state level agencies.

Further, it gives me an immense pleasure to present before you esteemed Research Bulletin of the Institute, Research Bulletin Vol.48, No. III & IV.

This book provides a valuable information on the topics like Virtual Digital Currency, Chat GPT, Employee Satisfaction in the Post-Merger Scenario, ESG Portfolio Analysis, Stock Market, Liquidity Management, etc.

Wish all the readers a happy reading!!!

CMA Vijender Sharma
President
The Institute of Cost Accountants of India

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Editor's Note

Greetings!!!

In the year 2019, when the $5 trillion benchmark was first set and intended to be achieved by 2024-25; you are aware that India as well as the global economy since then has been affected adversely by the Covid-19 pandemic followed by the Russia-Ukraine war. Despite these challenges, India has exhibited resilience. The economy has emerged as the world's fifth largest, with a GDP of $3.5 trillion in 2022. Various experts believe that India is best positioned to overcome the recessionary headwinds projected for the global economy.

The government of India's strong infrastructure push under the Prime Minister's Gati Shakti initiative, logistics development, and industrial corridor development will contribute significantly towards raising industrial competitiveness and boosting of future growth. Recent announcements to boost agricultural productivity, such as setting up digital services for crop planning and support for agriculture startups has become imperative for agricultural sustainability. The Finance Minister emphasized on the seven main priorities of the government for the year 2023-24 – inclusive development, reaching the last mile, infrastructure and investments, unleashing potential, green growth, youth power and financial sector. The Rs. 10 lakh crores allocated to the public sector is a significant boon for the economy.

Also, analysis has shown that investing in green energy could result in a 4% increase in the GDP as well as create millions of jobs. The Budget announced an Urban Infrastructure Development Fund, along with plans to create sustainable cities. India's plan to launch '100 critical sustainable infrastructure projects' to boost last mile connectivity will play a crucial role in improving the delivery of food, fertilisers, coal, etc. Furthermore, the government's focus on technology to accelerate the growth of the data centre economy may play a key role in achieving its growth targets. This year the budget reflects a demand side and supply side focus on key technology such as AI, robotics, and drones. This includes the inclusion of key imperatives such as inclusion and unleashing potential, and creating capability, through centres of excellence in AI, and a skill India platform.

It gives me an immense pleasure to proclaim the release of Research Bulletin, Vol.48 No. III & IV, issue. Our Research Bulletin mainly emphasizes on pragmatic research articles and has a much wider reader base consisting of academicians,

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researchers, professionals and practitioners. The strength of this book lies in its innovative approach in looking at issues in a comprehensive manner.

The present volume of Research Bulletin, comprises of various blazing topics like, Digital Currency, Environmental, Social, and Governance (ESG) issues, Liquidity Management in Maharatna Central Public Sector Enterprises, Securities Markets, Banking, etc. would surely improve the knowledge base of readers.

We publish both theme based and non-theme based articles on the contemporary issues. Inputs are mainly received both from academicians and the corporate stalwarts. Our attempt is to draw attention towards environmental, social, economic and market-related issues, so that the researchers and decision-makers can enrich their knowledge base and can take strategic decisions deliberately.

We are extremely happy to convey that our next issue of *Research Bulletin, Vol.49, No. I*, April, 2023 issue is a non-theme one**.**

We look forward to constructive feedback from our readers on the articles and overall development of the Research Bulletin. Please send your mails at *research.bulletin@icmai.in*. We thank all the contributors and reviewers of this important issue and hope our readers enjoy the articles.

Warm regards,

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Contents

AN ECLIPSE OF VIRTUAL DIGITAL CURRENCY IN INDIA: AN UPDATED REVIEW WITH UNION BUDGET 2022-23

Shubham Kakran
Arpit Sidhu

Abstract

Digital money is a type of electronic tender that can be produced, saved and swapped. Cryptocurrencies are attracting to both expert and casual investors because to their high returns and diversification capabilities. Quick developments and expanded applications are the primary elements that have led cryptocurrency as an emerging asset for investment portfolios. Being a subset of digital currency, cryptocurrency customs crypto-graphical technology to drive a consensus on a certain value. The recent union budget (2022-23) was one of the most awaited budget for crypto investors. Their eyes were keenly looking for the favorable laws and regulation for investing in crypto. But, government did not show any positive golden step for promoting crypto even its regulations hung the neck of Indian as well as international investors with the high flat taxation i.e. 30% and 1% TDS. Government focused on digital rupee (₹) and start promoting it to be launched by 2023 backed by CBDC. Such steps of government of India depicting crypto currencies as unreliable source of investing. Indian government still believes crypto as a dormant volcano, which may explode any day, and no one is responsible for such explosion (impact of failure of crypto).

Keywords:
Indian Union Budget, Cryptocurrency, VDA (Virtual Digital Assets)

Introduction and Discussion

In modern era, digitalization is the thunderstorm for India, which ultimately reflected from the moment of traditional way to digital mode of transaction. In 2015, Digital India program played vital role as an umbrella under which different schemes are covered as to connect India with the digital payments. There is no doubt that these payment systems are working on a massive scale successfully. As per statistics, India is just behind from China emerged as second largest digital or online market in the world. This digital market created a space for digital currency. Satoshi Nakamoto, (real creator, pseudo name) in 2008, attempted to establish a monetary system that used a peer-to-peer network and was not stored in a central location. It is based on chains of transaction in form of network. This network is based on the computation intensive validation process known as "mining". In long run, cryptocurrencies provide huge profits (Yadav A, 2021; Sovbetov Y, 2018). In 2010, first transaction in form of bitcoin took place. Bitcoin was initially launched in India in 2012, and its popularity has progressively expanded since then. Highkart.com (an e-commerce site) was the first to accept Bitcoin as a payment method in December 2013. Many cryptocurrency exchanges, such as Zebpay, Unocoin and Coinsecure, soon began to provide platforms for trading, storing, and managing cryptocurrencies. The crypto trading platforms provided much-needed depth and volume to the Indian crypto market until 2013, when the Reserve Bank of India ("RBI"), i.e. the Central Bank of India, issued a bulletin warning the public against trading in virtual currencies. Again, in February and December 2017, RBI released press note as after demonetization sudden hike was observed. In November 2017, a high level Inter-ministerial committee was constituted under the chairmanship of Shri Subhash Chandra Garg, Secretary, Department of Economic Affairs, Ministry of Finance. Report results suggested as for blanket ban on private cryptocurrency in India. In 2018, the RBI issued a circular forbidding banks and financial institutions from trading in virtual currencies and from providing services that assist such transactions. However, in march 2020, a three-judge bench of the Supreme Court of India struck down such a circular in Internet and Mobile Association of India v. Reserve Bank of India (Supreme court of India, 2018), observing that since Cryptocurrencies are not banned in India and pose no discernible risk, denying cryptocurrency exchanges entry to banking and payments channels would be inappropriate. During the cryptocurrency taxation, a major news was revealed. The finance minister declared during the budget

address that virtual digital assets, such as cryptocurrency, would be taxed at a rate of 30% beginning April 1, 2022. In Budget 2022, crypto are assets created by individuals and government is taxing profits made out of transactions of those assets, at 30%. The government would also monitor the money trail in cryptocurrency transactions, with a 1% TDS (Tax Deduction at Source) charged on each transaction. According to bill a new section, implemented 194S will be added from July 01, 2022. Buyers of crypto have to deduct 1 percent in form of TDS, which is ultimate burden on the buyer. As Indian enthusiast crypto buyer, do frequent transactions to earn from volatilities or fluctuation in currency, in such context TDS impact such person highly discourage to take risk. The exchanges liquidity may disappear at first, since subtracting TDS from every market-making order might quickly deplete all available funds. Indian exchanges may revert to a peer-to-peer format, requiring purchasers to deduct TDS from the entire amount.

In India, income tax on earnings from stock market for period of STCGs (Short-Term capital Gains) levied by 15% and for real-estate market 15%. On comparison with taxation on gains, VDA (Virtual Digital Asset) can be considered as tax bomb on small investors (those who earn through volatility in market). A comparative study on crypto currency has been done in Table 1 along with bonds, shares, and precious metals.

Table 1: Comparative study of crypto currency with stocks, bonds and precious metals.

Basis	Cryptocurrency	Stocks and Shares	Bonds	Precious Metal
Understanding	It is part of block chain system for trading and investments. Available online with different names of currency as in Figure 4. There currency have limited utility i.e. speculative and digital currency. It has potential for asymmetric returns. It gives higher returns in week in months	Stocks are the ownership and shares are the small denomination of that ownership in a firm or company. It is lesser volatile than crypto currency. Longer investment may give high returns.	A conditional loan from an individual to government or companies.	Diamond, gold, jewelry, precious stones etc. are highly regulated asset and dependent on market. It can be used as currency, luxuries along wide range of applicability.
Investors	Small to Big	Small to Big	Small to Big	Small to Big
Volatility	HIGH	HIGH	LOW	HIGH
Risk of return	HIGH	HIGH	LOW	Low (As reallocate fluctuating market situation and have minimum value based on daily use)

Profit/Loss in short-term and long –term	HIGH	HIGH	MEDIUM	MEDIUM
Ownership	Holder of VDA	Holder of shares	Holder of certificate	Holder of Metal
Regulation	Decentralized (Depends on regulation of country to country)	Decentralized	Centralized (RBI-Bonds and other securities on behalf of government and SEBI (Security Exchange Board of India– Corporate and private bonds)	Decentralized
Taxation	30% (High)	STCG 15% (Medium)	LTCG 10% (Low)	20% (Medium)

After Supreme Court India ruling, the crypto investment is legal in India but tender of money is still illegal. Indian finance budget 2022-23 did not given open platform for trading in crypto as considering high risk of volatility and lot of data for transactions of exchanges. To counter this issue, government is planning for digital currency to be launched in 2022-2023 (as per budget speech 2022 by finance minister). Insertion of new section 115BH deals with taxation on VDA, which provides deduction only to expenditure related to cost of acquisition (without any more deduction based on any other expenses, allowance, or set off any losses). As per statistics, the share of respondents of other VDAs in Indian crypto currency market in comparison with the world has shown hike as 7%, 9% and 15% in 2019, 2020 and 2021. (Cryptocurrency Report - Times of India, 2021; Sachetas, 2022) In previous financial year, approximately $10 million digital

currency transacted, which shows 640% rise in Indian crypto market. In figure 1, it can be seen that India is on top followed by USA, Russia, Ukraine and other countries in ranking based on number of investors. Although in case of investor awareness, (figure 2) India is on rank seven as in weak condition.

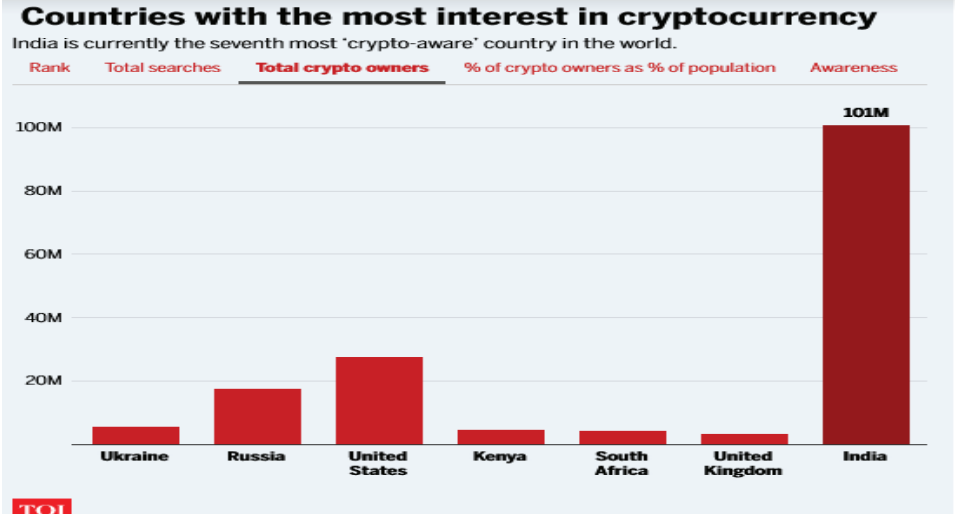

Figure 1: Total crypto owners in different country as per reports of TOI (Times of India newspaper).

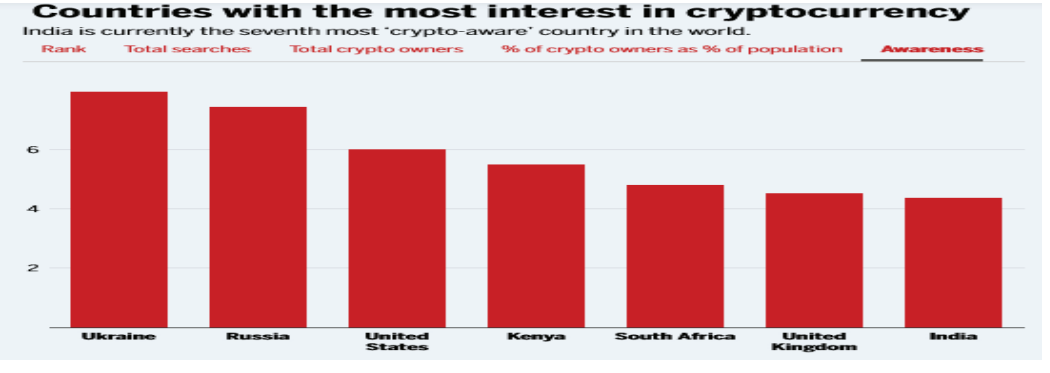

Figure 2: As per ranking awareness among crypto investors in different country (Source: TOI).

At the grassroots level, crypto market demonstrated a positive impact as sub-sector of rising technology. Cryptography boosted the rate of transaction as cryptography as created space for more scope as no one wants to tell earning from VDA. Figure 3 shows the number of different forms of digital currencies available in between 2013 (66) to 2022 (10,397). Therefore, with this short span of time the growth of digital currencies is tremendous. These different online currencies created a huge space for exchange platforms also. Binance exchange platform shows the top rank (Figure 4) among all other with $15.22 billion trading. Figure 5 shows number of block chain users increased hurriedly as reached near above 80 million number of users in a very short span of time. It is the demand for modern era to deal in digital assets without any tracking systems.

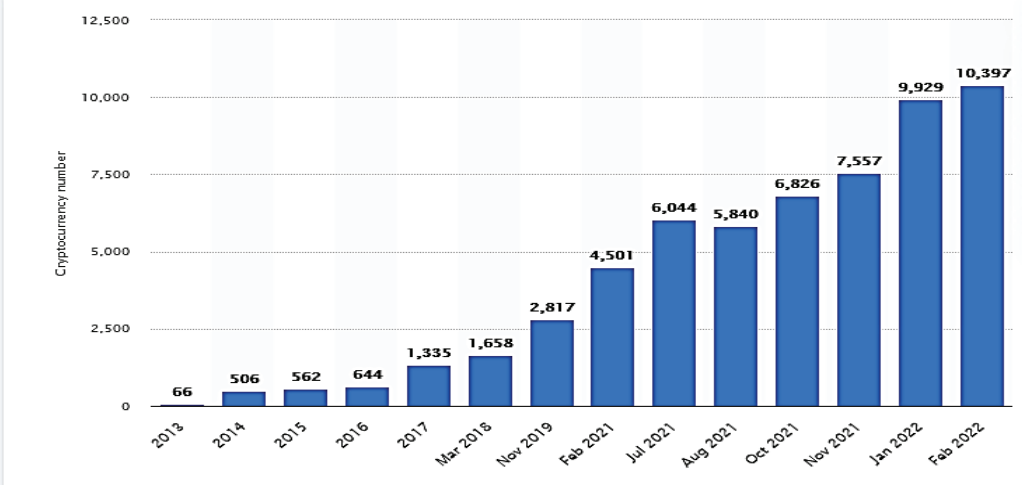

Figure 3: Number of crypto currencies in word wide (2013-2022) (Source: Statista).

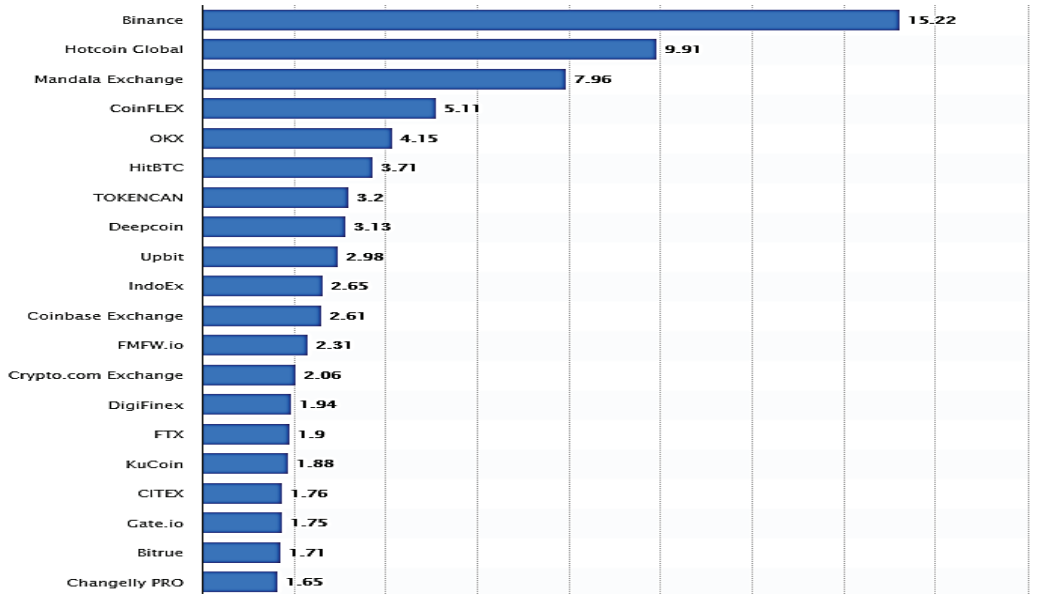

Figure 4: Largest crypto currency exchanges as per volume (in billion U.S. dollars) (Source: Statista).

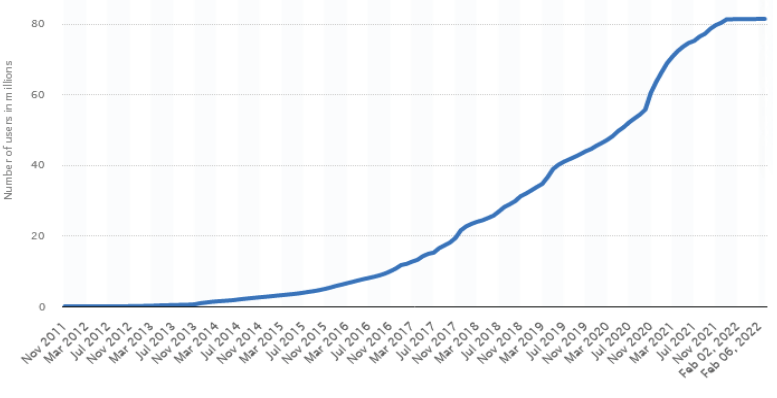

Figure 5: Block chain wallet users worldwide (in millions) (Source: Statista).

As per Yadav A. (2021), dark wallet complicates the crypto dealings that is not being tracked by anyone. To counter unethical uses as well as for proper tracking, Indian budget FY 2022-23 opened doors for investors in digital rupee to form a digital version of physical cash which is backed by RBI (Reserve Bank of India). China has already launched digital Yuan as banned crypto dealing as well as mining and highly advertised in winter Olympics of 2021. As per Atlantic Council Organization (ACO), CBDC has been explored by 87 countries (contributing in 97% of GDP) and nine countries have already launched their digital currency. As e-Naira is latest digital currency launched by Nigeria. As per ACO reports, 2022 China, South Korea along with 14 countries are in pilot stage with their CBDC. US is farthest behind in the four largest central banks (the US, the Euro Area, the UK, and the Japan) Currently, India has the highest number of crypto owners globally (Figure 6).

