VOL. 53 (1) • JUNE, 2021

INDIAN JOURNAL OF ACCOUNTING

A National Bi-annual
Double Blind Peer Reviewed
Refereed Journal of IAA

Indian Accounting Association (IAA)
www.indianaccounting.org

EDITORIAL BOARD - IJA

CHIEF EDITOR

EDITORS

ASSOCIATE EDITORS

ADVISORY CUM REVIEWERS BOARD

RNI NO.: MPENG01246/12/1/2014-TC
ISSN-0972-1479(PRINT) | ISSN-2395-6127 (ONLINE)
REGD. NO.: 429/68-69

Volume 53 | No. 01 | June, 2021

Indian Journal of Accounting

A National Bi-annual Double Blind Peer Reviewed Refereed Journal of IAA

Indian Accounting Association (IAA)

www.indianaccounting.org

Message from the Chief Editor

India is still fighting the COVID- 19 pandemic and let me at the outset place on record our rich appreciation and acknowledgment to the efforts put in by our Government at the Centre as well as the States in dealing with the pandemic, we do salute all our health workers, researchers and the dedicated medical team for their relentless support in fighting the virus and supporting human life. Our education institutions and teachers have played their role in keeping education rights intact and doing everything possible to meet the aspirations of our learners.

The COVID 19 Pandemic has made us think deeply about how a virus can restrict mobility and disrupt the industry, but the challenges put forward would make us ponder over opportunities as is being done in terms of e-learning and online transactions. We are now compelled to think beyond the limitations of time and space, caring for all our resources and making careful use of the same. Responsibility Accounting and Environment Accounting, among other themes, would turn out to be relevant.

In the year 2020, IAA could not have its Annual Accounting Conference and International seminar, however, our branches were active throughout with several workshops, seminars, and academic activities all of which attracted huge participation and wide interest, I congratulate all our branch secretaries, members and Office Bearers for their initiative and support.

Transforming challenges into opportunities and working under the emerging New Normal is what we need to learn and adopt. Moving into the virtual space with E-learning, MOOCs and advanced ICT tools like Artificial intelligence and Machine Leering systems is what will empower us. We need to Transform and re-engineer ourselves into this demanding environment and this is what all of us are now attempting to do. The Accounting and finance disciplines are also demanding re-adjustment and re-focus on this line.

Much is emerging in terms of Environment Accounting, Environment Audit, Climate Change financing, and so on. Gone are the days when we could just look at finance as raising funds and using them and Accounting as just preparing the statements on annual results. Wise and judicious use of scarce resources and tracking fund usage in terms of impact on human life is turning to be important.

Indian Journal of Accounting would like to showcase pertinent research outcomes in the domain of Accounting and Finance as well as trans-disciplinary research which would be an eye-opener for the industry, professional bodies as well as policymakers. Such research is a movement from data to information and from information to Knowledge and again from Knowledge to wisdom. For Academicians in Finance and Accounting, this would be financial wisdom and Accounting Wisdom

I take this opportunity to thank all the contributors of research Papers to this issue and sincerely request all my friends to come up with more research work and research publications which we would welcome. I also thank all our Subscribers and the Office bearers of IAA, especially the President and General Secretary and all in my editorial team. I acknowledge with sincere gratitude the timely intellectual support from our reviewers. As we were caught up in the COVID lockdown for over four months, this issue of IJA is coming out a little late. I request all our readers and well-wishers to kindly give us suggestions and valuable inputs on improving the journal further.

Wishing you all the very best and hoping to see quality research Papers in the future, let me conclude by hoping and praying to see our economy and academics back in their normal mode soon. Thank you.

Gabriel Simon Thattil
Chief Editor
Indian Journal of Accounting

Message from the President

Recently, the association celebrated International Accounting Day (November 10, 2021) by organizing a panel discussion on " Accounting Discipline: Prospects and Challenges". Senior past Presidents of IAA namely Prof B Banerjee, Prof N M Khandelwal, and Prof K R Sharma who are also among the senior-most accounting stalwarts in the field of accounting in India, were the panelists. The same day while participating in the celebrations organized online by Bangladesh Accounting Association, my call to join the membership of IAA and also to encourage student's participation in the National Accounting Talent Search organized by IAA was appreciated and applauded by our counterparts from this neighboring country.

Due to the concerted efforts of the Foreign Collaborations Committee under the chairmanship of Prof K V Achalapathi, the process of having an MOU with the European Accounting Association has made good progress. Similarly, the Professional Bodies Liaison Committee under the chairmanship of Prof K Eresi has made a substantial move in the direction of having MOUs with the Institute of Cost Accountants of India and Institute of Company Secretaries of India. Such affiliations shall greatly benefit IAA in achieving its objectives more effectively.

The welcoming move due to the joint efforts of Prof G Simon Thattil, Chief Editor IJA, and Prof Anil Kumar has resulted in great headway in the direction of implementing the Journal Management System. We are all set to implement the system beginning with the December 2021 issue of IJA. Such a system will provide the facility to submit a paper and track the progress of its publication anytime. This shall result in more transparency and effectiveness in bringing even better-quality papers for the journal.

The committed efforts of Prof Sanjay Bhayani, General Secretary, and Prof Arindam Gupta, Treasurer have resulted, inter alia, in the addition of Chennai as 57th branch of IAA and crossing of 7350 mark of life membership of the association. The practice of sending birthday wishes to members on behalf of IAA has also begun which is adding warmth to our fraternity.

In recent times, a welcoming development particularly among the young researchers has been noticed that the formal structure of the research paper is being better appreciated and followed. However, there is the need to further improve the quality of discussion, analysis, and conclusion in the research papers, in general.

We look forward to the 43rd All India Accounting Conference and International Seminar (Dec 18-19, 2021). Our best wishes to Prof V Appa Rao and his team for the grand success of the event.

Best regards

G Soral
President, IAA
Former Professor, HOD, and Dean, Mohanlal Sukhadia University, Udaipur (Raj)

RNI NO.: MPENG01246/12/1/2014-TC
ISSN-0972-1479(PRINT) | ISSN-2395-6127 (ONLINE)
REGD. NO.: 429/68-69

INDIAN JOURNAL OF ACCOUNTING

GENERAL IMPACT FACTOR 2.4602

(INDEXED IN COSMOS FOUNDATION & ELECTRONIC JOURNAL LIBRARY EZB, GERMANY)

Volume 53 | No. 01 | June, 2021

CONTENTS

◆◆◆

A CRITICAL REVIEW OF RESEARCH ON CROWDFUNDING

Babu Lal Gedar *
Dr. Shilpa Lodha **

ABSTRACT

In this paper, a critical review of research on crowdfunding has been presented. This study is based on a review of literature on crowdfunding which has been divided according to the objectives of researches, which were the overview of crowdfunding, the success of crowdfunding projects, review of literature, awareness about crowdfunding, and remaining research studies were included in others. Total 62 research papers and articles reviewed. For further analysis, the graphical section presents the summary of review of literature in the form of graphs and tables on the basis of the year of publication, countries where researches were done, objectives of researches, statistical tools used, etc. It can be concluded that not much work has been done on crowdfunding as it is a very recent topic. It was found that research was conducted in a total of 30 countries. It was found the objective of most researches was to provide a basic overview of crowdfunding. Many types of research focused on identifying success factors for crowdfunding projects and a comparative study of these factors for various types of crowdfunding. The majority of researches used descriptive statistics which shows that role of descriptive statistics is very high in the analysis of data. Several authors have also used correlation and regression.

Keywords: Crowdfunding, Review

Introduction

In finance, procuring funds is the basic step for investment and distribution decisions. Of late, crowdfunding is emerging as an alternative way of procuring funds for start-ups and entrepreneurial projects. Several authors have tried to define crowdfunding. "Crowdfunding is a solicitation of funds (small amount) from multiple investors through a web-based platform or social networking site for a specific project, business venture or social cause." (SEBI Consultation Paper, 2014). "Crowdsourcing takes place when a profit-oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a [voluntary] contribution to the firm's production process for free or for significantly less than that contribution is worth to the firm." Crowdfunding is an alternative way

* Junior Research Fellow, Department of Accountancy and Business Statistics
Mohanlal Sukhadia University, Udaipur (Rajasthan), India,
E-mail: babulal.gedar1993@gmail.com

** Assistant Professor
Department of Accountancy and Business Statistics, Mohanlal Sukhadia University,
Udaipur (Rajasthan), India, E-mail: lodhashilpa80@gmail.com

of raising funds for innovative, entrepreneurship, creative projects, start-ups, and social causes, which provide funds at lower cost and lesser time. The project must be well planned for its success. Funds are raised from crowdfunding with the help of crowdfunding websites, which provide an online platform for investors and borrowers. Crowdfunding platforms are used to raise money in the form of equity, debt, or donations.

Prior researches were reviewed, and a summary has been presented below:

Following Researchers Concentrate on Overview of Crowdfunding:

Akalya (2019) summarized the idea of crowdfunding which was going to be added within the Indian laws is a complicated idea having both its merits and demerits. Mostly all the risks related to crowdfunding are related to the internet. If the internet becomes a more secure area to perform activities of trade, then crowdfunding is a concept that would be capable of reaching its capability to complete and might feature as a channel in figuring out the goals of various entrepreneurs. Awareness programs should be initiated by SEBI to educate entrepreneurs, issuers, and structure intrinsic information about the method.

V, Vaswani, Kaur, and S (2019) understand the concept and types of crowdfunding, the performance of crowdfunding platforms in India, and the focal areas of crowdfunding platforms in India. Undoubtedly Crowdfunding, which poses a prodigious potential, is in its nascent stage. Therefore, it is the need of the hour for the lawmakers to look upon the regulations and give this potential market, a strong support system. Crowdfunding plays a vital role in capital accumulation for the small and medium scale business entities, which otherwise experience a huge problem with traditional forms like Banks and Financial Institutions etc.

Baber (2019) studied WHIRL Company which was among the few blockchain-based crowdfunding platforms available for backers and fundraisers. Crowdfunding platforms need a sustainable model for social projects. Social projects were usually for the problems which exist in society and need to be addressed. The WHIRL accepts projects in any field until it was within the guidelines and policies of the company. The model Pay-it-Forward is based on the old formula of the collaboration of local communities to pool money for development, future expenses, or helping each other in certain aspects of life like marriage, education, death, employment, housing, etc.

Sajjan (2017) aimed to understand the factors influencing the evolution of the crowdfunding ecosystem in India and to design a crowdfunding promotion model. This study identified cultural, social, technological, and regulatory factors based on descriptive research analysis and it was concluded that all four factors played a major role in developing an effective framework in India.

Kraus, Richter, Brem, Cheng, and Chang (2016) contributed to the literature om different ways: first, it shed more light on the developing concept of crowdfunding, with an overview of current academic discussions on crowdfunding. Furthermore, the analysis of success factors for crowdfunding initiatives adds to an emerging area of research and allows entrepreneurs to extract best practice examples for increasing the probability of successful crowdfunding projects under consideration of the key influencing factors of communication.

Kraus, Richter, Brem, Cheng, and Chang (2016) contributed to the literature om different ways: first, it shed more light on the developing concept of crowdfunding, with an overview of current academic discussions on crowdfunding. Furthermore, the analysis of success factors for crowdfunding initiatives adds to an emerging area of research and allows entrepreneurs to extract best practice examples for increasing the probability of successful crowdfunding projects under consideration of the key influencing factors of communication.

K (2016) concluded Crowd funding comes with many advantages compared to existing avenues available to start-ups and SMEs. Capital raise under the Crowd Funding Platform not being a public offer and thus not triggering public offer related pre-conditions, and the related costs and compliances therein is a good starting point for this platform available for such new generation companies. That would also enable the Eligible Entities to reach out to a wider section of investors and investor groups for raising capital.

Lau and Chew (2016) investigated the hurdles that challenge the crowdfunding initiative, assessed the crowdfunding strategies for the Research Management Centre in Malaysia on innovation and scientific research. Found obtained in this research enables readers to know more about the hurdles that might challenge the academic crowdfunding initiative in Malaysia and investigate how the

fundraisers overcome the challenges of academic crowdfunding. Moreover, the readers are also able to know which crowdfunding model is the most effective for the Research Management Centre in Malaysia.

Lee, Zhao, and Hassna, G. (2016) explored how crowdfunding can be extended as a financial intermediary to support government-incentivized projects. They investigated both financial and non-financial mechanisms that crowdfunding could offer and summarized how such features could improve participatory budgeting, facilitate private-public collaboration, and achieve transparency. One aspect of participatory budgeting emphasizes that crowdfunding can provide a key approach to reach out to the crowd and help finance projects initiated by the public sector.

Mollick and Robb (2016) reviewed for managers and executives, crowdfunding represents an exciting opportunity to examine the innovation process at the grassroots level. By observing crowdfunding campaigns, established companies could better understand consumer demand, user-driven innovations, and the nascent organizations that were trying to launch new ideas. Further, crowdfunding gives larger organizations the opportunity to intervene early in the evolution of a new venture, whether by providing resources, partnerships, or other forms of support.

Gierczak, Bretschneider, Hass, Blohm, and Leimeister (2015) aimed to provide a deeper understanding of the rise of crowdfunding as an alternative funding opportunity by discussing its main characteristics, the market development, different classification approaches, its fields of application and by providing directions for future research. The nature of the study was descriptive. They concluded that crowdfunding provided a lot of potentials. Besides its actual function of fundraising, there were further fields of interest, inter alia using crowdfunding for pre-sale marketing and market research as well as for co-creating with possible future customers.

Morse (2015) concluded, On the investor side, P2P disintermediates an asset class of consumer loans, and investors seem to capture some rents associated with the removal of the cost of that financial intermediation. Risk and portfolio choice questions linger before any inference. On the borrower side, evidence suggests that proximate knowledge (direct or inferred) unearths soft information, and by implication, P2P should be able to offer pricing and/or access benefits to potential borrowers.

Hildebrand, Puri, and Rocholl (2015) found, in the presence of rewards, group leader bids result in lower interest rates but higher default rates. Thus, although group leader bids enhance the credibility of an issue and the perception of higher quality, those issues do not appear to be of higher quality, as evidenced ex-post by higher default rates suggesting that group leaders behave strategically. It is only when group leaders have sufficient skin in the game that we see default rates reduce along with a decrease in interest rates. Univariate analysis and multivariate analysis were used for data analysis.

Pazowski and Czudec (2014) that the main value of the method was to increase the probability of obtaining more beneficial solutions from the community than from the enterprises offering outsourcing services. A well-organized process of crowdfunding could finance start-ups and increase investment opportunities, especially for small and medium enterprises.

Mollick (2014) found that the clear majority of founders seem to fulfill their obligations to funders, but that over 75% deliver products later than expected, with the degree of delay was predicted by the level and amount of funding a project receives. These results offer insight into the emerging phenomenon of crowdfunding and also shed light more generally on the way that the actions of founders may affect their ability to receive entrepreneurial financing.

Bruton, Khavul, Siegel, and Wright (2014) developed a framework to analyze new financial alternatives to seed entrepreneurship. They utilized that framework to develop an agenda for future research and within which they had situated the contributions to that special issue. The study presented in that special issue cover only a subset of the elements of the framework. They hope that the foundation they had laid in that study and the special issue would provide the basis for substantial further scholarly effort on the role of new financial alternatives in seeding entrepreneurship.

Valanciene and Jegeleviciute (2013) found from the SWOT analysis reveal that crowdfunding was a novelty, uncertainty and various publicly expressed fears enhance the weaknesses and threats of the method. Despite that, in the nowadays' global, rapidly changing, and network-based economy, crowdfunding can serve as a valuable and useful tool. The publicly expressed fears and doubts about crowdfunding should be exploited and lead to better and more thoughtful decisions regarding it.

Jhaveri and Choksi (n.d.) concluded that the primary focus of the platforms under study was fundraising for either social-cause-based or creative-based projects. Crowdfunding is in a nascent stage in India. It will take time to the awareness and change the mindset of people. While looking forward, crowdfunding had a bright future as internet penetration and e-commerce success will pave the way for crowdfunding. This will help CFPs to float equity-based and lending-based campaigns.

Usha (n.d.) discussed the prominence of crowdfunding as a mode of financing for start-ups. they elaborated meaning, different forms of crowdfunding suitable for start-ups in India, analysis of merits, cautions to be taken, and risks involved in crowdfunding. The nature of the study was descriptive. They stated that India as a developing economy could motivate investors for crowdfunding.

Following Researchers Concentrate on Success of Crowdfunding Projects:

Meoli, Munari, and Bort (2019) concluded that the reward-based crowdfunding context pointed out a negative signaling role of patens and provided an explanation to reconcile such evidence with previous

relevant literature, and highlighted promising avenues for future research in that area. Descriptive statistics and correlation statistics tools were used for data analysis.

Bento, Gianfrate, and Thoni (2019) tried to understand to what extent project characteristics influence the ability to raise funds on the world-leading reward-based crowdfunding platform and importantly, to explain their survival post-campaign. The study was empirical in nature. The data analysis was done using descriptive statistics and a regression model. The results showed that the perceived sustainable mission positively influenced the outcome of the campaign.

Yang, Bi, and Liu (2019) studied ways to design appropriate profit allocation mechanisms to enhance the success rate of an investment-based crowdfunding project. The basic model focused on the two-investor case, where only two investors with dynamic entry times were considered. The profit allocation mechanism was shown to a had great impact on the pledging probabilities of investors, as well as the success rate of a project. After that, they shifted our focus to the two-cohort case, where dynamic investors were assumed to arrive at the platform in two sequential cohorts. By taking the sizes of each cohort into consideration, they were able to analyze the success rate of a project under various practical situations.

Martinez-Climent, Costa-Climent, and Oghazi (2019) concluded the definition of sustainability covered a range of areas, with some authors considering economic sustainability. They went further, considering manuscripts that focused on sustainability from a social and environmental perspective to address the established system leading us to climate change, the depletion of the planet's natural resources, and the preservation of the social differences that exist in society.

Wati and Winarno (2018) tried to describe the alternative funding source of crowdfunding for MSME businesses in various countries, by knowing the differences of the success in crowdfunding models and the factors that influence the success level in the achievement of the crowdfunding model. One-way ANOVA and multiple regression statistical tools were used for data analysis. The result of this research showed that the highest funding was achieved by the equity-based crowdfunding model. The result also showed that there was a difference in the achievement levels of crowdfunding models.

Lu, Xie, Kong, and Yu (2014) concluded the underlying connections between promotion campaigns in social media and the fundraising results of crowdfunding projects and identified a number of important principles that guide the direction of devising an effective campaign. They also provided a promising step towards inferring the impacts of social media on crowdfunding. They anticipate that further analysis

could quantify the personal interests of participants from historical behaviors, develop richer ways of assessing social influences among users, and suggest potential customers from collaborative filtering of personal interests and social influences.

Greenberg, Pardo, Hariharan, and Gerber (2013) applied machine learning techniques to a dataset of Kickstarter projects to determine whether they could classify projects as successful or failures at the time of launch. Their work in that area was in support of a user-facing tool to assist novices with project planning. The idealized result of that tool was a prediction engine that could be used to advise users in project creation, and to open access to crowdfunding to those who had not previously completed creative ventures.

Gerber and Hui (2013) concluded Crowdfunding was fundamentally changing the way people solicit resources from the crowd to realize new ideas. The crowd contributes millions of dollars each month to entrepreneurial creators throughout the world. Continued participation could have a profound influence on the creative economy by influencing how, why, and which ideas were introduced into the world (Landler 2012), (Obama 2011). However, human-computer interaction designers have a large unrealized opportunity to design the interactions between the creators, supporters, and the technology that connects them, to ensure alignment of motivation among the diverse participants.

Belleflamme, Lambert, and Schwienbacher (2013) examined the characteristics of individual crowdfunding practices and drivers of fundraising success. To their knowledge, that was the first study directly dealing with individual crowdfunding practices based on a hand-collected data set. They document evidence that the individual crowdfunding practice was a way to develop venture activities through the process of fundraising, where entrepreneurs may tailor their crowdfunding campaign better than on standardized platforms. Analysis of data used to descriptive statistics, correlation and OLS regression, and Tobit regression.

Myriam, Cheikh, and Abdellatif (n.d.) concluded that participation in a crowdfunding platform could be influenced by the awareness of social media, the support of a project for a good cause or interpersonal relationship which was established between the different parties, and the feeling of belonging to a group discussion which creates peer. Sought to identify the motivations of contributors to this type of platform. A qualitative approach based on semantic analysis was used to reflect the emotions of borrowers and lenders in their contribution on a crowdfunding platform, and to explore other motivations aside fundraising (for the borrower) and consumption of a product or the fact of living a successful experience (for the lender).

Following Researchers Concentrate on Review of Crowdfunding's Literature:

Bockel, Horisch, and Tenner (2020) studied systematically review literature at the intersection of crowdfunding and sustainability. They found that the research field has a relatively short history but already shows signs of growing maturity. About the research foci, the results reveal misbalances between the relevance ascribed to various aspects in research and practice.

Kotwani and Malu (2019) concluded that crowdfunding was widely used in developed countries like

America whereas, in India, the population was still less aware of it. The study was done with the intention to identify the development of crowdfunding in India.

Jain, Sharma, and Srivastava (2019) studied presents an integrative framework incorporating the important and renewed research gaps, with an explicit focus on the upcoming research avenues, through the descriptive findings and thematic discussions. proposes to present a framework that shall enable the practitioners and policy makers to take much wiser decisions and develop and support crowdfunding as a significant emerging market choice for entrepreneurs and potential funders.

Sauermann, Franzoni, and Shafi (2019) examined how these characteristics relate to fundraising success. The findings highlight important differences between crowdfunding and traditional funding mechanisms for research, including high use by students and other junior investigators but also relatively small project size. Students and junior investigators were more likely to succeed than senior scientists, and women had higher success rates than men.

Abdullaha, Rametseb, Abdullahc, Hassand, and Yunohe (2019) studied the acceptance of crowdfunding as a research topic and the trend of crowdfunding research, a different review of crowdfunding research was provided. Descriptive statistics and Co-citation analysis were used in data analysis. Further, these findings support that crowdfunding research is still in the infancy stage, particularly for equity crowdfunding and most of the publications were focused on the determinants of crowdfunding success. It was expected that research surrounding crowdfunding success would continue to evolve as more data becomes available.

Cai (2018) identified gaps in economic and finance research regarding two applications of FinTech: crowdfunding and blockchain. That review and discussion were intended to provide a deeper understanding of FinTech and its impact on the financial industry. Given the nature of FinTech and its influences were more cross-disciplinary studies utilizing technology, economics, and psychology were required to examine unaddressed puzzles.

Belleflamme and Lambert (2014) reviewed some recent developments in the study of crowdfunding, the practice of raising funds through an open call on the Internet. early findings on crowdfunding provided significant advances, they think that important theoretical efforts had still to be made to better understand the underlying logic of the dynamics of crowdfunding. They presented the very first study that goes in that direction, they had then shown how microeconomic theory could help in this perspective.

Tomczak and Brem (2013) provided an extensive survey of the environment of crowdfunding based on current literature. That's model appears to be the first and only conceptualized crowdfunding investment model, considering the present literature on crowdfunding. Two important findings of that study involved the identification of bottlenecks in the investment process that were not recognized in the literature reviewed for that study. First, in the model, the delays concerning the pay-out models were critically important to crowdfunding investment. That was a stage where the entire funding process can stop.

Lehner (2013) reviewed extant literature on CF and its financial underpinnings in an SE context and had outlined eight CF-related research themes that would provide valuable information for academics,

policy-makers, and practitioners. The almost undefined and disputed field of CF for donations, equity or debt, even increases that convolution of terms, concepts, and actions. The proposed schema of the inner workings of CF should thus reduce ambiguity and provide a framework for researchers to find a common ground. They need to see rigorous and robust conceptual and empirical research, drawing and developing from existing proven theories from a multitude of disciplines.

Moritz and Block (n.d.) provided an overview of crowdfunding literature, classified in terms of the main actors (capital seekers, capital providers, and intermediaries), and presents important research questions for future research. identified several research priorities in academic literature. The motives for participating in crowdfunding markets for capital seekers and capital providers have been of major academic interest. In addition, identifying success factors for crowdfunding transactions and analyzing different national legal frameworks were of major interest to the researchers.

Following Researchers Concentrate on Awareness About Crowdfunding:

Sharma, Yadav, and Udupa (2019) determined the awareness level of the crowdfunding system and explored the factors that lead to investing in crowdfunding. Factor analysis, KMO, and Bartlett's test were used for data analysis. concluded that the awareness level about crowdfunding in India is very low. Since the awareness level about various financial options is very low and the risk-taking appetite of investors is less resulting in investing majorly in risk-free instruments.

Shivangi (2018) concluded that Crowd funding is a form of crowd sourcing and alternative finance. This approach taps into the collective efforts of a large pool of individuals—primarily online via social media and crowd funding platforms—and leverages their networks for greater reach and exposure. Though crowd funding is the most trending method of fundraising, yet it has different limitations that can be tackled through adopting an effective strategy.

Bhuvanendran and R (2018) identified awareness of crowdfunding among entrepreneurs in Kerala, commerce and management students in Kerala. Chi-Square test used in data analysis. Concluded this research paper by concentrating on the fact that, even though there is a nominal rate of awareness about Crowdfunding among entrepreneurs, and commerce and management students in Kerala, yet the importance of Crowdfunding as a source of fund for business is not been explored and exploited by Keralites when compared to other Developed Economies across the world.