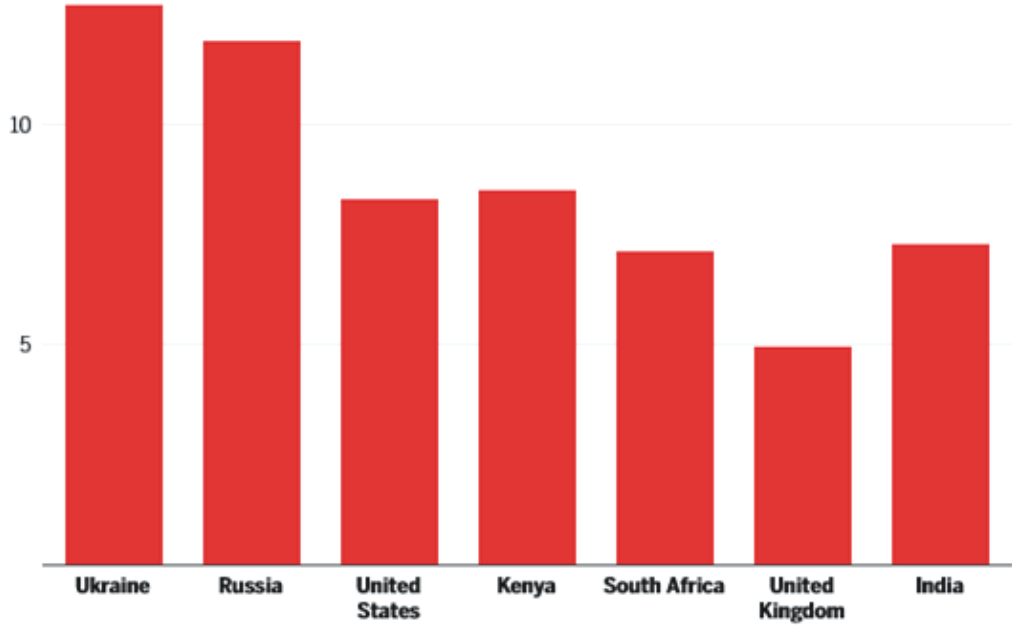

Figure 6: Crypto owners in % of population and investors (Source: Broker Chose's annual crypto proliferation index)

As per NASSCOM (National Association of Software and Services Companies), Indian market will touch heights of $241 million by 2030. As per the investors' attention are concerned, African, Asian and South American countries are more interested to deal in crypto instead of European, North American or Australian. Figure 7 and Figure 8 shown depth and demand of crypto currency in the world as a future revolutionary exchange value. As Asian countries are highly influenced by, different crypt is as dealing on different platforms. In 2021, it is seen that Nigerian shown deep interest in crypto as to guard themselves from Nigeria currency depreciation. Later on, government banned in Nigeria still it is trend as people are directly in crypto without any trackings. To counter such situation Indian governments focused on CBDC system.

Figure 7: Crypto users in the world (Source: Statista)

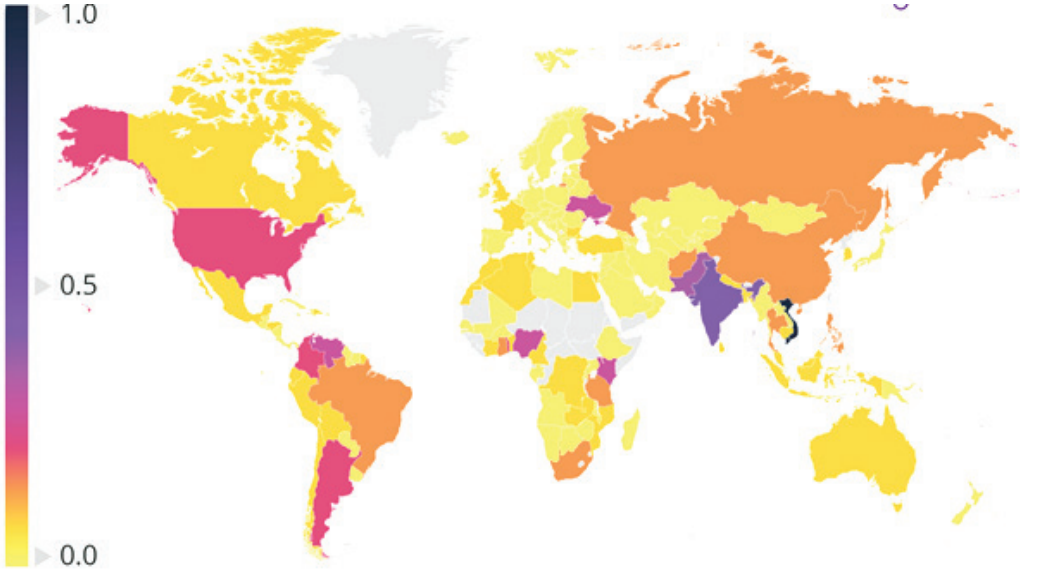

Figure 8: Index value based on adoption of global crypto currency (Source: Statista).

Conclusion:

Present commentary leads to identify the essential to broaden the debate and understanding on the VDA in context of India and world. Although still, there is uncertainty in context of India to legalize the different cryptocurrency available on different exchanges. This commentary underlines the importance of crypto currency in Indian market based on comparative study with other source of investment as in Table1. Indian budget for FY 2022-23 deals cryptocurrency as undervalued investment by demotivating investors by charging 30% tax and 1% TDS by adding new section 115BH in Income tax act. To counter such currency announced CBDC. In point of view of investors secrecy that is provided by cryptography will be loosen and then transaction could be tracked and very lesser opportunity to earn through volatility. Government is still not counting crypto as mature market as it can be influenced by different sources, which may cause heavy losses to people. (Hong & Yoon, 2022) Research on the latent impact of cryptocurrencies is still inadequate while considering the effects of

cryptocurrencies on the diverse sectors of economy and society. (Bloomberg updates, 2021) As in 2021, “Musk Blast” caused $50000 fallout in bitcoins as Elon Musk took U-turn as for not accepting crypto. As Indian investors are in billions dealing in crypto (Figure1) and have very less awareness (Figure 2) for understanding crypto, which resembles as burning coal in hand. A good thing is that people would aware more about VDA and by learning and understanding will invest. In perspective of international investors, budget (2022-23) will choke the dealers in crypto and block chain wallets, which may affect exports and imports units. In context of taxation, dealing on cryptocurrency is as tax bomb. Especially heavy tax is concern for investors dealing in small period and try to earn from fluctuation. Based on the above lesson Indian government still not as confident for motivating people for investing in crypto. A new digital block chain rupee (₹) can be seen by 2023. As it would have capability to track transaction on behalf of chains and may hit backbone of unethical transaction, i.e. corruption etc. may work as golden weapon. Moreover, its impact is still to watch modernization of currency.

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A SWOT AND IMPACT ANALYSIS OF CHAT GPT

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Abstract

Chat GPT is a potent natural language processing technology that can produce replies to user inputs that resemble those of a human being. Several businesses have used it successfully, including customer service, education, and entertainment. This paper intends to thoroughly examine Chat GPT's advantages, disadvantages, possibilities, risks, and effects on the economies of India and other countries. As AI technology advances, Chat GPT will need to adapt and develop to maintain its competitiveness in the market.

Keywords:

Chat GPT, Artificial intelligence, SWOT, Generative Pre-trained Transformer

Introduction

Chat GPT (Generative Pre-trained Transformer) is an artificial intelligence language model developed by Open AI. It is based on the transformer architecture and is pre-trained on a large corpus of text data, which allows it to understand the nuances of natural language and generate human-like responses to text prompts. The Chat GPT model uses unsupervised learning techniques to build a neural network that is capable of generating coherent and contextually relevant responses to a variety of text-based inputs. It is particularly effective at handling sequential data, such as conversation threads, and can generate responses that are grammatically correct and semantically meaningful. Chat GPT is widely used for developing conversational AI applications, such as chatbots and virtual assistants, that can interact with humans through natural language text. It can also be used for other natural language processing tasks, including language translation, text summarization, and sentiment analysis. Overall, Chat GPT represents a significant advancement in the development of artificial intelligence technology that can understand and generate natural language text in a way that is similar to human communication.

Review of Literature

1. **Lund, B.D.and Wang, T. (2023).** This article summarises essential terminologies about Chat GPT, a publicly available application created by Open AI, and its underlying technology, Generative Pretrained Transformer (GPT). Moreover, it talks about the background and technology of GPT, including the generative pre-trained transformer model, the breadth of language-based tasks it can do, and how Chat GPT uses this technology to act as a smart chatbot.

Need for the study

Overall, the literature on Chat GPT is extensive and covers a wide range of topics, including language modeling, chatbot applications, transfer learning, ethical concerns, multilingual applications, and model variants. The use of Chat GPT is likely to continue to expand as the model continues to improve and new applications are discovered. However, it is important to consider the ethical implications of using AI-based models like Chat GPT and to work to address issues of bias and fairness in AI applications. Hence, the present study is to

undertake to address the concept of Chat GPT and its merits and demerits as well as the impact of Chat GPT on the Indian Economy and other countries.

Objectives of the Study

The following are the objectives of the study

1. To study the concept of Chat GPT and its Merits and Demerits.
2. To explore the SWOT analysis of Chat GPT.
3. To analyze the impact of Chat GPT on the Indian Economy and other Countries.

Research Methodology

Technology is advancing rapidly, and we require assistance in utilizing conventional methods and technology resources. Many generations are perplexed about new inventions. Chat GPT, a recently released artificial intelligence, gives rapid, well-formulated replies to various topics. We are interested in the influence of this instrument on education and research. We must keep our students and faculty aware of Chat GPT. Hence, the present study has to know what Chat GPT is, How it impacts the nations, and SWOT analysis. The study is purely based on secondary data gathered from websites and articles etc.

Discussion of Chat GPT

- **Concept of Chat GPT**

  An artificial intelligence (AI) model known as GPT (Generative Pre-training Transformer) was created by the business Open AI to produce writing that resembles that of a person. A language model called GPT can produce new text comparable to the text it was trained on after being taught on a sizable text dataset. It has proved especially effective in NLP, which entails creating computer programs that can comprehend, decipher, and produce human language.

  GPT is frequently used in chatbots and computer systems created to have text-based or voice-based dialogues with human users. GPT-enabled chatbots can better simulate human interaction by providing replies to user inquiries or prompts that resemble human responses.

- **Merits and Demerits of Chat GPT**

  As an AI language model, Chat GPT (Generative Pre-trained Transformer) has several advantages and disadvantages. Here are some of the main ones:

- **Merits of Chat GPT**

  1. **Large Knowledge Base:** Chat GPT has been trained on a massive amount of data, which has helped it to acquire a vast knowledge base. It can provide answers to a wide range of questions and offer insights on many topics.
  2. **Natural Language Processing:** Chat GPT has natural language processing capabilities, which means it can understand and respond to natural language questions and statements. This makes it more user-friendly and accessible to people who are not familiar with coding or technical language.
  3. **Improved Customer Support:** Chat GPT can be used to provide customer support for a wide range of businesses. It can handle simple and complex queries and provide accurate and consistent responses. This can improve customer satisfaction and reduce response time.
  4. **Time-Saving:** Chat GPT can save time by answering questions quickly and efficiently. This can be especially useful for businesses that receive a large volume of inquiries.

- **Demerits of Chat GPT**

  1. **Lack of Personalization:** Chat GPT is not capable of personalizing responses based on the specific needs or preferences of individual users. This can limit its ability to provide customized or targeted responses.
  2. **Limited Contextual Understanding:** Chat GPT can sometimes struggle to understand the context of a question or statement. This can result in inaccurate or irrelevant responses.
  3. **Limited Emotional Intelligence:** Chat GPT does not have emotional intelligence and cannot understand or respond to emotions in the same way as a human. This can make it less effective in situations where empathy or understanding is needed.

4. **Vulnerability to Bias:** Chat GPT can be vulnerable to bias if the data it is trained on is biased. This can lead to inaccurate or inappropriate responses, which can be harmful to users.

- **SWOT analysis of Chat GPT**

This SWOT analysis evaluates the strengths, weaknesses, possible opportunities, and dangers of Open AI Chat GPT. If organizations and individuals are aware of these factors, they may make informed decisions about how to use this technology for the benefit of humanity.

- **Strengths**

1. **Large Knowledge Base:** Chat GPT has been trained on a vast amount of data, which has helped it acquire a massive knowledge base. This allows it to provide accurate and helpful responses to a wide range of questions.
2. **Natural Language Processing:** Chat GPT has natural language processing capabilities, which means it can understand and respond to natural language questions and statements. This makes it more user-friendly and accessible to people who are not familiar with coding or technical language.
3. **Scalability:** Chat GPT can be scaled up to handle an increasing volume of inquiries and can provide quick and efficient responses to users.
4. **Cost-Effective:** Chat GPT can provide round-the-clock support to customers, reducing the need for a large customer support team. This can save businesses money in the long run.

- **Weaknesses**

1. **Lack of Personalization:** Chat GPT is not capable of personalizing responses based on the specific needs or preferences of individual users. This can limit its ability to provide customized or targeted responses.
2. **Limited Emotional Intelligence:** Chat GPT does not have emotional intelligence and cannot understand or respond to emotions in the same way as a human. This can make it less effective in situations where empathy or understanding is needed.

- **Opportunities**

  1. **Improved Machine Learning:** As machine learning and AI continue to improve, Chat GPT can be trained on larger and more diverse datasets, which will enhance its capabilities and improve its accuracy.
  2. **Expansion to New Industries:** Chat GPT can be used in a variety of industries and applications, including healthcare, finance, and education. As more businesses and industries adopt AI technology, the potential for Chat GPT will continue to grow.

- **Threats**

  1. **Competition from other AI chatbots:** There are other AI chatbots available in the market, which may compete with Chat GPT. These chatbots may have different features or pricing models, which could affect the market share of Chat GPT.
  2. **Data Privacy Concerns:** As Chat GPT relies on data to train its algorithms, there may be concerns around data privacy and security. This could limit its use in industries where data privacy is a top concern.

- **Chat GPT Impact on Indian Economy and other countries**

  Chat GPT is an AI-based chatbot that can have a significant impact on the Indian economy and other countries in a variety of ways. Here are some potential impacts:

  1. **Improved Customer Service:** Chat GPT can be used by businesses to provide round-the-clock customer service support, which can enhance the customer experience and increase customer satisfaction. This can lead to increased customer loyalty and ultimately, increased revenue for businesses.
  2. **Cost Savings:** Chat GPT can automate many customer service tasks, which can reduce the need for a large customer support team. This can lead to cost savings for businesses and help them become more efficient.

3. **Increased Productivity:** Chat GPT can handle a large volume of inquiries simultaneously, which can help businesses increase their productivity and reduce response times.
4. **Job Displacement:** The use of AI technology like Chat GPT can lead to job displacement in certain industries. As more businesses adopt AI technology, some traditional jobs may become redundant, and workers may need to upskill or reskill to remain competitive in the job market.
5. **Enhanced Educational Opportunities:** Chat GPT can be used in education to provide students with immediate access to information and answers to their questions. This can enhance their learning experience and help them become more knowledgeable.
6. **Improved Healthcare:** Chat GPT can be used in the healthcare industry to provide patients with immediate access to medical information and to answer questions about their health. This can improve patient outcomes and help people take better care of their health.
7. **Ethical Concerns:** There are ethical concerns around the use of AI technology like Chat GPT, particularly around data privacy, security, and algorithmic bias. These concerns need to be addressed to ensure that the use of AI technology is ethical and responsible.

Findings of the study

Chat GPT has several strengths and opportunities but also some weaknesses and threats to consider. While it can be useful for providing information and support, it is important to be aware of its limitations and potential drawbacks. As AI technology continues to evolve, it will be important for Chat GPT to adapt and improve to stay competitive in the market. The impact of Chat GPT on the Indian economy and other countries will depend on how it is used and implemented. While there are potential benefits to using AI technology like Chat GPT, there are also potential risks and challenges that need to be considered. As AI technology continues to evolve, it will be important for businesses, governments, and society to stay informed and engaged in the conversation around its use and impact.

Conclusion

A language model called Chat GPT, developed by Open AI aims to give users accurate and beneficial information on various subjects. It can handle a lot of data, analyze and synthesize data, and produce results to user queries that resemble those of a human being. To assist people with their queries, it offers helpful and educational solutions. It is a potent tool that may help people, companies, and organizations with various activities, such as research, analysis, and communication. It is a component of the expanding artificial intelligence field and technological advances to improve the world. All users of Chat GPT may rely on it to deliver trustworthy, accurate, and useful information, and it hopes to be a useful tool for many years to come.

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A STUDY OF EMPLOYEE SATISFACTION, JOB & ORGANISATIONAL PERFORMANCE OF SBI IN THE POST-MERGER SCENARIO

Bushra Shazli
Lamaan Sami

Abstract

The majority of studies on merger and acquisitions (M&As) have been financial in nature, and the effectiveness of a merger was judged in financial terms. Therefore, the present study aimed at studying effectiveness of the M&As in context of employee satisfaction, compensation and benefits, job performance and organizational performance of SBI. For this purpose, quota sampling technique has been applied to collect the primary data of 400 employees of SBI (200-SBI employees & 200 employees who were working with associate banks in pre-merger period). The data has been analysed by applying appropriate statistical tests such as: exploratory factor analysis & Mann Whitney U Test and mediation regression analysis using Sobel test with the help of IBM SPSS version 25.

The outcomes of the study has shown that for both the respondents, variables such as- performance based rewards, employee welfare schemes, salary at par, good insurance, bonus and retirement plans have been the most important factors of satisfaction for SBI`s Compensation and benefits practices in the post-merger scenario. It has been found that for variables Annual increment, Level and quality of transparency on remuneration practices and policy, Contribution of remuneration provision to financial stability, there is difference between the two groups of respondent`s satisfaction for Compensation and benefits practices of SBI. The results of mediation regression analysis reflects that Service Quality & Employee satisfaction have positive and a significant impact on Organisational Performance. Compensation and Benefits has positive and a significant impact on Job Performance by the inclusion of the mediator variable employee satisfaction

Keywords

Compensation and Benefits, Employee satisfaction, Job & Organisational Performance

1. Background

In the corporate sector, mergers and acquisitions are common events that are viewed as beneficial business growth strategies (Rahman, Ali, & Jebran, 2017). The rationale for M&As is that they promote business expansion and growth, making two organisations that work together more profitable than two separate ones. These kinds of transactions are frequently carried out in the financial sector (Maditinos, Theriou, & Demetriades, 2009). Many organisations utilised merger and acquisition methods to grow their businesses as a result of the rapid expansion. Each year, the business world records about 4,000 transactions (Malik et al., 2014).

The preponderance of M&As studies are conducted in the financial sector, where the success of the merger may be judged using metrics such as total assets, bonds, and net worth. However, determining the effectiveness of the merger and acquisition in terms of how HR functions within the company is equally important (Soundarya, Lavanya, & Hemalatha, 2018). M&As waves that swept across the banking industry in the 1980s and 1990s changed it globally and affected the jobs of millions of staff (Iankova, 2014).

Most employees feel sadness, resentment, and unhappiness at work, and these emotions can become more intense and result in M&A disappointment (Appelbaum, Lefrancois, Tonna, & Shapiro, 2007), The primary human resource challenges in merger movements are personnel planning, remuneration, turnover, performance evaluation system, and staff interactions (Sambu, Wanza, & Campus, 2018). Employee satisfaction plummets by 14% after a merger fails, productivity declines by 50%, administration declines progressively by 47% in three years, and employees start to perceive that top management is more focused on the bottom line (by 80%). At this stage, HR concerns including structuring a new organisation, retaining important personnel and influencing them, switching executives, and interacting with stakeholders are likely to come to light (Soundarya et al., 2018; Paudel, Parajuli, Devkota & Mahapatra 2020).

The Indian banking sector has constantly witnessed changes because it is one of the service sector's fastest-growing industry. Because of strategic bank decisions, the banking industry has seen takeovers, amalgamations, mergers, and acquisitions. Due to their size and frequency, M&As are strategically significant for businesses, their customers, and the economy as a whole (Hartog,

2002). However, in order to be successful, banks looking to merge with or buy out rival institutions must figure out how to implement the competitive business reforms they need to while still managing the crucial human factors at play. The success of M&As and the creation of the synergy that corporations desire may be influenced by human dynamics.