Vergara (2015) aimed to measure awareness and attitudes towards crowdfunding in the Philippines. The research was conducted using an online survey questionnaire. The results showed a significant gap between crowdfunding awareness and actual participation, with only two percent, had ever participated as a backer and none too had ever participated as a fund seeker. The survey also revealed that there was very low awareness of Filipino-oriented crowdfunding platforms, despite the existence of four such platforms.

Rossi (2014) described, analyzed, and increase the knowledge of the emerging crowdfunding phenomenon. Crowdfunding in the actual economic context represents a valid alternative to the traditional financial ways of firms. In fact, in a situation like that, where there were a imitate number of institutional

investors involved in the financing of small and medium start-ups, a limited number of private incubators, universities, and some hundreds of informal investors, crowdfunding platforms seem to go into the opposite direction. It represents an important instrument to give impetus to entrepreneurship, economic development, and job creation.

Following Researchers Concentrate on Others Different Objectives:

Liang, Hu, and Jiang (2020) studied the perspective of information communication and based on information asymmetry and signaling theory. Descriptive statistics, correlations, and binary logistic regression statistical tools were used for data analysis. The results reveal that when considering these three dimensions of information description together, word count is associated with crowdfunding success in an inverted-U shape. Picture count, video count, comment, and update have positive effects on crowdfunding success. In contrast, readability is negatively related to crowdfunding success.

Shree V and Alphia J (2019) focused on comparing the growth of crowdfunding before and after the introduction of Fintech and analyzing the growth prospects over the years and ascertaining the financial return generated through equity crowdfunding. The study was mainly based on secondary data. The study was exploratory in nature. They concluded that delegates and arrangement creators ought to consider approaches to enable organizers to make practical plans and objectives, to guarantee that crowdfunding keeps up its low rate of extortion and high rate of extortion and high rate of development.

Hellmann, Mostipan, and Vulkan (2019) used equity crowdfunding data to ask how fundraising amounts can be explained by what entrepreneurs ask for, versus what investors want to invest. Descriptive statistics and regression statistical tools were used for data analysis. One of the strongest results in the study was that while setting a higher goal reduces the probability of success, it also helps companies to raise more money: “Be careful what you ask for, as you might get it.”

Hornuf, Schmitt and Stenzhorn (2018) concluded that first follow-up funding and especially firm failure were important factors that could help policy-making evaluate whether ECF was an efficient and worthwhile form of financing. Second, they identified selection criteria for crowd and professional investors such as BAs/VCs, which added to the recent literature in entrepreneurial finance. Descriptive statistics and binary outcome regression tools were used for data analysis. They

Bhargava, Bhat, and Tiwari (2017) aimed to understand and comprehend crowdfunding as a concept relevant to India and analyze the proposed regulations that SEBI has put forth. They concluded by firstly analyzing the validity of SEBI releasing these guidelines and secondly finding out how successful SEBI has been in drafting such regulations for crowdfunding activities as well as propose certain amendments that could be made along with pointing out a substantial issue that has been left out of the draft released by SEBI.

Vulkan, Astebro, and Sierra (2016) analyzed 636 campaigns, encompassing 17,188 investors and 64,831 investments between 2012 and 2015, from one of the leading European equity crowdfunding platforms. Analysis of data was done by using descriptive statistics and cross-campaign regression statistical tools. They concluded some similarities and some interesting dissimilarities when comparing the descrip-

tive statistics and regression results with rewards-based crowdfunding. The data showed that equity crowdfunding would likely pose great challenges to VC and business angel financiers soon.

Koziot-Nadolna (2016) concluded that Polish enterprises finance their innovative projects through crowdfunding platforms in Poland to a small extent and that polish enterprises were looking to finance their innovative projects on crowdfunding platforms outside Poland. It should be noted, however, that Polish companies, despite having problems with raising capital for projects, showed little interest in the alternative source of financing, such as crowdfunding.

Courtney, Dutta, and Li (2016) concluded extends current research by addressing the influence of multiple signals and third-party endorsement on crowdfunding success. In that process, they seek to advance the application of information economics by examining when signals and third-party endorsements interact to enhance or diminish one another's effects and exploring backer sentiment as

a unique source of third-party endorsement. Descriptive statistics, correlation, and robustness test statistical tools used for data analysis.

Verma and Tyagi (2016) examined whether crowdfunding can work in an Indian context. In particular, it will focus on whether India has the proper legal framework to enable and support crowdfunding. The SEBI guidelines should be more flexible in allowing people to invest in crowdfunding as seen in the JOBS act 2012, of the USA. This will encourage economic development because it will allow the investor to raise capital while keeping costs to the investor lower. They had taken steps to protect the customer in the guidelines.

Vismara (2016) found that project proponents should devote effort to stimulate bids in the initial stages of the campaigns, as that was likely to generate an informational cascade dynamic and trigger further investments. Their study of information cascades in equity crowdfunding carries relevant policy implications. Regulators and policy makers worry that the learning/herding behavior of retail investors might increase the chances for fraud, as their investments are not protected by the oversight of financial authorities. Sophisticated investors may, indeed, take advantage of their influential position.

Koch and Siering (2015) provided a comprehensive view of factors influencing crowdfunding success by both focusing on project-specific as well as founder-specific aspects. The study was empirical in nature based on secondary data and descriptive statistics and regression statistical tools were used for data analysis. They concluded the project description related images and videos as well as the question of whether the founder had previously backed other projects influence funding success. Interestingly, the question of whether the founder had previously created other projects, had no significant influence. The results were of high interest for the stakeholders on crowdfunding platforms.

Ying (2015) found that equity crowdfunding has the potential to play a significant role in building a start-up ecosystem. However, it is a new and untested fundraising method that applies public fundraising techniques to small companies which traditionally funds from friends, family, and professional investors. While the proposed reforms seek to strike a balance between facilitating equity crowdfunding and protecting investors' interests, further empirical research is required to test the effectiveness of such measures and the feasibility of using equity crowdfunding as a fund for small businesses.

Agrawal, Catalini, and Goldfarb (2015) found that investment patterns over time were not strongly related to the geographic distance between artist and funder after controlling for the artist's offline social network. That result contrasts with the existing literature that emphasizes the importance of spatial proximity in early-stage financing.

Belleflamme, Lambert, and Schweinbacher (2014) compared two forms of crowdfunding entrepreneurs solicit individuals either to pre-order the product or to advance a fixed amount of money in exchange for a share of future profits (or equity). Their conclusions had implications for managerial decisions in the early development stage of firms when the entrepreneur needs to build a community of individuals with whom he or she must interact and offer extensions on the impact of quality uncertainty and information asymmetry.

Mollick and Kuppuswamy (2014) concluded for creators seeking funding, there was some clear advice from that study. Projects that were better prepared in terms of business plans and schedules were more likely to gain benefits and deliver on time. Outside endorsements and having appropriate backgrounds were also helpful. Bigger projects were less likely to be funded but had more benefits when they were. Additionally, some of the factors found to lead to successful fundraising (having many Facebook friends, being featured by Kickstarter), were less useful in getting long-term benefits from Kickstarter.

Frydrych, Bock, Kinder, and Koeck (2014) contributed to crowdfunding literature referencing the results of an empirical study that was explorative and descriptive in nature. That study illustrates that cultural entrepreneurship activities play a significant role in creating online organizational legitimacy and links specific features to successful crowdfunding efforts. While that study offers an additional understanding of some dynamics that take place in crowdfunding and could be associated with organizational legitimacy, research on crowdfunding was still limited and further research was required.

Greenberg and Mollick (n.d.) examined when members of underrepresented groups choose to support each other, using the context of the funding of female founders via donation-based crowdfunding. Analysis of data used to descriptive statistics, correlation, and logistic regression. they showed that activist choice homophily explains why women are more likely to succeed at crowdfunding than men and why women are most successful in industries in which they are least represented.

Some common objectives of researches were to review of literature for crowdfunding status in India and other countries (Usha,(n. d.); Bockel, Harisch & Tenner, 2020: Kotwani & Malu, 2019; Greenberg & Mollick, (n. d.); Tomczak & Brem, 2013; Lehner, 2013), to provide a deeper understanding of the rise of crowdfunding as an alternative funding opportunity by discussing its main characteristics, the market development, different classification approaches, its fields of application and by providing directions for future research (Gierczak, Bretschneider, Haas, Blohm & Leimeister, 2015; Wati & Winarno, 2018; Bruton, Khavul, Siegel & Wright, 2014), to assess the Awareness of concept of crowd funding among the people in India (Shivangi, 2018; Sharma, Yadav & Udupa,

2019), to identify the benefits of crowdfunding (Bahal, 2017; Shivangi, 2018; Valanciene & Jegeleviciute, 2013), to know the Crowdfunding growth & development (Usha, (n. d.); Sajjan, 2015), to

understand the crowdfunding scenario (Jhaveri & Choksi, (n. d.); Bhargava, Bhat & Tiwari, 2017; V, Vaswani, Kaur & S, 2019).

Majority of researchers, for their study, used the tools like Descriptive statistics (Meoli, Munari & Bort, 2019; Bento, Gianfrate & Thoni, 2019; Hellmann, Mostipan & Vulkan, 2019; Sauermann, Franzoni & Shafi, 2019; Abdullaha, Rametseb, Abdullahc, Hassand&Yunohe, 2019; Wati & Winarno, 2018; Hornuf, Schmitt & Stenzhorn, 2018; Bhargava, Bhat & Tiwari, 2017; Courtney, Dutta & Li, 2016; Koch & Siering, 2015; Agrawal, Catalini & Goldfarb, 2015; Mollick, 2014; Frydrych, Bock, Kinder & Koeck, 2014; Belleflamme, Lambert & Schwienbacher, 2013; Greenberg & Mollick, (n. d.)), Correlation (Meoli, Munari & Bort, 2019; Abdullaha, Rametseb, Abdullahc, Hassand & Yunohe, 2019; Courtney, Dutta & Li, 2016; Koch & Siering, 2015; Mollick, 2014; Belleflamme, Lambert & Schwienbacher, 2013; Greenberg & Mollick, (n. d.)), Probit model (Meoli, Munari & Bort, 2019), Regression (Bento, Gianfrate & Thoni, 2019;Hellmann, Mostipan & Vulkan, 2019), Two cohort model (Yang, Bi & Liu, 2019), Logit regression model (Bento, Gianfrate & Thoni, 2019), Factor analysis, KMO and bartlett's test (Sharma, Yadav & Udupa, 2019), One way ANOVA and Dout regression (Wati & Winarno, 2018), Binary outcome regression (Hornuf, Schmitt & Stenzhorn, 2018), Chi-square test (Bhuvanendran & R, 2018), Cross campaign regression (Vulkan, Astebro & Sierra, 2016), Robustness test (Courtney, Dutta & Li, 2016), OLS regression and tobit regression (Belleflamme, Lambert & Schwienbacher, 2013) and Exponentiated logistic regression (Greenberg & Mollick, (n. d.)).

In our literature review, some researches were in India on crowdfunding for start-ups, an ecosystem of crowdfunding, study on Indian online crowdfunding platforms, growth of crowdfunding in Fintech, crowdfunding status in India, role of crowdfunding in financing start-ups and SME in India, etc. Researches in the US were based on an exploratory study on dynamics of crowdfunding, the patent paradox in crowdfunding, new financial alternatives in seeding entrepreneurship, activist choice homophily and the crowdfunding of female founders, information and the potential for disruption in consumer lending in peer to peer crowdfunding, fundraising strategies in equity crowdfunding, inferring the impacts of social media on crowdfunding, motivation, and deterrents for participation in crowdfunding, the role of crowdfunding in democratizing innovation and capital access, crowdfunding support tools in predicting success and failure, outcomes of crowdfunding after the campaign, etc.

In Germany researches on outlining the new era of fundraising from crowdfunding, the characteristics of successfully funded projects on crowdfunding platforms, equity crowdfunding in Germany and the UK, literature review and research direction of crowdfunding, a conceptualized investment model of crowdfunding, adverse incentives in crowdfunding, In UK researches on new phenomena of equity crowdfunding, fundraising strategies in equity crowdfunding, a model and research agenda on crowdfunding social ventures, exploring entrepreneurial legitimacy in reward-based crowdfunding, etc. In Italy researches on the patent paradox in crowdfunding, crowdfunding for sustainability ventures, information cascades among investors in equity crowdfunding, etc.

Graphical Summary of Review of Literature

This section presents the summary of review of literature in the form of graphs (bar and pie charts) on

the basis of the year of publication, countries where researches were done, objectives of researches, statistical tools used, etc.

Table 1: Number of Research Publication in Different Years

Years of publication	No. of Research Papers
2013	7
2014	9
2015	7
2016	10
2017	3
2018	5
2019	14
2020	2
No Date	5

Figure 1: Number of Research Publication in Different Years:

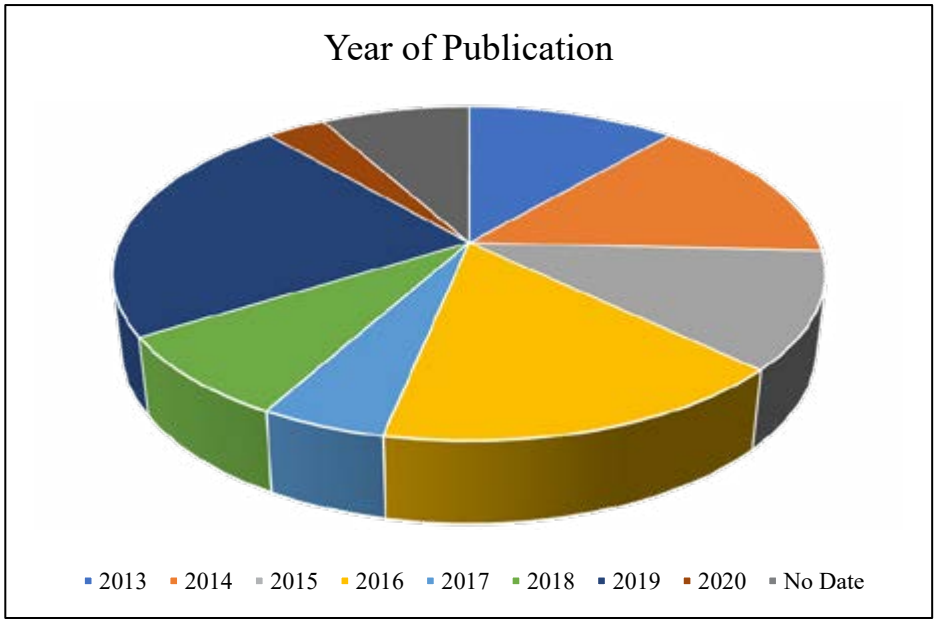


Figure 1 shows the year the research paper was published. It was found that the paper published on crowdfunding was in 2013. Thus, this is a very recent phenomenon. It was found that in the initial years; very few papers were published on crowdfunding, which increased gradually in later years. It was found that 11% of the research papers reviewed were published in 2013, 15 percent in 2014, 11 percent in 2015, 16 percent in 2016, 5 percent in 2017, 8 percent in 2018, 23 percent in 2019, 3 percent in 2020 and 8 percent research papers publication year was not given.

It means researches on crowdfunding started in 2013. In 2019 maximum number of research papers were published so it can be concluded that not much work has been done on crowdfunding as it is a very recent topic.

Table 2 : Number of Researches Publication in Different Countries

Countries	No of Research Papers	Countries	No of Research Papers
India	15	France	4
US	14	Belgium	3
Germany	10	China	3
UK	5	Other	25
Italy	4		

Figure 2: Number of Researches Publication in Different Countries:

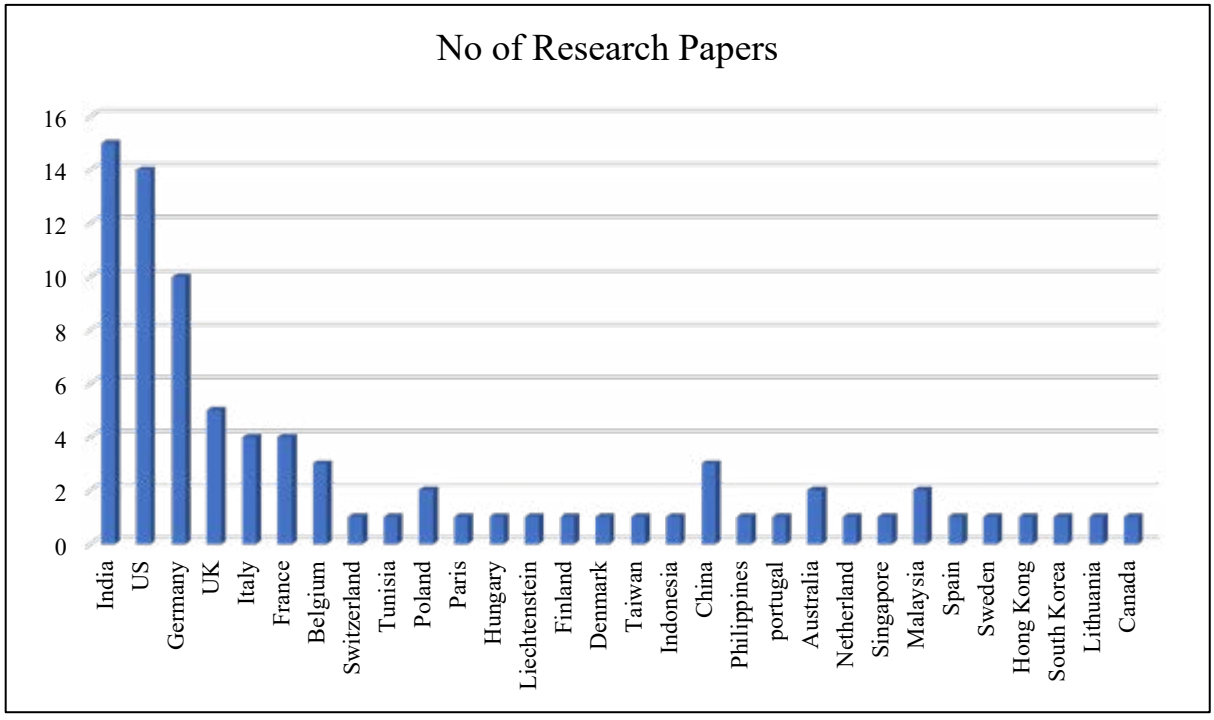


Figure 2 shows countries where research on crowdfunding was conducted. It was found that research was conducted in a total of 30 countries. Most of the research papers were from India (15), US (14), Germany (10), UK (5), Italy (4), France (4), Belgium (3), China (3), and remaining other 23 countries (25). Crowdfunding is very popular for fundraising these days. But fewer researches were conducted in India as compared to foreign.

Table 3: Number of Researches Publication for Special Objectives

Objectives	No. of Research Papers
Success of Crowdfunding Projects	11
Review of Literature	10
Awareness about Crowdfunding	5
Aftermath of Crowdfunding	1
Overview of Crowdfunding	20
Legal Framework of Crowdfunding in India	3
Case Study of Crowdfunding Platform	2
Evaluation of Crowdfunding Projects	1
Comparison of Crowdfunding Forms	1
Other	8

Figure 3: Number of Researches Publication for Special Objectives:

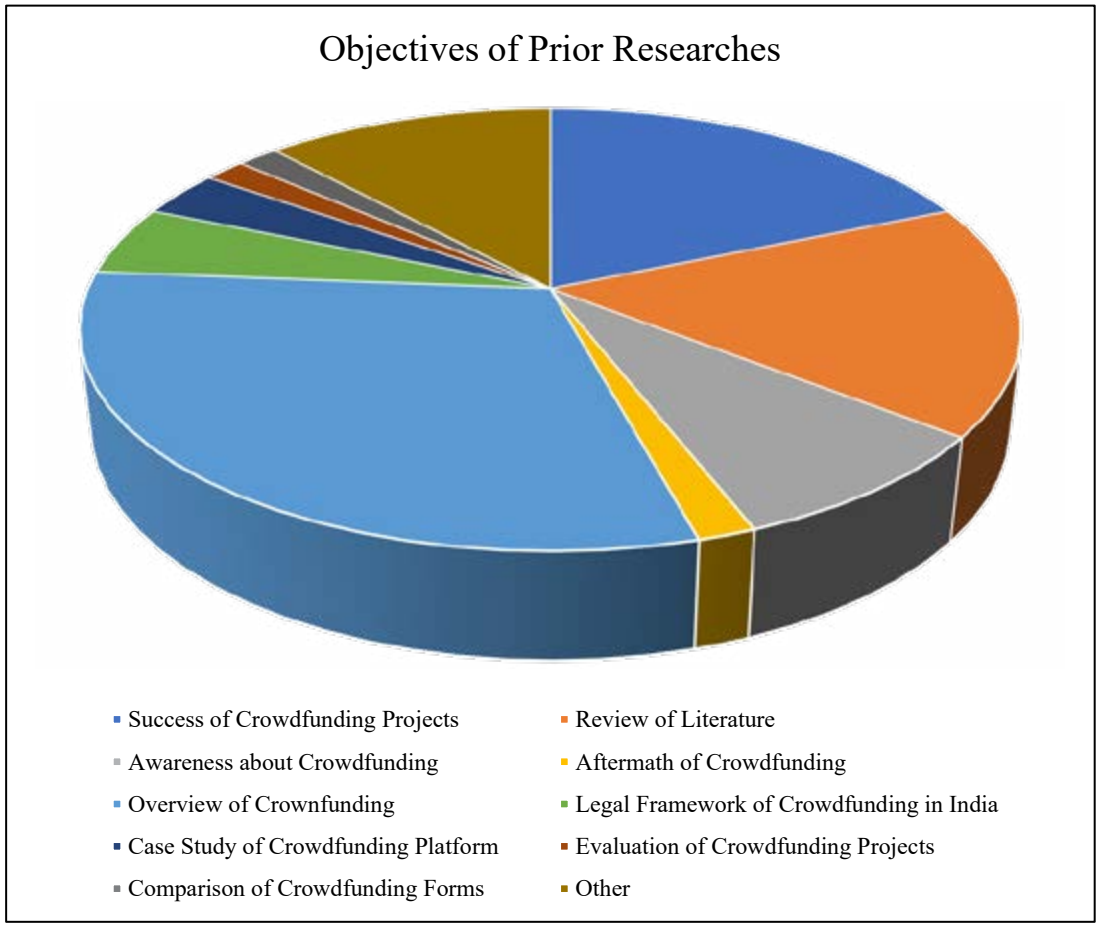


Figure 3 shows the objectives of prior researches. Objectives of prior researches have been divided into 10 categories. Most of the researches was based on an overview of crowdfunding (31 percent) so it can be concluded that the objective of most researches was to provide a basic overview of crowdfunding. Many types of research aimed to explore the success of crowdfunding projects (19 percent). These researches focused on identifying success factors for crowdfunding projects and a comparative study of these factors for various types of crowdfunding. 17 percent of research papers provided a review of literature based on crowdfunding. These papers provided a deeper understanding of what has already been done.

Awareness about crowdfunding was concentrated by 8 percent of research papers. These papers tried to explore the general awareness about crowdfunding, its importance, and benefits, and major challenges. 2 percent of papers were based on exploring the aftermath of crowdfunding projects. 5 percent of research papers examined the legal framework of crowdfunding in India and other countries. A case study of crowdfunding platforms was provided by 3 percent of research papers. The remaining papers were based on the evaluation of crowdfunding projects (2 percent), comparison of crowdfunding forms (2 percent), and others (12 percent).

Table 4: Statistical Tools used in Prior Researches:

Statistical Tools	No of Research Papers	Statistical Tools	No of Research Papers
Descriptive Statistics	16	Binary Outcome Regression	1
Correlations	9	Chi-square Test	1
Probit Model	1	Cross Campaign Regression	1
Regression	2	Robustness Test	1
Two Cohort Model	1	OLS Regression and Tobit Regression	1
Logit Regression Model	1	Exponentiated Logistic Regression	1
Factor Analysis, KMO and Bartlett's Test	1	Binary Logistic Regression	1
One-way ANOVA and Dout regression	1		

Figure 4: Statistical Tools used in Prior Researches:

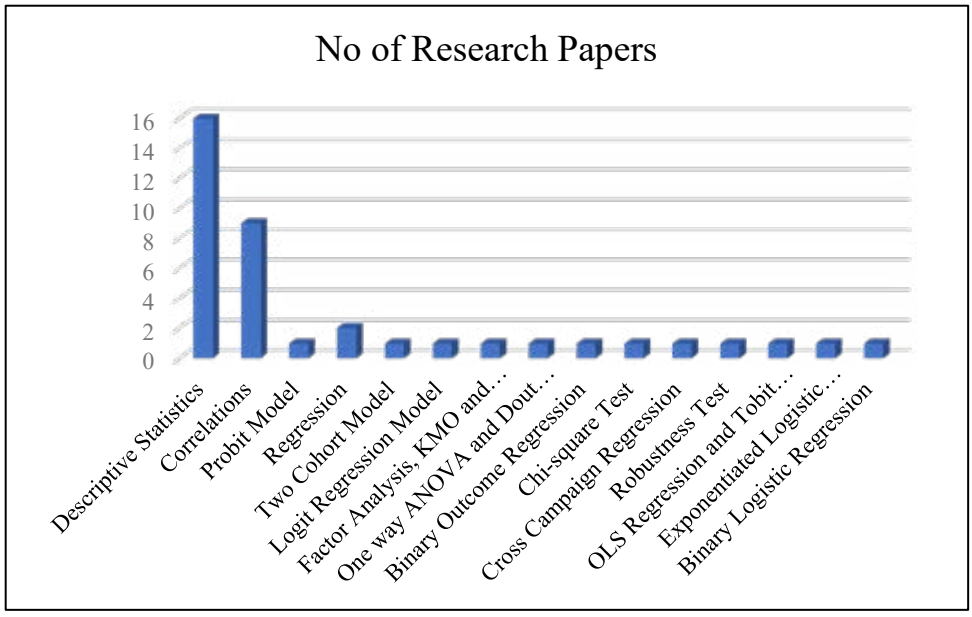


Figure 4 shows statistical tools used in prior researches. The majority of researches i.e., 16 papers used descriptive statistics which shows that role of descriptive statistics is very high in the analysis of data. Several authors also used correlation which was 9 papers. Regression analysis had also been used by authors but there are different forms of regression which have been used like Multiple Regression (2), Logit Regression (1), Binary Regression (1), Cross Campaign Regression (1), OLS Regression & Tobit Regression (1), Exponentiated logistic regression (1) and Probit model (1). Some other tools used were Two cohort models (1), Factor analysis, KMO & Bartlett's test (1), One-way ANOVA & Dout regression (1), Chi-square test (1), Robustness test (1), and Binary logistic regression (1), etc and some studies based on descriptive type so no used any statistical tools.