Banks, on the other hand, must keep a more devoted workforce that demonstrates organisational citizenship behaviour and has less plans to depart. The satisfaction of banking employees is a prerequisite to attain it. Employee satisfaction improves the bank's operational performance, and results in lower staff nonattendance rates, and decreases employee turnover (Abuzid and Abbas, 2017). Staff satisfaction is influenced by a number of organisational factors, including the job, the manager, the promotion, the pay structure, the perks offered, etc. There are various levels of employee satisfaction with these organisational factors (Monga, Verma and Monga, 2015).

Some factors like compensation are more crucial than others in determining satisfaction of employees. In the banking industry, pay satisfaction makes the biggest difference in overall employee satisfaction (Usman, Akbar, and Ramza, 2013; Nawab and Bhatti, 2011). It means that one of the major requirements for employee satisfaction is pay satisfaction. Monetary and non-monetary components of pay affects satisfaction of bank employees in India (Sinha and Shukla, 2013; Chahal et al. 2013; Shukla and Tiwari, 2013; Sharma and Bajpai, 2011).

In nutshell, M&As have long been a crucial component of the banking industry in India. Banks have the potential to grow, gain a competitive edge, and have the upper hand when competing with competitors in the market after M&As. However, when a bank is changed, the management system also changes, which significantly alters the company's resources. In the event of M&As, the bank's human resources, or its workers, are the ones who are most impacted. As a result, the bank's strategic decisions have an impact on both its financial and non-financial performance.

The recent and largest M&As in the history of Indian banking industry was of State Bank of India on 1st October 2017 with its 5 associate banks namely- State Bank of Bikaner and Jaipur (SBBJ), State Bank of Mysore (SBM), State Bank of Travancore (SBT), State Bank of Hyderabad (SBH) and State Bank of Patiala

(SBP). Therefore, it provides the justification to conduct a study on the employee satisfaction, compensation and benefits, job performance and organizational performance of SBI.

The present study aimed to examine the satisfaction level of two categories of employees; one who were working with SBI before M&As and the other who were previously working with associate banks, but became employees of SBI after M&As. The researcher found lack of studies on the employee satisfaction, compensation and benefits, job performance and organizational performance at SBI. Thus, the following research questions guided the present study.

1. What are the most significant factors of satisfaction for both SBI employees and SBI employees that were previously working in associate banks for Compensation and benefits practices in the bank in the post-merger scenario?
2. Is there any difference of satisfaction between SBI employees and SBI employees that were previously working in associate banks for Compensation and benefits practices in the bank in the post-merger scenario?

1.1 Research Objectives

The objectives of the present study are as mentioned below-

1. To identify the most important factors of satisfaction for both SBI employees and SBI employees that were previously working in associate banks for Compensation and benefits practices in the bank in the post-merger scenario.
2. To ascertain the difference of satisfaction (if any) between SBI employees and SBI employees that were previously working in associate banks for Compensation and benefits practices in the bank in the post-merger scenario.
3. To analyse the impact of the employee satisfaction (IV) on the organisational performance (DV) with mediating effect of service quality (MV) of SBI.
4. To analyse the impact of the compensation and benefits (IV) on the job performance (DV) with mediating effect of employee satisfaction (MV) in SBI.

2. Literature Review

2.1 Concept of Merger & Acquisition

Although the terms "merger" and "acquisition" are not the same, they are sometimes used synonymously. One company purchases all or a portion of another in an acquisition. When two or more firms come together, they form one (Alao 2010). A merger is the legal process of joining two or more businesses into one single, continuing business (Horne and John 2004). A large, financially sound firm purchases a smaller organisation, according to Georgios & Georgios (2011). When two or more businesses combine to become one, this is referred to as a merger. A merger, according to Khan (2011), is the joining of two or more firms to form one or more new businesses. According to Durga, Rao, and Kumar (2013), takeovers, corporate restructuring, or corporate control are all considered to be mergers and acquisitions because they alter the ownership structure of organisations. A corporation typically engages into a M&As deal in order to partner with other companies since doing so might be more lucrative than going it alone in a market. Because of M&As, the return on equity and shareholders' wealth increase and any related expenses (operating costs) for the business are decreased (Georgios and Georgios 2011).

In order to remain competitive in the swift, efficient market, maximising shareholder wealth is the second important purpose of M&As. The management of the corporation is in favour of mergers and acquisitions as well because it will increase their influence and aid them in achieving both short- and long-term objectives for the organisation (Gattoufi et al, 2009).

Maximizing shareholder wealth is the next key objective of M&As in order to survive in the swift, efficient market. The top management is in favour of mergers and acquisitions as well because it will increase their influence and aid them in achieving the company's short- and long-term objectives (Gattoufi et al, 2009). Due to the fact that M&A is an essential strategy for business expansion in many countries, researchers from all over the world are interested in studying on this topic (Goyal and Joshi 2011). The United States in the seventeenth century is where M&As first emerged. The M&A trend starts in Europe in the nineteenth century (Focarelli, Panetta and Salleo 2002). The United States and Europe's markets have seen the most M&A research. Research on mergers and acquisitions in developing nations including Pakistan, India, Malaysia, and Bangladesh, among others, has been conducted relatively little.

Businesses have utilised M&As frequently during the past three decades as a strategic strategy for business reorganisation. Initially, only developed nations—particularly the US and UK—were affected by this tendency of concentration. But later, developing nations began to adopt the same trend. The rise of the tendency can be seen in the fact that in the last ten years of the twentieth century in the USA saw a triple increase in the number of M&As while a fivefold rise in terms of value was seen (Coopland, 2005).

Relationship between Employee Satisfaction, Job and Organisational Performance

After reviewing the several researches, it was found that employee satisfaction is directly related to their job performance. According to Katebi, A., et al. (2022), satisfied workers perform better on the job. Additionally, a significant correlation between worker job satisfaction and job performance was discovered by Gazi, M. A. I., et al. in 2022. According to Hajiali, I., et al. (2022), employee performance is positively but insignificantly influenced by competence, and work motivation has a negative and large impact on job satisfaction. Competence influences employee performance through job satisfaction in a positive but minor way.

Hauret, L., et al. (2022) also demonstrated that job-related criteria had a stronger impact on job performance than respondents' personal qualities did. When considering employee HRM perception, they discovered that even a high HRM exposure is insufficient to increase job satisfaction. The findings of their study revealed that managers should support their teams' positive HRM perceptions in order to increase job satisfaction.

In their research, Goretzki, L., et al. (2022) discovered scholarly and corporate support for employee satisfaction assessment as a critical element of effective management control. Their investigation demonstrated how an employee satisfaction assessment system's organisational role is subject to actors' sense-making rather than being predetermined by its intended purpose or implanted structural elements.

According to Amin, M. S. (2022), organisational commitment significantly improved job satisfaction. Employee job happiness is significantly impacted favourably by competence. Employee performance is directly and significantly improved by job happiness. Through job satisfaction, organisational dedication indirectly has a beneficial but negligible impact on performance. Through job satisfaction,

competence indirectly has a considerable positive impact on performance. In contrast to their known effects in permanent organisations, Goetz, N., & Wald, A. (2022) discovered that job satisfaction and organisational commitment have a negative effect on employee performance in a workplace environment formed either by coexistence of a permanent organisation and a temporary organisation.

Job engagement affects employee job happiness, work participation influences organizational commitment, employee performance affects work engagement, and performance of employees affects job satisfaction, according to Yandi, A., and Havidz, H. B. H. (2022). Beuren, I. M., et al. (2022) revealed that organisational resilience influences company performance and work satisfaction. The partial relationships between job happiness and business performance show that contentment can have an impact on performance through other factors.

2.2 Impact of Mergers & Acquisition in the Banking Sector on employee satisfaction

One of the oldest issues in the banking industry, when viewed in the global context, is merger and acquisition (Dwa & Shah, 2017). In order to acquire a competitive advantage, mergers are occurring more frequently today (Sambu et al., 2018). Covin, Koleno, Sightler, and Tudor (1997) claim that a merger makes employees more insecure, which causes stress, unhappiness, dishonesty, and irresponsiveness toward the organisation. The numerous societies will be ideal if the administrators and employees of the two associations involved in a merger and acquisition agree on the preferred way of cultural assimilation (Rottig et al., 2014). These types of workplace conflict and job unhappiness might cause unpleasant life events for the employees. Following a merger and acquisition, employees will likely get worried about a variety of difficulties (Holmes & Rahe, 1967). Employees are typically reluctant to divulge their true selves following a merger, therefore an organisation should make an effort to comprehend this and deal with the situation (Rasheed, Khan and Ramzan, 2013). According to Covin et al. (1997), leadership style has little bearing on employee satisfaction in a situation following a merger. In addition, Covin et al. (1996) recommended taking into account several requirements for employee satisfaction following a merger, specifically how salary and union membership affect employees' attitudes. When M&As occur, managers of all organisations should tell their staff properly and frequently (Covin et al., 1997; Zhu et al., 2004). According to Sambu et al. (2018)

and Akhimien & Kadiri (2017), organisations should create fair compensation systems for their employees and equitable promotion policies to enhance employee engagement in restoring a harmonious organisational culture. Open and early communication is vital for the employees who are involved in the M&As process since employees will deliver an effective return or levels of performance in their organisations when management is forthright with them (Seo & Hill, 2005). After the merger and acquisition, workers will probably worry about a range of issues, such as conflict and job unhappiness, which could lead to stressful life events for workers (Holmes & Rahe, 1967). Zhu et al. (2004) claimed that post-merger job satisfaction was worse than pre-merger job satisfaction, and that this unhappiness was mostly because employees did not receive the proper information that should have been properly and strategically communicated to them.

According to Cartwright & Cooper (1993); Akhimien and Kadiri (2001), employees are happy with their jobs, communication, and co-workers but are less pleased with their chances for promotion, benefits, and pay as well as the type of work they do (2017). In order to increase employee engagement in restoring a harmonious organisational culture, organisations should create fair remuneration systems for the employees and equal promotion rules, according to Sambu et al. (2018) and Akhimien & Kadiri (2017).

2.3 Compensation and benefits and employee satisfaction in Banking Sector

According to Hossain (2014), the work environment, remuneration, fair policies at the bank, and employee advancement all have a big impact on how satisfied bank employees are with their jobs. According to research by Hameed et al. (2014), pay has a major impact on how well bank employees perform, hence more pay can help staff perform better. However, Young et al. (2014) discovered a negative correlation between employee compensation and job satisfaction. It was explained that as wages rise, employees' workloads and levels of stress rise as well, which has a detrimental effect on their overall job satisfaction. Pay acts as a hygiene factor in banking, according to Monga, Verma, and Monga (2015), as it may or may not motivate employees, but insufficient pay leads to employee unhappiness. Kim and Kim (2001) discovered a negative relationship between self-efficiency and pay satisfaction for bank personnel. The study found that employees who are more self-efficient believe they are undercompensated

and are less satisfied with their pay and benefits. Additionally, it was due to the bank's pay system's inability to reward staff based on their productivity.

3. Research Methodology

The present study is exploratory, qualitative, quantitative & cross sectional in nature and is based on primary data collected by quota sampling technique in which population was divided into two groups (200 officials from SBI & 200 officials of SBI that were working with associate banks before merger) and then data was collected non-randomly from each group. The sample size was from 400 SBI officials. Further, the data has been collected with close ended structured questionnaire having 5-point likert-based questions as well as dichotomous and multiple choice questions for collecting demographic information. The responses were collected by sending questionnaires via google docs link to the respondent`s email address and scheduling was also done where feasible. The data was analysed by applying appropriate statistical tests such as: reliability analysis, normalcy analysis, cross tabulation, exploratory factor analysis & Mann Whitney U Test, linear regression analysis, multiple linear regression analysis and mediation regression analysis using Sobel test with the help of IBM SPSS version 25.

4. Data Interpretation and Analysis

4.1 Reliability Analysis

	Reliability Statistics	
	Cronbach's Alpha	N of Items
Compensation and Benefits	.698	8
Employee Satisfaction	.783	6
Service Quality	.872	4
Job Performance	.710	5
Organisational Performance	.740	4

Interpretation- The value Cronbach's Alpha signifies high reliability of the data. In table-4.1, it can be seen that all the dimensions have high reliability.

4.2 Demographic Profile of the respondents

The demographic profile of the respondents exhibited that there were total 400 respondents out of which 50% were from State Bank of India and remaining 50% were SBI employees previously working in Associate Banks. Further, analysing the age of these respondents, it was found that majority of them (73.8%) were under the age group of 41 to 50 years, 20% were under the age group of 31 to 40 years of age and only 6.3% respondents were under the age bar of 51 to 60 years. Further, it was also revealed that males were comparatively more than females and 93% of these banking officials were post-graduates, 42.3% were professionally qualified and only few were holding PhD degree. Last but not the least 93% of the respondents were holding the position of middle level management and remaining were from the higher-level management.

4.3 Identifying the Most Important Factors of Satisfaction for Compensation and benefits practices for SBI employees & SBI employees previously working in Associate Banks.

Table 4.2-KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.694
Bartlett's Test of Sphericity	Approx. Chi-Square	913.367
	Df	28
	Sig.	.000

The present data can be used for factor analysis because the KMO measure of sampling adequacy is 0.694. Bartlett's test of sphericity also shows significant results (p 0.001), which explains there is enough correlation between the variables.

Table 4.3 -Total Variance Explained

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.818	35.228	35.228	2.818	35.228	35.228	2.626	32.819	32.819
2	1.734	21.681	56.909	1.734	21.681	56.909	1.927	24.090	56.909
Extraction Method: Principal Component Analysis.									

Interpretation: After extraction and rotation, the most important **factor 1 explained 35.228% of total variance** and factor 2 explained **21.681%** of total variance that can be extracted.

Figure 4.1- Scree Plot

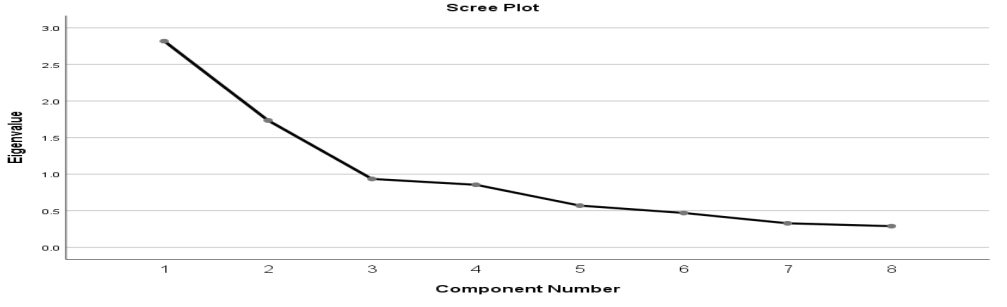


Table 4.4 -Rotated Component Matrix

Rotated Component Matrix[a]		
	Component	
	1	2
There is performances based reward/ incentive schemes.	**.861**	-.077
Employee Welfare Schemes are best in the banking industry.	**.829**	.093
My salary is at par with other banks.	**.645**	-.063

Rotated Component Matrix[a]		
The bank has good insurance, bonus and retirement plans.	**.632**	.491
The Compensation and benefits practices help our bank to retain High-Performing employees.	**.571**	.144
Annual Increment	.145	**.869**
Level and quality of transparency on remuneration practices and policy.	-.161	**.774**
The contribution of remuneration provisions to individual financial stability.	.095	**.540**

Findings: Most Important Factors of Satisfaction for SBI`s Pay Scale

In the present study the most important factors of Satisfaction for SBI`s Pay Scale looking at table 4.4, we found that-

Factor -1 includes following 5 variables-

1. There is performances based reward/ incentive schemes.
2. Employee Welfare Schemes are best in the banking industry.
3. My salary is at par with other banks.
4. The bank has good insurance, bonus and retirement plans.
5. The Compensation and benefits practices help our bank to retain High-Performing employees.

Factor -2 includes following 3 variables-

1. Annual Increment
2. Level and quality of transparency on remuneration practices and policy.
3. The contribution of remuneration provisions to individual financial stability.

4.4 Mann-Whitney U-Test: Difference between the satisfactions of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variables of 'Compensation and benefits practices'.

- **Null hypothesis 1:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'My salary is at par with other employees'.
- **Null hypothesis 2:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'There is performance based reward/incentive schemes'.
- **Null hypothesis 3:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'The Compensation and benefits practices help our bank to retain high performing employees'.
- **Null hypothesis 4:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'Employees welfare schemes are the best in the banking industry'.
- **Null hypothesis 5:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'The bank has good insurance, bonus and retirement plans'.
- **Null hypothesis 6:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'Annual increment'.

- **Null hypothesis 7:** There is no significant difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'Level and quality of transparency on remuneration practices and policy'.
- Null hypothesis 8: There is no significant difference between the satisfactions of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variable of **Compensation and benefits practices-** 'The contribution of remuneration provision to financial stability'.

Figure 4.2- Mann-Whitney U Test: Difference between the satisfaction of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for the variables of Compensation and benefits practices.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of My salary is at par with other banks. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
2	The distribution of There is performances based reward/ incentive schemes. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
3	The distribution of The Pay Practices help our bank to retain High-Performing employees. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
4	The distribution of Employee Welfare Schemes are best in the banking industry. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
5	The distribution of The bank has good insurance, bonus and retirement plans. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
6	The distribution of Annual Increament is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.487	Retain the null hypothesis.
7	The distribution of Level and quality of transparency on remuneration practices and policy. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.414	Retain the null hypothesis.
8	The distribution of The contribution of remuneration provisions to individual financial stability. is the same across categories of I was working with- SBI / Associate Banks.	Independent-Samples Mann-Whitney U Test	.335	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Interpretation & Findings

According to the output (fig. 4.2) generated by SPSS for Mann-Whitney U-test, it has been found that the value of asymptotic significance comes out to be less than 0.05 in case of 5 **variables-**

1. My salary is at par with other employees,
2. There is performance based reward/incentive schemes,
3. The Compensation and benefits practices help our bank to retain high performing employees,
4. Employees welfare schemes are the best in the banking industry,
5. The bank has good insurance, bonus and retirement plans.

Hence, it can be seen that there is significant difference between the two groups of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) **for Satisfaction for Compensation and benefits practices.** Therefore, it can be concluded that these five **Null Hypotheses** are **rejected.**

The value of asymptotic significance comes out to be more than 0.05 for the following three variables-

1. Annual increment,
2. Level and quality of transparency on remuneration practices and policy,
3. The contribution of remuneration provision to financial stability,

Therefore, the null hypotheses for these 3 variables were accepted and it can be concluded that there is no significant difference between the two groups of respondents (employees of SBI & employees of SBI, who were previously working with Associate banks) for Satisfaction for Compensation and benefits practices.

- **Mediation effects Analysis: Regression & Sobel Test**

Research Objectives: To analyse the impact of the employee satisfaction on the organisational performance with mediating effect of service quality of SBI.

The mediation model looks at the relationship between the independent and

dependent variables, the independent and mediator variables, and the link between the dependent and mediator variables (Baron and Kenny, 1986). In the present study, employee satisfaction is Independent Variable (IV); organisational performance is Dependent Variable (DV) and service quality is Mediator Variable (MV). In model-1, the proportion of explained variance as measured by R-Square ($R^{2)}$ was 0.356, which indicates that about 35.6% of the variance in organisational performance (DV) was explained by employee satisfaction & service quality. The p-value (0.0000) associated with F value (137.376) is less than 0.05, which indicates that the independent variables reliably predicts the dependent variable.

H0-1: Service quality has positive and a significant impact on Organisational Performance.

H0-2: Employee satisfaction has positive and a significant impact on Organisational Performance.

Table-4.5: Results of Regression Analysis (IV on DV and MV on DV)

Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	1.721	.137		12.575	.000			
	Service Quality	.227	.029	.297	7.861	.000	.429	.333	.283
	Employee Satisfaction	.375	.033	.435	11.511	.000	.525	.459	.414
a. Dependent Variable: Organisational Performance									

Service Quality: The value of unstandardised coefficients is 0.227, it means that 1-unit positive change in it would result in the increase of Organisational Performance Level (DV) by 0.227 units. Since, the value of coefficient is significant (.000), thus, it can be concluded that Service Quality has positive and a significant

impact on Organisational Performance. Therefore, it can be said that H0-1 is rejected.

Employee satisfaction: The value of unstandardised coefficients (Beta) is 0.375, it means that 1-unit positive change in dimension- employee satisfaction would result in the increase of Organisational Performance (DV) by 0.375 units. Since, the value of coefficient is significant (.010), thus, it can be concluded that employee satisfaction has positive and a significant impact on Organisational Performance Level. Therefore, it can be said that H0-2 is rejected.

In model 2, Employee satisfaction is IV and **Service Quality** is **DV**. The proportion of explained variance was **(R2=0.092)** which indicates that about **9.2%** of the variance in Service Quality (DV) was explained by employee satisfaction. The p-value (0.002) associated with F value (50.744) is less than 0.05, which indicates that the I.V. reliably predicts the DV.

H0-3: Employee satisfaction has positive and a significant impact on **Service Quality.**

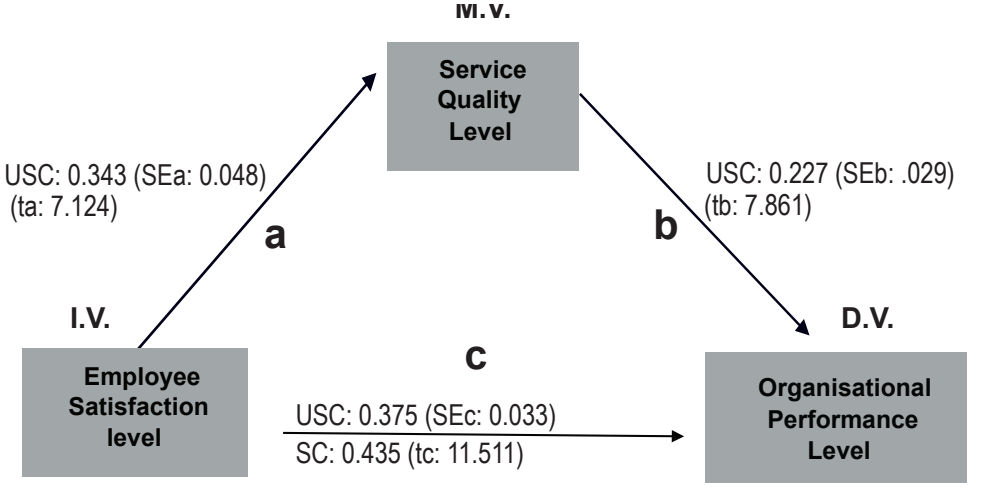
Table-4.6: Results of Regression Analysis (IV on MV)

Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	2.167	.189		11.469	.000			
	Employee Satisfaction	.343	.048	.304	7.124	.000	.304	.304	.304
a. Dependent Variable: Service Quality									

Employee satisfaction: The value of unstandardised coefficients (Beta) is 0.343, it means that 1-unit positive change in it would result in the increase of service quality (DV) by 0.343 units. Since, the value of coefficient is significant (.010), thus, it can be concluded that employee satisfaction has positive and a significant impact on service quality. Therefore, it can be said that H0-3 is rejected.

H0-4: There is no positive and significant impact of employee satisfaction on the organisational performance with mediating effect of the service quality.

Figure-4.3: Mediation Effect Mod



The intention of the Sobel test is to determine whether a mediator transmits an IV's influence to a DV. In a Monte Carlo investigation, the Sobel and Aroian tests appeared to perform the best and converge closely with sample sizes greater than or equal to 50. The Sobel test is essentially a customised t test that offers a means to ascertain whether the mediation effect is statistically significant if the independent variable's effect is reduced significantly after the mediator is included in the model.

Table-4.7: Sobel Test Statistics

Input:			Test statistic:	Std. Error:	*p*-value:
a	.343	Sobel test:	5.27746125	0.0147535	1.3e-7
b	.227	Aroian test:	5.25412689	0.01481902	1.5e-7
s_a	.048	Goodman test:	5.30110929	0.01468768	1.2e-7
s_b	.029	Reset all	Calculate		

As an alternative, the t-test statistics for the difference between the a and b coefficients and zero were entered into the cells below as t_a and t_b. Except for rounding error, the results should be the same as the first test.

Table-4.8: Sobel t-Test Statistics

Input:			Test statistic:	*p*-value:
t_a	7.124	Sobel test:	5.27880148	1.3e-7
t_b	7.861	Aroian test:	5.25550501	1.5e-7
		Goodman test:	5.30241053	1.1e-7
		Reset all	Calculate	

The ab product is judged to be statistically significant if z is greater than +1.96 or less than –1.96. The test statistic for the Sobel test is -3.147 (Critical Ratio (C.R.) value), with an associated p-value is more than 0.01, therefore H0 is accepted and it can be concluded that there is no significant impact of employee satisfaction on the organisational performance with mediating effect of the service quality.

- **Mediation effects Analysis: Regression & Sobel Test**

Research Objectives: To analyse the impact of the compensation and benefits (IV) on the job performance (DV) with mediating effect of employee satisfaction (MV) in SBI.

H0: There is no impact of the compensation and benefits (IV) on the job performance (DV) with mediating effect of employee satisfaction (MV) in SBI.

In model-3, R-Square (R^2) was 0.076, which indicates that about 7.6% of the variance in job performance (DV) was explained by compensation and benefits (IV), and service quality (MV). The p-value (0.0000) associated with F value (20.385) is less than 0.05, which indicates that the independent variables reliably predicts the dependent variable.

H0-2: There is no impact of the service quality on the job performance in SBI.

H0-3: There is no impact of the employee satisfaction on the job performance with mediating effect of service quality in SBI.

Table-4.9: Results of Regression Analysis (IV on DV and MV on DV)

Coefficients[a]									
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**Correlations**		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	**(Constant)**	2.296	.191		12.033	.000			
	Compensation and Benefits	.210	.045	.218	4.693	.000	.258	.206	.202
	Employee Satisfaction	.105	.047	.105	2.251	.025	.187	.100	.097
a. Dependent Variable: Job Performance Level									

Compensation and Benefits: The value of standardised coefficients (Beta) is 0.210, it means that 1-unit positive change in it would result in the increase of Job Performance Level (DV) by 0.210 units. Since, the value of coefficient is significant (.000), thus, it can be concluded that Compensation and Benefits has positive and a significant impact on Job Performance. Therefore, it can be said that H0-1 is rejected.

Employee Satisfaction: The value of standardised coefficients (Beta) is 0.105, it means that 1-unit positive change in it would result in the increase of Job Performance Level (DV) by 0.105 units. Since, the value of coefficient is significant (.000), thus, it can be concluded that Employee Satisfaction has positive and a significant impact on Job Performance. Therefore, it can be said that H0-1 is rejected.

In model-4, Compensation and Benefits is IV and Employee Satisfaction is DV. The proportion of explained variance as measured by R-Square was **(R2=0.141)** which indicates that about **14.1%** of the variance in DV was explained by IV. The p-value (0.002) associated with F value (81.777) is less than 0.05, which indicates that the I.V. reliably predicts the DV.

H0-4: There is no impact of employee satisfaction on service quality in SBI.

Table-4.10: Results of Regression Analysis (IV on MV)

Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	2.591	.141		18.365	.000			
	Employee Satisfaction	.359	.040	.376	9.043	.000	.376	.376	.376
a. Dependent Variable: Service Quality									

Compensation and Benefits: The value of unstandardised coefficients (Beta) is 0.359, it means that 1-unit positive change in it would result in the increase of **Employee Satisfaction** (DV) by 0.359 units. Since, the value of coefficient is significant (.000), thus, it can be concluded that **Compensation and Benefits** has positive and a significant impact on DV. Therefore, it can be said that H0-1 is rejected.

H0-4: There is no positive and significant impact of the compensation and benefits (IV) on the job performance (DV) with mediating effect of employee satisfaction (MV) in SBI.

Figure-4.4: Mediation Effect Model

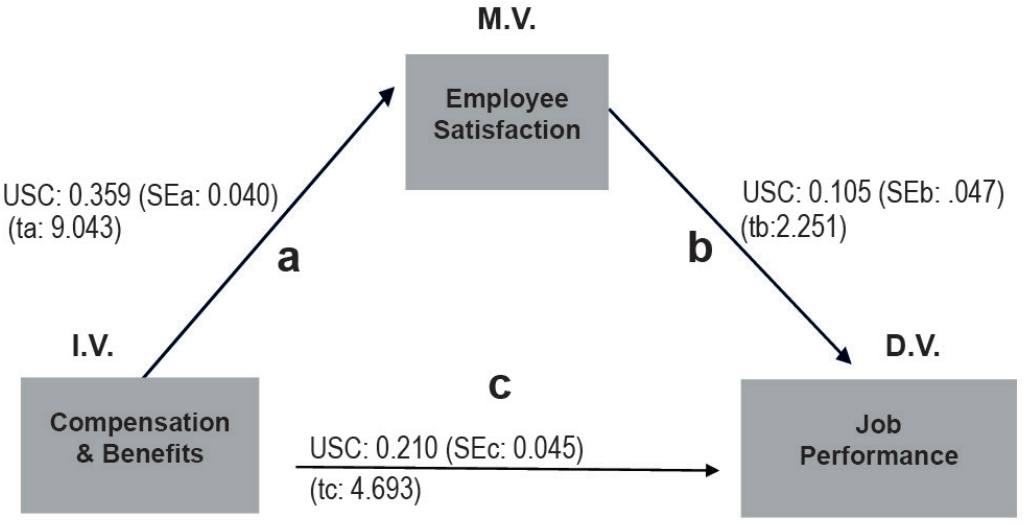


Table-4.11: Sobel Test Statistics

Input:			Test statistic:	Std. Error:	*p*-value:
a	.359	Sobel test:	2.16789022	0.01738787	0.03016704
b	.105	Aroian test:	2.15532869	0.01748921	0.03113612
s_a	.040	Goodman test:	2.18067398	0.01728594	0.02920754
s_b	.047	Reset all	Calculate		

Table-4.12: Sobel t-Test Statistics

Input:			Test statistic:	*p*-value:
t_a	9.043	Sobel test:	2.18434379	0.028937
t_b	2.251	Aroian test:	2.17187495	0.0298651
		Goodman test:	2.19702987	0.02801831
		Reset all	Calculate	

The ab product is judged to be statistically significant if z is greater than +1.96 or less than –1.96. The test statistic for the Sobel test is -3.147 (Critical Ratio (C.R.) value), with an associated p-value (0.000) less than 0.01. The Critical Ratio (C.R.) values for all the three tests were greater than ± 1.96, indicating significant regression coefficient is achieved. Hence, it can be concluded that the H0-4 is rejected. Therefore, it can be concluded that indirect effect (a*b) the association between the compensation and benefits (IV) and the Job Performance (DV) is statistically significant by the inclusion of the mediator variable employee satisfaction; hence, it can be concluded that there is evidence of mediation.

5. Conclusion and Suggestions

Generally, impact of mergers are studied on the financial performance of SBI, but the significance of the present study lies in studying the impact of merger on non-financial aspects of SBI like employee satisfaction, compensation and benefits, job performance and organizational performance in the post-merger period. It has been observed that SBI`s employees have affirmed that the SBI`s policy of providing performances based reward and incentive schemes is the most important satisfying factor for them. It can be deduced that when employee`s performance is being rewarded and incentive schemes are given to them they feel that their efforts are acknowledged. The performance based reward system also ensures bias free reward recognition to employees thus contributing to employee`s satisfaction from Compensation and benefits practices. Further, SBI`s effort in providing best employee welfare schemes in the banking industry was also successful as employees showed it to be the most important factor of

satisfaction for pay practice in the bank. The respondents were also satisfied with their salary as it was at par with the other banks. It can be concluded that SBI has lesser possibility of its employees leaving the job on the ground of salary. Thus, the Compensation and benefits practices help SBI to retain High-Performing employees. The more satisfied an employee is from the Compensation and benefits practices of the bank, the more loyal he will be. Moreover, insurance, bonus and retirement plans of SBI were also noted to keep its employees satisfied with the Compensation and benefits practices. The reason for being satisfied can be regarded as employee`s other than salary expectation from the bank.

The study also revealed that annual increment was something important for employee satisfaction from SBI`s Compensation and benefits practices but not as important as above discussed factors. The results are intuitively appealing, as the employees might feel dissatisfied if their services over a period of year are not appreciated monetarily by giving them an increment. Apart from the increment in salary, employees also feel satisfied with the level and quality of transparency on remuneration practices and policy. It can be inferred that providing transparency in paying policies gives the green flag and a base to both the employees and the bank to claim things if needed as per the policy already discussed so that any conflicts or disruptions can easily be resolved. The contribution of remuneration provisions to individual financial stability was also found to be an important satisfying factor for employees with regard to SBI`s Compensation and benefits practices.

Another significant finding to emerge from the present study is that out of all the factors of satisfaction for Compensation and benefits practices discussed above, there was a difference between satisfaction of SBI employees & SBI employees previously working in Associate Banks for Compensation and benefits practices. The study revealed that for factors like- annual Increment, level and quality of transparency on remuneration practices and policy and the contribution of remuneration provisions to individual financial stability the two categories of respondents were in disparity. The reason might be that SBI employees might have felt that with the merger the transfer of associate bank`s employees has disrupted their organizational set up.

Finally, from the results of mediation regression analysis it can be concluded that Service Quality has positive and a significant impact on Organisational

Performance. Employee satisfaction has positive and a significant impact on Organisational Performance. Employee satisfaction has positive and a significant impact on service quality. It was finally concluded that there is no significant impact of employee satisfaction on the organisational performance with mediating effect of the service quality.

Compensation and Benefits has positive and a significant impact on Job Performance. Employee Satisfaction has positive and a significant impact on Job Performance. Compensation and Benefits has positive and a significant impact on employee satisfaction. It can also be concluded that indirect effect (a*b) the association between the compensation and benefits (IV) and the Job Performance (DV) is statistically significant by the inclusion of the mediator variable employee satisfaction.

5.1 Suggestions

- SBI should ensure that its compensation practises are best in the industry as it is essential for employers to treat their staff with respect and ensure that they are satisfied with how the bank pays them.
- Employees are the foundation upon which the employer-based bank is created. Therefore, it is important to work toward employee satisfaction.
- SBI should provide staff a fair annual raise so they feel appreciated for their hard work and remain commitment to the bank.
- Efforts must be made by SBI to continuously improve the service quality and its organisational performance.
- SBI must ensure employee satisfaction as it has direct impact on their job performance.

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ESG PORTFOLIO VS TRADITIONAL PORTFOLIO ANALYSIS-A STUDY OF MSCI ESG INDICES

Gattaiah Tadoori , V. Usha Kiran

Abstract:

Corporate's ability to create long-term value for stakeholders doesn't only depend on financial information, but also on integrating non-financial information in the form of Environmental, Social, and Governance (ESG) issues. The financial community is keen on the management of ESG issues by the company which would provide strategic opportunities and also may create strategic threats. Therefore, in the present era of the business environment, it has become necessary to integrate this non-financial information into annual reports or as separate reports on ESG issues.

The evolution of ESG integration is a kind of top-down approach where international institutional investors/ foreign portfolio investors have initiated the process and followed by regulatory bodies and finally at the bottom, the corporates who are obliged to disclose information on relevant ESG issues. Various international organs or bodies made initiations to integrate ESG disclosure. Eventually, capital markets of countries were made to frame regulatory guidelines, and the respective stock exchanges introduced ESG based indices. Similarly, some institutions like Morgan Stanley Capital Internal (MSCI), Standard & Poor (S&P), Sustainalytics, PricewaterhouseCoopers (PwC), and others provide ESG related services.

The present study analyzed 22 ESG country leader indices along with the MSCI World ESG leader index and corresponding benchmark indices of the countries from developed and emerging markets. Monthly returns of all the indices from April 2014 to March 2021 have been collected for the study to calculate descriptive statistics, correlation of ESG indices with their respective benchmark indices, Co-integration and Granger Causality. The results found that ESG indcies have faredwell in terms of return during the study period, but traditional indices have outperformed. In case of Granger Causality test, results have shown that traditional and ESG indices do not Granger each other but are co integrated in long-term.

Keywords:

ESG, MSCI ESG indices, Benchmark Indices, Correlation, Co-integration, & Granger Causality

Introduction:

United Nations Sustainable Stock Exchange Initiative (UN SSE) has prepared Model Guidance on Reporting ESG information which serves as a tool for stock exchanges to frame regulatory framework for companies to integrate and report ESG information. UN SSE is co-organized by United Nations Conference on Trade and Development (UNCTAD), United Nations Global Compact, United Nations-supported Principles for Responsible Investment (UNPRI), and United Nations Environment Program (UNEP) Finance Initiative. It was launched in the year 2009 to collaborate with policymakers, stock exchanges, regulators, and investors to promote ESG disclosure. Stock exchanges around the world have become signatories to encourage and promote sustainable business practices.

Responsibility and oversight, clarity of purpose, relevance and materiality, accessibility, credibility & responsiveness are basic guiding principles of ESG report preparation. Existing compliance may be modified to include ESG reporting or new guidance can be created for ESG disclosure by stock exchanges.

ESG or non-financial factors can impact - access to capital, cost-saving, productivity, risk management, revenue growth, market access, brand value and reputation, license to operate, human capital, employee retention and recruitment, and company value(https://sseinitiative.org/esg-disclosure/). 63 of 114 signatory stock exchanges have prescribed model guidance on ESG reporting for their listed companies. Based on the guidance, ESG disclosure and ESG risk scores are to be assigned to companies and the construction of indices based on the scores are to be made by stock exchanges. Similarly, MSCI, S&P, Sustainalytics, and PwC have also started tracking ESG indices of countries.

MSCI:

MSCI, a leading service provider for the investment community, aims at transparency in capital markets, enabling better investment decisions for quant managers, assets managers, pension managers, insurance companies, investment banks, wealth managers, and sovereign wealth funds. MSCI offers services on analytics, climate investing, ESG investing, factor investing, indexes, and real estate investing.

MSCI ESG Investing:

MSCI ESG investing solutions include ESG ratings and data, ESG Indexes, ESG and analytics, and real estate climate solutions. Over 1500 ESG equity and fixed income indices have been designed for institutional investors. The following table provides broad categories of ESG indexes maintained by MSCI

Theme	MSCI ESG Equity Indices	MSCI Fixed Income & Bloomberg MSCI ESG Indexes
ESG Integration	8	6
ESG Value & Screens	7	2
Impact	3	1

Source: www.msci.com

MSCI is maintaining country ESG country leader indices for 23 countries, both from developed and emerging markets under broad categories of Country ESG Leaders, ESG Custom, and ESG Leaders along with World ESG Leaders Index.

Review of Literature:

R/S analysis and fractional integration technique to test the persistence of selected ESG and traditional indices resulted in no significant difference (**Caporale**, **2021**). The study highlighted the role of ESG information in the market and finance in general and ESG measures in return predictability (**Chu**, **2021**). Investors can incorporate the ESG risk factor into the portfolio optimization process (**Jin**, **2021**). Examination of risk-adjusted performance of ESG portfolios from 2015-2019 did not generate significant alphas (**Naffa**, **2021**). An Event Study "How have ESG-investment performed during the Covid-19 pandemic?", the study of S&P ESG indices showed mixed results between markets, S &P ESG 350 index has less positive significant abnormal returns around the event **(Rosenberg, 2021)**. There is a lack of uniformity in ESG reporting practices and index methodologies (**Sakib**, **2021**). The study highlighted the role of ESG information in the market and finance in general and ESG measures in return predictability (**Chu**, **2021**). An attempt has been made to increase the transparency on the design, composition, and driving forces of sustainable indices (**Jacob**, **2021**).