Conclusion

The present paper attempts to study a critical review of research on crowdfunding. The study aims to review prior researches conducted on crowdfunding around the world. Total 62 research papers and articles were reviewed for this study and divided into four categories according to their objectives. Researchers could find the first paper published on crowdfunding in 2013. In 2019 maximum number of research papers were published so it can be concluded that not much work has been done on crowdfunding as it is a very recent topic. It was also found that research was conducted in a total of 30 countries. Crowdfunding is very popular for fundraising these days, but fewer researches were conducted in India as compared to foreign countries.

The objective of most researches was to provide a basic overview of crowdfunding. Many types of research focused on identifying success factors for crowdfunding projects and a comparative study of these factors for various types of crowdfunding. Some researches provided a deeper understanding of what has already been done. Some tried to explore the general awareness about crowdfunding, its importance, and benefits,

and major challenges and very few studies focused on the aftermath of crowdfunding projects, the legal framework of crowdfunding in India and other countries, Case study of crowdfunding platforms, evaluation of crowdfunding projects, comparison of crowdfunding forms and others. The majority of researches used descriptive statistics which shows that role of descriptive statistics is very high in the analysis of data. Several authors have also used correlation and regression.

References:

SEBI, (2014). "Consultation paper on crowdfunding in India." pp 1-66.

Kleemann, F., VoB, G. G. & Rieder, K. (2008). "Un(der) paid Innovators: The commercial utilization of consumer work through crowdfunding." Science, Technology & Innovation Studies 4(1): pp 5-26.

Akalya, V. (2019). "A study on crowdfunding in India." International Journal for Research in Engineering Application & Management (IJREAM) 4(10): retrieved from DOI: 10.18231/2454-9150.2018.1412SA visited on 2nd July 2020.

V, L., Vaswani, P., Kaur, K. & S, M. L. (2019). "An Exploratory study on crowdfunding platforms in India." International Journal of Current Research 11(01): pp 970-972. Retrieved from DOI: https://doi.org/10.24941/ijcr.34153.01.2019 visited on 5th June 2020

Baber, H. (2019). Blockchain-based crowdfunding: "A 'pay-it-forward' model of WHIRL." International Journal of Recent Technology and Engineering 8(3): pp 3225-3229.

Sajjan, R. (2017). "Crowdfunding ecosystem in India." International Journal of Science and Research 6(12): pp1230-1232. Retrieved from DOI: 10.21275/ART20178891 visited on 8th June 2020.

Kraus, S., Richter, C., Brem, A., Cheng, C. F. & Chang, M. C. (2016). "Strategies for reward-based-crowdfunding campaigns." Journal of Innovation & Knowledge pp 13-23.

Kraus, S., Richter, C., Brem, A., Cheng, C. F. & Chang, M. C. (2016). "Strategies for reward-based-crowdfunding campaigns." Journal of Innovation & Knowledge pp 13-23.

K, P. (2016). "A study on crowd funding and its implications in India." Paripex – Indian Journal of Research 5(1): pp 233-235.

Lau, K. L. & Chew, B. C. (2016). "Crowdfunding for research: A case study in research management centre in Malaysia." International Journal of Industrial Engineering and Management (IJIEM) 7(3): pp 117-124.

Lee, C. H., Zhao, J. L. & Hassna, G. (2016). "Government-incentivized crowdfunding for one-belt, one-road enterprises: Design and research issues." Financial Innovation. Retrieved from DOI 10.1186/s40854-016-0022-0 visited on 25th July 2020.

Mollick, E. & Robb, A. (2016). "Democratizing innovation and capital access: The role of crowdfunding."

University of California Berkeley 58(2): pp 72-87.

Gierczak, M. M., Bretschneider, U., Haas, P., Blohm, I. & Leimeister, J. M. (2015). "Crowdfunding: Outlining the new era of fundraising." FGF Studies in Small Business and Entrepreneurship pp 7-23.

Morse, A. (2015). "Peer to peer crowdfunding information and the potential for disruption in consumer lending." National Bureau of Economic Research

Hildebrand, T., Puri, M. & Rocholl, J. (2015). "Adverse incentives in crowdfunding." Management Science pp 1-22. Retrieved from http://dx.doi.org/10.1287/mnsc.2015.2339 visited on 5th September 2020.

Pazowski, P. & Czudec, W. (2014). "Economic prospects and conditions of crowdfunding." Management Knowledge and Learning International Conference pp 1079-1088.

Mollick, E. (2014). "The dynamics of crowdfunding: An exploratory study." Journal of Business Venturing pp 1-16. Retrieved from http://dx.doi.org/10.1016/j.jbusvent.2013.06.005 visited on 10th June 2020.

Bruton, G., Khavul, S., Siegel, D. & Wright, W. (2014). "New financial alternatives in seeding entrepreneurship: Microfinance." Entrepreneurship Theory and Practice, retrieved from DOI: 10.1111/etap.12143 visited on 11th September 2020.

Valanciene, L. & Jegeleviciute, S. (2013). "Valuation of crowdfunding: Benefits and Drawbacks." Economic and Management 18(1): pp 39-48. Retrieved from http://dx.doi.org/10.5755/j01.em.18.1.3713 visited on 6th September 2020.

Jhaveri, H. & Choksi, A. (n.d.). "Crowdfunding at India: A study of Indian online crowdfunding platforms." pp 1-11.

Usha, G. (n.d.). "Crowdfunding for start-ups in India." IOSR Journal of Business and Management pp 50-54.

Meoli, A., Munari, F. & Bort, J. (2019). "The patent paradox in crowdfunding: An empirical analysis of Kickstarter data." Industrial and Corporate Change 28(5): pp 1321-1341.

Bento, N., Gianfrate, G. & Thoni, M. H. (2019). "Crowdfunding for sustainability ventures." Journal of Cleaner Production. Retrieved from doi:10.1016/j.jclepro.2019.117751 visited on 12th June, 2020.

Yang, Y., Bi, G. & Liu, L. (2019). "Profit allocation in investment-based crowdfunding with investors of dynamic entry times." European Journal of Operational Research pp 323-337. Retrieved from https://doi.org/10.1016/j.ejor.2019.07.016 visited on 4th June, 2020.

Martinez-Climent, C., Costa-Climent, R. & Oghazi, P. (2019). "Sustainable financing through crowdfunding." Sustainability, retrieved from doi:10.3390/su11030934 visited on 25th July 2020.

Wati, C. R. & Winarno, A. (2018). "The performance of crowdfunding model as an alternative funding source for micro, small and medium scale businesses in various countries." The First International Research Conference on Economics and Business pp 16-33. Retrieved from DOI: 10.18502/kss.v3i3.1871 visited on 7th June, 2020.

Lu, C. T., Xie, S., Kong, X. & Yu, P. S. (2014). "Inferring the impacts of social media on crowdfunding." WSDM'14 pp 573-582. Retrieved from http://dx.doi.org/10.1145/2556195.2556251 visited on 1st September 2020.

Greenberg, M. D., Pardo, B., Hariharan & Gerber, E. (2013). "Crowdfunding support tools: Predicting success & failure." Changing Perspectives pp 1815-1820.

Gerber, E. M. & Hui, J. (2013). "Crowdfunding: Motivations and deterrents for participation." ACM Transactions on Computing-Human Interaction 20(6): retrieved from DOI: http://dx.doi.org/10.1145/2530540 visited on 12th September 2020.

Belleflamme, P., Lambert, T. & Schwienbacher, A. (2013). "Individual crowdfunding practices." Venture Capital: An International Journal of Entrepreneurial Finance 15(4): pp 313-333. Retrieved from http://dx.doi.org/10.1080/13691066.2013.785151 visited on 8th September 2020

Myriam, A., Cheikh, A. B. & Abdellatif, T. (n.d.). "Crowdfunding: Determinants and motivations of the contributors to the crowdfunding platforms." Retrieved from http://ssrn.com/abstract=2552168 visited on 18th June 2020.

Bockel, A., Horisch, J. & Tenner, I. (2020). "A systematic literature review of crowdfunding and sustainability: Highlighting what really matters." Management Review Quarterly, retrieved from https://doi.org/10.1007/s11301-020-00189-3 visited on 21st September 2020.

Kotwani, S. & Malu, S. K. (2019). "A study on crowd funding status in India: A review of literature." UNNAYAN: International Bulletin of Management and Economics 9: pp 258-265.

Jain, M., Sharma, G. & Srivastava, M. (2019). "Crowdfunding for entrepreneurs: A review, critique and research agenda." British Academy of Management Conference.

Sauermann, H., Franzoni, C. & Shafi, K. (2019). "Crowdfunding scientific research: Descriptive insights and correlates of funding success." PLoS ONE, retrieved from https://doi.org/10.1371/journal.pone.0208384 visited on 21st July 2020.

Abdullaha, A. R., Rametseb, N., Abdullahc, S. S., Hassand, A. & Yunohe, M. N. M. (2019). "Mapping crowdfunding research on the web of science database: A bibliometric analysis approach." International Journal of Innovation, Creativity and Change 6(3):

Cai, C. W. (2018). "Disruption of financial intermediation by FinTech: A review on crowdfunding and block-

chain." Accounting and Finance 58: pp 965-992.

Belleflamme, P. & Lambert, T. (2014). "Crowdfunding: Some empirical findings and microeconomic underpinnings." pp 1-15.

Tomczak, A. & Brem, A. (2013). "A conceptualized investment model of crowdfunding." Venture Capital: An International Journal of Entrepreneurial Finance 15(4): pp 335-359. Retrieved from http://dx.doi.org/10.1080/13691066.2013.847614 visited on 3rd September 2020.

Lehner, O. M. (2013). "Crowdfunding social ventures: A model and research agenda." Venture Capital: An International Journal of Entrepreneurial Finance, retrieved from http://dx.doi.org/10.1080/13691066.2013.782624 visited on 6th September 2020.

Mortiz, A. & Block J. B. (n.d.). "Crowdfunding: A literature review and research." Retrieved from https://www.fundable.com/crowdfunding101/history-of-crowdfunding visited on 13 Feb 2020

Sharma, G. V. M., Yadav, A. S. & Udupa, P. N. (2019). "Crowdfunding in India: An empirical study." International Journal of Advanced Research (IJAR) 7(3): pp 935-942. DOI:10.21474/IJAR01/8719

Shivangi (2018). "Crowdfunding- Online platform for fund raising." International Journal of Innovative Research in Engineering & Multidisciplinary Physical Sciences (IJIRMPS) 6(5):

Bhuvanendran, R. & R, P. N. (2018). "An exploratory study of awareness and attitude towards crowdfunding in Kerala." International Journal of Pure and Applied Mathematics 118(20): pp 4065-4078.

Vergara, R. A. G. (2015). "Awareness and attitudes towards crowdfunding in the Philippines." 9th Global Business Conference.

Rossi, M. (2014). "The new ways to raise capital: An exploratory study of crowdfunding." International Journal of Financial Research 5(2): pp 8-18. Retrieved fromhttp://dx.doi.org/10.5430/ijfr.v5n2p8 visited on 2nd August 2020.

Liang, X., Hu, X. & Jiang, J. (2020). "Research on the effects of information description on crowdfunding success within a sustainable economy - The perspective of information communication." Sustainability. Retrieved from doi:10.3390/su12020650 visited on 21st September 2020.

Shree V, P. & Alphia J, J. (2019). "Growth of crowdfunding in Fintech." International Journal of Business and Management Invention (IJBM) 8(1): pp 6-10.

Hellmann, T., Mostipan, I. & Vulkan, N. (2019). "Be careful what you ask for: Fundraising strategies in equity crowdfunding." National Bureau of Economic Research. Retrieved from on http://www.nber.org/papers/w26275 visited on 8th June 2020.

Hornuf, L., Schmitt, M. & Stenzhorn, E. (2018). "Equity crowdfunding in Germany and the United King-

dom: Follow-up funding and firm failure." WILEY, retrieved from DOI: 10.1111/corg.12260 visited on 2nd June 2020.

Bhargava, A., Bhat, R. & Tiwari, N. (2017). "Crowdfunding- An emerging concept in India." International Journal of Legal Developments and Allied Issues 3(2): pp 57-69.

Vulkan, N., Astebro, T. & Seirra, M. F. (2016). "Equity crowdfunding: A new phenomena." pp 1-22.

Koziot-Nadolna, K. (2016). "Funding innovation in Poland through crowdfunding." Journal of Entrepreneurship, management and Innovation (JEMI) 12(3): pp 7-29.

Courtney, C., Dutta, S. & Li, Y. (2016). "Resolving information asymmetry: Signaling, endorsement and crowdfunding success." Entrepreneurship Theory and Practice, retrieved from DOI: 10.1111/etap.12267 visited on 10th September 2020.

Verma, A. & Tyagi, S. R. (2016). "An overview of crowdfunding in the Indian setting." Imperial Journal of Interdisciplinary Research 2(11):

Vismara, S. (2016). "Information cascades among investors in equity crowdfunding." Entrepreneurship Theory and Practice. Retrieved from DOI:10.1111/etap.12261 visited on 2nd September 2020.

Koch, J. A. & Siering, M. (2015). "Crowdfunding success factors: The characteristics of successfully funded projects on crowdfunding platforms." ECIS 2015 Completed Research Papers. Retrieved from http://aisel.aisnet.org/ecis2015_cr/106 visited on 15th June 2020.

Ying, H. (2015). "Regulation of equity crowdfunding in Singapore." Singapore Journal of Legal Studies pp 46-76. Retrieved from https://www.jstor.org/stable/24872272 visited on 1st August 2020.

Agrawal, A., Catalini, C. & Goldfarb, A. (2015). "Crowdfunding: Geography, social networks and the timing of investment decisions." Journal of Economics & Management Strategy 24(2): pp 253-274.

Belleflamme, P., Lambert, T. & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. Journal of Business Venturing pp 585-609.

Mollick, E. & Kuppuswamy, V. (2014). "After the campaign: Outcomes of crowdfunding." Retrieved from http://ssrn.com/abstract=2376997 visited on 5th September 2020.

Frydrych, D., Bock, A. J., Kinder, T. & Koeck, B. (2014). "Exploring entrepreneurial legitimacy in reward-based crowdfunding." Venture Capital: An International Journal of Entrepreneurial Finance 16(3): pp 247-269. Retrieved from http://dx.doi.org/10.1080/13691066.2014.916512 visited on 7th September 2020.

Greenberg, J. & Mollick, E. (n.d.). "Activist choice homophily and the crowdfunding of female founders." pp 1-65.

DICHOTOMY IN INVESTMENT BEHAVIOUR OF FOREIGN PORTFOLIO INVESTORS AND MUTUAL FUNDS – RECENT EVIDENCE FROM INDIA

Dr. Harvinder Kaur *

ABSTRACT

The study analyzes the contemporaneous relation between FPI net flows and MF net flows into the Indian stock market during the period from January 2014 to December 2020 across all investment product classes – equity, debt, hybrids, and derivatives – they are permitted to invest in. Such comprehensive analysis of their comparative behavior is important for validating the popular perception that FPI and MF behavior is dichotomous. Such perception is mostly built around their investment in equity alone, while their investment in derivatives is much higher. Also, novel investment products like debt-VRR and hybrids, by design, enforce a longer holding time on institutional investors. Both the FPI and MF fund managers aim to maximize returns for their clients albeit via contrasting investing styles. While the MF must behave in line with the average market perception and risk appetite of a large base of subscribers, FPI is generally more aggressive in its approach. FPI investment, therefore, is sometimes seen as "hot money", while mutual fund investment is considered more stable and conservative.

The study, while confirming the dichotomous behavior of FPI and MF in respect of their equity investments, finds that they behave similarly when investing in derivatives and long-term debt. Also, bidirectional causality in their investments in equity and derivatives means that the fund managers learn from each other. These findings hold immense value for retail investors who tend to follow the "smart money", and, Indian financial policymakers in their endeavor to simplify the policy framework and further encourage these dominant classes of institutional investors without hurting the domestic capital markets and economy.

Keywords: Foreign Portfolio Investment, Mutual Funds, Dichotomy, India

JEL Classification: C12, G11

Introduction

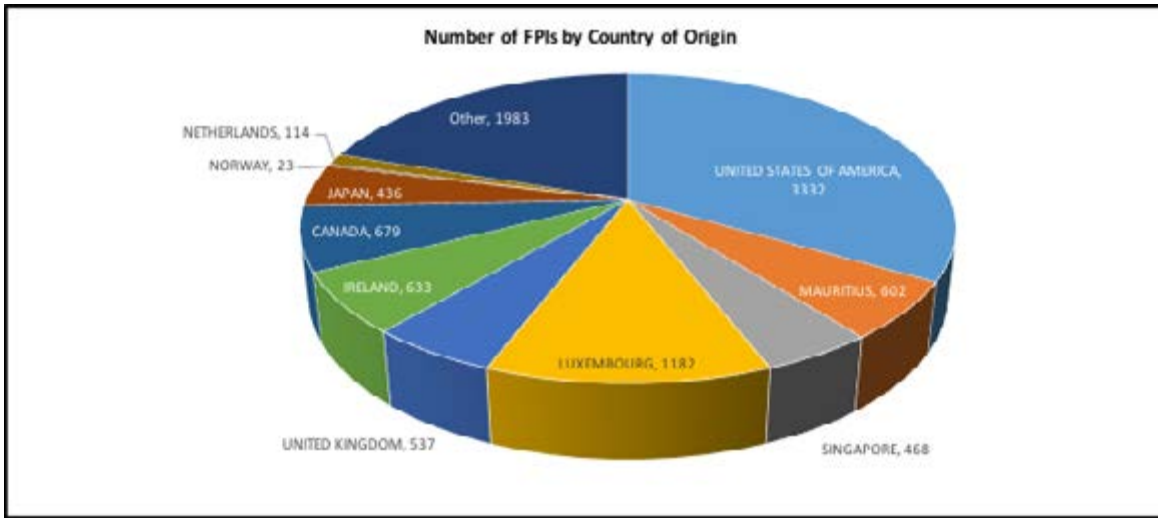
Foreign portfolio investor (FPI) and mutual fund (MF) investment in the Indian capital market, have come a long way since their inception in the early '90s. The term "Foreign Portfolio Investor (FPI)"

* Associate Professor
Department of Commerce
Sri Guru Gobind Singh College of Commerce, University of Delhi, Delhi
Email: harvinderkaur@sggscc.ac.in

was introduced by the SEBI in June 2014 as an umbrella term for Foreign Institutional Investors (FII), their sub-accounts, and Overseas Financial Institutions. Regulatory reforms along the way have permitted a variety of foreign portfolio investors to invest in equity, debt (of various kinds), and derivatives. The focus of regulatory changes in respect of FPIs has been to discourage circuitous investment and encourage portfolio investment through a direct access route and retention of investment for longer time horizons.

Foreign portfolio investors and mutual funds, due to their sheer size wield significant influence in the Indian stock market which is witnessing increasing institutionalization. At an aggregate level, equity received the lion's share (around 90%) of FPI investment, while debt, debt VRR, and hybrids received the balance of 10 percent. In 2018-2019, FPIs held around 29 percent of equity shares listed on the Indian capital markets. FPI holding in frontline stocks is generally at the maximum permissible limits set by the RBI/NSDL, and these limits are progressively being raised for all kinds of investments in order to attract more foreign portfolio investment and improve India's weightage in indices like Morgan Stanley MSCI. During the last decade, the Indian mutual fund industry has posted strong growth. As of 31 October 2020, according to the Association of Mutual Funds in India (AMFI), the Average Assets Under Management (AAUM) of the industry stood at INR 28.23 trillion, a fourfold growth in a decade. The total number of folios stood at 93.7 million. However, when compared with the developed markets like the US ($ 21.29 trillion AUM in 2019, per Statista) the Indian MF industry has a lot of room for growth. As of November 2020, 9989 FPIs were registered with the SEBI, representing 54 countries or territories. Led by the USA, the top ten countries by AUM include tax havens such as Luxembourg, Ireland, Mauritius, Singapore, and Cayman Islands (Figure 1).

Figure 1. Number of FPIs by Country/ Territory of Origin (November 2019)



Data Source: NSDL

The FPI and MF fund managers are driven by similar objectives of fund performance, (systematic) risk management, fund flow management, and maximizing their compensation. To achieve these, fund managers use derivatives to hedge, speculate and manage fund flows. The problem of fund flow is particularly important to MF fund managers due to continuous fund inflows/outflows following good/bad performance. The MF fund manager may not have investment candidates lined up to immediately plow in new fund inflows. Conversely, the fund manager may not like to dilute holding in a potentially good long-term bet in the face of short-term redemption pressure. To handle such unexpected flows, MF fund managers use derivatives, especially futures and options, for slowing down their response. Derivative trades have lower transaction costs and allow more efficient flow management. FPI fund managers are more likely to use derivatives for hedging, speculation, and leverage. FPI fund managers are more likely to use derivatives for speculation than MF fund managers due to greater freedom to trade, lesser reporting and regulatory requirements, and a clientele that is willing to take higher risk. MF fund managers face higher pressure to alter their risk profile in response to the past performance of the fund, i.e., play safely after a good performance, and vice versa.

The institutional investors and their clients exhibit herding behavior both in the short and the long term (Wermers, 1999; Qureshi et al, 2019). The goal of any fund manager is maximizing fund performance (return) for a given risk profile. Also, it is fair to assume that investment decisions by FPI and MF fund managers are based on better knowledge and experience than retail investors, and fund managers learn from each other. This means that both FPI and MF managers should largely behave similarly in playing a particular market like India, the only thing separating them being the relatively trickier fund flows into and out of mutual funds and greater restrictions on MF fund managers in respect of their use of derivatives and leverage (Almazan et al., 2004; Deli and Varma, 2002; Stulz, 2007).

Since the lion's share of FPI and MF investment goes to equities and equity derivatives, studies related to comparative behavior of FPI and MF have hitherto focussed on equity investment and found dichotomy in their investment decisions, i.e., when FPI sell, MF buys, and vice versa. However, with the increased availability of derivative products and competition among fund houses, the use of derivatives by mutual funds is set to increase. More than FPI, MF investment is hemmed in by restrictions imposed (by the regulator, AMC management, or the fund managers themselves) on their use of complex instruments. Studies have shown that the use of derivatives helps MF fund managers manage flow risk more efficiently and even improve performance. It is therefore important to consider both cash and derivative investment while comparing FPI and MF investment behavior. In the Indian context, the comparison between the investment behavior of MF and FPI has hitherto been limited to their investment in equity. This study overcomes this limitation by including the full range of MF and FPI investment product categories, viz. equity, debt, debt VRR, hybrids, futures, and options, and, a sufficiently long period of observation of seven years. The study provides robust insights into the comparative behavior of FPI and MF fund managers, validates whether their behavior is indeed dichotomous as is popularly believed, and, whether any causality exists between their past and current investments.

Such insights are valuable to retail investors, financial regulators, and stock exchange administrations. Savvy retail investors tend to mimic the actions of institutional investors under the belief that they possess expert information ("smart money") on individual stocks and the market at large. Regulators and exchange administrations impose limits, controls, and reporting requirements on institutional investors such that their investments do not harm their investors and destabilize domestic markets. In this context, if FPI and MF investment behavior is any different, they should be regulated differently, or else a uniform policy regime should exist for both.

Literature Review

Research studies on the subject can be broadly categorized into two types – those that study patterns in the trading behavior of institutional investors and their impact on stock returns and volatility, and, those that compare the trading behavior of various types of institutional investors like mutual funds, pension funds, and hedge funds. The goals of institutional investors are overlapping yet distinct in terms of the interplay of targeted returns, risk appetite, and regulatory restrictions.