Higher preferences for the portfolio ESG value (PESGV) yield more concentrated portfolios and lower Sharpe ratios and partial correlations based portfolios are more diversified and have higher PESGVs than the Pearson's correlations based portfolios **(B. Schmidt, 2020).** Investing in ESG and communicating ESG strategies positively impact on return only for a few companies which are operating sectors like energy and utilities **(Mario La Torre, 2020).** ESG index can lower potential conditional value-at-risk (CVaR) and maintain a higher return **(Guizhou & Shigeyuki , 2020)**. A study on ESG indices and an enterprise's stock market performance resulted in a positive correlation (**Deng**, **2019**). A study on MSCI regional ESG indices and found that they were no significant differences in ESG and corresponding traditional or equity indices **(Jain, 2019)**. Empirical results have shown that there exists a positive correlation between a firm's ESG indices and its stock market performance **(Xiang & Xiang , 2019)**.

Integrating ESG emerging market equities into institutional portfolios could provide institutional investors the opportunity for higher returns and lower downside risk than non-ESG equity investments **(Sherwood & Pollard, 2018)**. It was observed Socially Responsible Investment (SRI) indices have lower efficiency than traditional indices (**Mynhardt**, **2017**). Results of comparison of NSE Nifty and ESG index showed that Nifty has outperformed in the pre-crisis period, whereas ESG index has outperformed during and the post-crisis period **(Wadhwa, 2017).**

ESG factor can add financial value in portfolios and financial indexes and can be used the same way as or in addition to traditional common performance factors **(Giese, Ossen, & Bacon, 2016)**. The performance of ESG indices of Asian countries is similar to the performance of traditional indices and suggested pursuing SRI-based investment **(Ur Rehman, 2016)**. Institutional investors are looking to improve the ESG profile of their portfolios on a systematic basis, in their investment processes **(Nagy, Kassam, & Lee, 2016).**

There was a difference in annual average returns of the SRI portfolios relative to the returns of FTSE 100 and FTSE 4 Good Index (**Brzeszczyński**, **2014**). ESG stocks portfolio generated higher returns than the blue-chip companies and market return **(M.M. Goyal & Aggarwal, 2014).** S&P India ESG index has outperformed Nifty and S&P CNX 500durong the study period **(Sudha, 2014)**. The study suggested multi-decision model criteria for portfolio selection to include ESG investment to improve portfolio performance (**Chelawat**, **2013**).

Relevance of the Study:

Corporate world and regulatory framework across the globe has shifted its focus from Corporate Social Responsibility (CSR) Sustainability initiatives. As a part of these initiatives various international institutions like Organisation for Economic Cooperation & Development (OECD), Sustainable Stock Exchanges (SSE) Initiatives and various reporting imitative like Global Reporting Initiave (GRI), International Integrated Reporting Council (IIRC), Integrated Reporting (IR) and Foreign Institutional Investors (FII's), have begun reporting non-financial information in companies annual reports, which will have significant impact in profitability and other aspects of the business. Combined efforts has led to the evolution of the concept of Environmental, Social, and Governance (ESG) reporting. Stock exchanges across world have also started constructing ESG indices with constituent companies who score prescribe level of ESG risk score of ESG disclosure Score or ESG performance.

From investment concept point of view, these indices can be considered as an alternative portfolio choice as the companies included in ESG indices tend to perform better than their peers in the long run. With proper disclosure of ESG information by companies, investors can take better investment decision. Therefore, present study attempt to analysis, whether ESG indices as a portfolio generate better return than the traditional or broad market indices.

Research Question: The following fundamental research questions have been framed in the context of the relevance of the study.

1. Whether ESG indices generate batter investment returns than the traditional indices?
2. Is there any relation between ESG indices and respective benchmark indices?

Objectives of the study: The following objectives have been framed based on the research questions.

1. To evaluate and compare the performance of MSCI ESG Leader Indices.
2. To find the relation between ESG & benchmark Indices.

Constituents of all the ESG indices are based on broad market indices of the country. In India, National Stock Exchange Nifty 100 ESG Index, which is based on

NIFTY-100 index. Nifty 100 ESG index consist of 100 companies. When a company attains pre-determined ESG Disclosure or companies with pre-determined ESG risk score are avoided in including in the index. Therefore, all ESG indices are similar to its broad based market index. In this it becomes imperative to analyse and compare the performance of the ESG indices in relation to their benchmark indices. In this regard the following hypotheses were framed for the study.

Hypotheses:

1. Ho 1: There is no significant difference in mean returns of MSCI ESG indices.
2. Ho 2: ESG and benchmark indices don't granger each other.
3. Ho 3: ESG and benchmark indices are not co-integrated.

Sample: MSCI construct and maintain a total of 22 Country ESG Leaders Indices along with the MSCI ESG World Leaders Index. These indices consist of companies with highest ESG performance in each sector of the benchmark index. All the 22 indices have been chosen for the study**,** and also corresponding countries MSCI Indices and MSCI World Index were also included for comparative performance. (Refer to Annexure 1 for a list of indices.)

Study Period: Monthly values of all the selected indices have been collected from March 2014 (as the data for few indices is available from March 2014 only) to March 2021 and returns have been calculated for the study.

Data Sources: MSCI indices values have been collected from the MSCI website and the benchmark indices values have been collected from investing.com. The data is purely secondary.

Methodology: Monthly Closing values of all the indices have been collected and then descriptive statistics have been calculated and comparison has been done among MSCI ESG Leaders indices and against MSCI World ESG Leaders Index. Then the correlation between ESG Indices and their benchmark indices has been analysed. Then to find causality between i.e. to find the directional movement of the ESG benchmark indices from their benchmark indices the Granger Causality test has been applied. In other words whether benchmark indices and ESG indices are related or not. If there is Granger Causality between benchmark indices and ESG indices, then the next step is to find the long term relationship between them. To find the long term relation exist or doesn't exist, Johansen Co-integration test has been applied.

Data Analysis and Interpretation:

The following table provides the descriptive statistics of MSCI Country ESG Leader Indices against their respective benchmark indices.

Table -1

Descriptive statistics of ESG Vs Benchmark Indices

Country	Index Name	Mean	St. Dev.	Sample Variance	Kurtosis	Skewness	Min.	Max.
Australia	S&P ASX 200	0.32	4.17	17.36	7.74	-1.68	-21.18	9.96
	ESG	0.09	5.71	32.65	4.99	-0.88	-25.52	16.79
Brazil	Bovespa	1.28	7.05	49.75	3.47	-0.85	-29.90	16.97
	ESG	0.16	10.51	110.40	1.41	-0.19	-38.44	28.07
Canada	S&P TSX	0.36	3.60	12.99	7.76	-1.12	-17.74	10.48
	ESG	0.45	5.24	27.44	2.98	-0.40	-20.76	14.09
China	SZSE Composite	1.12	7.41	54.84	2.24	-0.12	-25.64	22.35
	ESG	1.30	6.14	37.75	-0.20	-0.19	-14.89	13.69
France	CAC 40	0.51	4.94	24.42	3.40	0.14	-17.21	20.12
	ESG	0.48	5.04	25.44	3.74	0.53	-15.04	22.47
Germany	DAX	0.67	5.22	27.29	0.85	-0.19	-16.44	15.01
	ESG	0.54	5.38	28.90	0.75	0.00	-15.14	17.29
Hong Kong	Hang Seng	0.42	5.03	25.26	0.01	-0.22	-12.04	12.98
	ESG	0.73	5.05	25.49	1.30	-0.05	-12.51	17.72
India	Nifty-50	1.01	5.04	25.39	5.76	-1.04	-23.25	14.68
	ESG	0.98	5.56	30.88	3.00	-0.50	-21.87	16.07
Indonesia	IDX Composite	0.40	3.99	15.93	3.33	-1.16	-16.76	9.44
	ESG	0.25	6.74	45.44	5.01	-1.24	-31.27	15.35
Italy	FTSE MIB	0.33	6.02	36.27	3.55	-0.11	-22.44	22.95
	ESG	0.56	6.24	38.90	3.89	0.45	-18.70	27.33
Japan	Nikkie 225	0.88	4.85	23.55	0.64	-0.43	-10.53	15.04
	ESG	0.60	3.92	15.39	1.64	0.04	-9.61	13.70

Country	Index Name	Mean	St. Dev.	Sample Variance	Kurtosis	Skewness	Min.	Max.
Korea	KOSPI 50	0.65	4.37	19.12	1.59	0.15	-11.66	14.55
	ESG	0.48	5.91	34.90	0.25	-0.09	-15.42	14.53
Malaysia	KLCI	-0.07	3.01	9.03	2.15	-0.34	-11.01	8.08
	ESG	-0.46	4.28	18.29	1.53	-0.29	-14.69	11.40
Russia	MOES	1.24	4.76	22.69	2.05	0.25	-9.92	17.98
	ESG	0.77	7.61	57.98	1.25	-0.14	-21.14	20.54
South Africa	SA Top 40	0.41	4.40	19.35	2.30	-0.17	-15.81	14.88
	ESG	0.35	7.13	50.89	0.81	-0.44	-25.00	17.81
Spain	IBEX 35	-0.05	5.51	30.38	6.80	0.31	-22.21	25.18
	ESG	0.06	6.69	44.77	7.84	1.06	-22.62	33.93
Switzerland	SMI	0.36	3.41	11.66	0.27	-0.16	-7.50	9.28
	ESG	0.41	3.63	13.21	-0.18	-0.22	-8.43	8.90
Sweden	OMXS 30	0.63	4.30	18.52	0.38	-0.28	-11.17	11.64
	ESG	0.19	4.78	22.81	1.37	0.22	-13.47	17.12
Taiwan	TPEx 50	0.83	6.11	37.37	1.61	-0.42	-18.45	18.88
	ESG	1.43	5.26	27.69	1.94	0.34	-13.57	20.59
Thailand	SET	0.28	4.60	21.12	4.48	0.33	-16.01	17.86
	ESG	0.27	5.60	31.41	3.93	0.50	-16.47	23.67
UK	FTSE 100	0.01	3.63	13.16	2.92	-0.54	-13.81	12.35
	ESG	-0.17	4.56	20.81	1.19	-0.37	-15.22	13.62
US	NASDAQ	1.67	4.73	22.35	0.33	-0.01	-8.91	15.19
	ESG	0.95	3.98	15.84	1.89	-0.39	-12.66	12.31
World	MSCI World Index	0.70	4.05	16.42	2.08	-0.34	-13.47	12.66
	World ESG Leaders	0.90	3.92	15.37	2.01	-0.36	-12.66	12.50

Source: Author's Calculation

Note: ESG indicates respective MSCI Country ESG Leader Index

During the study period, it was found that the ESG index of Taiwan has posted the highest mean return of 1.43% which is greater than its benchmark index of TPEx-50 (0.83%), followed by the China ESG index with 1.30% which is also higher than its benchmark index (1.12%). The third highest return has been posted by India ESG Leader Index with 0.97% which is marginally lower than its peer Nifty-50 which has a mean return of 1.01%. Then followed by USA ESG Leader Index with 0.95% return, however, it underperformed against its benchmark index NASDAQ which has posted a 1.65% return during the study period.

On the other hand, Malaysia's ESG Leader Index underperformed among all the ESG indices with -0.46%, which is lower than its benchmark index KLCI (-0.07%). UK's ESG Index posted the second-lowest return during the study period with -0.17% which is also lower than its benchmark index FTSE 100 which has a return of 0.01% during the study period.

MSCI World ESG Leader Index has outperformed its competitor MSCI World Index with a 0.20% higher return.

Of the total 22 sample observation, it was found that only seven (7) ESG indices have outperformed their benchmark indices, namely, Canada, China, Hong Kong, Italy, Spain, Switzerland, Taiwan, and MSCI World ESG index, and the remaining ESG indices underperformed against their benchmark indices.

Table -2

Correlation of MSCI ESG Leader Indices with their Benchmark Indices

Australia	S&P ASX 200	0.88		Korea	KOSPI 50	0.88
	ESG				ESG	
Brazil	Bovespa	0.92		Malaysia	KLCI	0.84
	ESG				ESG	
Canada	S&P TSX	0.90		Russia	MOES	0.68
	ESG				ESG	

China	SZSE Composite	0.58		South Africa	SA Top 40	0.80
	ESG				ESG	
France	CAC 40	0.89		Spain	IBEX 35	-0.08
	ESG				ESG	
Germany	DAX	0.90		Switzerland	SMI	0.76
	ESG				ESG	
Hong Kong	Hang Seng	0.90		Sweden	OMXS 30	0.81
	ESG				ESG	
India	Nifty-50	0.92		Taiwan	TPEx 50	0.58
	ESG				ESG	
Indonesia	IDX Composite	0.92		Thailand	SET	0.93
	ESG				ESG	
Italy	FTSE MIB	0.91		UK	FTSE 100	0.77
	ESG				ESG	
Japan	Nikkei 225	0.83		US	NASDAQ	0.90
	ESG				ESG	
				World	MSCI World Index	1.00
					World ESG Leaders	

Source: Author's Calculations

Note: ESG indicates respective MSCI Country ESG Leader Index

Interpretation :

From table 2, it can be observed that MSCI World ESG Index and MSCI World Index are highly correlated with 1, followed by the ESG & Benchmark Index of Thailand with 0.93, further ESG indices of India and Indonesia are highly positively correlated (0.92) with their benchmark indices. On the other hand, ESG and Benchmark Indices of Spain are negatively correlated (-0.08), and the indices of China & Taiwan are having the lowest correlational value of 0.58.

Granger Causality Test:

Correlation between two variables, say, X and Y explain the relationship between them. It explains a simple regression model between the given variables and is a static model. Whereas, Granger Causality Test is applied to test which variable causes the movement in another variable. It can be either bi-directional or uni-directional i.e. whether only variable X Granger causes variable Y or vice versa or both X & Y Granger cause each other. To apply the Test time series must be differenced to make it stationary if the data collected is not stationary. For the purpose of the study, the time-series data has been differenced and the Augmented Dicky Fuller (ADF) Test has been applied to test the stationary. Results of the ADF test found that time-series data of all indices i.e. ESG and Benchmark Indices is stationary.

The Granger (1969) approach to the question of whether X causes Y is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation. Y is said to be Granger-caused by X if X helps in the prediction of Y, or equivalently if the coefficients on the lagged X are statistically significant. Note that two-way causation is frequently the case; Granger X causes Y and Y Granger causes X.It is important to note that the statement "X Granger causes Y" does not imply that Y is the effect or the result of X. Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term (http://www.eviews.com, 2022).

The regression equation for the test is

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \ldots + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \ldots + \beta_l x_{-l} + \epsilon_t$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \ldots + \alpha_l x_{t-l} + \beta_1 y_{t-1} + \ldots + \beta_l y_{-l} + u_t$$

for all possible pairs of series in the group. The reported F-statistics are the Wald statistics for the joint hypothesis:

$$\beta_1 = \beta_2 = \ldots = \beta_l = 0$$

for each equation. The null hypothesis is that X does not Granger-cause Y in the first regression and that Y does not Granger-cause X in the second regression (http://www.eviews.com, 2022).

Table- 3

Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
S& P ASX 200 does not Granger Cause AUSTRALIA	81	0.45836	0.7122
AUSTRALIA does not Granger Cause S&P ASX 200		0.93879	0.4264
BRAZIL does not Granger Cause BOVESPA	81	0.16324	0.9208
BOVESPA does not Granger Cause BRAZIL		0.10192	0.9587
S&P TSX does not Granger Cause CANADA	81	0.90171	0.4445
CANADA does not Granger Cause S&P TSX		0.18178	0.9085
SZSE COMPOSITE does not Granger Cause CHINA	81	2.08861	0.1090
CHINA does not Granger Cause SZSE COMPOSITE		1.29315	0.2831
FRANCE does not Granger Cause CAC 40	81	0.41445	0.7431
CAC 40 does not Granger Cause FRANCE		0.04694	0.9864
HONGKONG does not Granger Cause HANG SENG	81	0.77328	0.5126
HANG SENG does not Granger Cause HONGKONG		0.30194	0.8239
INDIA does not Granger Cause NIFTY 50	81	0.65011	0.5854
NIFTY 50 does not Granger Cause INDIA		0.82535	0.4841
INDONESIA does not Granger Cause DX COMPOSITE	81	0.65939	0.5796
IDX COMPOSITE does not Granger Cause INDONESIA		0.41701	0.7413
ITALY does not Granger Cause FTSE_MIB	81	0.71925	0.5436
FTSE MIB does not Granger Cause ITALY		0.07505	0.9732
NIKKIE 225 does not Granger Cause JAPAN	81	0.60204	0.6157
JAPAN does not Granger Cause NIKKIE 225		2.19482	0.0958
KOSPI 50 does not Granger Cause KOREA	81	0.12622	0.9443
KOREA does not Granger Cause KOSPI 50		0.40946	0.7467
MALAYSIA does not Granger Cause KLCI	81	0.35261	0.7874
KLCI does not Granger Cause MALAYSIA		0.12792	0.9433
RUSSIA does not Granger Cause MOES	81	0.64668	0.5875
MOES does not Granger Cause RUSSIA		3.08931	0.0322
SOUTH AFRICA does not Granger Cause SA TOP 40	81	0.18667	0.9052
SA TOP 40 does not Granger Cause SOUTH AFRICA		0.30868	0.8190

Null Hypothesis:	Obs	F-Statistic	Prob.
SPAIN does not Granger Cause IBEX 35 IBEX 35 does not Granger Cause SPAIN	81	0.36225 160.462	0.7804 0.0000
SWEDEN does not Granger Cause OMXS 30 OMXS 30 does not Granger Cause SWEDEN	81	0.15894 0.80167	0.9236 0.4969
SWITZERLAND does not Granger Cause SMI SMI does not Granger Cause SWITZERLAND	81	0.71606 0.23473	0.5455 0.8719
TPEX 50 does not Granger Cause TAIWAN TAIWAN does not Granger Cause TPEX 50	81	2.03773 0.45427	0.1159 0.7151
THAILAND does not Granger Cause SET SET does not Granger Cause THAILAND	81	3.03849 1.64740	0.0343 0.1858
UK does not Granger Cause FTSE 100 FTSE 100 does not Granger Cause UK	81	1.90034 0.13670	0.1369 0.9378
USA does not Granger Cause NASDAQ NASDAQ does not Granger Cause the USA	81	1.26036 0.74533	0.2943 0.5285
WORLD ESG LEADERS does not Granger Cause MSCI WORLD INDEX MSCI WORLD INDEX does not Granger Cause WORLD ESG LEADERS	81	1.91633 2.05899	0.1343 0.1130

Source: Author's Calculations

Note: Country name indicates respective MSCI Country ESG Leader Index

Interpretation-:

The null Hypothesis under the Granger Causality test is variable X doesn't Granger cause the variable and the variable Y doesn't Granger cause the variable X. If the *p*-value is greater than 0.05, accept null hypothesis i.e. there exists no causality. If the *p*-value is less than 0.05 then the null hypothesis is rejected and can be concluded that there exists causality between the variables. Similarly, if the *p*-value is less than 0.05 in one direction and greater than 0.05 in another direction, then it said that there is Unidirectional Causality.

Bidirectional Causality exists when the null hypothesis is rejected in both directions. If the null hypothesis is accepted then it can be said that there exists no causality between the variables.

From the analysis of table 3 which shows test results, it can be found that there is no Granger Causality (p values are greater than 0.05) between ESG and Benchmark indices of Australia, Brazil, Canada, China, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Korea, Malaysia, South Africa, Sweden, Switzerland, Taiwan, UK, USA, and MSCI World ESG and MSCI World Index.

There has been Unidirectional Granger Causality in the case of ESG and Benchmark Indices of Russia, Spain and Thailand. In the case of Spain's Benchmark Index Iberian Index (IBEX 35) Granger Cause (0.00) it's MSCI ESG Country ESG Leader Index. Similarly, MSCI Thailand ESG Leader Index Granger Cause (0.0343) Thailand's benchmark index Stock Exchange of Thailand (SET). Russia's benchmark index granger causes its ESG Index.

Overall, on majority note, it can be concluded that most of the cases ESG and Benchmark indices don't Granger each other.

Johansen Co-Integration Test:

Causality indicates which variables cause other, whereas Co-integration tells about the long-run & short-run relationship among variables X & Y. If two variables are co-integrated then at least one variable causes the other variable. Co-integration is applied to find associational linear relationships among non-stationary time series i.e. finding a stationary linear combination among I (1) time-series. If variables are integrated, there may be short-term in-equilibrium but in the long-term, they may be integrated.

Co-integration helps to identify the degree to which variables are sensitive to the same average price over a specified period. Thus co-integration does not reflect whether the pairs would move in the same or opposite direction, but can tell us whether the distance between them remains the same over time. In time series, variables often deviate from their mean path because of various shocks & cyclical fluctuations. Simple Ordinary Least Squares regression does not capture these shocks & fluctuations. Therefore, co-integration is used to accommodate such deviations in estimation. Co-integration explains the long-term relationship between two or more variables.

Test Statistics:

$$LR_{tr}(r|k) = -T\sum_{i=r+1}^{k}\log(1-\lambda_i)$$

$$LR_{max}(r|r+1) = -T\log(1-\lambda_{r+1})$$
$$= LR_{tr}(r|k) - LR_{tr}(r+1|k)$$

T is the sample size, $\lambda\hat{\imath}$ is I the largest canonical correlation.

Table- 4

Johansen's Co-integration Test results

Country	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
Australia	None *	0.399531	71.45545	18.39771	0.0001
	At most 1 *	0.310729	30.14181	3.841466	0
Brazil	None *	0.378609	65.2243	15.49471	0
	At most 1 *	0.280676	26.68491	3.841466	0
Canada	None *	0.480644	77.94326	12.3209	0.0001
	At most 1 *	0.264421	24.87485	4.129906	0
China	None *	0.311385	46.51688	12.3209	0
	At most 1 *	0.182259	16.29797	4.129906	0.0001
France	None *	0.284119	50.92399	12.3209	0
	At most 1 *	0.255059	23.85042	4.129906	0
Germany	None *	0.308465	56.1171	12.3209	0
	At most 1 *	0.276723	26.24097	4.129906	0
Hong Kong	None *	0.320066	51.7427	12.3209	0
	At most 1 *	0.223562	20.49614	4.129906	0

Country	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
India	None *	0.323684	55.09878	12.3209	0
	At most 1 *	0.251091	23.42012	4.129906	0
Indonesia	None *	0.347769	46.43093	12.3209	0
	At most 1 *	0.135725	11.81502	4.129906	0.0007
Italy	None *	0.325069	55.94198	12.3209	0
	At most 1 *	0.257325	24.09725	4.129906	0
Japan	None *	0.331386	56.65205	12.3209	0
	At most 1 *	0.256852	24.04565	4.129906	0
Korea	None *	0.326661	56.37377	20.26184	0
	At most 1 *	0.259527	24.33779	9.164546	0
Malaysia	None *	0.369195	51.61459	12.3209	0
	At most 1 *	0.161767	14.2932	4.129906	0.0002
Russia	None *	0.361182	63.05931	15.49471	0
	At most 1 *	0.281346	26.76037	3.841466	0
South Africa	None *	0.305363	51.61444	12.3209	0
	At most 1 *	0.238793	22.10085	4.129906	0
Spain	None *	0.250647	42.50636	12.3209	0
	At most 1 *	0.210396	19.13417	4.129906	0
Switzerland	None *	0.328611	61.56919	12.3209	0
	At most 1 *	0.303514	29.29829	4.129906	0
Sweden	None *	0.324183	54.00223	25.87211	0
	At most 1 *	0.240322	22.26376	12.51798	0.0009
Taiwan	None *	0.377379	66.13842	18.39771	0.0001
	At most 1 *	0.290154	27.75924	3.841466	0
Thailand	None *	0.356313	59.64927	12.3209	0
	At most 1 *	0.256114	23.96528	4.129906	0

Country	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
UK	None *	0.356313	59.64927	12.3209	0
	At most 1 *	0.256114	23.96528	4.129906	0
USA	None *	0.356082	50.1615	20.26184	0
	At most 1 *	0.163973	14.50666	9.164546	0.0045
World	None *	0.250834	33.09837	18.39771	0.0002
	At most 1 *	0.122055	10.28355	3.841466	0.0013

Source: Author's Calculations.

Interpretation:

The null hypothesis under the test is there is no co-integration i.e. no long-term relationship between variables. If the *p* value is less than or equal to 5% reject the null hypothesis & vice versa. The test has been carried out under Akaike Information Criteria by Rank (rows) and Model (columns) and Unrestricted Cointegration Rank Test (Trace). Test results from the above table indicate rejection of null hypothesis i.e. there is no co-integration and can be concluded that there exists a long-term relationship between the variables i.e. all ESG and Benchmark indices are co-integrated in long-term. Similarly, trace statistic values of all ESG and benchmark indices are greater than critical values at a 5% level of significance. Therefore it can be concluded that all the ESG indices are co-integrated in long-term with their benchmark indices.

Conclusions:

ESG investment strategy is gaining momentum in India and across the world. Joint efforts of various international organizations, foreign institutional investors, portfolio managers, and regulatory authorities have led to the prominence of ESG investment. For retail investors, it is hard to evaluate their portfolios based on ESG criteria as the information available under ESG disclosures is not uniform and mandatory in most of countries. Moreover, access to ESG information is limited to portfolio managers, institutional investors, and research agencies.

Therefore, it is suggested to retail and small investors to find the stocks included on ESG based indices to find the stocks which are following ESG disclosure and reporting practices. Similarly, companies with low ESG risk scores are considered as a better investment choice for investors.

Portfolio managers and mutual fund managers can also include ESG investment strategies for their portfolio construction. Various research agencies and rating agencies are providing ESG risk scores for companies, which can be made as a base for taking a prudent investment decision.

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IMPACT OF DIVIDEND DECLARATIONS ON STOCK PRICES DURING COVID-19 IN INDIA: AN EVENT STUDY APPROACH

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Abstract:

This study aims to investigate the impact of dividend declarations on stock prices in the Indian stock market during the Covid-19 pandemic, where many companies faced unprecedented challenges due to the sudden onset of the pandemic. The study seeks to address the gap in research by exploring the relationship between dividends and stock prices during the pandemic. The research was conducted on S&P BSE 100 companies listed on the Bombay Stock Exchange. The event study methodology and runs test were used for the analysis. The estimated average abnormal returns and cumulative average abnormal returns were calculated 61 days in total, 30 days prior to and 30 days after the dividend declaration. Furthermore, the runs test was applied to determine if the abnormal returns were random. The study concluded that dividend declarations do not significantly affect stock returns during a stressful pandemic. The evidence suggests that in an efficient market, the stock prices quickly incorporate new information, indicating that generating abnormal profits in such a market is difficult.

Keywords*:*

Covid-19, Efficient Market Hypothesis, Event Study, Runs Test, Sub-Event Window

1. Introduction

The global economy, including the stock market, has been significantly affected by the Covid-19 pandemic (Ibrahim et al., 2020). Many companies in India have faced unprecedented challenges due to the sudden onset of the pandemic, which has severely impacted their business operations, financial performance, and shareholder value (Lodha & Kumawat, 2022). In this challenging environment, dividends play a critical role in providing returns to investors. Dividends are a crucial aspect of corporate finance and a significant determinant of shareholder value (Walter, 1963). Especially in times of economic uncertainty, dividend payments can considerably impact a company's stock price (Pandey & Kumari, 2022). It is, therefore, essential to comprehend the relationship between dividend declarations and stock prices, particularly in the context of Covid-19 in India, to better understand its effects. Prior research exploring the impact of dividend announcements during the pandemic is limited. Thus, this study makes an attempt to investigate the impact of dividend declarations on stock prices during the Covid-19 pandemic. If the market efficiently incorporates the dividend announcements, investors can rely on the market to price securities accurately based on publicly available information (Maitra & Dey, 2012). However, suppose the markets are inefficient; investors should carefully evaluate the impact of corporate actions on a company's stock price before making investment decisions (Anwar *et al.,* 2017). In light of this ongoing debate of whether the markets are efficient or inefficient, the paper seeks to address this gap in research and better understand the relationship between dividends and stock prices during the pandemic. Several listed companies declared dividends to keep momentum and maintain shareholder value (BSE Website). This pandemic year provides an ideal opportunity to investigate whether investors can gain abnormal profits using corporate information (Lodha & Kumawat, 2022). The outcomes of this study can provide investors with valuable information regarding how the market reacts to dividend actions. Further, these findings may assist investors, analysts, and policymakers in making informed decisions about dividend policies and investment strategies in the Indian stock market.

1.1. Efficient Market Hypothesis (EMH)

The efficient market hypothesis (EMH) is essential in modern finance theory. It suggests that the capital market's price formation is efficient when information is

quickly and efficiently incorporated into stock prices with minimal friction (Robinson & Bangwayo-Skeete, 2017). According to this theory, prices in an "efficient market" always accurately reflect current information (Fama, 1965). One of the critical implications of the EMH is that it is not possible for traders or investors to consistently generate abnormal profits by using specific trading strategies (Mehla & Goyal, 2012). This means market timing and stock selection are unlikely to result in superior returns. As a result, fundamental and technical analysis cannot be used to identify undervalued stocks or generate abnormal profits. The EMH is categorized into three levels of efficiency: weak, semi-strong, and strong. The weak form states that security prices accurately reflect all information obtained from market trade data, including price history and trading volume (Sen et al., 2017). The semi-strong form states that stock prices consider all publicly known information and quickly react to new information made available to the public, such as stock splits and earnings releases (Singh et al., 2020). The strong form states that all available information, whether it is public or private, is already reflected in current stock prices, and investors cannot gain abnormal profits from this information.

2. Literature Review

Many countries have attempted to examine stock market behavior. The efficiency or inefficiency of the securities market has prompted a lot of debate in finance and economics circles (Saravanakumar, 2011). The outbreak of Covid-19 has had a significant effect on the worldwide financial system. Research has been conducted to examine the impact of various announcements made during the pandemic. Lodha and Kumawat (2022) examined an event study to investigate the impact of lockdown announcements on banking stocks in India. The study found that investors gained abnormal profits during various lockdown periods. He *et al.* (2020) also studied Chinese industries' market performance and reaction patterns during the Covid-19 pandemic using event study methodology during the Covid-19 outbreak. Ibrahim et al. (2020) found proof that stock markets did not initially react strongly enough to the pandemic news, as evidenced by the delay in their response. The research looks at the immediate effects of the Covid-19 outbreak on 52 publicly traded airline companies worldwide through the use of event study analysis. The most significant overreaction is observed in the time following official statements from the World Health Organization and President Trump (Maneenop & Kotcharin, 2020). Singh et al. (2020) analysed the actions

taken by the G-20 nations in relation to the Covid-19 pandemic. They used the event study method as a means of analysing data. The research covered the time period of 2019 to 2020, with a focus on the 58 days immediately following the outbreak and an estimated period of 150 trading days. The results showed that following the outbreak, the financial markets performed poorly and had statistically significant negative returns during the 58-day event window.

Many researchers have also examined the impact of dividend declarations throughout various periods on several financial markets through their research. Aharony et al. (1980) investigated the quarterly dividend and earnings announcements on investor returns from 1963 to 1976. The research paper, which was conducted using an event study methodology, examined a sample of 149 listed industrial companies and focused on the period between 1963 and 1976. The study emphasized the importance of quarterly dividends and earnings announcements in relation to investor returns. The research findings support the notion of semi-strong form efficiency in the market, indicating that the declaration of dividends and earnings had a substantial impact on equity share prices. Asamoah (2010) conducted a study that examined the Ghana Stock Exchange (GSE) efficiency in the semi-strong form of EMH. The study focused on the effect of dividend declarations on the market and collected data on the daily closing prices of the GSE from 2003 to 2005. The study employed the use of event study and sign test methods to estimate abnormal returns. The study results suggest that the GSE is inefficient in its semi-strong form. Gupta et al. (2018) examined the effect of changes in a company's dividend policy on its share price was analysed using market capitalization as a measure. The research utilized a sample of 124 firms listed on the Bombay Stock Exchange and National Stock Exchange from 2011 to 2015. It employed the event study methodology to assess the relevance of the findings to the Indian stock market. The results showed that large-cap and small-cap companies were significant, while mid-cap companies were insignificant. The study suggests that traders could potentially earn abnormal profits during the sample period. Abhay Kumar et al. (2020) conducted the efficiency of Indian stocks in the context of weak-form and semi-strong-form efficiency in pharmaceutical companies. A duration period of 2012 to 2017 was taken into consideration for this study. Statistical tools such as event study and run tests were utilized to conduct the analysis. The research revealed that the Indian stock market is efficient in its weak form but

not in its semi-strong form. Legenzova et al. (2017) studied the effect of dividend declarations on the security values from 2010 to 2015. NASDAQ OMX took 40 companies as a sample size from NASDAQ and analysed stock prices using an event study to evaluate normal and abnormal returns. The study reveals that stock prices significantly impact dividend announcement information. Gupta et al. (2018) investigated the impact of dividend policy changes on companies' stock prices. The study included 124 companies listed on the BSE and NSE from 2011 to 2015, using a market capitalization sample size. The researchers employed event study techniques to evaluate the importance of the Indian stock market and exposed that both large and small companies had a significant impact. On the other hand, mid-cap companies are insignificant, which indicates that traders can gain abnormal profits in the above sample period. Most research studies agree that Indian markets are only semi-strong efficient. Insider trading may exist, based on various research. The studies examined lacked case-by-case discussions on each script.

3. Objectives and Hypothesis

This study investigates stock market reactions to the declaration of dividends using the event study methodology. After reviewing the literature on stock market efficiency, the study defined the following objectives and hypothesis:

3.1. Objectives of the Study

These are the major objectives of this investigation:

- To examine the impact of dividend declarations on stock prices during Covid-19.
- To investigate whether average abnormal returns move randomly.

3.2. Hypothesis of the Study

In order to ascertain the stock market's response to dividend information, this study tests the following null hypotheses:

H_{01}: The stock prices are not significantly affected by dividend declarations during pandemic-induced stress.

H_{02}: The AARs are almost near zero.

H_{03}: The CAARs are almost near zero.

H_{04}: The average abnormal returns occur at random.

If these null hypotheses cannot be rejected, it suggests that the current stock price quickly reacts to the dividend announcement that is made available to the public. Therefore, efficiency in its semi-strong form is considered to be acceptable.

4. Research Methodology

4.1. Sample

The study is based on secondary data. The focus is specifically on companies with the highest trading volumes and highly liquid assets that fall within the large-cap category based on market capitalization. These companies are listed on the Bombay Stock Exchange (BSE). The research period covers the years 2020 to 2021. The sample consists S&P BSE 100 index for analysis. Of the 100 companies selected for the study, we looked out for any other corporate actions except dividend announcements and such firms were excluded from the sample. In addition to this, interim dividends were also not considered. Thus, our final sample comprised 61 firms that declared a final dividend.

4.2. Data

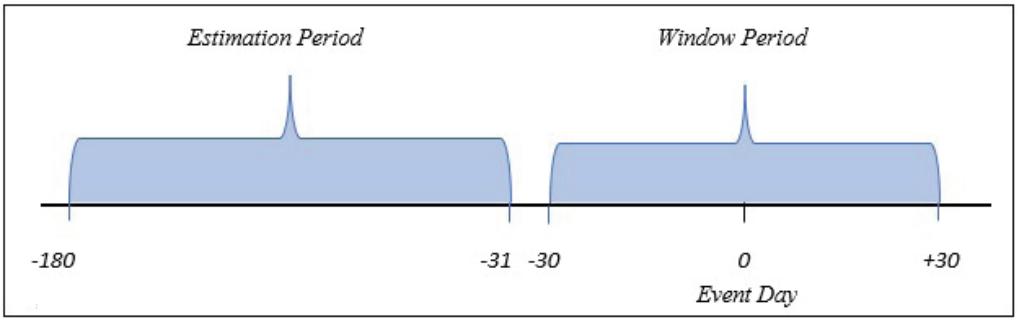
In our study, we divided the data into three categories of information. The first set of data contains dividend declarations made by firms at the board of directors' meetings. Additionally, since a few companies declared dividends on non-trading days, the study chose the following trading day as the declaration day. The second piece of information includes the daily adjusted closing prices of firms. The third set of data includes closing prices for the S&P BSE 100 index, obtained from the bseindia.in website.

4.3. Methodology

4.3.1. Event Study Methodology

The event study methodology has gained wide acceptance and recognition in the fields of economics and finance as a means of examining the impact of certain events on stock prices (Saravanakumar, 2011). The event study methodology involves a statistical analysis that is useful for identifying the effects of an event, such as the announcement of dividends by a company, on the prices of that company's stocks (Banerjee & Dey, 2022). This approach is predicated on the assumption that all information made available to the public is immediately

incorporated into stock prices when released (Brown & Warner, 1985). The research aims to analyse how prices change regarding direction, intensity, and speed in response to an event (Arora *et al.,* 2015). Additionally, the event research approach aims to ascertain whether an event has an abnormal stock price impact and represents the relevance of the event (Lalwani et al., 2019). Considering this, we adopted the event study methodology to determine the connection between announcing dividends and stock prices.



Source: Authors' estimation

Figure 1. Event Window and Estimation Period

- Event of Interest: The event of interest is the declaration of a final dividend.
- Define Window Period: The event window period being examined is 30 days pre, i.e. anticipation period, 30 days after, i.e. adjustment period, and zero on the event day. In prior investigations, a similar event window was employed (Kalra et al., 2013; Uddin & Uddin, 2014).
- Estimation Period: The estimation window is considered to estimate the expected returns. The present study's estimated timeframe is 150 days (from day 180 to day 31 prior to the event window). The estimated time is necessary to determine a specific stock's slope, regression alpha, and beta. For that, estimation models are utilized. In this study, the market model was used for the regression analysis. It is worth noting that the market model was originally developed and proposed by (Sharpe, 1963). Most of the literature has adopted this model in their studies (Aharony & Swary, 1980; M. Gupta & Aggarwal, 2018; Legenzova et al., 2017; Lodha & Kumawat, 2022).

Market Model is as follows

The market model posits a linear connection between index returns (S&P 100) and the returns on individual stocks. It is based on common normality.

$E(R_i) = \alpha_i + \beta_i * R_{it}$ Equation 1

Where the estimated return on security I for the period of "t" is represented by $E(R_{it})$. The alpha coefficient of the ith security is represented by α_i, which is also the point where a straight line intercepts the axis. β_i = The measure of the relationship between security and a change in the value of another variable, represented by a straight line's incline.

R_{it} = expected return over the study period (t') for the S&P BSE 100 index.
The method of calculating abnormal returns involves subtracting the expected return $E(R_{it})$ from the actual return (R_i) using the formula:

$AR_i = R_i - E(R_{it})$ Equation 2

AR_i = abnormal returns of security on the day I over the event window period, R_i = actual stock return.

The AARs of each security are calculated for each day between 30 days prior and 30 days after the event occurs. The ARR is the difference between a portfolio's actual and expected returns.

The calculation of Average Abnormal Returns is done as follows:

$$AAR = \frac{\sum_{i}^{n=1} ARit}{n}, \quad \text{Equation 3}$$

Where I = different study securities, n stands for the total number of stocks, and t = the days preceding the event day Cumulative Average Abnormal Returns over the event window.

The computed ARR is compounded over a significant period (CAAR) to get a Cumulated Average Abnormal Return. The calculated CARR should be near close to 0.

$CAAR_i = AAR_i + CAAR_i\text{-}1$ Equation 4

$CAAR_i$ is the Cumulative Average Abnormal Returns on Day I during the event

window. CAARi-t is the Cumulative Average Abnormal Returns the day before Day I.

The average abnormal returns' significance was determined using the t-test.

$$t\ test = \frac{AARi}{\sigma(ARi)}, \qquad \text{Equation 5}$$

Where AARi = the average abnormal returns of securities on the day of corporate action, and (ARi) = Std error of abnormal returns of securities on the day of corporate action.

$$\text{Standard error is calculated } \sigma(ARi) = \frac{\sigma i}{\sqrt{n}} \qquad \text{Equation 6}$$

Where σi = Std devi of securities abnormal returns on the day I of corporate action.