Koski and Pontiff (1999) investigate the use of derivatives by mutual funds in the USA. It finds that during the period from January 1992 to December 1994, approximately 20 percent of the 675 equity mutual funds were invested in derivatives, and there was no significant difference in the risk and return performance of funds that used derivatives and funds that did not. Derivatives, due to low transaction costs and efficiency of fund flow management, allow funds to dampen the effect of changes in fund risk and slow down response to unexpected cash in/out flows. Such use of derivatives

by mutual fund managers to tackle fund flows is consistent with Malkiel (1995), Silber (1985), and Rohleder, Schulte, and Wilkens (2014). The study does not find the evidence of use of derivatives by fund managers to game their incentive-based compensation, i.e., the "incentive gaming" conjecture. About half the fund's used derivatives (options and futures) for hedging to deal with systematic risk and 40 percent of the funds used it either for leverage or to suit fund managers' idiosyncrasies. Mutual funds' use of derivatives lowers the portfolio beta but not the idiosyncratic risk.

Eling and Faust (2010) compare the performance of hedge funds (HF) and mutual funds in emerging markets. The dataset comprises 566 HF and 1542 MF across investment strategies and spans the period from January 1995 to August 2008. It finds that while HF does, MF does not outperform the traditional benchmarks such as broad market indices. This is attributed to HF's greater freedom in investment style and their ability to more actively shift their asset allocation. MF, on the other hand, are restricted in their investment decision by their investors and regulators. This result is consistent with Abel and Fletcher (2004) and Stromqvist (2007). The incentive fee structure of the fund managers and their investment in the fund is another reason for HF to use options and futures for taking a higher risk with the goal of achieving higher return, and therefore, higher fees.

Rohleder, Schulte, and Wilkens (2014) relate the investment styles of MF to deal with flow risk. The study spans the period from 1998 to 2013 and the data set comprises monthly gross inflows and outflows of 2588 actively managed the US domestic equity funds as reported in their N-SAR filings with the SEC. It finds that as many as 94 percent of the funds were permitted to use derivatives (stock and stock index futures and options) but only 36 percent used them during the period of study. Among derivatives, stock futures were most popular (23% of the funds), followed by stock options (19% of the funds), index options (6%), and index futures (3%), respectively. One-third of funds used leverage in the form of borrowings (28%), short sales (7%), or margin purchases (1%). This result is in line with that of Chen et al. (2013). Borrowings do not have a significant relation to performance while margin purchases worsen flow risk. Funds that use derivatives and leveraging strategies outperform funds that do not by 0.12 percent to 0.72 percent, and this outperformance is a result of superior flow management, i.e., their ability to mitigate parts of the adverse effect of unexpected fund flows on fund performance and maintain adequate market exposure in the face of outflows. The use of derivatives though does not enhance fund managers' stock-picking or market timing ability. Funds on average have negative alphas, after adjusting for management fees. The use of complex instruments by MF is stable over time and the propensity to use is greater in times of higher flow risk. This ability makes the "Smart Money" smart.

Marin and Rangel (2006) explore the use of derivatives in the Spanish MF industry. It finds that over 60 percent of funds used derivatives to the extent of 10 percent of their total NAV. However, derivative usage did not improve the fund performance net of management fees. Most derivative users underperformed non-users. While the study finds evidence of the use of index derivatives for efficient

management of fund flows (the "cash flow management hypothesis" of Koski and Pontiff (1996)), it does not find evidence of use for hedging with the sole exception of high performing domestic and international Balanced funds. Fund managers in only one category of MF use derivatives for speculation. The study covers the period from March 1995 (695 funds) to March 2005 (2623 funds) and the entire universe of Spanish mutual funds without any selection bias. Domestic Equity funds were the most aggressive users of derivatives (26% of total NAV) and Money Market funds the least aggressive, with a 3.6 percent average position in derivatives. On average, 13 percent of funds across fund categories were heavy users of derivatives. Among derivatives used by funds, 48.4 percent were of linear (non-option) type (e.g., futures) and 32 percent non-linear (option) type (e.g., Call options and Floors). Another 7 percent derivative positions were related to bond and currency assets. Fund/AMC size, use of derivatives by other funds managed by the Asset Management Company (AMC), and NAV were positively related and age of fund, exit load, and dividend yield were negatively related with derivatives usage.

Kibbie (2013) critically examines the increased use of complex derivatives by mutual funds. It points to the inadequacy of publicly available information and statutory and regulatory framework for investor protection in the USA, considering the huge AUM ($11.6 trillion) at their disposal and the fact that 94 percent of individual investors saving for retirement. Even though derivatives provide increased liquid-

ity at low transaction costs, such leverage can drastically magnify losses. Fund managers and AMC tend to play the MF market as a 'tournament' and use complex derivatives to improve fund performance for the purpose of attracting more investors to the fund and maximizing management compensation. Fixed income funds' use of credit default swaps increased from 4 percent of NAV in 2004 to 14 percent in 2008. As many as 72 major US funds were using shell companies incorporated in tax havens to circumvent US regulations. The use of complex instruments makes asset and risk evaluation tricky. Such risky behavior can lead to huge losses for the MF. The author suggests the use of European-style value at risk (VaR) based determination of a fund's global exposure limit and capping the fund's global exposure to less than the fund NAV and ensuring that all payment and delivery obligations of the fund are met.

Stulz (2007) differentiates the USA mutual fund and hedge fund (HF) investment behavior in respect of fund manager compensation design, flow risk, information disclosure requirements, ability/freedom to hedge and diversify, use of leverage, and performance. It finds that mutual funds as a group do not beat the market, while the hedge funds do, and, hedge fund manager performance is persistent. Fund manager compensation design is based on the AUM metric in the case of MF managers but related to profits they generate in the case of HF managers. The HF managers, therefore, target to deliver higher alpha without raising the beta of their portfolio. MF has to deal with daily fund withdrawal (and addition) while HF lock-in investor funds for a specified minimum period and require advance notice of fund withdrawal. MF has to disclose more information to investors than HF. HF

feeds on arbitrage opportunities and aggressively uses short-sales and derivatives. MF, on the other hand, are limited in their ability to hedge and are subject to diversification restrictions. In addition, MF cannot borrow funds (leverage) as much as the HF. As a result, while HF has a positive alpha, MF has a negative alpha. The study argues that as the regulatory requirement of HF is raised (to contain their ability to harm the market and investors), in the future, HF and MF may behave similarly.

Grinblatt, Titman, and Wermers (1995) analyze the extent of 'herding' behavior among 155 US mutual funds during the 1975-1984 period. It finds that 77 percent of funds were momentum investors, i.e., buying past winners (and selling past laggards, though not systematically). Funds using the momentum strategy performed significantly better than those which did not (contrarians). The superior performance is not attributable to superior knowledge or stock picking ability. The stock preferences among funds were unique and there was no evidence of herding in-stock selection. The authors use multiple momentum measures at lags to support the statistical inferences.

Thiripalraju and Acharya (2011) uses FPI and MF daily net flows during the period from January 2000 to December 2009 to investigate the interaction between institutional investment and market return. It finds FPI investment to be positively related and MF investment to be negatively related to the lagged market return. There exists bidirectional causality between FPI investment and market (BSE Sensex) return but unidirectional causality from the market return to FPI investment. Similarly, Bose (2012)

uses a multivariate VAR framework to explore the dynamic interaction between FII (known as "FPI" post-2014) and MF daily net flows inequity in the Indian stock market during the April 2008 – March 2012 period. The domestic market is represented by the BSE Sensex, 'developed markets' by the S&P 500 index, and, 'developing markets' by the MSCI BRIC and MSCI EM indices. It finds a strong negative correlation between FPI and MF flows. FPI pursue a momentum-based strategy while the Indian MF as a group is contrarian traders. MF follows FPI cues and chases market return (one-way causality from the market return to flows). FPI flows have a causal influence on market returns and MF flows.

Lakonishok, Shleifer, and Vishny (1991) use data on quarterly portfolio holdings of 769 equity pension funds in the USA during the 1985-1989 period to study the impact of funds' trading on stock prices. It does not find evidence of substantial 'herding' by the funds and correlation between changes in a fund's holding of a stock and its abnormal return. The study does not find evidence of either 'herding' or 'positive feedback', and, as a consequence, of a destabilizing effect of institutional investors' trading on stock prices.

Sehgal and Tripathi (2009) analyze FII (FPI) trading behavior in the Indian stock market during the years from 2000 to 2006. Using the Herding Measure (HM) suggested by Lakonishok, Shleifer, and Vishny (1992), the study finds that FPI exhibit strong herding behavior at an aggregate level (based on quarterly data) but not at a stock-specific level (HM ranging from 1% to 8% for BSE Sensex stocks), perhaps because they consider stock fundamentals before reacting. FPI chase returns but with

some delay, i.e., they chase market return and do not cause it. From the causality point of view, BSE returns cause FII outflows but only when monthly flows are considered. Acharya, Anshuman, and Kumar (2016) use a data set of 223 unique Indian stocks, domestic broad market index (S&P CNX Nifty), and global indices (S&P 500 and CBOE VIX) to study the information content of FPI flows. It finds that Indian stocks experiencing high FPI order flows are related to a permanent increase in stock price, while a reduction in flows leads to a partly-transient price decline. This supports the 'price pressure' hypothesis and the fact that FPI activity in a stock reveals new information about the stock.

Thenmozhi and Kumar (2009) explore the dynamic interaction between MF flows and security returns, and, between MF flows and stock return volatility in the Indian stock market. It finds a positive correlation between contemporaneous stock market returns and MF flows (purchases and sales) and stock market volatility and MF flows. MF chase returns, i.e., flows are significantly influenced by returns but MF flows do not influence market returns.

Lokeshwarri (2020) analyses FPI and MF flow in the Indian stock market during the twenty-one-year period from the year 2000 to the year 2020 to reveal a dichotomy in their behavior. FPI flows are closely linked to the monetary policy of central banks (quantitative easing, interest rates) and stimulus programs of governments. MF on the other hand buy during bear phases and delay their response to market recovery due to the recency bias and redemption pressure from investors (flow risk). It finds that

over the long term, FPI lead market declines by selling and leads recovery by buying. In 12 years out of 21, FPI and MF flow had the opposite sign. FPI wields greater influence on stock prices but MF has the better stock-picking ability and delivers long-term returns. The article attributes dichotomous behavior to the difference in the source of funds of FPI and MF, and the type of investors.

Objectives of the Study

The study empirically analyses whether there exists a dichotomy in the investment behavior of foreign portfolio investors and mutual funds in India across all financial product categories, e.g., equity, debt, futures, and options. Further, it investigates if causal relation exists among their contemporary and lagged investments, that is, do their current or lagged investments contain any significant information about future investment.

The study, therefore, has the following objectives:

1. To find whether there is an inverse relation (dichotomy) between FPI and MF investment in equity and debt.

2. To find whether there is an inverse relation (dichotomy) between FPI and MF investment in derivatives, i.e., futures and options.

3. To find whether there is a causal relation between FPI and MF investments in equity, debt, and derivatives. One-way or bidirectional (Granger) causality could exist between their lagged or contemporary investments.

Research Methodology

The dataset, data sources, and research methodology are described in the following paragraphs. Statistical analyses have been done by using EViews (version 11) and descriptive analysis and charting by using Microsoft Excel.

The Sample

The dataset comprises the following quantities aggregated over the entire universe of FPI and MF operating in the Indian stock market:

1. Monthly net FPI flows into equity, debt, debt VRR and hybrids.

2. Monthly FPI open interest in index and stock futures, index and stock options, and, interest rate futures.

3. Monthly net MF flows into equity, debt, debt VRR and hybrids.

4. Monthly open interest in index and stock futures, index and stock options, and interest rate futures.

The study uses 'net' flows instead of 'gross' flows to allow for factors like exchange rates and interest rates to manifest in the buy/sell decisions of FPI and MF. A favorable USD-INR exchange rate (more Rupees for a US Dollar) for instance may prompt a foreign institution's buy decision, and vice-versa. Particularly, excess return on debt investment is sensitive to exchange rate fluctuations. The net flows are therefore a truer reflection of FPI and MF confidence in the Indian stock market at any given time.

Data Sources

Data on FPI and MF net flows has been taken from the websites of the Securities and Exchange Board of India (SEBI) and the National Securities Depository Limited (NSDL). SEBI and NSDL publish daily, monthly, and yearly aggregate FPI and MF net flow. The periods considered for various data series are as follows:

Time Series	Period
Monthly FPI and MF net investment in Equity & Debt	January 2014 to December 2020
Monthly FPI open interest in Derivatives	July 2014[1] to December 2020
Monthly MF open interest in Derivatives	January 2014 to December 2020
Monthly FPI and MF investment in Debt VRR	January 2020[2] to December 2020
Monthly FPI and MF investment in Hybrid Securities	December 2017[3] to December 2020
Monthly FPI and MF open interest in Interest Rate Futures	November 2015[4] to December 2020

1. FPI was permitted to invest in derivatives in July 2014.
2. Institutional investment in Debt via RBI's Voluntary Retention Route (VRR) was started in January 2020.
3. Separate reporting of Institutional investment in Hybrid securities started in December 2017.
4. Institutional investment in Interest Rate Futures was started in November 2015.

The description of some of the terms used in the paper is as follows.

Open Interest is a derivative product is the total value (in INR) of outstanding options and futures contracts that have not been settled at the end of a trading day. This means that a net inflow of

investment into a type of contract will lead to an increase in the open interest and vice versa. The study uses the month-end open interest in futures and options contracts held by FPI and MF on the NSE and the BSE as reported on the NSDL website.

Debt-VRR (Voluntary Retention Route) is an investment route through which FPI and MF can invest in corporate and government debt. The policy framework for this route was given by the Reserve Bank of India (RBI) in March 2019 but actual investment data is available from NSDL only from January 2020. According to the RBI, "The objective of the VRR channel is to attract long-term and stable FPI and MF investments into debt markets while providing FPI and MF with operational flexibility to manage their investments." Investment through this channel is free of the macro-prudential and other regulatory prescriptions otherwise applicable to FPI and MF investments in debt markets. The main feature of 'debt VRR' is that investors voluntarily commit to retaining a required minimum percentage of their investments in India for a period of their choice, subject to a certain minimum period.

Hybrids refer to investment in hybrid securities such as investments made through Real Estate Investment Trusts (REIT) and Infrastructure Investment Trusts (InvIT). Separating reporting of such investment was mandated by the SEBI in November 2017.

Hypotheses to be Tested

To meet the objectives of the study, the following hypotheses have been tested:

Hypothesis 1: There is an inverse relation between FPI and MF monthly net flows into equity and debt.

Hypothesis 2: There is an inverse relation between FPI and MF monthly net flows into derivatives.

Hypothesis 3: There is no causal relation among contemporary and lagged FPI and MF investments in equity, debt, and derivatives.

Method of Analysis

Statistical analysis software package EViews 11 has been used to carry out various analyses. Where required, descriptive statistics have been computed and charts plotted by using Microsoft Excel. The following steps have been followed to compute descriptive statistics on the indices and FPI flows, and carry out empirical analyses.

1. Compute descriptive statistics FPI and MF net flows and open interest to reveal the nature of their distributions and compare the relative scale of their investments in various types of products.

2. Define the variables listed in Table 5 to represent the various time series used in the study.

Table 5: Regression Variables

(Frequency of all variables is Monthly and unit of measurement is INR Crore)

#	Variable Name	Time Series
1.	FPI_NET_EQUITY	FPI net investment in equity
	MF_NET_EQUITY	MF net investment in equity
2.	FPI_NET_DEBT	FPI net investment in debt, including debt VRR and hybrids
	MF_NET_DEBT	MF net investment in debt, including debt VRR and hybrids
3.	FPI_NET_TOTAL	FPI net investment in equity and debt
	MF_NET_TOTAL	MF net investment in equity and debt
4.	FPI_OI_INDEX_FUT	FPI open interest in index futures
	MF_OI_INDEX_FUT	MF open interest in index futures
5.	FPI_OI_INDEX_OPT	FPI open interest in index options
	MF_OI_INDEX_OPT	MF open interest in index options
6.	FPI_OI_STOCK_FUT	FPI open interest in stock futures
	MF_OI_STOCK_FUT	MF open interest in stock futures
7.	FPI_OI_STOCK_OPT	FPI open interest in stock options
	MF_OI_STOCK_OPT	MF open interest in stock options
8.	FPI_OI_INTRATE_FUT	FPI open interest in interest rate futures
	MF_OI_INTRATE_FUT	MF open interest in interest rate futures
9.	FPI_OI_TOTAL	FPI open interest in all derivatives
	MF_OI_TOTAL	MF open interest in all derivatives

3. To reveal the nature and strength of their relationship during the period of study, run linear regression between the following set of variables. Compute the Pearson's R^2 of the fitted regression line in each case.
    a. FPI_NET_EQUITY (independent variable) and MF_NET_EQUITY
    b. FPI_NET_DEBT (independent variable) and MF_NET_DEBT
    c. FPI_NET_TOTAL (independent variable) and MF_NET_TOTAL
    d. FPI_OI_INDEX_FUT (independent variable) and MF_OI_INDEX_FUT
    e. FPI_OI_INDEX_OPT (independent variable) and MF_OI_INDEX_OPT

f. FPI_OI_STOCK_FUT (independent variable) and MF_OI_STOCK_FUT
g. FPI_OI_STOCK_OPT (independent variable) and MF_OI_STOCK_OPT
h. FPI_OI_INTRATE_FUT (independent variable) and MF_OI_INTRATE_FUT
i. FPI_OI_TOTAL (independent variable) and MF_OI_TOTAL

4. To find whether lagged values of variables contain useful information about future values of other variables, conduct pair-wise Granger Causality tests between all variables. For instance, lagged values of MF investment in a product may contain information about the fund's future investment in the same product or may cause future FPI investment in that product, etc.

Data Analysis & Findings

The results of the computations done and the interpretation of the results of empirical analyses are presented in the following paragraphs. A quick look at the descriptive statistics on various time series is followed by a discussion of results of regression analyses done on the relationships between FPI and MF monthly net flows into equity and debt, and, month-end open interest in derivatives.

Descriptive Analysis

FPI and MF annual net investments in equity and debt are shown in Table 1 and open interest in various types of derivatives in Table 2. For a finer examination of net investment trends, monthly net investments in equity are depicted in Figure 2 and debt in Figure 3. Based on the data in Table 2, the average open interest at the end of each month in a year is shown in Figure 4.

Table 1: MF and FPI Net Investment Equity and Debt during 2014-2021

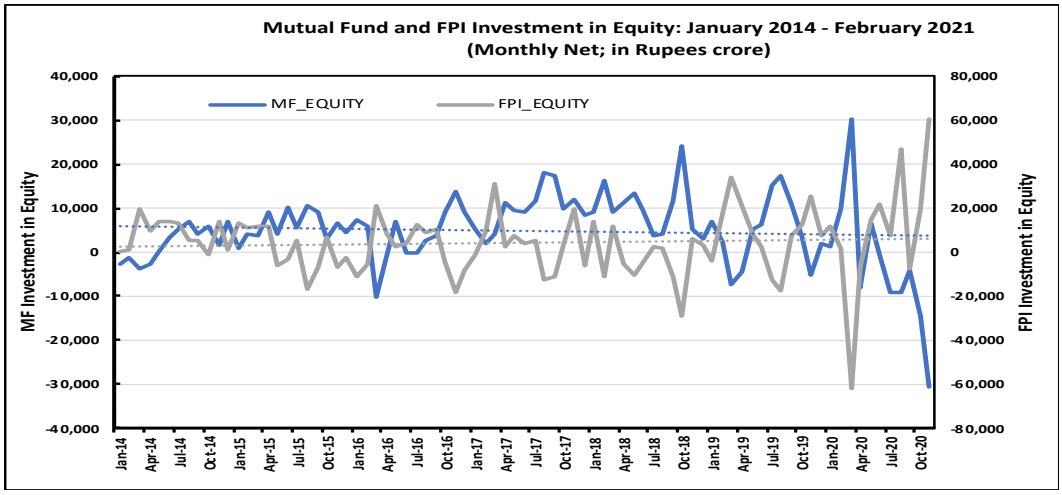
Year	Equity (INR Crore)		Debt (INR Crore)		Total (INR Crore)	
	MF	**FPI**	**MF**	**FPI[1]**	**MF**	**FPI**
2014	23,843	97,054	6,19,902	1,59,156	6,43,744	2,56,210
2015	72,197	17,808	4,34,097	45,857	5,06,295	63,665
2016	48,169	20,568	3,31,221	(-) 43,647	3,79,390	(-) 23,079
2017	1,18,774	51,252	3,81,668	1,48,797	5,00,442	2,00,049
2018	1,20,735	(-) 33,014	3,34,316	(-) 47,904	4,55,051	(-) 80,918
2019	52,237	1,01,122	5,31,335	34,877	5,83,572	1,35,999
2020	(-)19,985	1,70,262	1,92,525	(-) 67,102	1,72,540	1,03,159

Source: NSDL

Note 1: FPI investment in debt includes Debt, Debt-VRR, and Hybrid Securities.

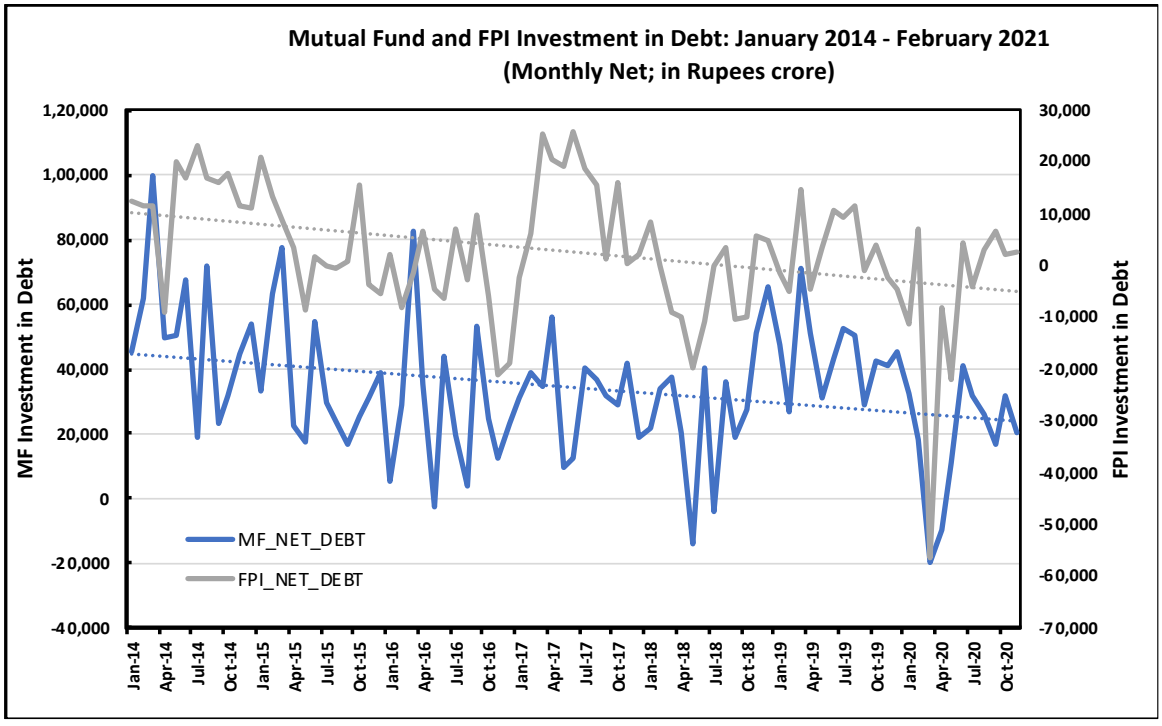
Numbers in italics correspond to years in which MF and FPI investments were dichotomous.

Figure 2: FPI and MF Monthly Net Investment in Equity during 2014-2021



Data Source: NSDL

Figure 3: FPI and MF Monthly Net Investment in Debt during 2014-2021



Data Source: NSDL

FPI were net buyers in equity in all the years but for the year 2018. MF were net buyers but for the year 2020. MF net investment plummeted to INR 52,237 crore in 2019 to about half the size of 2018 (INR 120,733 crore). In the COVID-19 engendered turbulence during the year 2020, FPI were net buyers (INR 170,262 crore) but MF net sold INR 19,985 crore. When equity and debt were taken together, MF investment was much higher than FPI investment, with the MF being net buyers during all years. FPI on the other hand were net sellers in the years 2016 and 2018. FPI turned net sellers in 2018 due to several factors such as the US Fed

rate hike, slowdown in frontline economies, US-China trade tensions, and uncertainty about Brexit. In 2016, they heavily sold the debt and bought equity. The year 2020 witnessed feverish activity by the FPIs. They offloaded conventional debt and bought heavily into equity, debt VRR, and hybrid securities.

From a behavioral dichotomy point of view, MF and FPI net investment in equity were at odds in the years 2018 (MF net buyers, FPI net sellers) and 2020 (MF net sellers, FPI net buyers. In the case of debt, dichotomous behavior was seen during the years 2016, 2018, and 2020 (MF net buyers, FPI net sellers). Their comparative investment behavior at a monthly level is depicted in Figure 2 (equity) and Figure 3 (debt). Visual inspection suggests that MF and FPI tend to behave oppositely in the case of equity and but not so in the case of debt. Their average open interest at the end of each month in a year does not suggest dichotomous behavior (Table 2 and Figures 4) in the case of derivatives.

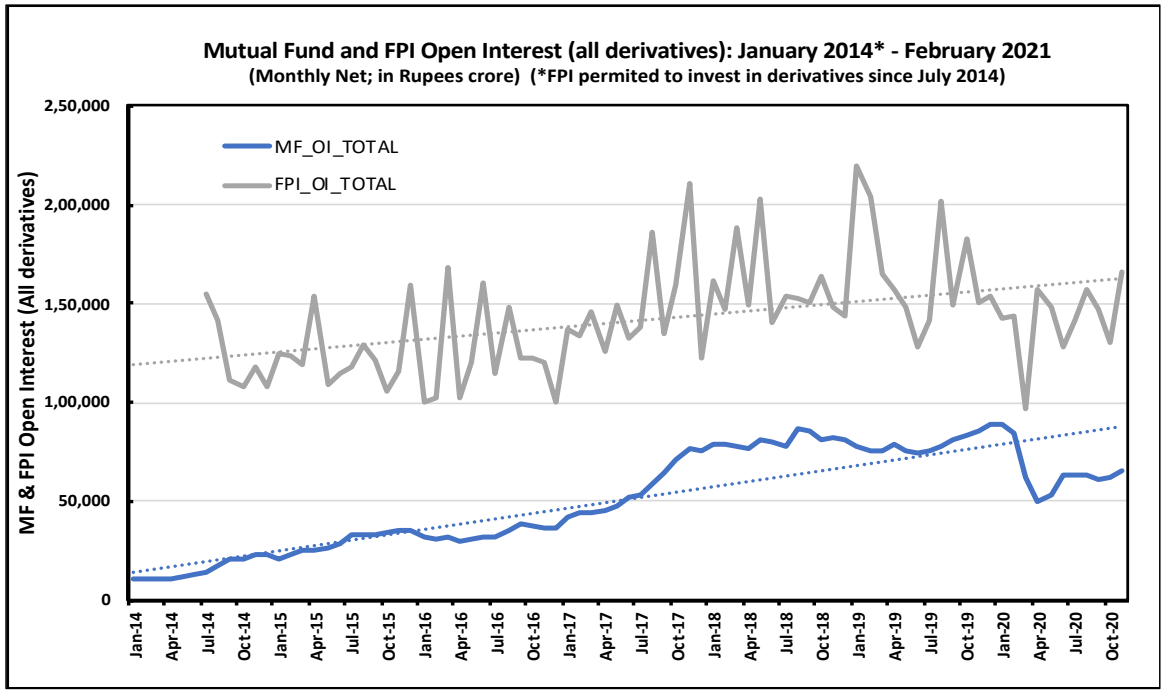
Table 2: MF and FPI Open Interest in Derivatives during 2014-2020

(Average OI at end of the month during the year. Figures in parentheses correspond to FPI investment. All figures in Rupee crore.)

Year/ OI	Index Futures	Index Options	Stock futures	Stock Options	Interest Rate Futures	Total (INR crore)
2014	402	7,987	6,761	34	170	15,353
	[2,70,135]	[11,86,405]	[9,41,896]	[48,240]	[0]	[24,46,676]
2015	1,596	10,851	16,683	7	205	29,341
	[3,72,136]	[14,21,719]	[10,59,230]	[54,496]	[2,180]	[29,07,945]
2016	2,013	10,107	2,124	4	175	33,540
	[3,55,778]	[13,73,824]	[10,84,772]	[91,992]	[4,592]	[29,10,958]
2017	3,586	12,043	40,355	13	355	56,352
	[4,37,581]	[15,27,137]	[13,87,775]	[1,26,661]	[4,839]	[34,83,993]
2018	7,161	11,488	61,753	14	96	80,511
	[4,59,042]	[13,92,247]	[16,63,703]	[1,47,324]	[4,710]	[36,67,026]
2019	6,691	9,498	62,738	44	109	79,080
	[4,24,164]	[11,70,805]	[18,29,171]	[1,10,918]	[3,112]	[35,38,171]
2020	3,644	4,710	56,888	213	70	65,525
	[2,34,996]	[11,95,855]	[18,29,014]	[1,01,528]	[1,665]	[33,63,058]

Data Source: NSDL

Figure 4. MF and FPI Average Open Interest in Derivatives during 2014-2020 (INR Crore)



Data Source: NSDL

Descriptive statistics on MF and FPI investment in equity and debt, and in various types of derivatives, during 2014-2021 are presented in **Table 3** and **Table 4**, respectively. While equity investment by MF and FPI are comparable on average, MF investment in debt and interest rate futures is much higher than FPI investment. This may be explained by mutual funds' need to invest in debt as part of their balanced and debt fund offerings. For most types of derivatives, FPI investment is higher by an order of magnitude. This is due to restrictions imposed on mutual funds in respect of investment in derivatives for hedging or speculation. FPI enjoy far more freedom in their investment choices.

Table 3: Descriptive Statistics: FPI and MF Monthly Net Investment in Equity and Debt (2014-2021)

	Equity (INR Crore)		Debt (INR Crore)	
	FPI	MF	FPI	MF
Mean	5,469	4,094	2,599	33,438
Median	5,240	5,114	2,382	31,907
Maximum	62,016	30,286	25,685	99,457
Minimum	(61,973)	(30,760)	(56,230)	(19,646)
Std. Dev.	16,843	9,380	12,470	21,148
Skewness	0.16	-0.89	-1.16	0.27
Kurtosis	7.08	5.70	7.33	3.67

Data Source: NSDL

Table 4: Descriptive Statistics on FPI and MF Monthly Open Interest in Derivatives (2014-2021)

	All Derivatives (INR Crore)		Index Futures (INR Crore)		Index Options (INR Crore)		Stock Futures (INR Crore)		Stock Options (INR Crore)		Interest Rate Futures (INR Crore)	
	FPI	MF	FPI	MF	FPI	MF	FPI	MF	FPI	MF	FPI	MF
Mean	1,44,032	51,885	17,423	3,600	55,135	9,298	68,651	38,777	2,696	47	128	163
Median	1,43,656	52,220	16,866	3,195	50,457	9,875	68,863	39,058	1,875	11	81	88
Maximum	2,36,758	89,498	40,519	10,626	1,08,751	14,394	1,00,218	75,903	11,544	572	550	1,436
Minimum	96,634	10,293	7,440	100	28,387	1,311	42,564	3,547	13	(0)	-	-
Std. Dev.	28,867	24,866	5,796	2,506	15,216	2,942	17,689	22,780	2,790	102	136	230
Skewness	0.84	-0.10	1.11	0.61	1.19	-1.00	0.09	-0.08	1.53	3.62	1.19	2.84
Kurtosis	3.81	1.57	5.19	2.54	4.73	3.68	1.63	1.45	5.08	16.60	3.74	13.58

Data Source: NSDL

We now examine the relation between MF and FPI net flows into equity, debt, and derivatives through linear regression.

MF and FPI Investment in Equity and Debt: Relation

The relation between MF and FPI investment in equity and debt during the 2014-2020 period is analyzed by individually regressing FPI_NET_EQUITY on MF_NET_EQUITY and FPI_NET_DEBT on MF_NET_DEBT. Linear regression lines are fitted to estimate the goodness of fit in each case (**Figures 5 and 6**).

Figure 5. Linear regression plots of FPI and MF monthly net investment in Equity during 2014-2020

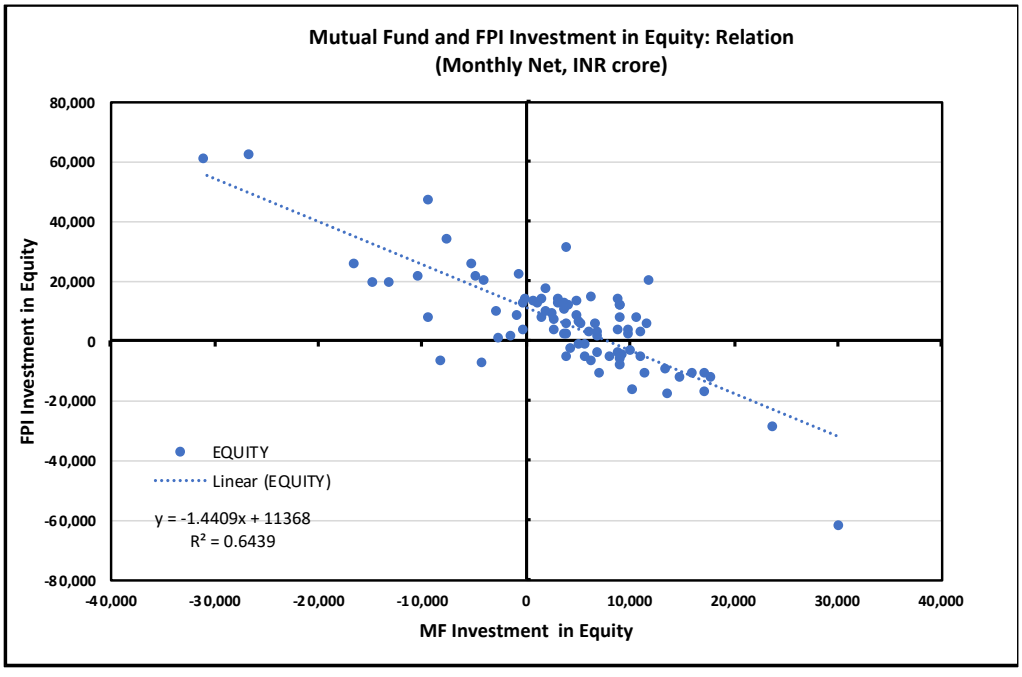
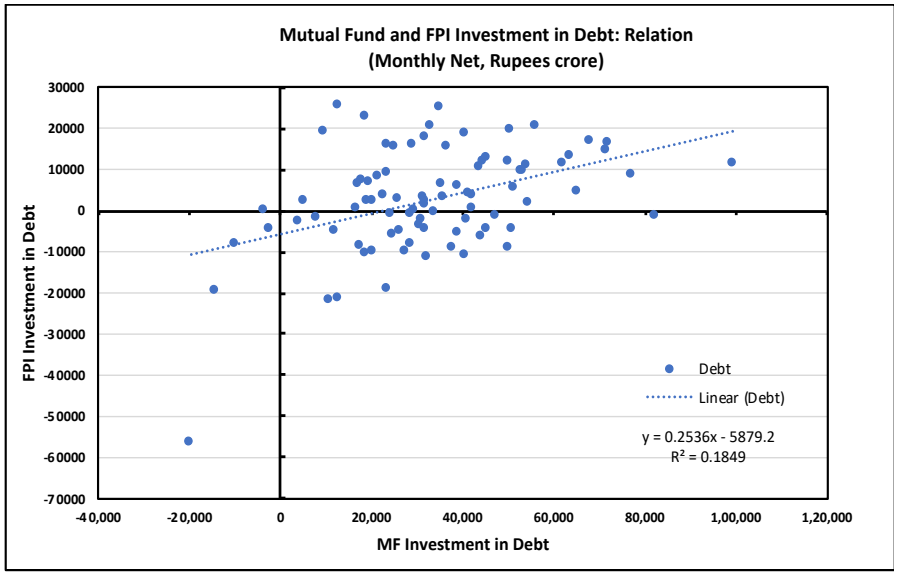


Figure 6. Linear regression plots of FPI and MF monthly net investment in Debt during 2014-2020



Regression plots indicate that during the 2014-2000 period, while the relation between FPI and MF investment in equity is indeed inverse, it is sympathetic in the case of debt. The dichotomous relation between equity investments of FPI and MF is highly significant (R^2 of 64.4%), meaning that more than 64 percent of the time, when FPI sells equity, MF buy equity and vice versa. The relation between their debt investments is positive and fairly significant (R^2 of 18.5%). The reason for this could be the relative illiquidity of debt and mutual funds' much higher investment in debt as compared to the FPI.

Hypothesis 1, i.e. "There is an inverse relation between FPI and MF monthly net flows into equity and debt", is therefore accepted for equity and rejected for debt.

MF and FPI Investment in Derivatives: Relation

The relationship between monthly FPI and MF open interest in various types of derivatives during the 2014-2020 period is analyzed by individually regressing corresponding monthly values of FPI_OI_INDEX_FUT, FPI_OI_INDEX_OPT, FPI_OI_STOCK_FUT, FPI_OI_STOCK_OPT, FPI_OI_INTRATE_FUT, and FPI_OI_TOTAL on MF_OI_INDEX_FUT, MF_OI_INDEX_OPT, MF_OI_STOCK_FUT, MF_OI_STOCK_OPT, MF_OI_INTRATE_FUT, and MF_OI_TOTAL, respectively.

Figure 7. Relation between FPI and MF monthly open interest in all derivatives during 2014-2020

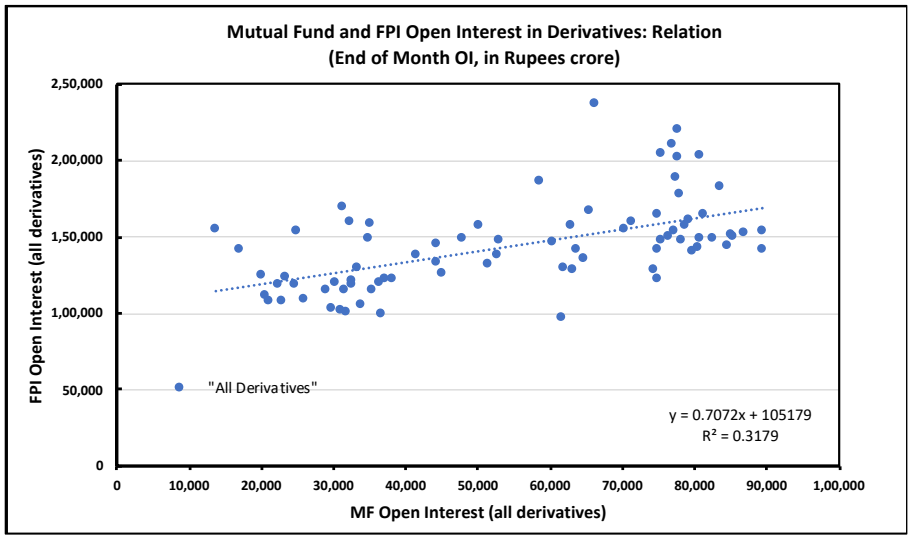
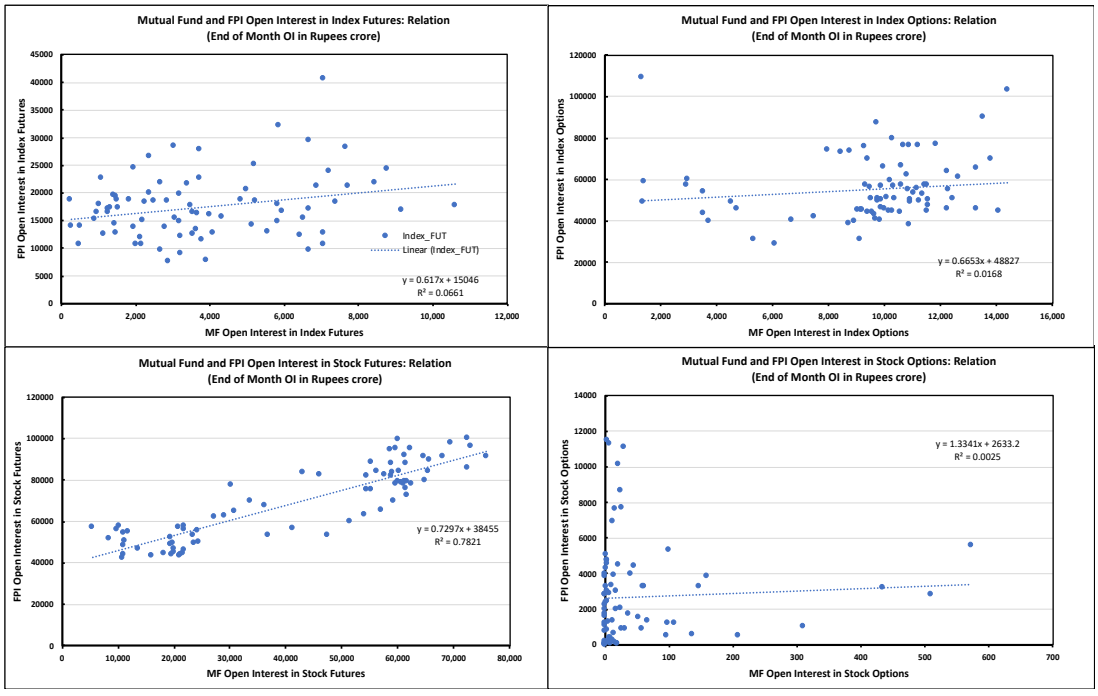


Figure 8. Relation between FPI and MF monthly open interest in Index/Stock futures/options during 2014-2020



Regression plots of **Figures 7** (all derivatives) and **Figure 8** (stock/index futures and options) indicate that during the 2014-2000 period, the relation between FPI and MF monthly open interest is significant and positive for all derivative types. At an aggregate level, the relationship is fairly positive (R^2 of 31.8%). A very strong positive relationship exists between their monthly investment in stock futures with an extremely high correlation of 78.2 percent, while investments in stock options do not

exhibit any correlation (R^2 of nearly zero). A positive but weak correlation is found between FPI and MF investments in index futures (R^2 of 6.6%) as well as index options (R^2 of 1.7%). The correlation between their investments in interest rate futures is non-existent (R^2 of nearly zero).

The steep positive relation between investments in index options and stock futures, the two dominant derivatives types in terms of volume, lead to a very strong positive relation between FPI and MF investment in derivatives. In sum, we do not find any evidence at all of the dichotomous behavior between FPI and MF investments in derivatives.

Hypothesis 2, i.e. "There is an inverse relation between FPI and MF monthly open interest in derivatives", is therefore rejected for all types of derivatives, viz. index futures, index options, stock futures, stock options, and interest rate futures, and, derivatives at large. Dichotomous behavior between FPI and MF investment in derivatives does not exist.

Causality Analysis

The results of pair-wise Granger linear causality tests between variables are summarized in **Table 5**. We use an extended lag structure to confirm a stable causality relationship between variables.

Table 5: Granger Causality: FPI and MF investment in Equity, Debt & Derivatives (2014-2021)

Null Hypothesis:	Lag = 2			Lag = 4			Lag = 5			Result
	F-Statistic	Prob.	Null Hypothesis	F-Statistic	Prob.	Null Hypothesis	F-Statistic	Prob.	Null Hypothesis	
MF_NET_EQUITY does not Granger Cause FPI_NET_EQUITY	11.4233	4.00E-05	Reject	5.33003	8.00E-04	Reject	3.88891	3.60E-03	Reject	Bidirectional Causality
FPI_NET_EQUITY does not Granger Cause MF_NET_EQUITY	4.80285	0.0108	Reject	2.82097	0.031	Reject	2.25746	0.058	Reject	
MF_NET_DEBT does not Granger Cause FPI_NET_DEBT_VRR_HYBRID	0.06018	0.9416	Accept							
FPI_NET_DEBT_VRR_HYBRID does not Granger Cause MF_NET_DEBT	1.81448	0.1696	Accept							
MF_OI_INDEX_FUT does not Granger Cause FPI_OI_INDEX_FUT	0.90554	0.4088	Accept	0.90554	0.4088	Accept				
FPI_OI_INDEX_FUT does not Granger Cause MF_OI_INDEX_FUT	2.06976	0.1336	Accept	2.06976	0.1336	Accept				
MF_OI_INDEX_OPT does not Granger Cause FPI_OI_INDEX_OPT	0.86276	0.4263	Accept	0.86276	0.4263	Accept				
FPI_OI_INDEX_OPT does not Granger Cause MF_OI_INDEX_OPT	1.05752	0.3526	Accept	1.05752	0.3526	Accept				
MF_OI_STOCK_FUT does not Granger Cause FPI_OI_STOCK_FUT	4.34794	0.0164	Reject at 5%	3.06549	0.0222	Reject at 5%				One-way Causality from MF to FPI
FPI_OI_STOCK_FUT does not Granger Cause MF_OI_STOCK_FUT	0.42534	0.6552	Accept	0.46126	0.7639	Accept				
MF_OI_STOCK_OPT does not Granger Cause FPI_OI_STOCK_OPT	0.1188	0.8882	Accept	0.1188	0.8882	Accept				
FPI_OI_STOCK_OPT does not Granger Cause MF_OI_STOCK_OPT	0.78276	0.4609	Accept	0.78276	0.4609	Accept				
MF_OI_TOTAL does not Granger Cause FPI_OI_TOTAL	8.83558	0.0004	Reject	2.566	0.046	Reject at 5%	2.6426	0.0311	Reject at 5%	Bidirectional Causality
FPI_OI_TOTAL does not Granger Cause MF_OI_TOTAL	2.92548	0.06	Reject at 10%	2.96946	0.0255	Reject at 5%	2.31659	0.0536	Reject at 10%	
MF_OI_INTRATE_FUT does not Granger Cause FPI_INTRATE_FUT	0.48331	0.6187	Accept	0.48331	0.6187	Accept				
FPI_INTRATE_FUT does not Granger Cause MF_OI_INTRATE_FUT	0.19915	0.8199	Accept	0.19915	0.8199	Accept				

Data Source: Author

Significant bidirectional causality is found between equity and total derivative investments of MF and FPI. This means that both MF and FPI scale up/down their equity investments at the same time and follow up on positive feedback from their past investment. MF and FPI fund managers have similar goals (that of maximizing fund performance) and learn from each other. Among derivatives, in the case of stock futures, by far the dominant derivative product by volume, past MF investment contains significant information about oncoming FPI investment in stock futures. This could mean that mutual

funds, being more defensive, hedge their positions in equity ahead of the FPI. Also, since MF fund managers have more expansive disclosure requirements, FPI fund managers have access to such public information disclosed by mutual funds. In essence, causality analysis brings forth the conclusion that MF and FPI fund managers learn from each other's past investments both in the case of equity and derivatives. No such relationship is found in the case of debt.

Hypothesis 3, i.e., "There is no causal relation among contemporary and lagged FPI and MF investments in equity, debt and derivatives" is therefore rejected for equity and aggregate derivative investments but accepted for debt. Among derivatives, significant one-way causality exists from MF to FPI in the case of stock futures, the dominant category by volume. The hypothesis is rejected for stock futures but accepted individually for other derivative investments.

Conclusion

The study purports to find if dichotomous behavior exists between FPI and MF investments in equity, debt, and derivatives. Based on monthly FPI and MF net flows during the seven years from the year 2014 to the year 2020, the study finds an inverse relation between FPI and MF investments in equity. For all other investment categories, viz. debt, futures, and options, it finds a sympathetic relation. Dichotomy in the case of equity investments of FPI and MF is highly significant (R2 of 58.5%), meaning that more than 58 percent of the time, when FPI sells equity, MF buys equity and vice versa. This is consistent with the findings of Lokeshwarri (2020). The relation between their debt investments is positive and fairly significant (R2 of 18.2%). The reason for this could be the relative illiquidity of debt and mutual funds' much higher investment in debt as compared to the FPI. A strong positive relation between investments in stock futures (R2 of 79.6%) and index options (R2 of 29%), the two dominant derivatives types in terms of volume, lead to a very strong positive relation between FPI and MF investment in derivatives (R2 of 57.2%). From the causality perspective, bidirectional (Granger) causality exists between their investments in equity and derivatives, meaning that MF and FPI fund managers use the information on each other's past trades for future investment.

Specifically, the following conclusions can be drawn based on the results of empirical analyses:

1. There is a strong inverse relation between FPI and MF monthly net flows into equity.

2. The relation between FPI and MF investment in debt and hybrid securities is sympathetic and fairly significant.

3. On aggregate, FPI and MF investments in derivatives are strongly correlated, the strongest relationship is found between their monthly open interest in the two dominant derivative types – stock futures and index options.

4. From a causality point of view, bilateral causality is found between MF and FPI investment in equity and derivatives. Among derivatives, MF investment in stock futures – the dominant derivative product – contains leading information about oncoming FPI investment in stock futures, i.e., MF invests in stock futures ahead of FPI, who follow the cue. This could be because MF is more defensive investors and hedges their positions in equity much earlier than FPI to tackle stock-specific volatility.

Practical Implications

The present study on the relative investment behavior of foreign portfolio investors and mutual funds in India is current and comprehensive. It covers the entire period (2014-2020) during which both MF and FPI were permitted to invest in equity, debt, and derivatives. Prior studies have focussed only on their equity investments and found evidence of a dichotomous behavior, for instance, Bose (2012), Sehgal and Tripathi (2014), and Lokeshwarri (2020). Since 2014, institutional investment in derivatives has exploded, especially from the FPI, whose investment in derivatives far outweighs their investment in derivatives. MF is usually constrained in their use of derivatives for hedging and speculation, while FPI aggressively uses them for enhancing fund performance. In this context, it is imperative to examine institutional investment in derivatives too before drawing any conclusion about their relative investment behavior. The findings of the study are important in the context of the current and future investment climate in India in which wider participation from MF and FPI is expected. Among the developing economies, India is currently the top investment destination of foreign investors and some experts opine that this is just the beginning. India's domestic mutual fund industry is deepening. The sustenance of these trends is going to be critical to the growth of the Indian capital market. Studies have also shown that institutional investment does not destabilize the stock market (Bose, 2012; Lakonishok, Shleifer, and Vishny, 1991). Increased institutional participation, therefore, augurs well for the Indian capital market. The Indian policymakers will do well to encourage financial product innovation and permit FPI and MF to invest in these products for hedging and speculation (and possibly improve fund performance) while keeping checks and balances in place for risk containment. The principal finding of the present study, i.e., FPI and MF largely behave similarly, save for their equity investments, should make Indian policymakers' jobs easier as they prepare the turf for attracting higher institutional investment.