4.3.2. Runs Test

The "runs test" is a non-parametric statistical test that evaluates the degree of independence between the sequence's elements (Kumar et al., 2020). The run test determines whether the number of runs in a randomly generated series is accurate (Kalsie, 2012). In our study, we employed the run test to examine the randomness of AARs over the event window period in order to assess the null hypothesis significance at a 5 percent level with an adequate degree of freedom. The Wald and Wolfowitz Runs test, which was introduced in 1940, is included in this study. The following equation is used to determine the runs test:

$$\mu_r = \left(\frac{2n_1n_2}{n_1+n_2}\right) + 1, \qquad \text{Equation 7}$$

The number of positive returns is labeled n1, the number of negative returns is labeled n2, and the number of runs is explained by r, mr is the mean total number of runs (actual sequence of counts).

The following formula can be used to compute the standard error of the expected number of runs:

$$\sigma_{r,} = \sqrt{\frac{2\,n_1n_2(n_1n_2-n_1-n_2)}{(n_1+n_2)^2(n_1+n_2-1)}}, \qquad \text{Equation 8}$$

The difference between the actual and estimated number of runs as determined by given equations may be expressed by a standardized variable, "Z":

$$Z = \frac{n - \mu_r}{\sigma_r}$$, Equation 9

5. Empirical Results and Discussion

Table 1: Average Abnormal Returns and T-statistics

Pre-Declaration			Declaration & Post Declaration		
Days	AAR	t-stats	Days	AAR	t-stats
-30	-0.00129	-0.1732	0	0.005866	0.272224
-29	-0.00275	-0.54914	1	-0.00166	-0.32714
-28	0.001095	0.233686	2	-0.00315	-0.75896
-27	-0.00189	-0.31379	3	0.001506	0.386118
-26	-0.00085	-0.27049	4	-0.00673	-0.27076
-25	0.002953	0.552075	5	-0.00467	-0.37346
-24	-0.00072	-0.13777	6	-0.00052	-0.16124
-23	-0.00023	-0.04962	7	0.002598	0.749592
-22	0.001211	0.415878	8	-0.00228	-1.07211
-21	0.004603	0.622471	9	-0.00159	-0.16517
-20	-0.00608	-1.13674	10	-0.0015	-0.53103
-19	0.004878	0.722277	11	0.001018	0.121533
-18	-0.00433	-0.31639	12	-0.00065	-0.22233
-17	0.000832	0.333687	13	-0.0001	-0.02439
-16	0.006686	0.80256	14	0.000806	0.182505
-15	0.004581	0.588268	15	0.002694	0.75281
-14	0.000444	0.03265	16	0.000842	0.213594
-13	-0.00073	-0.14725	17	-0.00056	-0.39467
-12	-0.00118	-0.17602	18	-0.00504	-0.49821
-11	-0.00148	-0.13627	19	-0.00302	-0.56184
-10	0.003656	0.583237	20	0.002607	0.480486
-9	0.003616	1.199159	21	0.001044	0.100359
-8	-0.00012	-0.03706	22	-0.00067	-0.16265
-7	-0.0003	-0.06232	23	-0.00041	-0.23105
-6	0.000568	0.077296	24	-0.00138	-0.15204

Pre-Declaration			Declaration & Post Declaration		
Days	AAR	t-stats	Days	AAR	t-stats
-5	0.006016	0.687314	25	1.05E-05	0.006543
-4	0.002227	0.788365	26	-0.00094	-0.27262
-3	-0.00278	-0.98681	27	-0.0036	-0.75438
-2	0.002846	1.030881	28	0.000176	0.048681
-1	0.005521	1.439132	29	0.000462	0.068992
0	0.005866	0.272224	30	0.004833	0.512725

Note: * denotes significant @ 5 % level

Source: authors-calculation

As shown in Table 2, it can be observed that the average abnormal returns on the event day are negative. Furthermore, the average abnormal returns for the 16 days before the dividend announcement are positive and negative for the 14 days before the information. Additionally, it is notable that the price fluctuated after the dividend announcement, with positive returns for 12 days and negative returns for the remaining days. The t statistics further indicate that the AARs on the event day and the days preceding and following the dividend announcement are statistically insignificant. This suggests that the dividend announcement did not generate any surprise signals on the stock prices. Thus, the null hypothesis that states that the outcome of the dividend announcement had no significant impact on the stock returns cannot be rejected. Hence, our study's third null hypothesis that AARs are almost near to zero cannot be rejected.

Table 2: Cumulative Average Abnormal Returns and T-Statistics

Pre-Declaration			Declaration & Post Declaration		
Days	CAAR	t-stats	Days	CAAR	t-stats
-30	-0.00129	-0.1732	0	0.03288	1.525889
-29	-0.00404	-0.8054	1	0.031219	6.148853*
-28	-0.00294	-0.62798	2	0.028071	6.766892*
-27	-0.00483	-0.80341	3	0.029577	7.582153*
-26	-0.00568	-1.80977	4	0.022848	0.919385

Pre-Declaration			Declaration & Post Declaration		
Days	CAAR	t-stats	Days	CAAR	t-stats
-25	-0.00273	-0.50974	5	0.018178	1.453678
-24	-0.00344	-0.6604	6	0.017657	5.464645*
-23	-0.00367	-0.7997	7	0.020255	5.844664*
-22	-0.00246	-0.84508	8	0.017974	8.449595*
-21	0.002141	0.289589	9	0.016388	1.706003
-20	-0.00394	-0.73648	10	0.01489	5.280695*
-19	0.000938	0.138851	11	0.015908	1.899673
-18	-0.0034	-0.24794	12	0.015258	5.219352*
-17	-0.00256	-1.02827	13	0.015154	3.560218*
-16	0.004122	0.494762	14	0.015961	3.612542*
-15	0.008703	1.117641	15	0.018655	5.212341*
-14	0.009146	0.672828	16	0.019497	4.943289*
-13	0.008416	1.695434	17	0.018933	13.2396*
-12	0.007238	1.081963	18	0.013896	1.374596
-11	0.00576	0.531028	19	0.010876	2.023078*
-10	0.009416	1.502086	20	0.013483	2.485276*
-9	0.013032	4.32189*	21	0.014527	1.396199
-8	0.012912	4.005072*	22	0.013855	3.356398*
-7	0.012616	2.655709*	23	0.013448	7.627812*
-6	0.013184	1.794979	24	0.012066	1.327548
-5	0.0192	2.193614*	25	0.012076	7.547239*
-4	0.021427	7.583633*	26	0.011137	3.232321*
-3	0.018647	6.619003*	27	0.007537	1.579406
-2	0.021493	7.785028*	28	0.007713	2.138617*
-1	0.027014	7.041601*	29	0.008175	1.219635
0	0.03288	1.525889	30	0.013009	1.379942

Note: * denotes significant @ 5 % level

Source: authors-calculation

Based on the results presented in Table 2, it can be observed that the cumulative average abnormal returns (CAARs) are positive for 21 days before the dividend announcements and negative for nine days prior to the declaration. However, the CAARs are positive almost every day after the dividend declarations. The t statistics also indicate that the CAARs are statistically significant for 28 days but statistically insignificant for 33 days. This suggests that most days' cumulative abnormal returns are close to zero. Therefore, our evidence does not support rejecting the idea that the CARRs are close to zero.

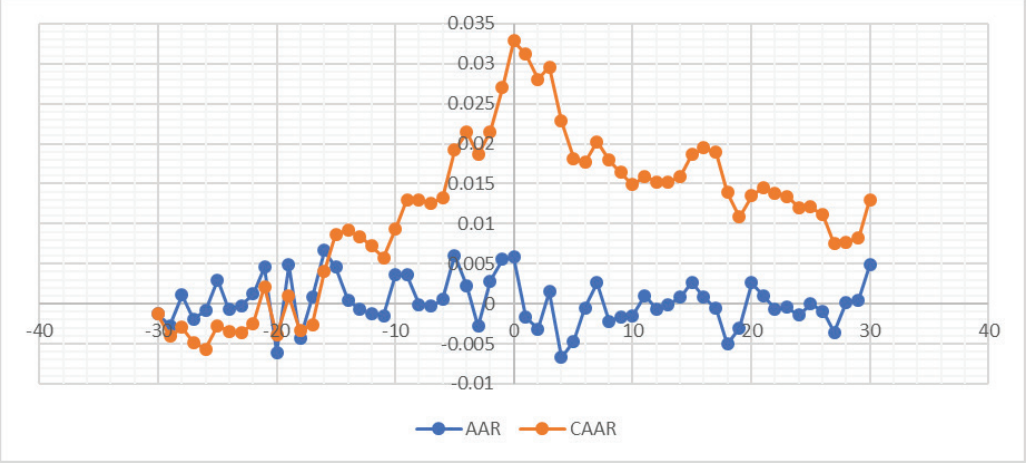


Figure 2: Average Abnormal Returns and Cumulative Average Abnormal Returns

Table 3: Sub Event Window

Sub Events	No of Days	CAAR	t-stats
-1,1	3	0.00973	1.63428
-3,3	7	0.00815	0.89651
-6,3	10	0.01696	1.56099
-5,5	11	0.00913	0.8012
-15,15	31	0.01453	0.75966

Note: * denote significant @ 5 % level

Source: authors-calculation

As per Table 03, the entire event window has been divided into five separate windows to determine the outbreak's impact on various periods. Additionally, we have analysed some sub-event windows (t-1, t+1), (t-3, t+3), (t-6, t+3), (t-5, t+5), and (t-15, t+15) within the main period [t-30, t+30], with t = 0 representing the date of the event. It has been found that the aforementioned sub-event windows are statistically insignificant at a 5% level of significance, that is, (±1.96). This suggests that the stock prices have absorbed the information so quickly, and abnormal profits cannot be obtained during the event period.

Table 4. Runs Test

Total Runs	Expected Runs	z -stat	p-value
30	31.42623	-0.36921	0.902354

Note: * denotes significant @ 5 % level

Source: authors-calculation

Table 4 displays the results of the runs test conducted on the average abnormal returns during the pre-and post-periods. The runs test aims to determine whether the sequence of the observed returns is random. The expected returns (31) and total runs (30) are either equal or close to similar, indicating that the observed sequence of returns is random. As a result, the estimated z statistic (±1.96) is less than the critical value. The null hypothesis stating that the average abnormal returns occur at random cannot be rejected. This suggests that the average abnormal returns occurred randomly, and there is no evidence of any systematic pattern in the abnormal returns during the pre-and post-periods.

6. Conclusion

The study is carried out to examine the effect of dividend declarations on stock prices during the Covid-19 pandemic. The specific time frame under examination is from 2020 to 2021. An event study methodology was used to gather data and conduct the analysis. This methodology involves identifying particular events, such as dividend announcements, and analysing their impact on stock prices within a period. In this case, the event window included the day of the event and 30 days before and 30 days after the event (in total, 61 days, including the

event day). We have employed a market model to determine stocks' expected returns. After that, ARRs and CAARs are estimated. The study found that most of the days of AARs and CAARs during the event window are insignificant as per the t-statistics associated with dividend declaration. Additionally, a runs test was performed to evaluate randomness, and it was concluded that AARs were insignificant and moved randomly. The evidence from the analysis suggests that stock prices have quickly incorporated new information in an efficient market, indicating that generating abnormal profits by investors in such a market is hard, which can have implications for investment strategies and portfolio management. Thus, we conclude that the stock market quickly absorbs information during a turbulent period. It should be noted that this study has certain limitations, such as the study solely on dividend announcements during the pandemic and considering companies that are listed in the S&P BSE 100. The limited time frame available for analysis leaves scope for further investigation while also allowing for an exploration of the impact on established markets, which could benefit researchers, companies, investors, and policymakers.

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LIQUIDITY MANAGEMENT IN MAHARATNA CENTRAL PUBLIC SECTOR ENTERPRISES IN INDIA AFTER THE LIBERALIZATION PERIOD: A STUDY OF POWERGRID

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Abstract:

Liquidity is a major concern for any business that wants to stay in business. Any company's entire life and existence depends on its access to liquid resources. Adequate liquidity is always desirable for smooth business operation. It should be neither excessive nor inadequate. Having adequate liquid assets in the hands of a business to meet the firms current and futures obligations is essential for the heath of the business firm while when a company has too much liquidity, it builds up a lot of unused resources that don't make any money for the company. When a company has too little liquidity, it slows down business operations, which hurts the company's overall earnings. The key objective of managing short- term debt paying capability is to ensure the business must hold adequate amount of liquid resources to pay off its short term debts. In order to maximise value creation for shareholders, customers, employees, and the company itself, sound management of liquid assets must be an integral part of the business's entire strategy. The efficiency in managing liquidity of a firm directly influences the overall profitability of the firm. Thus considering the stiff competition that exists in present market, measuring liquidity and examining the impact of efficient management of liquid assets on the capacity of a business to generate is essential to investigate the managerial efficiency and excellence. The preceding analysis analyses the patterns in the liquidity of the company selected for the study, as well as the consequences of efficient management of liquid assets on the firm's overall profitability.

Keywords:
Liquidity, Profitability, Strategy, Managerial, Obligations

Introduction

The ease with which an asset or security can be converted into cash without hurting its market value is referred to as its "liquidity." For handling its regular operations a firm always try to maintain a proportion of liquid asset such cash, bank balance, short terms marketable securities and money market instruments. Liquidity is essential for the existence of a business firm. Adequate liquidity is always desirable for survival of a company. Surplus liquidity means firm does not have adequate investment avenues where it could employ its liquid cash or cash equivalents. Excessive liquidity is very dangerous for the overall success of the firm while having insufficient liquid assets in the hands could interrupt the normal business operation of any business firm. Thus, managing liquid assets in efficient manner is desirable for overall success of the business firm and for creation of wealth for the stakeholder. Company mainly designed their strategies for utilizing liquid assets in most efficient manner to obtain maximum benefits from that in order maximize of stakeholder's wealth. Keeping in mind the cut throat competition that remain in current business environment it is essential for the corporate executives to identify how the efficient management liquid assets influences the profitability or profit earning capability of a firm.

The privatization process first started in U.K. in 1980s and then it spread throughout the world. The privatization process created a talk over in India on denationalization of its public sector undertakings (PSUs) which are sick and not performing well in their areas. Due to increasing imports of essential commodities from foreign developed nations to satisfy the domestic demands. Over dependence on foreign funding agencies for managing, the adverse balance of payment. India also adopted the liberalization policy in the year 1991 which allow entry of foreign players in Indian markets. The Government of India set in policy by discarding the old policy which kept everything under restriction. Since then Government of India moved in a direction of easing the policies, which could help business to grow prosper and become a global leader. Due to easing the policies and entry of foreign player in the domestic markets, a large number of PSEs which grown in India and enjoyed monopoly over the year before the entry of private players in Indian market have started facing severe rivalry from foreign business housed due to the adoption of liberalization policy. Due to the changes in the business environment PEs also made notable changes in its strategy and policies to meet the new changes and to remain in existence. The strategy regarding managing the

liquid assets in PEs has also shown a drastic change. Even some well-performed PEs in India have made serious changes in the liquidity management strategies after 1991. This research study deals with investigating the liquidity management practices of POWEGRID, the only Maharatna company in power transmission sector in India throughout the period 2001- 2022 to 2020-2021.

Literature Review

A company's success is contingent on its ability to effectively and efficiently manage its liquid assets. Despite the importance of liquidity management, it is unusual and astonishing that it has not yet attracted as many academics in India as desired. The diverse research works in the topic are evaluated concisely in the following paragraphs.

Olaleye et al. (2022) used a cross-sectional survey to investigate the association of liquidity management with financial performance of Nigerian firms belongs to chemical and paints manufacturing industries. Findings showed a significant positive correlation exists between liquidity, asset quality, macroeconomic factors, and capital structure. The study's findings suggest that effective and efficient management of liquid assets had made considerable positive effect on the financial health of the sampled businesses across the time period covered by the research.

Tarseer et al. (2020) conducted as research study using panel regression to analyse the influence of liquidity management on the profitability of banks in Nigeria during 2010 to 2018. In this study, statistical tools such as Hausman test was used to choose between fixed effect and random effect. The study found that the liquidity ratios significantly improved the financial performance of the sampled banks, and that the prudent management of liquid assets significantly boosted the sampled firm's total profitability.

Mishra et al. (2019) made an effort to describe how the banks which belong to private sector in India can benefit from better management of its liquid assets. Return on assets (ROA) and return on equity (ROE) were employed as dependent factors, while the study's independent variables, which indicated the banks' efficiency in managing liquidity, were the cash deposit ratio (CDR), the credit deposit ratio (CRDR), and the investment deposit ratio (IDR). The research shows that CDR and IDR negatively affect ROA, whereas ROE is not significantly connected with

the liquidity of the institutions included in the analysis. Research shows that these financial institutions can prioritise profit growth without jeopardising their capacity to meet short-term obligations.

Fahleni et.al.(2019) in their study tried to dissect the effect of effective and efficient management of liquid assets, firm size and dividend on value of the selected Indonesian firm using multiple regression technique to explain the impact of selected independent variables on value of the firm. The outcome of the study confirms that the liquidity, firm size and dividend policy of the selected firms have the capability to enhance value of the firm.

Apara (2015) carried out a study on Steel Authority of India Ltd (SAIL) to analyse the profitability and its determinants such as size, growth, liquidity, leverage and productivity. In this study correlation and regression techniques were used. The analysis indicated a negative link between size, leverage, productivity, and profitability while growth and liquidity had positive correlation with profitability. The outcome derived from the regression analysis also showed the productivity and size as the prominent variables in explaining the profitability of the SAIL.

Priya and Nimalathasan (2013) applied suitable statistical tools and techniques to look at the association that exists between effective management liquid assets and overall earning of Sri Lankan listed manufacturing companies from 2008 to 2012. The results indicated a negative link between liquidity management and profits which ultimately enhanced the overall earnings of the firm during study period.

Lartey et al. (2013) attempted using panel regression analysis technique, to scrutinize the association of liquidity with profitability of selected banks of Ghana for a period of 10 years. A modest positive link was found between liquidity and profitability, although this had no appreciable effect on the profitability of the enterprises that were studied.

Ashraf (2012) deployed accounting ratios, descriptive statistics, and other statistical tools tests to investigate the connection of effective utilization of various components of current assets with firm's profitability for 16 Indian enterprises for 5 years period. The empirical findings demonstrate a significant inverse association of net current assets with the overall earning of the firm. It also explains that the bigger the company, the more money it made.

Nandi (2012) makes an attempt by employing regression analysis technique to determine the linear connection net current assets with earning of the firm. In light of the findings, it can be also concluded that the selected firm maintains a suitable proportion of net current assets to current liabilities at all times. That allows it to maintain a healthy financial reserve during the research phase, which boosts its bottom line.

Uremadu et al. (2012) used a statistical technique called time series data analysis to analyze the effects of effective use of net current assets on corporate profitability for a sample of Nigerian businesses. The study disclosed that success in the economy was found to be highly correlated with indices of working capital management. According to the study, efficient management of liquid assets was found to have a beneficial effect on the selected firm's total earning capability.

Sherin (2010) did a research study to determine the correlation between the liquidity and revenue earning capability of selected of pharmaceutical companies. The analysis revealed that the selected firm successfully maintained a healthy equilibrium between operating capital and revenue generation, which ultimately contributed to an increase in the total profitability of the selected pharmaceutical companies.

Velmathi and Ganesan (2009) figured out how well the Neyveli Lignite Corporation Limited managed its current assets and how that affected its profit earning capability during 1999 to 2007. They noticed that the company's financial condition was very good and that it kept a good balance between earning profit and managing its cash flow.

Jafar and Sur (2006) in their study analysed the effectiveness with which NTPC Ltd. managed its working capital in the after the liberalization. The study disclosed that in the after the liberalization, the selected company was able to reach a greater degree in terms of efficiency in managing of working capital by responding to the new environment brought about by liberalisation, globalisation, and competitiveness.