Suggestions for Further Research

The study of the relative behavior of MF and FPI fund managers is important for market participants and policymakers alike. The present study adds to the body of knowledge by examining their relative investment behavior for all financial product categories. It uses monthly net flows and open interest data to empirically examine the relationship through linear regression. Further studies can be done by using daily data and employing more advanced econometric techniques to reveal if indeed the two dominant categories of institutional investors behave any differently under varying degrees of market volatility and regulatory regimes.

References

Abel, E., & Fletcher, J. (2004). An Empirical Examination of UK Emerging Market Unit Trust Performance. Emerging Markets Review 5 (4), 389–408.

Acharya, V.V., Anshuman, V.R., & Kumar, K.K. (2016). Foreign Fund Flows and Asset Prices: Evidence from the Indian Stock Market. Working Paper, New York University.

Almazan, A., Brown, K.C., Murray, C., & Chapman D.A. (2004). Why constrain your mutual fund manager? Journal of Financial Economics, 73(2), 289-321,

https://doi.org/10.1016/j.jfineco.2003.05.007. Bose, S. (2012). Mutual Fund Investments, FII Investments and Stock Returns in India. Money and Finance, ICRA Bulletin, September 2012. Chen, H., Desai, H., & Krishnamurthy, S. (2013). A First Look at Mutual Funds That Use Short Sales. The Journal of Financial and Quantitative Analysis, 48(3), 761-787.

Deli, D.N., & Varma, R. (2002) Contracting in the investment management industry: evidence from mutual funds. Journal of Financial Economics, 63:79-98

Eling, M., & Faust, R. (2010). The Performance of Hedge Funds and Mutual Funds in Emerging Markets. Journal of Bank Finance. DOI: 10:1016/j.bankfin.2010.01.008.

Grinblatt, M., Titman, S., & Wermers, R. (1995). Momentum investment strategies, portfolio performance, and herding. American Economic Review, 85(5), 1088-1105.

Kibbie, K.S. (2013). Dancing with the Derivatives Devil: Mutual Funds' Dangerous Liaison with Complex Investment Contracts and the Forgotten Lessons of 1940. Hastings Business Law Journal, 9(2), 195-260.

Koski, J.L., & Pontiff, J. (1999). How Are Derivatives Used? Evidence from the Mutual Fund Industry. The Journal of Finance, 54: 791-816. https://doi.org/10.1111/0022-1082.00126

Lakonishok, J., Shleifer, A., & Vishny, R.W. (1992). The impact of

institutional trading on stock prices. Journal of Financial Economics, 32(1), 23-43. DOI: 10.1016/0304-405x(92)90023-q. Lokeshwarri, S.K. (2020). The Dichotomy of FPI and MF Behaviour. Business Line, December 16.

Malkiel, B. (1995). Returns from Investing in Equity Mutual Funds 1971 to 1991. Journal of Finance, 50, 549-572.

Marin, J. M., & Rangel, T.A. (2006). The Use of Derivatives in the Spanish Mutual Fund Industry. Available at http://dx.doi.org/10.2139/ssrn.945191

Qureshi, F., Kutan, A.M., Ghafoor, A., Khan, H.H., & Qureshi, Z. (2019).

Dynamics of mutual funds and stock markets in Asian developing economies.

Journal of Asian Economics, 65.

https://doi.org/10.1016/j.asieco.2019.101135.

Rohleder, M., Schulte, D., & Wilkens, M. (2014). Management of Flow Risk in Mutual Funds. Review of Quantitative Finance and Accounting. DOI: 10.1007/s11156-015-0541-1. Sehgal, S., & Tripathi, N. (2009). Investment Strategies of FIIs in the Indian Equity Market. Vision-The Journal of Business Perspective, 13(1), January-March 2009.

Silber, W.L. (1985). The Economic Role of Financial Futures. In Anne E. Peck, ed: Futures Markets: Their Economic Role, American Enterprise Institute for Public Policy Research.

Strömqvist, M. (2007). Should You Invest in Emerging Market Hedge Funds?

Available at http://dx.doi.org/10.2139/ssrn.985547

Stulz, R. (2007). Hedge Funds: Past, Present and Future. Journal of Economic Perspectives, 21(2), 175-194.

Thenmozhi, M., & Kumar, M. (2009). Dynamic Interaction among Mutual Fund Flows, Stock Market Return and Volatility. NSE Working Papers.

Thiripalraju, M., & Rajesh, A. (2011). Dynamic Interaction between

Institutional Investment and Stock Returns in India: A Case of FIIs and

MFs. Indian Institute of Capital Markets.

Wermers, R. (1999). Mutual Fund Herding and the Impact on Stock Prices. Journal of Finance, LIV (2), 581-622.

CORPORATE REPORTING UNDER IFRS: A MICRO-STUDY ON INTANGIBLE ASSETS

MD Suleman *

ABSTRACT

In the modern period, every business will have its asset base which is used for business operations and generating revenue and earning profits. The assets possessed by a firm can be classified as tangible assets and intangible assets. The intangible assets have much influence on the financial statements of an entity and influence the valuation process. The different types of intangible assets of the pharmaceutical industry include goodwill, software, copyrights, patents, trademarks, and technical know-how. The accounting and recording of the value of various assets held by an entity are important as it communicates the results and financial health which in turn has an impact on various financial decisions by the stakeholders. The International Financial Reporting Standards (IFRS) are a set of accounting standards that are practiced by more than a hundred countries around the world. This article attempts to analyze the impact of IFRS on intangible assets and especially on goodwill and elicits the stakeholder's perceptions towards fair valuation under IFRS. The impact of IFRS reporting on intangible assets has been studied by analyzing the goodwill values of Dr. Reddy's Laboratories Limited and it is found that the valuation process has been improved under IFRS.

Keywords: IFRS, Intangible assets, Pharmaceutical Industry, Gray Index of Conservatism

Introduction

In the modern period, every business will have its asset base which is used for business operations and generating revenue and earning profits. The assets base in the pharmaceutical industry comprises various assets like current assets and non-current assets. Among the non-current assets, there are various kinds of assets but the intangible assets develop through research and development are most important and play a significant role. Intangible assets cannot be touched. Examples of intangible assets in the pharmaceutical industry include goodwill, brand recognition, copyrights, patents, trademarks, trade names, and customer lists. In other words, intangible assets can be classified into two categories: intellectual property and goodwill. Intangible assets in pharmaceutical businesses are generally contract-and technology-based. The fair market values of patents and licenses are generally not fully reflected on the balance sheets of pharmaceutical companies. In the energy industry, most intangible assets are contract-based.

* Assistant Professor of Commerce
MVS Government Degree and PG College (Autonomous)
Mahabubnagar, Telangana State

In common parlance, accounting is referred to as a language through which a business communicates with its stakeholders and the annual reports provide vital information regarding the performance of a company in a given period.

The International Financial Reporting Standards (IFRS) are a set of accounting standards that aim at bringing uniformity in the accounting standards across the world and more than 100 countries around the world are following the IFRS. In the Indian context, few companies listed globally started reporting the financial results in a dual-mode i.e., one for local needs and the other for global needs. Like this, the companies communicated the results annually in Indian accounting standards in force viz., Indian GAAP and Ind AS and also as per IFRS for international requirements. As the stakeholders accompanying would be keen to assess the financial position of the company they invest in, they would be interested to know the performance of the company in the light of the global standard that is IFRS. Therefore, it is important to study the impact of IFRS on intangible assets and especially on goodwill.

Review of Literature

The following research articles were found useful for the paper.

Owolabi et al in a research article on accounting for intangible assets noted that the non-physical nature of intangible assets has continued to impede the efforts to measure their exact value. Despite decades of debate and effort, it has not been proved possible to find a way of accounting for such assets similar to an investment in a machine. Companies with largely purchased goodwill do not appear to be better than companies without goodwill.

Shweta Narang in her research article on intangible assets disclosure found that Indian companies have shown a positive trend in disclosure of information on intangible assets in their annual reports

since the year 2001-02 and the number of companies disclosing such information has doubled. But still, the intangible assets constitute a small part of the total assets of Indian companies which reveals that Indian companies still lag in valuing their intangible assets in their financial statements.

V Ahalada Rao in his research on intangible assets and implication of IFRS on corporate reporting practices concluded that conversion experience in Europe, as well as Asia and Australia, show that conversion projects often take more time and resources than anticipated. Historically that has led some companies to rush and risk mistakes or outsource more work than necessary, driving up costs and hindering the embedding of IFRS knowledge within the company and conversion brings a one-time opportunity to comprehensively reassess financial reporting and take "a clean sheet of paper" approach to financial policies and processes of the organization to compete in global markets.

M.S. Turan and Dimple examined the effect of the transition to IFRS on selected financial statement items of 62 sampled companies migrating from UK GAAP to IFRS. It was revealed that convergence with IFRS brought significant variations in the value of total non-current assets, total current assets, total assets, equity, total liabilities, revenue, operating profit/loss, and Profit/loss after tax. The transition from UK GAAP to IFRS has had a statistically significant impact on the intangible asset, total assets, equity, revenue, operating profit/ loss, profit/loss after tax, and sales & administration expenses for different clusters.

Meiqin Lu in his research on accounting practices of pharmaceutical companies in the U.S. before IFRS adoption compared the US GAAP and IFRS found that IFRS adoption results in lower net income and higher shareholders' equity than U.S. GAAP for the sampled companies. By comparing the several financial ratios under U.S. GAAP and IFRS, it was found that under IFRS, current ratio and return on assets increases, asset turnover tends to decrease and debt to equity ratio decreases. It was also found that when converting to IFRS, R&D tends to decrease and intangible assets tend to increase even though development costs are not capitalized.

The review of the literature revealed that a few studies have been done on the impact of IFRS on intangible assets valuation. It appears that not much work is done to examine the effect of IFRS on corporate reporting, especially on intangible assets. This article tries to assess the effect of IFRS reporting by selecting one company that has reported in dual mode. Hence, a micro-study is undertaken to analyze the impact of IFRS adoption on accounting values of goodwill of Dr. Reddy's Laboratories Limited and to elicit the investor perceptions regarding the fair valuation under IFRS.

Objectives

1. To examine the impact of IFRS on intangible assets

2. To study the perceptions of the stakeholders on intangible assets under IFRS

Methodology

This article is based on both primary and secondary data. The primary data has been collected from two groups of stakeholders of the pharmaceutical industry in Hyderabad city. The perceptions of the stakeholders viz., auditors, and investors have been noted to the fair valuation method used under IFRS. For this purpose, the primary data was collected from 200 auditors and 200 investors in Hyderabad city.

In India, the Indian GAAP was followed during the financial years 2010-11 to 2015-2016, and Ind AS was followed during the financial years 2016-17 to 2018-19. Hence this study tries to compare the financial values recorded as per the Indian GAAP and Indian form of IFRS i.e., Ind AS vis a vis IFRS. For this purpose, the secondary data is collected from the published annual reports of Dr.

Reddy's Laboratories Limited which has reported as per IFRS voluntarily during the financial years 2010-11 to 2018-19 in addition to the Indian GAAP and Ind AS and followed dual reporting of the financial results.

The Gray Index of Conservatism is used to examine the impact of IFRS adoption of accounting figures of goodwill of Dr. Reddy's Laboratories Limited. The t-test of significance is used to test the difference between the goodwill values recorded as per Indian GAAP and IFRS and also Ind AS and IFRS.

Impact of IFRS on Intangible Assets:

The intangible assets form an important part of the total assets of an entity. In companies where a lot of funds are spent for research and development, intangible assets developed require protection against misuse so that the entity developing the intangible asset gains the benefits. Intangible assets are recorded at the consideration paid for acquisition including any import duties and other taxes (other than those subsequently recoverable by the enterprise from the taxing authorities), and any directly attributable expenditure in making the asset ready for its intended use. Intangible assets are amortized on a systematic basis over the best estimate of their useful lives, commencing from the date the asset is available to the company for its use.

The amortization period and method for intangibles are reviewed at least each financial year-end. If the expected useful life of the asset is significantly different from previous estimates, the amortization period is changed accordingly.

An intangible asset is derecognized on disposal or when no future economic benefits are expected from its use and disposal. The gains or losses arising from the disposal of intangible assets are recognized in the statement of profit or loss.

Gray Index of Conservatism

$$1 - \frac{Value_{IGAAP} - Value_{IFRS}}{Value_{IGAAP}}$$

The results of the Gray Index of Conservatism are understood further in three ways:

1. Conservatism when the index < 0.95
2. Neutrality when the index values between 0.95 and 1.05
3. Optimism when the index is over 1.05

Data Analysis with Gray Index of Conservatism and T-Test of Significance:

The Gray index of conservatism is applied to the intangible asset values of Dr. Reddy's Laboratories Limited to quantify the impact of IFRS adoption on yearly basis.

Table 1: Goodwill of Dr. Reddy's Laboratories Limited – Indian GAAP and IFRS

(Rupees in Indian Millions)

Sl. No	Year	Indian GAAP	IFRS	Difference	Difference in Percentage	Gray Index of Conservatism
1	2010-11	6059	2180	3879	64.0205	0.36
2	2011-12	5463	2208	3255	59.5826	0.40
3	2012-13	6192	3193	2999	48.4335	0.52
4	2013-14	5948	3428	2520	42.3672	0.58
5	2014-15	4403	3380	1023	23.2342	0.77
6	2015-16	3983	3848	135	3.3894	0.97
TOTAL		**32048**	**18237**	**13811**	**241.027**	

(Source: Annual Reports)

Table 1 shows the trends of goodwill valued by Dr. Reddy's Laboratories Limited for the financial years 2010-11 to 2015-16 where the company has reported in Indian GAAP and IFRS. It can be seen from the table that goodwill valued is more in number under Indian GAAP with a difference of a minimum of 3 percent in the year 2015-16 and a maximum of 64 percent in the year 2010-11. This is because of the treatment of various line items in the asset component under both standards. The Gray index of conservatism show conservatism in the values recorded during the financial years 2010-11 to 2014-15 and neutrality in the financial year 2015-16.

To evaluate the differences in the values recorded under the standards Indian GAAP and IFRS, the t-test was applied to test the statistically significant difference in the values recorded under both standards by setting the following hypothesis.

H_0: There is no significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under the Indian GAAP and IFRS

H_1: There is a significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under the Indian GAAP and IFRS

Result: t calculated value = 4.86

t critical value = 2.446

The null hypothesis is rejected at $\alpha = 0.05$

Therefore, it has been concluded that there is a significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under the Indian GAAP and IFRS. Further, it is noticed that the goodwill values recorded during the select period 2010-11 to 2015-16 have shown a lot of difference, and the quantum of difference has come down over some time. Therefore, it can be noted that the goodwill values calculated under the standards Indian GAAP and IFRS carry a lot of differences due to the valuation method.

Table 2: Goodwill of Dr. Reddy's Laboratories Limited – Ind AS and IFRS

(Rupees in Indian Millions)

Sl. No	Year	Ind AS	IFRS	Difference	Difference in Percentage	Gray Index of Conservatism
1	2016-17	323	3752	-3429	-1061.6	11.62
2	2017-18	323	3945	-3622	-1121.4	12.21
3	2018-19	323	3902	-3579	-1108	12.08
TOTAL		**969**	**11599**	-10630	-3291	

(Source: Annual Reports)

Table 2 shows the trends of goodwill valued by Dr. Reddy's Laboratories Limited for the financial years 2016-17 to 2018-19. After the adoption of the Indian form of IFRS i.e., Ind AS, the valuation process of goodwill has changed and it can be seen from the table that goodwill is valued more under IFRS unlike under Indian GAAP. The results of the Gray index of conservatism also show the same thing and there is much optimism in the values recorded under IFRS.

To weigh the differences in the values recorded under the standards Ind AS and IFRS, the t-test was applied to test the statistically significant difference in the values recorded under both the standards by setting the following hypothesis.

H_0: There is no significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under the Ind AS and IFRS

H_1: There is a significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under the Ind AS and IFRS

Result: t calculated value = 0.3685

t critical value = 2.776

The null hypothesis cannot be rejected at $\alpha = 0.05$

Therefore, it has been concluded that there is no significant difference in the goodwill values of Dr. Reddy's Laboratories Limited recorded under Ind AS and IFRS. Hence, it can be noted that the Indian

form of IFRS i.e., Ind AS has tried to harmonize the method of valuation of goodwill resulting in optimism in the goodwill values recorded.

As the process of goodwill valuation is different under the two standards leading to differences in the values recorded, the perceptions of the stakeholders of the pharmaceutical industry viz., auditors, and investors have been studied to elicit their views on the impact of IFRS on the valuation of intangible assets.

Valuation of Intangibles Without Marked Price:

The valuation of intangible assets is one of the most important tasks of an entity. As the values of assets reflect the strength of an entity, the assets must be properly valued. In the process of valuation of intangibles, we use marked price. In the absence of the marked price, fair value is required. To have a clear idea of this, the opinions of the stakeholders were taken to elicit their opinions. For this statement, the opinions of auditors and investors were collected and analyzed to test the difference in opinions.

Table 3: When there is no specific marked price for an intangible asset, we shall use fair value method – Auditor perspective

Profession	Response	No. of Respondents	Percent
Auditor	Strongly Disagree	4	2.0
	Disagree	10	5.0
	No Opinion	27	13.5
	Agree	111	55.5
	Strongly Agree	48	24.0
Total		**200**	**100.0**

(Source: primary data)

It is evident from Table 3 that 55.5 percent of the auditors agree that where there is no specific marked price for an intangible asset, we shall use the fair value method. At the same time, 24 percent of auditors strongly agreed with the statement that where there is no specific marked price for an intangible asset fair value method can be used. Hence a total of 79.5 auditors from the total respondents have agreed on the statement that a fair valuation method shall be used in case there is no specific marked price. On the other hand, 5 percent of the auditors disagreed with the statement.

Table 4: When there is no specific marked price for an intangible asset, we shall use fair value method – Investor perspective

Profession	Response	No. of Respondents	Percent
Investor	Strongly Disagree	17	8.5
	Disagree	8	4.0
	No Opinion	11	5.5
	Agree	81	40.5
	Strongly Agree	83	41.5
Total		**200**	**100.0**

(Source: primary data)

It is clear from table 4 that a large percentage of investors i.e., 41.5 percent strongly agreed that where there is no specific marked price for an intangible asset, we shall use the fair value method. In addition to this, 40.5 percent of investors agreed with the above statement. Therefore, a total of 82 percent of investors from the total respondents agreed with the statement. On the other hand, 8.5 percent of investors strongly disagreed with the statement that where there is no specific marked price for an intangible asset, we shall use the fair value method.

The opinions of the auditors and investors were tested by setting up the following hypotheses to know whether there is any significant difference in the opinions provided by the auditors and investors.

H_0: There is no significant difference in opinions of auditors and investors that where there is no specific marked price for an intangible asset, we shall use the fair value method.

H_1: There is a significant difference in opinions of auditors and investors that where there is no specific marked price for an intangible asset, we shall use the fair value method.

Result: P calculated value = 0.008

P critical value = 0.05

The Null Hypothesis is rejected at $\alpha = 0.05$

Hence, it has been concluded that there is a significant difference in opinions of auditors and investors that where there is no specific marked price for an intangible asset, we shall use the fair value method. Thus, based on the analysis, it may be noted that investors are more inclined towards the fair valuation method when there is no specific marked price given for an intangible asset.

Calculation of Value of Intangibles Under IFRS:

The value of intangibles is recorded at the consideration paid for acquisition including any import duties and other taxes. At the same time, intangible assets are amortized on a systematic basis over

the best estimate of their useful lives, commencing from the date the asset is available to the company for its use. Further, the gains or losses arising from the disposal of intangible assets are recognized in the statement of profit or loss. For this statement also, the opinions of auditors and investors were collected and analyzed to test the difference in opinions.

Table 5: Calculation of value of Intangible assets is accurate under IFRS – Auditor perspective

Profession	Response	No. of Respondents	Percent
Auditor	Strongly Disagree	2	1.0
	Disagree	8	4.0
	No Opinion	32	16.0
	Agree	75	37.5
	Strongly Agree	83	41.5
Total		**200**	**100.0**

(Source: primary data)

It is understandable from table 5 that the majority of Auditors i.e., 41.5 percent strongly agreed that the calculation of the value of intangible assets is accurate under IFRS. In addition to this, 37.5 percent of auditors agreed that the calculation of the value of intangible assets is accurate under IFRS. A total of 79 percent of auditors agreed with the statement. On the other hand, 16 percent of auditors are indifferent and provided no opinion on the statement.

Table 6: Calculation of value of Intangible assets is accurate under IFRS – Investor perspective

Profession	Response	No. of Respondents	Percent
Investor	Strongly Disagree	4	2.0
	Disagree	4	2.0
	No Opinion	16	8.0
	Agree	42	21.0
	Strongly Agree	134	67.0
Total		**200**	**100.0**

(Source: primary data)

It is realistic from table 6 that a large number of investors i.e., 67 percent strongly agreed that calculation of the value of intangible assets is accurate under IFRS. Also, 21 percent of investors

agreed that the calculation of the value of intangible assets is accurate under IFRS. A total of 88 percent of investors agreed with the statement. Only 4 percent of the investors disagreed with the statement.

The opinions of the auditors and investors were tested by setting up the following hypotheses to know whether there is any significant difference in the opinions provided by the auditors and investors.

H_0: There is no significant difference in opinions of auditors and investors that calculation of the value of intangible assets is accurate under IFRS

H_1: There is a significant difference in opinions of auditors and investors that calculation of value of intangible assets is accurate under IFRS

Result: P calculated value = 0.00

P critical value = 0.05

The Null Hypothesis is rejected at $\alpha = 0.05$

Hence, it has been concluded that there is a significant difference in opinions of auditors and investors that calculation of the value of intangible assets is accurate under IFRS. At the same time, the investors are more inclined towards the fair valuation method used for intangibles valuation under IFRS and agreed that the calculation of the value of intangible assets is accurate under IFRS.

Conclusion

The intangible assets in pharmaceutical businesses are generally contract and technology-based and the fair market values of such intangible assets depend on the price in the active markets.

The value of goodwill under Indian GAAP, Ind AS, and IFRS has differences. This is because of the treatment of various components and the calculation of values to arrive at the value of goodwill each year. The Gray index of conservatism has recorded different positions during the select period 2010-11 to 2018-19 of the select company Dr. Reddy's Laboratories Limited. Further, the results Gray index of conservatism applied for goodwill values recorded by following Indian GAAP, Ind AS and IFRS revealed that there is conservatism in the values recorded during the financial years 2010-11 to 2014-15 and neutrality in the financial year 2015-16 and optimism on the values recorded thereafter when Ind AS were implemented. As the Ind AS are the converged form of IFRS which suits the corporate reporting of the Indian business environment, the implementation of Ind AS has changed the orientation of valuation of intangible assets and the valuation process has improved due to the fair valuation method.

The perceptions of the stakeholders of the pharmaceutical industry also show a positive response towards IFRS. Though there are many levels of agreement from the stakeholders of the pharmaceutical industry on corporate reporting under IFRS, the results of hypothesis testing revealed that there is a significant difference in the opinions of auditors and investors. At the same time, investors are more inclined towards the corporate reporting system under IFRS.

References

Owolabi, Sunday Ajao and Aguguom Theophilus Anaekenwa, Value Paradox: Accounting for intangible assets, Unique Journal of Business Management Research, Volume 3(1), April 2016

Shweta Narang, Intangible Assets Disclosure: A Study of Indian Companies, International Journal of Research in Commerce & Management, Volume No.6, Issue No.11, November 2015

V Ahalada Rao, Intangible Assets - Implications of IFRS for Corporate Reporting Practices, Osmania Journal of International Business Studies, Vol.X No.I, Jan – June 2015

M.S. Turan and Dimple, Impact of IFRS on Firms Reporting: An Evidence from UK, The Indian Journal of Commerce, Vol.64, No.3, July-September 2011

Meiqin Lu Survey of IFRS Accounting Practices of Pharmaceutical Companies That Used U.S. GAAP prior to IFRS, Honors Thesis, Eastern Michigan University, October, 2009

This article is written on the basis of Ph.D work done under the research supervision of Dr. K V Achalapathi, Retired Professor of Commerce from Osmania University, presently Director, Dhanwantri Institute of Science and Technology Hyderabad, Telangana State.

TAX IMPLICATIONS OF NON-COMPETE FEE

Dr. Somnath Ghosh *

ABSTRACT

Tax implications of the non-compete fee both in the hands of payer and payee are dealt with under the following two enactments:

1. Income-tax Act, 1961: If the non-compete fee is received by an employee from his/her employer, then the same can be taxable as profits instead of salary under the head 'Salaries.

Before the Assessment Year 2003-2004 non-compete, a fee was held as non-taxable 'Capital Receipt' by the Hon'ble judiciaries.

From the Assessment Year, 2003-2004 receipt of the non-compete fee was brought within the income tax net either as business income or as capital gains.

Several judgments held that consideration received for refraining from carrying on business similar to the transferred one should be considered as business income and consideration received for transfer of right to carry on business should be considered as capital gains.

Now, concerning the tax implications of expenditure incurred on non-compete fee in the hands of the payer, Hon'ble judiciaries held different views treating the same in any one of the following alternatives:

(a) Capital expenditure eligible for depreciation; or

(b) Capital expenditure not eligible for depreciation; or

(c) Deductible revenue expenditure; or

(d) Amortizable deferred revenue expenditure. Taxability of receipts of non-compete fees in the hands of non-residents is governed by the DTAAs entered into by India with countries of the recipients.

2. Central Goods and Services Tax Act, 2017: Transactions of the non-compete fee will be taxable in all cases except where employer and employee relationships exist.

Introduction

The taxability of non-compete fees is a controversial issue. Generally, a non-compete fee denotes the

* Practicing Chartered Accountant & Guest Faculty Member
Department of Commerce, Calcutta University
Email: casghosh59@gmail.com

consideration which is paid by the acquirer of a business to the transferor instead of his/her commitment that no business similar to that of the transferred one shall be carried on. The business acquirer agrees to pay a non-compete fee to the transferor only to protect the taken-over business from the competition of the transferor who has accumulated substantial and valuable expertise over the years in the line of the transferred business.

Certainly, there will be tax implications, both direct and indirect, for such a transaction of non-compete fee in the hands of both payer and payee. Direct tax implications will be under the Income-tax Act, 1961 and indirect tax implications will be under the Goods and Services Tax. The objective of this article is to identify the different taxation issues, both direct and indirect, involved in the receipts and payments of non-compete fees and examine the related judicial pronouncements. Study of the taxability issues of the non-compete fee transactions i.e., receipts and payments of non-compete fees is undertaken under the following sections: (a) Taxability Under the Income-tax Act, 1961 (Act): (i) Domestic; and (ii) International. (b) Taxability Under the Goods and Services Tax (GST).

Tax Implications of Non-Compete Fee Under the Income-tax Act, 1961 – Domestic:

1. Tax Implications of Non-Compete Fee in the Hands of Recipient:

1.1. Receipt of Non-Compete Fee was Treated as Non-Taxable 'Capital Receipt' before Assessment Year 2003-2004

The Finance Act, 2002 introduced Clause (VA) to Section 28 and amended Section 55(2)(a) of the Act to bring non-compete fee within the ambit of taxation with effect from the Assessment Year 2003-2004. Beforehand receipt of the non-compete fee was considered as 'Capital Receipt' under several judicial pronouncements and hence, non-taxable. Following judicial pronouncements may be referred to in this regard:

(a) Guffic Chem Private Limited Vs. Commissioner of Income-tax [2011] 198 Taxman 78 (SC);

(b) Commissioner of Income-tax, Chennai Vs. Real Image Private Limited [2012] 23 taxmann.com 30 (Madras);

(c) Commissioner of Income-tax Vs. Spencers and Co. Limited (No. 1) [2014] 47 taxmann.com 55 (Madras);

(d) Commissioner of Income-tax, Central Circle, Bangalore Vs. Wintac Limited [2013] 40 taxmann.com 534 (Karnataka);

(e) Commissioner of Income-tax, Central Circle, Bangalore Vs. Sapthagiri Distilleries Limited [2014] 46 taxmann.com 398 (Karnataka);

(f) Commissioner of Income-tax, Chennai Vs. Hackbridge Hewittic & Easun Limited [2015] 62 taxmann.com 188 (Madras);

(g) Commissioner of Income-tax, Chennai Vs. TTK Healthcare Limited [2016] 70 taxmann.com 263 (Madras); and

(h) Commissioner of Income Tax Vs. Anjum G. Balakhia [2017] 88 taxmann.com 473 (Gujarat).

1.2. Receipt of Non-Compete Fee Taxable as 'Profits instead of Salary' under the Head 'Salaries'

Section 17 (3) (iii) of the Act (introduced with effect from 01.04.2002) provides as under:

"Section 17. For sections 15 and 16 and of this section, — …….
(3) "profits instead of salary" includes — …….

(iii) any amount due to or received, whether in a lump sum or otherwise, by any assessee from any person —

(A) before he joined any employment with that person; or

(B) after cessation of his employment with that person."

So, non-compete fee received by an employee from a prospective or former employer (whether before joining the employment or after cessation of the employment) can be taxable under the head 'Salary' as 'profits in lieu of salary under Section 17(3)(iii) of the Act.

In the case of Shri B. L. Shah Vs. ACIT, Special Range 16(2), Mumbai (Income Tax Appeal No. 910 of 2007) the Hon'ble Bombay High Court held that the non-compete fee received by the 81 years old assessee from his employer at the time of his retirement is to be taxed as 'profit in lieu of salary as at the age of 81 years the assessee was not in a position to compete with his employer.

1.3. Receipt of Non-Compete Fee Taxable Under the Head 'Profits and Gains of Business or Profession'

The Finance Act, 2002 introduced Clause (VA) to Section 28 of the Act. This amendment made the non-compete fee chargeable to tax under the head 'Profits and Gains of Business or Profession' from Assessment Year 2003-2004.

Section 28(VA)(a) of the Act provides that consideration received or receivable (in cash or in-kind) under an agreement for 'not carrying out any activity concerning business or profession' shall be taxable under the head 'Profits and Gains of Business or Profession'.

However, proviso (i) to Section 28(VA) of the Act provides that consideration received or receivable (in cash or in-kind) under an agreement for 'transfer of the right to manufacture, produce or process any article or thing or right to carry on any business or profession,' shall be taxable under the head 'Capital Gains'.

Central Board of Direct Taxes (CBDT) vide Circular No. 8 of 2002 Dated 27.08.2002 explained this proposition of law in the following way: 'To give certainty to taxation of receipts like non-compete fees and fees for exclusivity rights, the Finance Act, 2002, has included within the scope of "profit and gains of business or profession" any sum received or receivable in cash or in-kind under an agreement for not carrying out activity concerning any business; …….' However, the said CBDT circular excluded receipts for transfer of right to manufacture, produce or process any article or thing or right to carry on any business from the ambit of Section 28(VA) of the Act and made it chargeable to tax under the head 'Capital Gains'. This sea change compelled to structure the business or share acquisition deals carefully to optimize the cost, as the impact of taxation is generally lower in the case of 'Capital Gains'.

Judicial pronouncements determining non-compete fee taxable under the head 'Profits and Gains of Business or Profession', include the following:

(a) Commissioner of Income-tax, Attavara Mangalore Vs. Sunil Kini K. [2011] 13 taxmann.com 156 (Karnataka);

(b) Arun Toshniwal Vs. Deputy Commissioner of Income-tax 1(3) [2015] 59 taxmann.com 274 (Bombay);

(c) Commissioner of Income Tax, Chennai Vs. Cheech Laboratories Limited (Tax Case Appeal No. 1492 of 2007) (Madras High Court);

(d) Deputy Commissioner of Income-tax Vs. International Business Services Group Private Limited [2009] 314 ITR (A. T.) 114 [Income Tax Appellate Tribunal (ITAT) Cochin];

(e) Ramesh D. Tainwala Vs. Income Tax Officer, 8(3)-1, Mumbai (ITA No. 3853/Mum/2010) [ITAT Mumbai 'D' Bench].

The ratio decidendi that emerges from the above judgments is that in case of a business acquisition transaction if through an agreement the transferor refrains from carrying on similar business and agrees not to compete with the transferee then the consideration i.e., non-compete fee received by the transferor should be taxed under the head 'Profits and Gains of Business or Profession'. On the other hand, if through the agreement the transferor transfers the right to carry on business, then the consideration i.e., non-compete fee received should be taxed under the head 'Capital Gains'.

1.4. Receipt of Non-Compete Fee Taxable Under the Head 'Capital Gains'

The Finance Act, 2002 also amended Section 55(2)(a) of the Act fixing the cost of acquisition of 'right to carry on any business at the purchase price if the same is a purchased one and at nil if the right is not purchased. Central Board of Direct Taxes (CBDT) also vide its Circular No. 8 of 2002 Dated 27.08.2002 explained as follows: 'The Finance Act, 2002, has amended section 55 to provide that the

'cost of acquisition' and 'cost of improvement' for working out "Capital gains" on capital receipts arising out of transfer of right to carry on any business would also be taken as 'nil'.' The cost of acquisition of the transferred asset has to be deducted from its sale consideration to arrive at the 'Capital Gains'. This amendment made possible computation of 'Capital Gains' on receipt of non-compete fee from the transfer of right to carry on any business by prescribing the cost of the transferred right. Before this amendment, computation of taxable income under the head 'Capital Gains' on receipt of non-compete fee on account of transfer of right to carry on any business was not possible due to the absence of prescribed way under the Act to determine the cost of acquisition of the transferred right to carry on any business.

Judicial pronouncements determining non-compete fee taxable under the head 'Capital Gains', include the following:

(a) Commissioner of Income-tax Vs. Mediworld Publications Private Limited [2011] 11 taxmann.com 374 (Delhi);

(b) Mrs. Hami Aspi Balsara Vs. Assistant Commissioner of Income Tax (ITA No. 6402/Mum/2008) [ITAT Mumbai 'H' Bench]. The ratio decidendi that emerges from the above judicial pronouncements is that receipt of non-compete fee on account of transfer of right to carry on business shall be chargeable under the head 'Capital Gains', and not under the head 'Profits and Gains of Business or Profession'.

Now, tax implications of expenditure incurred on payment of a non-compete fee in the hands of the payer may be looked into.

2. Tax Implications of Expenditure on Non-Compete Fee in the Hands of Payer:

2.1. Payment for Non-Compete Fee will be Considered as 'Capital Expenditure' and its Eligibility for Claiming 'Depreciation' in the Hands of Payer

2.1.1. Eligible for 'Depreciation'

Section 32 of the Act provides for depreciation on assets of a business entity. Relevant portions of Section 32 are reproduced below: "Section 32. (1) In respect of depreciation of— (i) buildings, machinery, plant or furniture, being tangible assets; (ii) know-how, patents, copyrights, trademarks, licenses, franchises, or any other business or commercial rights of similar nature, being intangible assets acquired on or after the 1st day of April 1998, owned, wholly or partly, by the assessee and used for the business or profession, the following deductions shall be allowed— ……..

Explanation 3. —For this sub-section, the expression "assets" shall mean— (a) tangible assets, being buildings, machinery, plant or furniture; (b) intangible assets, being know-how, patents, copyrights,

trademarks, licenses, franchises or any other business or commercial rights of similar nature." The definition of intangible assets under Explanation 3 to Section 32(1) includes 'any other business or commercial rights of similar nature. This definition is wide enough to cover expenditure incurred on non-compete fee within the ambit of an intangible asset, as by dint of this expenditure the payer is acquiring a valuable right which entitles him to carry on the acquired business smoothly without any competition from the transferor for an agreed period. This right is valuable, as in its absence the acquirer of the business may have to face competition from the transferor who has gained valuable expertise about the nitty-gritty of the transferred business. Hence, the right acquired by payment of a non-compete fee should be considered as an intangible asset that is eligible for depreciation under Section 32(1)(ii) of the Act. There are several judicial pronouncements in favor of this proposition considering expenditure incurred on non-compete fees as an intangible asset and allowing depreciation on it. Some of those judicial pronouncements are provided below:

(a) Principal Commissioner of Income Tax-2 Vs. Ferromagnetic Milacron India Private Limited (R/Tax Appeal No. 1233 of 2018) (Gujarat High Court);

(b) Pentasoft Technologies Limited Vs. Deputy Commissioner of Income-tax, Company Circle V (2) [2014] 41 taxmann.com 120 (Madras High Court);

(c) 1. The Commissioner of Income-tax, 2. The Assistant Commissioner of Income-tax, Circle 11(4) Vs. Ingersoll Rand International India Limited (I. T. A. No. 452 of 2013) (Karnataka High Court);

(d) Principal Commissioner of Income Tax-7 Vs. Piramal Glass Limited (Income Tax Appeal No. 556 of 2017) (Bombay High Court).

(e) IND Global Corporate Finance Private Limited Vs. Income Tax Officer and Deputy Commissioner of Income-tax Vs. IND Global Corporate Finance Private Limited [2012] 19 ITR (Trib) 483 [ITAT Mumbai];

(f) Assistant Commissioner of Income-tax Vs. GE Plastics India Limited [2012] 20 ITR (Trib) 58 [ITAT Ahmedabad];

(g) Serum Institute of India Limited Vs. Additional Commissioner of Income-tax, Circle 6, Pune [2012] 18 taxmann.com 305 (Pune);

(h) Compass Group (India) Support Services Private Limited Vs. The Assistant Commissioner of Income Tax, Circle-1(3), Chennai (ITA Nos. 2064 & 2924/Mds/2016) [ITAT Chennai 'A' Bench];

(i) The Deputy Commissioner of Income Tax, Circle-6(1)(1), Bangalore Vs. Sapa Extrusion India Private Limited (ITA No. 402/Bang/2018) [ITAT Bangalore 'C' Bench].

2.1.2. Not Eligible for 'Depreciation'

However, there are a few judicial pronouncements that are contradictory to the above-mentioned pronouncements. These are provided below: (a) Hon'ble Delhi High Court in the case of Sharp Business System Vs. Commissioner of Income-tax-III, [2012] 27 taxmann.com 50 observed that 'Every species of right spelled-out expressly by the Statute - i.e., of the intellectual property right and other advantages such as know-how, franchise, license, etc. and even those considered by the Courts, such as goodwill can be said to be alienable. Such is not the case with an agreement not to compete which is purely personal.' Here, depreciation was not allowed in the hands of the payer on the expenditure incurred for payment of a non-compete fee. (b) Similarly, in the case of Srivatsan Surveyors Private Limited Vs. Income-tax Officer [2009] 318 ITR (A. T.) 283 [ITAT Chennai] Hon'ble Chennai Bench while disallowing depreciation on expenditure incurred for payment of non-compete fees observed that 'Section 32(1)(ii) prescribes for depreciation in respect of know-how, patents, copyrights, trademarks, licenses, franchises or any other business or commercial rights of similar nature, being intangible assets acquired on or after the first day of April 1998, owned, wholly or partly, by the assessee and used for the business or profession. There is no prescription for allowance of depreciation in respect of non-compete fees.' (c) Similar views were expressed by Hon'ble ITAT Delhi Bench 'B': New Delhi while delivering the order in the case of DCIT, Circle-11(1) Vs. EAC Industrial Ingredients India Private Limited (ITA No. 1801/Del/2011). Hence, in the light of the above judicial pronouncements, this may be concluded that the issue of whether expenditure incurred on payment of non-compete fee will be eligible for depreciation or not has not yet been settled conclusively.

2.2. Non-compete Fee to be Considered as Revenue Expenditure in the Hands of Payer

The following judgments of the Hon'ble High Courts allowed deductions for expenditures on non-compete fees as revenue expenditure at the time of computing taxable income under the head 'Profits and Gains of Business or Profession' under Section 37 of the Act: Hon'ble Delhi High Court in the case of Commissioner of Income-tax Vs. Career Launcher India Limited [2013] 358 ITR 179 held that, as the non-compete fee was paid by the assessee (in the business of running learning centers) to its two faculty members for agreeing not to compete with the assessee's business for a limited period of twelve months, the payment of non-compete fee should be considered as revenue expenditure deductible under Section 37 of the Act. Hon'ble Madras High Court in the case of Hatsun Agro Products Limited Vs. Joint Commissioner of Income-tax [2018] 407 ITR 674 held that as the payment of non-compete fee had not resulted into increase in fixed capital and also not encroached in the capital field, rather the assessee had received a commercial benefit from it, the payment of non-compete fee should be treated as revenue expenditure deductible under Section 37 of the Act. The principle emerged from the judgment of the Hon'ble Madras High Court is that if the advantage of the assessee from the payment of non-compete fee consists merely in facilitating the business operations or in enabling more efficient

or more profitable conduct and management of the business, leaving the fixed capital untouched, the expenditure should be considered as revenue expenditure.

2.3. Non-compete Fee to be Considered as Deferred Revenue Expenditure and Eligible for Amortization in the Hands of Payer

Even in a case, the Hon'ble judiciary held that expenditure incurred on non-compete fee by the payer should be treated as deferred revenue expenditure and allowed amortization of such expenditure in the hands of the payer over a while. Hon'ble 'D' Bench of ITAT Chennai in the case of Orchid Chemicals and Pharmaceuticals Limited Vs. Assistant Commissioner of Income-tax [2011] 7 ITR (Trib) 601 held that payment of non-compete fee should be considered as deferred revenue expenditure and observed as follows:

'Here, expenditure was incurred by the assessee which does not give it an advantage for a considerable period and hence more like deferred revenue expenditure. Though there was no liability on the assessee which was to be discharged in the future, the non-compete agreement precluded the sellers from engaging in a competing activity for a period of four years. Hence, in our opinion, the cited decision of the hon'ble apex court would come to the aid of the assessee on its contention that the outgo should be treated as deferred revenue in nature and hence allowable over a period of four years pro-rata.'

3. Tax Implications of Non-Compete Fee Under the Income-tax Act, 1961 – International:

Judgments of the Hon'ble judiciaries in the following cases may provide guidelines in understanding the issue of tax implications of the non-compete fee transactions with non-residents:

(a) In the case of The Director of Income Tax, International Taxation, Bangalore and The Income Tax Officer, International Taxation, Ward 19(2), Bangalore Vs. Sasken Communication Technologies Limited (I. T. A. No. 241 of 2011) the assessee company is based in India. It had entered into non-compete agreements with its two employees. Under the non-compete agreements, the two employees were prohibited from taking employment with the competitors of the assessee after the termination of their employment. The two employees were rendering services in the United States of America (USA) and the non-compete fees to its two employees were paid in the USA. The Hon'ble ITAT held that receipts of non-compete fees under the non-compete agreements were taxable as salary/profits in lieu of salary in the hands of two employees in India. However, in view of Article 16 of the Double Taxation Avoidance Agreement (DTAA) between India and the USA, the same is not taxable in India but the USA. The Hon'ble Karnataka High Court upheld the order of the Hon'ble ITAT.

(b) In the case of Income Tax Officer (International Taxation) – 4(1)(1), Mumbai Vs. Mr. Prabhakar Raghavendra Rao (I. T. A. No. 3985/Mum/2018) the assessee was a non-resident in India. The assessee was a director and a shareholder in an Indian company. The assessee sold the shares of the Indian

company to a company based in Singapore and also entered into non-compete and non-solicitation agreements with the purchaser company and had received non-compete and non-solicitation fees for restraint of trade i.e., not to compete with the purchaser company for a period of 10 years. Hon'ble ITAT Mumbai 'I' Bench held that such receipts should be taxed in the hands of the assessee in India as business income under Section 28(VA) of the Act. However, since the assessee is a non-resident in India, he is eligible for the treaty benefit i.e., DTAA between India and Qatar in terms of Section 90(2) of the Act. In terms of Article 7 of the DTAA between India and Qatar, such business income of the assessee could be taxed in India only if the assessee had any business connection or Permanent Establishment (PE) in India. Hon'ble ITAT 'I' Bench, Mumbai held that since the Assessing Officer could not establish that the assessee had any business connection or PE in India, such business income of the assessee is not taxable in India.

(c) In Trans Global PLC Vs. Director of Income-tax (International Taxation) – 3(1), Kolkata (I. T. A. No. 943/Kol/2013) the assessee, a non-resident British company, received a non-compete premium. The Hon'ble ITAT Kolkata 'C' Bench held that the non-compete premium received by the non-resident assessee company is a business income assessable under Section 28(VA) of the Act in India, but in the absence of a PE of the assessee in India, the non-compete premium received is liable to be taxed in United Kingdom (UK) only in terms of Article 7 of the DTAA between India and UK.

So, the ratio decidendi that emerges from the above judicial pronouncements is that the taxability in India of the receipt of the non-compete fee by a non-resident will be governed by the provisions of the DTAA entered by the country of the recipient with India.

4. Tax Implications of Non-Compete Fee Under the Goods and Services Tax (GST):

Schedule II of the Central Goods and Services Tax Act, 2017 (CGST Act) classifies activities or transactions under 'supply of goods' or 'supply of services. Clause 5(e) of the Schedule II of the CGST Act provides that transactions for 'agreeing to the obligation to refrain from an act, or to tolerate an act or a situation, or to do an act' will be considered as 'supply of services. Accordingly, consideration received for agreeing to refrain from a business activity should attract GST.

Again, Schedule III of the CGST Act enumerates activities or transactions to be treated neither as a 'supply of goods nor a 'supply of services. Clause 1 of Schedule III of the CGST Act provides that 'services by an employee to the employer in the course of or concerning his employment will not be considered as 'supply of services. Hence, GST will not attract in case of receipt of the non-compete fee by an employee from his/her employer.

The following propositions may be taken for consideration in light of the above provisions of the CGST Act:

(a) Non-compete fee received by a person from another person where employer and employee relation-

ship does not exist shall attract GST;

(b) Receipt of non-compete fee by an employee after submission of resignation but before the cessation of employment by agreeing to be refrained from accepting any similar employment or agreeing to be restrained from engaging in any similar business should not attract GST since the employer and employee relationship has not yet been terminated;

(c) However, receipt of a non-compete fee by an employee after cessation of employment by agreeing to be refrained from accepting any similar employment or to be restrained from engaging in any similar business may attract GST since at the time of receipt of the non-compete fee the relationship of employer and employee does not exist between the duo. However, it may also be argued that since the payment of non-compete fee relates to his/her past employment, then it should not attract GST, as provided in Clause 1 of Schedule III of the CGST Act. We have to wait, till pronouncements of the Hon'ble judiciaries settle the issue; and

(d) Again, receipt of a non-compete fee by an employee from his/her prospective employer before joining the employment may attract GST since at the time of receipt of the non-compete fee the relationship of employer and employee does not exist between the duo. Again, an argument similar to that provided in item no. (c) above may be put forward here contradicting the forgoing view, as in this case also payment of non-compete fee relates to prospective employment. We have to wait, till the pronouncements of the Hon'ble judiciaries settle the issue.

Conclusion

The above discussion reveals the intricacies of non-compete fees concerning its tax implications, both under direct and indirect taxes. Hence, the agreements for non-compete fees should be structured with utmost care to avoid unnecessary tax implications.

References

Central Goods and Services Tax Act, 2017

https://indiankanoon.org

Income-tax Act, 1961

Itat.gov.in

www. taxguru.in

www.taxmann.com

www.taxpundit.org

AN EMPIRICAL STUDY OF CONSUMER AWARENESS ABOUT HEALTH INSURANCE IN GUJARAT

Dr. Dharmendra S. Mistry *

ABSTRACT

Awareness of health insurance plays a vital role in the purchase decision-making of an insurance product. Hence, the present study has been carried out to study consumer awareness about health insurance in Gujarat. It is hypothesized for the study that there is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in Gujarat. The study found that as far as awareness about the health insurance products in respect of awareness of companies, benefits, schemes, general cost, awareness of diseases not covered and claim procedure) in Gujarat is concerned, the demographic factors such as the region of the consumers, educational background of the consumers, the income of the consumers, and age of the consumers play an important role in taking buying decision of health insurance in Gujarat.

Keywords: Consumer Awareness, Health Insurance, Demographic Factors

Introduction

Consumer awareness and attentiveness on health insurance have been increasing on account of marketing strategies of the companies, changes in social pattern, the effect of actions by Non- Governmental Organizations (NGOs), and word of mouth communication. Recent efforts by the government to provide health insurance to lower sections of the society through schemes like Rashtriya Swasthya Bhima Yojana (National Health Insurance Scheme), micro-insurance schemes, Pradhan Mantri Jeevan Jyoti Beema Yojana (PMJJBY), etc. have started influencing the consumers from different segments of society in making a positive outlook towards health insurance.

Gujarat is quite good in literature, health care, and wide reach of communication media so that the awareness is expected to be high. However, this need not be uniform and demographic and personal factors can cause variations in the level of consumer awareness. This knowledge is important to the various groups like government, local administration, health department, involved NGOs, and health insurance marketing companies.

* Professor and Principal, Prin. M C Shah Commerce College,
Ahmedabad, Gujarat
Email: dsmistry76@yahoo.co.in

Consumer decision-making happens after the consumer evaluates their perception (Zeithma & Berry, 1988) and perception may be affected by awareness about the insurance products. The consumer buying process can also be divided into 5 stages namely Stage 1: Problem or need recognition, Stage 2: Information search, Stage 3: Evaluation of alternatives, Stage 4: Purchase decision, Stage 5: Post-purchase behavior (Dewey, 1910). Some factors that form these perspectives are price, attitude, awareness, risk perception, etc. (Hansen, 2005).

Lack of consumer awareness of where to get health insurance, what it costs, and what options exist is a critical barrier that prevents many people from obtaining coverage in the individual market (Patel, 2002). Hence, Insurance companies like to give their ads in News/Business channels (Suman & Kapoor, 2014) to create awareness among the perspective as well as existing consumers. Considering the importance of awareness of health insurance in purchase decision-making, the present study has been carried out to study awareness about health insurance in Gujarat. In this context, it becomes important to understand awareness about health insurance in the state of Gujarat especially urban areas having a population of about 42-45 % of the state of Gujarat and the eight municipal corporations – Ahmedabad, Surat, Vadodara, Rajkot, Jamnagar, Junagadh, Bhavnagar, and Gandhinagar – together constitute about 75% of the total urban population. Hence, the research problem of the present study is "An Empirical Study of Consumer Awareness about Health Insurance in Gujarat"

It is hypothesized for the study that there is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in Gujarat.

The study has been carried out as follows: the present section gives the introduction about the present study. The second section discusses a literature review on research work carried out on insurance. The third section outlines the methodology of the present study. The fourth section discusses the result and discussion and the last part of the study outlines major observations, findings, conclusions, and suggestions.