Hrishikes (1995) stated in his book named "Total Management by Ratios" that the challenge of liquidity management is especially serious for rapidly expanding businesses. The rising cash flow (profit) curve produces a cheerful sense that "everything is well everywhere," which prompts managers to accelerate their

growth efforts. What they fail to account for is the company's actual cash position, which may be demonstrating a declining trend, thereby pushing the company, despite its high profit, towards a severe liquidity problem. Sadly, once a business management pushes the growth buttons, it is tough to undo the actions. Eventually, a high-growth corporation will become ill due to the ongoing depletion of liquidity. Making a profit is perfectly acceptable; in fact, it is the purpose of business. Yet, if there is no cash flow for the business in from profits, a company will eventually fail.

The primary intention of this research work is to inspect the effects of effective use of various components of current assets on POWERGRID's profit earning. Specifically, it focuses mostly on the issues discussed below:

Objectives

1. To assess the liquidity of the selected company during the study period.
2. To ascertain the liquidity status of the company based comprehensive score.
3. Examine the homogeneity of the chosen aspects pertaining to the liquidity management and profitability of the companies under the study.
4. To assess the degree of association exists in between liquidity and profitability of the selected company.
5. To determine the impact of liquidity management practices on profit earning capability of the company.

Methodology

This research was conducted using secondary statistics. The data of the POWERGRID was gathered from various sources such as annual reports of the company, articles, books and journals. The data were analysed using selected ratio analysis technique, ratios such as Working Capital Ratio (WCR), Acid Test Ratio (ATR), Debtor Turnover Ratio (DTR) and Cash Turnover Ratio (CTR) were used based on the book "Total Management by Ratios" by Hrishikes Bhattacharya and appropriate statistical tools like mean, standard deviation, trend movement, Pearson's simple correlation, Spearman's rank correlation and Kendall's coefficient of concordance were applied as per requirement. 't' test and

chi-square ($\chi 2$) applied as per requirement to know whether the calculated values are significant or not.

Profile of the Company

POWERGRID, a statutory corporation under the Ministry of Power, Government of India which engaged in transmission bulk power across different states of India was established in 1989.POWEGRID expands it operation all over India and cover a wide area for transmission of power. Its business segments also include Consultancy, Telecom, Consultancy Service and Internet service. POWERGRID has been generating surplus continuously since its inception and paying dividend to the shareholder on regular basis.

Considering its consistent performance in their sector for long period and enormous contribution in the field of bulk power transmission throughout the geographical boundary of India, Government of India granted the 'Maharatna" status to POWERGRID in October 2019.

Empirical result

A.Table I, seek to evaluate the liquidity position of POWERGRID using selected ratios. In this table, linear trend equations were fitted to identify trend in each of the selected ratios and t test was used to examine the relevance of the angle of the trend lines.

Working Capital Ratio (WCR): This ratio is treated as important measure of liquidity which reflects the firm's capacity to pay off its short terms debts. Higher WCR represents more the funds is available for paying off its short terms debts within a particular accounting year. Table I shows that the WCR of the company which has been selected for the study remains between 0.41 (2012-2013) to 2.23 (2002-2003). The average value of WCT was 0.84. The trend line which was fitted for WCR series showed a significant upward trend at 1 % level. The data in the table also demonstrates that the company's trends in meeting its short-term debt payment capacity are improving over time.

Acid Test Ratio (ATR): This is advanced version of WCR ratio which shows the association between quick assets and quick liabilities. This ratio is calculated by eliminating the slow moving stock from the current assets in order to quantity more effective short-term dent paying capacity of a firm. In Table I, ATR of POWERGRID

remains between 0.38 (2012-2013) to 2.11 (2002-2003). The average value of ATR was 0.80 during study. The regression line drawn to ATR series indicates a significant rising trend at 5 % level. A significant rising trend in ATR was observed throughout the research study which signifies that the company can easily repay off its short-term liability any time without any obstacles.

Inventory Turnover Ratio (ITR): This is calculated by taking to consideration the turnover of the firm and average stock. This is also an important liquidity ratio which indicates how fast the inventories are being converted into sales. A high ITR indicates the company's ability to manage it inventory in such a manner that it could be convert its inventory into sales and then cash very easily and by this way it could improve its liquidity too. It can be also concluded that a high ITR is considered decent in terms of liquidity and low ITR indicates presence of huge inventories than it requires for smooth running of business. Table I, indicates that the ITR of the selected firm lies between 12.66 (2003-2004) to 31.85 (2016-2017). The average value of ITR was 22.56. The ITR of the company showed a significant rising trend at 5 % level throughout the study. It implied that the significant positive growth of the POWERGRID in inventory management helped in enhancing its overall liquidity as well as profitability.

Debtors Turnover Ratio (DTR): DTR is the ratio of turnover to net credit sales. It can be calculated dividing the turnover by net credit sales. This ratio shows the firm ability to manage its debtors in such a manner so that the collection from debtors could be smooth and that could help in generating values for the organization as well as in liquidity management. Higher the value of DTR more efficient the firm is in managing its debtors as well liquidity. Table I, denotes that the company obtained highest value of DTR in the year 2013-2014 (10.11) while it was least in 2002-2003 (1.29). The mean DTR was 6.64. The trend line of the DTR series showed a significant (1 % level) rising trend throughout the study. It implied that the company successfully managed its debtors in most efficient manner resulting so that both the liquidity and profitability of the business could move in positive direction.

Cash Turnover Ratio (CTR): This is generally calculated to measure how many times a business firm uses it cash to generate sales revenue. This ratio is used to evaluate how efficiently the company is managing its liquid cash to generate sales revenue. A high CTR means the company is efficiently managing its cash

to generate values for the firm while low CTR denotes the company is not able manage its cash efficiently. The chosen firm's CTR ranged from 1.90 (2001-2002) to 13.71 (2017-2018), with a mean value of 5.22 (over the study period) as shown in Table I. Trend line of CTR series showed a significant rising trend. This can be inferred from the study that the CTR of the company which has been selected for the study have managed its cash in most efficient way which helps in improving its liquidity during the study period.

B. There are several factors, which affect liquidity of a business, out which working capital is one of them, which affects liquidity. The composition of working capital essentially affects a firm's capacity to repay its debts. The excess of current asset over current liabilities (excess of current assets over current liabilities is called as positive working capital, but sometime it may be negative balance that is known as negative working capital) which are used to maintain the day to day operation of a business is known as working capital. The sum total of stock, debtors, cash and receivables is known as current asset. Efficient utilization working capital and its components in is essential for the overall management of liquidity of a company. If a company efficiently manages it current asset, then it expected that the liquidity position of the firm will be improved and it could able to pay off its short term obligation at proper time. In Table II a composite rank based on individual ranks of the WCR, ATR, ITR, DTR and CTR was calculated for making an in depth analysis of the liquidity of the company under study. Kendall's coefficient of concordance (W) was calculated to measure the extent of conformity among the five sets of ranking and Chi-square test was applied to check significance of the computed result. The individual ranking of WCR, ATR, ITR, DTR and CTR was done based on the principle, higher the value more suitable the short-term debt paying capability while final rank was made based on the principle that the lower the point scored the more commending in terms of capacity of paying off short-term debts quickly and vice versa

Table II indicates the significant value of "W" (45.172) calculated during the study. It means liquidity is closely associated with the various components of working capital. This suggests that a company's liquidity could be greatly improved via better management of its working capital components.

The study also shows that in 2020-2021 the company obtained top position in terms of liquidity which was followed by 2016-2017, 2017-2018, 2018-2019,

2015-2015 and 2007-2008, 2019-2020, 2006-2007 and 2013-2014, 2005-2006, 2011-2012 and 2014-2015, 2004-2005, 2008-2009, 2002-2003, 2003-2004 and 2012-2013, 2010-2011, 2001-2002 and 2009-2010 respectively in that order. It can concluded from table II that the company holds better place in terms of overall liquidity in last half as compared to first half of the study.

C. In Table II an effort was made to appraise the degree of alliance exists in between liquidity and the earning capability of the firm using Spearman's rank coefficient (RLP) and "t" test was applied check the significance of RLP value. Here the overall profit earning capability of the firm has been analyzed using mean value and linear trend equation based on return on capital employed (ROCE) and t test. It can be concluded from Table III that the company earns profit (ROCE) at an average rate of 9.72 per cent while the ROCE of the company lies between 7.94 (2002-2003) to 12.55 per cent (2017-2018) throughout the study. The regression line of ROCE sequence reveals that a significant upward trend in ROCE was noticed in study. The table also reveals that calculated value of RLP (0.069) was significant at 1 % level. It demonstrates that liquidity and profitability has a significant positive association during the study, which means increase in one could put positive impact on another. Thus, the study inferred that the company managed it's all resources in such a manner that it ensures higher liquidity and higher profitability.

D. We know that the profitability earning capability is generally influenced by various factors. Therefore, in Table IV an effort was made to evaluate the factors, which makes positive contribution in enhancing the profit-earning capability of the business firm. In order to find these factors, correlation coefficients between ROCE and liquidity indicators like WCR, ATR, ITR, DTR, and CTR were calculated, taking into account their sizes as measured by Pearson's simple correlation coefficient, the order of their sizes as measured by Spearman's rank correlation coefficient, and the way their changes are related as measured by Kendall's correlation coefficient. These calculated values of correlation were tested using t test. The result of the correlation shows a notable association between ROCE and WCR, ROCE and ATR, ROCE and ITR, ROCE and DTR and ROCE and CTR was noticed during study. Out of 15 correlation coefficients 9 were positive while rest 6 were negative. From 9 positive correlations coefficients 7 were significant while rest 2 were insignificant. From 6 negative correlation coefficients, all were significant. It can also be concluded from the Table IV that the correlation coefficients between

ROCE and WCR and between ATR and ROCE were significant negative while the correlation coefficient between ITR and ROCE, DTR and ROCE and between CTR and ROCE were positive and statistically significant. It hinted that while working capital management affects adversely the profit generating capability of the business firm but the effects of debtors, inventory and cash management on overall profitability company was positive and were noticeable throughout the study period.

Concluding remarks

Results show that during the study period, POWEGRID's ability to pay its short-term and immediate debts increased significantly. The efficiency in managing the components of working capital such as debtors, cash and inventory was increasing with passage of time. Therefore, it is expected that this managerial efficiency will definitely make favourable impact on overall liquidity of the company. The outcome of composite rank test also indicates an appreciation in revenue and earning profitability of the company in recent times (2022 Rank-1). The profit earning capability of the firm also appreciated during the study period and the business utilized its current assets in most efficient manner to generate more values for the organization.

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Table: I

Selected Ratios relating to Liquidity Management of POWERGRID (2001-2002 to 2020-2021)

Year	WCR	ATR	ITR	DTR	CTR
2001-2002	1.54	1.43	13.19	1.40	1.90
2002-2003	2.23	2.11	12.69	1.29	2.32
2003-2004	1.33	1.24	12.66	2.12	2.82
2004-2005	1.01	0.94	13.19	5.37	4.11
2005-2006	0.75	0.70	17.26	8.10	5.34
2006-2007	0.73	0.69	19.70	8.80	3.00
2007-2008	1.07	1.02	21.35	5.80	2.47
2008-2009	1.00	0.96	20.85	4.60	2.75
2009-2010	0.95	0.92	22.19	3.97	2.17
2010-2011	0.92	0.88	23.10	5.04	2.28
2011-2012	0.62	0.59	24.74	7.78	4.29
2012-2013	0.41	0.38	25.73	8.70	7.68
2013-2014	0.54	0.51	24.10	10.11	3.43
2014-2015	0.47	0.44	24.02	9.29	8.29
2015-2016	0.48	0.45	29.00	8.51	8.42
2016-2017	0.55	0.52	31.85	8.63	7.70
2017-2018	0.49	0.47	30.60	8.68	13.71
2018-2019	0.52	0.49	30.13	8.23	7.88
2019-2020	0.56	0.53	27.55	7.60	6.71
2020-2021	0.70	0.67	27.26	8.87	7.14
Mean	**0.84**	**0.80**	**22.56**	**6.64**	**5.22**
Maximum	**2.23**	**2.11**	**31.85**	**10.11**	**13.71**
Minimum	**0.41**	**0.38**	**12.66**	**1.29**	**1.90**
Slope	**-0.570****	**-0.053****	**0.977****	**0.343****	**0.385****
t-value	**4.911**	**4.808**	**11.083**	**4.619**	**4.563**
***Significant at 5% level, ** Significant at 1 % level**					
Source: Authors calculation					

Table: II

Statement of ranking in order of liquidity and analysis of Kendall's Coefficient of Concordance among selected liquidity indicators of POWERGRID (2001-2002 to 2020-2021)

Year	WCR	Rank	ATR	Rank	ITR	Rank	DTR	Rank	CTR	Rank	Sum of Ranks	Ultimate Rank
2001-2002	1.54	**2**	1.43	**2**	13.19	**17.5**	1.40	**19**	1.90	**20**	**60.5**	**19**
2002-2003	2.23	**1**	2.11	**1**	12.69	**19**	1.29	**20**	2.32	**17**	**58**	**16**
2003-2004	1.33	**3**	1.24	**3**	12.66	**20**	2.12	**18**	2.82	**14**	**58**	**16**
2004-2005	1.01	**5**	0.94	**6**	13.19	**17.5**	5.37	**14**	4.11	**11**	**53.5**	**13**
2005-2006	0.75	**9**	0.70	**9**	17.26	**16**	8.10	**10**	5.34	**9**	**53**	**11**
2006-2007	0.73	**10**	0.69	**10**	19.70	**15**	8.80	**4**	3.00	**13**	**52**	**8.5**
2007-2008	1.07	**4**	1.02	**4**	21.35	**13**	5.80	**13**	2.47	**16**	**50**	**5.5**
2008-2009	1.00	**6**	0.96	**5**	20.85	**14**	4.60	**16**	2.75	**15**	**56**	**14**
2009-2010	0.95	**7**	0.92	**7**	22.19	**12**	3.97	**17**	2.17	**19**	**62**	**20**
2010-2011	0.92	**8**	0.88	**8**	23.10	**11**	5.04	**15**	2.28	**18**	**60**	**18**
2011-2012	0.62	**12**	0.59	**12**	24.74	**8**	7.78	**11**	4.29	**10**	**53**	**11**
2012-2013	0.41	**20**	0.38	**20**	25.73	**7**	8.70	**5**	7.68	**6**	**58**	**16**
2013-2014	0.54	**15**	0.51	**15**	24.10	**9**	10.11	**1**	3.43	**12**	**52**	**8.5**
2014-2015	0.47	**19**	0.44	**19**	24.02	**10**	9.29	**2**	8.29	**3**	**53**	**11**
2015-2016	0.48	**18**	0.45	**18**	29.00	**4**	8.51	**8**	8.42	**2**	**50**	**5.5**
2016-2017	0.55	**14**	0.52	**14**	31.85	**1**	8.63	**7**	7.70	**5**	**41**	**2**
2017-2018	0.49	**17**	0.47	**17**	30.60	**2**	8.68	**6**	13.71	**1**	**43**	**3**
2018-2019	0.52	**16**	0.49	**16**	30.13	**3**	8.23	**9**	7.88	**4**	**48**	**4**
2019-2020	0.56	**13**	0.53	**13**	27.55	**5**	7.60	**12**	6.71	**8**	**51**	**7**
2020-2021	0.70	**11**	0.67	**11**	**27.26**	**6**	8.87	**3**	7.14	**7**	**38**	**1**
Kendall's coefficient of concordance among five sets of liquidity performance ranks (W) is 0.4755 and Chi-square value of W is 45.1725 being significant at (36.191) 1 % level												
Source: Authors Calculation												

Table: III

Analysis of Spearman's Rank Correlation between Liquidity and Profitability of POWERGRID (2001-2002 to 2020-2021)

Year	Liquidity Rank (As per Table II)	ROCE (%)	Profitability Rank (Based on ROCE)	
2001-2002	**19**	8.46	19	**Spearman's rank correlation coefficient between liquidity and profitability (RLP) is 0.069 being significant at 1% level**
2002-2003	**16**	7.94	20	
2003-2004	**16**	9.20	12	
2004-2005	**13**	8.64	17	
2005-2006	**11**	8.67	16	
2006-2007	**8.5**	9.15	13	
2007-2008	**5.5**	8.87	14	
2008-2009	**14**	9.31	10	
2009-2010	**20**	8.49	18	
2010-2011	**18**	9.29	11	
2011-2012	**11**	10.22	5	
2012-2013	**16**	9.96	7.5	
2013-2014	**8.5**	10.63	4	
2014-2015	**11**	9.79	9	
2015-2016	**5.5**	8.86	15	
2016-2017	**2**	10.16	6	
2017-2018	**3**	12.55	1	
2018-2019	**4**	9.96	7.5	
2019-2020	**7**	12.37	2	
2020-2021	**1**	12.03	3	
Average		**9.7275**		
Maximum		**12.55**		
Minimum		**7.94**		
Slope of the Trend Line		**0.179****		
t value		**5.763**		
***Significant at 5% level, ** Significant at 1 % level**				
Source: Authors calculation				

Table: IV

Analysis of correlation between ROCE and selected liquidity indicators of POWERGRID

Correlation measures	WCR	ATR	ITR	DTR	CTR
Pearson	**-.586****	**-.582****	**.676****	**.585**	**.663****
Spearman	**-.648****	**-.638****	**.740****	**.629****	**.594****
Kendall	**-.459****	**-.449****	**.593**	**.459****	**.396***

**. Correlation is significant at the 1% level

*. Correlation is significant at the 5% level

INDEX

Granger Causality	51,56,61,62,63,64,68,69
Liquidity	3,88 -103
Managerial	88,98
merger and acquisitions (M&As)	22,50
MSCI ESG indices	51,56
Obligations	88,91
Organizational Performance	22,25,45
Profitability	49,55,88-93, 95,97-99,102
Regression & Sobel Test	37,42
Runs Test	71,79,84,85
Service Quality	22,25,30,37- 40,42,43,46,47
Strategy	26,27,67,88,89
Sub-Event Window	71,84
SWOT	14,16,18,21
Tax Deducted at Source (TDS)	1,3,11
Taxation	1,2,3,5,12
VDA (Virtual Digital Assets)	1,3,5,7,11,12

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Digital Object Identifier(DOI)-vol 48 nos. III & IV

Name of the Article	Author's Name	Vol.	Nos.	Issue	Page Nos.	DOI Number
AN ECLIPSE OF VIRTUAL DIGITAL CURRENCY IN INDIA: AN UPDATED REVIEW WITH UNION BUDGET 2022-23	Shubham Kakran Arpit Sidhu	48	III & IV	October'22 & January'23	1 to 13	10.33516/ rb.v48i3-4.01-13p
A SWOT AND IMPACT ANALYSIS OF CHAT GPT	Thippeswami H	48	III & IV	October'22 & January'23	14 to 21	10.33516/ rb.v48i3-4.14-21p
A STUDY OF EMPLOYEE SATISFACTION, JOB & ORGANISATIONAL PERFORMANCE OF SBI IN THE POST-MERGER SCENARIO	Bushra Shazli Lamaan Sami	48	III & IV	October'22 & January'23	22 to 50	10.33516/ rb.v48i3-4.22-50p
ESG PORTFOLIO VS TRADITIONAL PORTFOLIO ANALYSIS-A STUDY OF MSCI ESG INDICES	Gattaiah Tadoori V. Usha Kiran	48	III & IV	October'22 & January'23	51 to 70	10.33516/ rb.v48i3-4.51-70p
IMPACT OF DIVIDEND DECLARATIONS ON STOCK PRICES DURING COVID-19 IN INDIA: AN EVENT STUDY APPROACH	Mallesha L Archana H N	48	III & IV	October'22 & January'23	71 to 87	10.33516/ rb.v48i3-4.71-87p
LIQUIDITY MANAGEMENT IN MAHARATNA CENTRAL PUBLIC SECTOR ENTERPRISES IN INDIA AFTER THE LIBERALIZATION PERIOD: A STUDY OF POWERGRID	Sunil Kumar Yadav Rupa Yadav	48	III & IV	October'22 & January'23	88 to 103	10.33516/ rb.v48i3-4.88-103p

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