Literature Review

While buying life insurance, factors that affect buying behavior are consumer loyalty, service quality, ease of procedures, satisfaction level, company image and company-client relationship (Sahu et al., 2009), goodwill of the company (Yadav & Tiwari, 2012), risk cover (Mathivanan & Sasikala Devi, 2013) as well as advertising and word of mouth (Arual Minesh Rajkumar & Kannan, 2014). Managerial implication like the performance of agents also plays an important role in decision making (Sandhu & Bala, 2011). Moreover, the age of respondents also affects the choice of insurance products (Singh et al., 2014). Customer's perception towards life insurance is positive (Mahajan,

2013) which also plays an important role in insurance purchase decision making. The success of insurance marketing depends on an understanding of the social and cultural needs of the target population (Jain & Saini, 2012). People prefer to purchase insurance products through insurance agents or advisors (Sidhardha & Sumanth, 2017), banks, and financial institutions.

The young population is more interested in the private sector but the aged group is more interested in taking policies from the public sector because their mindset is already set to the feeling that security and safety are more in the public sector than in the private sector, while people having lower income prefer to buy public sector insurance product whereas the people having higher saving prefer to buy private sector insurance product due to product diversity, customer-centric approach, easy accessibility and technological advancement (Lulla & Monu, 2015).

As far as awareness about insurance products is concerned, consumers are more aware of the factors such as insurance services and premium charges rather than tax benefit, risk coverage & saving, security with high returns (Sini & Karpagam, 2016).

From the above review of empirical works, it is clear that different authors have approached their research on insurance products in different ways in varying levels of analysis. These different approaches helped in the emergence of more and more literature on the subject over time. It gives an idea of extensive and diverse works on insurance products. It has been noticed that the studies on consumer awareness about insurance products in various aspects provide divergent results relating to the study period overlap or coincide. The main reason for the divergence in the results is the use of different methods for the measurement of awareness. All the studies aimed to analyze awareness towards insurance products in India & abroad with several factors. The survey of the existing literature reveals that no specific work has been carried out to examine and ascertain consumer awareness about health insurance products in Gujarat. The present study is an attempt in this direction and therefore, aims to enrich the literature on consumer awareness about health insurance in Gujarat.

Objective

To study the consumer awareness about health insurance in Gujarat

Methodology

Geographical Coverage: The present research work had geographical coverage of Urban areas of Gujarat i.e., all eight municipal corporations – Ahmedabad, Surat, Vadodara, Rajkot, Jamnagar, Junagadh, Bhavnagar, and Gandhinagar – together constituting about 75% of the total urban population.

Sampling Method and Sample Size: The research study has used multi-stage random sampling as

the method of sampling. The sample size of the present study was 800 respondents from all 8 municipal corporations of the State of Gujarat.

Research Instrument: Questionnaire

Data Collection: Primary Data has been collected using a structured questionnaire based on a literature study. The questionnaires have been delivered in person to the respondents to ensure a better response rate and completed questionnaires have been collected, providing an opportunity for the respondents to clarify points if any.

Research Design:

Considering the importance of awareness on health insurance among the respondents/consumers in its purchase decision, this study has identified six factors contributing to awareness based on literature review i.e.

1) awareness of companies offering health insurance,

2) awareness of the benefit of health insurance,

3) awareness of schemes offered by major health insurance companies,

4) awareness of diseases not covered in health insurance schemes,

5) awareness of the general cost of health insurance premiums and

6) awareness of health insurance claim procedures.

The following hypothesis was framed:

Null Hypothesis - There is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in the selected regions i.e., 8 Municipal Corporations in the state of Gujarat on the grounds of Demographic Factors such as Region, Educational Background, Income, and Age.

Alternate Hypothesis - There is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in the selected regions i.e., 8 Municipal Corporations in the state of Gujarat on the grounds of Demographic Factors such as Region, Educational Background, Income, and Age.

Hypothesis Testing: To have a better understanding of each of the Demographic Factors such as Region, Educational Background, Income, and Age, the main hypothesis has been split into four sub hypotheses based on four Demographic Factors as Region, Educational Background, Income, and Age and tested with a statistical technique i.e., ANOVA.

Limitations: The present study has also faced problems due to some external factors which were out of control. Though an effort has been made to ensure the correctness of data collected, it might be possible that some of the respondents have not provided accurate data. The geographical scope was limited to the state of Gujarat. Hence, the generalization of findings might be limited to societies similar to Gujarat.

Result and Discussion

1) Analysis of Awareness based on Place of the Respondents

Null Hypothesis: There is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in the selected regions i.e., 8 Municipal Corporations in the state of Gujarat.

Alternative Hypothesis: There is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals residing in the selected regions i.e., 8 Municipal Corporations in the state of Gujarat.

ANOVA of Awareness about Health Insurance in Gujarat among Individuals of the Selected Regions

		Sum of Squares	df	Mean Square	F	Sig.
1. I am aware of companies offering health insurance	Between Groups	29.679	7	4.240	.000	.000
	Within Groups	724.286	704	1.029		
	Total	753.965	711			
2. I am aware of the benefits of health insurance	Between Groups	28.548	7	4.078	.000	.000
	Within Groups	694.493	697	.996		
	Total	723.041	704			
3. I am aware of schemes offered by major health insurance companies	Between Groups	13.775	7	1.968	.050	.050
	Within Groups	670.189	688	.974		
	Total	683.964	695			
4. I am aware of diseases not covered in health insurance Schemes	Between Groups	24.084	7	3.441	.001	.001
	Within Groups	632.825	667	.949		
	Total	656.910	674			
5. I am aware of the general cost of health insurance Premium	Between Groups	28.222	7	4.032	.000	.000
	Within Groups	618.032	661	.935		
	Total	646.254	668			
6. I am aware of the health insurance claim procedure	Between Groups	25.842	7	3.692	.000	.000
	Within Groups	613.967	658	.933		
	Total	639.809	665			

The significance value (p-value) is less than or equal to the level of significance 0.05, and hence Null hypothesis is rejected. So, there is a significant difference in awareness concerning the region. Hence, it can be concluded that there is a significant difference in awareness (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among the individuals residing in the selected regions i.e., 8 municipal corporations in Gujarat. Thus, it can be said that as far as awareness about health insurance in Gujarat is concerned, the region of an individual plays an important role in taking buying decisions of health insurance in Gujarat.

2) Analysis of Awareness based on Educational Background of Respondents

Null Hypothesis: There is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different educational backgrounds.

Alternative Hypothesis: There is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different educational backgrounds.

ANOVA of Awareness about Health Insurance in Gujarat among Individuals having Different Educational Background

		Sum of Squares	df	Mean Square	F	Sig
1. I am aware of companies offering health insurance	Between Groups	62.072	3	20.691	21.159	.000
	Within Groups	686.451	702	.978		
	Total	748.523	705			
2. I am aware of the benefits of health insurance	Between Groups	80.877	3	26.959	29.346	.000
	Within Groups	637.542	694	.919		
	Total	718.420	697			
3. I am aware of schemes offered by major health insurance companies	Between Groups	86.999	3	29.000	33.862	.000
	Within Groups	587.495	686	.856		
	Total	674.494	689			
4. I am aware of diseases not covered in health insurance schemes	Between Groups	48.289	3	16.096	17.766	.000
	Within Groups	602.504	665	.906		
	Total	650.792	668			
5. I am aware of the general cost of health insurance premium	Between Groups	53.943	3	17.981	20.229	.000
	Within Groups	584.868	658	.889		
	Total	638.811	661			
6. I am aware of the health insurance claim procedure	Between Groups	46.353	3	15.451	17.213	.000
	Between Groups	54.412	4	13.603	15.362	.000
	Within Groups	576.466	651	.886		
	Total	630.878	655			

The significance value (p-value) was less than the level of significance 0.05 and hence null hypothesis is rejected and the alternate hypothesis is accepted. So, there is a significant difference in awareness concerning the Income of the respondents. Hence, it can be concluded that there is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different incomes. Thus, it can be said that as far as awareness about health insurance in Gujarat is concerned, the income of an individual plays an important role in taking buying decision of health insurance in Gujarat.

4) **Analysis of Awareness based on Age of the Respondents**

Null Hypothesis: There is no significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different ages.

Alternative Hypothesis: There is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different ages.

ANOVA of Awareness about Health Insurance in Gujarat among Individuals having Different Age

		Sum of Squares	df	Mean Square	F	Sig
1. I am aware of companies offering health insurance	Between Groups	27.622	4	6.905	6.684	.000
	Within Groups	719.026	696	1.033		
	Total	746.648	700			
2. I am aware of the benefits of health insurance	Between Groups	28.959	4	7.240	7.268	.000
	Within Groups	686.281	689	.996		
	Total	715.239	693			
3. I am aware of schemes offered by major health insurance companies	Between Groups	28.649	4	7.162	7.497	.000
	Within Groups	649.664	680	.955		
	Total	678.312	684			
4. I am aware of diseases not covered in health insurance schemes	Between Groups	9.110	4	2.277	2.334	.054
	Within Groups	643.011	659	.976		
	Total	652.120	663			
5. I am aware of the general cost of health insurance Premium	Between Groups	10.854	4	2.714	2.822	.024
	Within Groups	628.812	654	.961		
	Total	639.666	658			
6. I am aware of the health insurance claim procedure	Between Groups	21.710	4	5.427	5.790	.000
	Within Groups	611.188	652	.937		
	Total	632.898	656			

From the above table, it is clear that the significance value (p-value) was less than the level of significance 0.05 (except awareness of diseases not covered in health insurance schemes – p-value was 0.054). As far as awareness of companies, benefits, schemes, general cost, and claim procedure is concerned, the null hypothesis is rejected and the alternate hypothesis is accepted. While as far as awareness of diseases not covered is concerned, the alternate hypothesis is rejected and the null hypothesis is accepted. So, there is a significant difference in awareness of companies, benefits, schemes, general cost, and claim procedure concerning the age of the respondents, while the insignificant difference in awareness of diseases is not covered in respect of the age of the respondents.

Hence, it can be concluded that there is a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, general cost, and claim procedure) (except awareness of diseases not covered) among individuals having different ages. Thus, it can be said that as far as awareness about the health insurance in respect of (awareness of companies, benefits, schemes, general cost, and claim procedure) (except awareness of diseases not covered) in Gujarat is concerned, the age of an individual plays an important role in taking buying decision of health insurance in Gujarat.

Major Observations, Findings, Conclusion, and Suggestions

The study found that there has been a significant difference in awareness (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among the individuals residing in the selected regions i.e., 8 municipal corporations in Gujarat was found. It also revealed a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different educational backgrounds was found. It also found that there has been a significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different incomes. A significant difference in awareness of companies, benefits, schemes, general cost, and claim procedure concerning the age of the respondents, while the insignificant difference in awareness of diseases not covered in respect of age of the respondents was also found.

As far as District-wise analysis is concerned, the study found that respondents of Ahmedabad District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, general cost of health insurance premium and health insurance claim procedure but not aware about the diseases not covered in health insurance schemes. Respondents of Vadodara District were about Companies offering health insurance,

benefits of health insurance, different schemes offered by major health insurance companies, and health insurance claim procedures but not aware about the diseases not covered in health insurance schemes as well as the general cost of health insurance premium. Respondents of Surat District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, and general cost of health insurance premium but not aware about the diseases not covered in health insurance schemes as well as health insurance claim procedure. Respondents of Gandhinagar District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, general cost of health insurance premium, and health insurance claim procedure but not aware of the diseases not covered in health insurance schemes. Respondents of Rajkot District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, but not aware about the diseases not covered in health insurance schemes, general cost of health insurance premium, and health insurance claim procedure. Respondents of Rajkot District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, but not aware about the diseases not covered in health insurance schemes, general cost of health insurance premium, and health insurance claim procedure. Respondents of Jamnagar and Junagadh Districts were aware of Companies offering health insurance, benefits of health insurance but not aware of different schemes offered by major health insurance companies, the diseases not covered in health insurance schemes, general cost of health insurance premium, and health insurance claim procedure. Respondents of Bhavnagar District were aware of Companies offering health insurance, benefits of health insurance, different schemes offered by major health insurance companies, but not aware about the diseases not covered in health insurance schemes, general cost of health insurance premium, and health insurance claim procedure.

From Analysis of Awareness of Respondents / Consumers in Purchasing Health Insurance in Gujarat with the help of ANOVA, it can be concluded that as far as awareness about the health insurance products in respect of awareness of companies, benefits, schemes, general cost, awareness of diseases not covered and claim procedure) in Gujarat is concerned, demographic factors such as region of the consumers, educational background of the consumers, the income of the consumers, and age of the consumers play an important role in taking buying decision of health insurance in Gujarat. Hence, health insurance companies should create awareness about health insurance products especially about the benefits of health insurance, about various types of health insurance products, about the cost of health insurance, about diseases covered as well as not covered by the health insurance products, and about the procedure for making claims to avail the benefits of health insurance among the potential consumers to facilitate them to take Health Insurance Buying Decision.

The higher the awareness about various aspects of health insurance among the potential consumers/ consumers, the easier the health insurance buying decision will be. Hence, it can be concluded that awareness about health insurance products among consumers would be one of the major determinants of the consumer purchase decision of health insurance in Gujarat.

Based on Analysis of Factors Contributing Awareness about Health Insurance	
Findings	**Conclusion**
Awareness among Individuals based on Place	
A significant difference in awareness (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among the individuals residing in the selected regions i.e., 8 municipal corporations in Gujarat was found.	It can be said that the level of awareness among consumers differs from region to region and hence it can be concluded that the region of the consumers is the key determinant in making a purchase decision of health insurance in the state of Gujarat.
Awareness among Individuals based on Educational Background	
A significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different educational backgrounds was found.	It can be said that the level of awareness among consumers differs from individual to individual based on educational background possessed by them and hence it can be concluded that the educational background of the consumers is a key determinant in making a purchase decision of health insurance in the state of Gujarat.
Awareness among Individual based on Income	
A significant difference in awareness about health insurance (awareness of companies, benefits, schemes, diseases not covered, general cost, and claim procedure) among individuals having different incomes was found.	It can be said that the level of awareness among consumers differs from individual to individual based on income earned by them and hence it can be concluded that the income of the consumers is a key determinant in making a purchase decision of health insurance in the state of Gujarat.
Awareness among Individuals based on Age	

A significant difference in awareness of companies, benefits, schemes, general cost, and claim procedure concerning the age of the respondents, while the insignificant difference in awareness of diseases not covered in respect of age of the respondents was found.	It can be said that the level of awareness among consumers differs from individual to individual based on their age and hence it can be concluded that the age of the consumers is a key determinant in making a purchase decision of health insurance in the state of Gujarat.

Suggestions

1) It is suggested that health insurance providers should make the consumers aware of the companies, features of health insurance products such as schemes, cost, benefits, diseases coverage, and claim procedure to facilitate consumers to take health insurance buying decisions. It will also increase the prevalence of health insurance in the state of Gujarat because it has become the need of modern times.

2) As the level of awareness among consumers concerning their regions, educational background, income, and age, it is suggested that health insurance providers should divide the health insurance market into various segments and introduce a variety of health insurance products in a customized way to cater to different needs of consumers

References

Dewey, J. (1910). How We Think. Boston: MA: D C Health & Co.

Zeithma, P. A., & Berry, L. L. (1988). SERVQUAL: A Multiple- Item Scale for Measuring Consumer Perceptions of Service quality. Journal of retailing, 64(11), 112-117.

Patel, V. (2002). Raising awareness of Consumer's options in the Individual Health Insurance Market. Health Aff (Millwood)((July-December, Suppl Web Exclusives)), 367-371.

Hansen, T. (2005). Perspectives on consumer decision making: An integrated approach. Journal of Consumer Behaviour, 4(6), 420-437.

Sahu, P., Jaiswal, G., & Pandey, V. (2009). A Study of Buying Behaviour of Consumers towrds Life Insurnace Policies. Asian Journal of Management Research, 3(3/4), 1-10.

Sandhu, H., & Bala, N. (2011). Customers' Perception towards Service Quality of Life Insurance Corporation of India: A Factor Analytical Approach. International Journal of Business and Social Science, 2(18), 219-231.

Jain, V., & Saini, B. (2012). Indian Consumer Damenour for Life Insurance. International Journal of Research in Finance and Marketing, 2(11), 29-35.

Yadav, B., & Tiwari, A. (2012). A Study on Factors Affecting Customers Investment towards Life Insurance Policies. International Journal of Marketing, 1(7), 106-123.

EFFECTS OF LIQUIDITY MANAGEMENT ON PROFITABILITY: A COMPARATIVE STUDY ON REGIONAL RURAL BANK AND STATE COOPERATIVE BANK IN MIZORAM

Vanlalmuana *

Dr. Laldinliana **

ABSTRACT

In any financial institution, liquidity and profitability are the two most important concepts. Liquidity management is a sensitive accounting concept which either affects profitability positively or adversely. In this paper, an attempt was made to study the effects of liquidity management on the profitability of two commercial banks in Mizoram namely Mizoram Rural Bank (MRB) and Mizoram Cooperative Apex Bank Ltd (MCAB). Mizoram is one of the small states in the north-eastern part of India and the survival of banking companies poses a very big question. Due to the low population and absence of the Industrial sector, the development of rural areas poses a significant challenge for the economic development of the state. In this paper, an attempt was made to establish a relationship between liquidity and profitability ratios. Three liquidity ratios namely Credit Deposit Ratio (CRDR), Cash Deposit Ratio (CDR), and Investment Deposit Ratio (IDR) were selected and their effects on two profitability ratios namely Return on Investment (ROI) and Return on Assets (ROA) was tested using Pearson's Correlation coefficient, multiple regression model and ANOVA.

Introduction

Rural banking in India started with the establishment of the banking sector in India. Rural Banks in those days mainly focused upon the agro sector. Today, commercial banks and Regional Rural Banks in India are penetrating every corner of the country are extending a helping hand in the growth process of the rural sector in the country. Rural banking institutions are playing a very important role in all-around development of rural areas of the country. To support the rural banking

* Assistant Professor, Department of Commerce,
Govt. J. Buana College, Lunglei, Mizoram – 796701
Email: Vanlalmn406@gmail.com

** Associate Professor, Department of Commerce
Mizoram University, Aizawl – 796004
Email: madinavarte@gmail.com

sector in recent years, Regional Rural Banks have been set up all over the country to meet the credit needs of the most underprivileged sections of the society. Considering the gross absence of banking facilities in the rural areas of the country, the Reserve Bank of India in consultation with the Central Government, State Governments, and some major nationalized sponsored banks had set up some Regional Rural Banks in the late 1970s intending to elevate the economic status of the rural poor as well as to inculcate a habit of saving among the rural masses.

Likewise, Cooperative banks are established to provide credits to marginalized farmers in rural and semi-urban areas. Both of these institutions are collectively working towards the development of rural areas in India. Their main objective is to advance credit and other facilities, especially to small and marginal farmers, agricultural laborers, artisans, and small entrepreneurs to develop agriculture, trade, commerce, industry, and other usual productive activities in different rural areas of the country.

In Mizoram, there is one Regional Rural Bank – Mizoram Rural Bank (MRB) and one state cooperative bank – Mizoram Cooperative Apex Bank Ltd (MCAB). Mizoram Rural Bank, established on 27th September 1983 under the Regional Rural Bank Act 1976 is perhaps the only RRB in the country having a spread in all the districts and blocks of a state. It covers 8 districts and 25 RD blocks including 1 urban and 11 semi-urban centers. The bank is the second largest bank in the State next to the lead as well as sponsor bank, the State Bank of India. It has a market share of 26.30% in deposits and 28.38% in advances. Mizoram State Cooperative Apex Bank Ltd. was established on 29th December1971 with one branch in Aizawl, Mizoram. It also covers all the 8 states of Mizoram with a total of 15 branches operating now. For the year 2017-18, MCAB recorded a 54.18% CD ratio against 103.92% of Mizoram Rural Bank.

Liquidity refers to how easily assets can be converted into cash. It measures how easily the business can meet its immediate and short-term financial obligation. It also determines the growth and development of banks as it ensures the proper functioning of financial markets. So, we can say that liquidity is fundamental to the well-being of financial institutions, particularly banking. Profitability, on the other hand, refers to the ability of a business to earn a profit from its operation. It measures the economic success of the firm and ensures the financial sustainability of the business. Owolabi et al (2011) opined that the survival of a business depends on its liquidity. Its long-term survival, growth, and expansion depend on profitability. Therefore, both are important for any company, and striking a balance between liquidity and profitability is of paramount importance to meet the regulatory requirements as well as shareholders' wealth aspirations. Akter & Mahmud (2015) also stated that liquidity is very important for any institution and profitability shows the financial strength of

that institution. Liquidity shows the strength of the banks in terms of their operations and profitability shows their effective and efficient value maximization over the period. Thus, to maximize profits and continue its operations efficiently, Bordeleau & Graham (2010) stated that banks need to hold more liquid assets.

The relationship between liquidity and profitability had been a common area where research had been conducted. Although the results of many studies do not show the relationship between liquidity and profitability many studies indicate the existence of their relationship. Horváth et al. (2016) concluded that there was a trade-off between the benefits of financial stability induced by stronger capital requirements and those of greater liquidity creation. Therefore, any action in favor of one objective would deteriorate the other. However, Olarewaju & Adeyemi (2015) found that there is no significant unidirectional and bidirectional causal relationship between liquidity and profitability. In the opinion of Elsharif (2016), the impact of liquidity management on the profitability of the banks is unpredictable. The result can either be positive or negative. The theory was supported in the work of Khan & Ali (2016), where it was found that liquidity has a positive relationship with profitability and has a considerable impact on the profitability of commercial banks and thought that banks should keep a considerable amount of their liquid assets to get a higher rate of profit. However, the result is opposite in the case of Dahiyat (2016), Malik et al. (2016), where it was found, that liquidity hurts profitability if it is measured by return on assets and increases if measured by quick ratio. This means that inadequate liquidity or excess liquidity may be injurious to the operations smoothing, also if the liquidity is too high then the bank may not be efficiently using each current asset. Sahyouni & Wang (2018) also found out that liquidity creation has a significant negative effect on bank profitability in emerging countries. This is consistent with the expected bankruptcy cost hypothesis, which supposes that liquidity creation is negatively correlated to bank profitability. A higher level of illiquidity risk because the liquidity creation increases the likelihood of bankruptcy, hence lowering bank profitability.

Thus, liquidity ratios measure a business' ability to meet obligations by comparing the cash and non-cash with payment obligations. If the coverage of the latter by the former is insufficient, the business might face difficulties in meeting its immediate obligations. This can affect the company's business and profitability. There is always a trade-off between liquidity and profitability, gaining one generally means giving up some of the other. To put it in a nutshell, the study will analyze liquidity management of MRB and MCAB and its effects on profitability.

Objectives of the Study

The main objective of the study is to analyze the liquidity management of MRB and MCAB. Following are sub-objectives:

1. To analyze and compare the financial performance of MRB and MCAB

2. To study the effects of liquidity management on the profitability of selected banks.

To support the above objectives, the following hypotheses were developed:

H1: There is a significant relationship between liquidity and profitability among selected banks.

H2: The liquidity level of the bank significantly predicts the level of profitability among selected banks.

RESEARCH METHODOLOGY

To analyze the relationship between liquidity and profitability of MRB and MCAB, required data are collected through annual reports and audited financial statements. A period of five years i.e., between 2013-14 and 2017-118 is considered in the present study. Various simple liquidity and profitability ratios were calculated from the financial data. And descriptive statistical tools like, mean, standard deviation, minimum and maximum are used to understand the properties of selected variables. To prove the standing hypotheses, Pearson Correlation coefficient, multiple regression model along with ANOVA was used.

To analyze the relationship between liquidity and profitability, the following variables are considered in the study:

Table 1: Liquidity Ratios and Profitability Ratios:

Liquidity Ratios	Profitability Ratios
1. Cash Deposit Ratio (CDR) $= \frac{Cash\ and\ bank\ balances}{Total\ Deposits} x100$	*1. Return on Assets (ROA)* $= \frac{Net\ Income}{Total\ Assets} x100$
2. Credit Deposit Ratio (CRDR) $= \frac{Total\ Loans}{Total\ Deposits} x100$	*2. Return on Equity (ROE)* $\frac{Net\ Income}{Sharejolder's\ Equity} x100$
3. Investment to Deposit Ratio (IDR) $= \frac{Total\ Investment}{Total\ Deposits} x100$	

Result and Discussion

Descriptive statistics of variables

To understand the statistical properties of selected variables, the following tables were generated relating to the Mean, Standard Deviation, Minimum and Maximum value of the banks.

Table 2: Descriptive analysis of variables of MRB

Measures/ Variables	CDR	CRDR	IDR	ROA	ROE
Mean	0.288	0.466	1.354	0.0766	1.766
Std. Deviation	0.053572	0.12054	0.23255	0.00477	0.63094
Minimum	0.24	0.26	1.16	0.07	1.33
Maximum	0.36	0.57	1.72	0.08	2.86

(Source: Copy of SPSS output)

Table No.2 shows descriptive analysis of variables of MRB, it can be seen that the average CDR was 0.288 (28.8%), CRDR was 0.466 (46.6%), IDR was 1.354 (135.4%), ROA was 0.0766 (7.66%) and ROE was 1.766 (176.6%). The standard deviation value of IDR is highest among variables with 0.2325 (23.25), which shows that it is the most unstable variable.

Table 3: Descriptive analysis of variables of MCAB Ltd.

Measures/ Variables	CDR	CRDR	IDR	ROA	ROE
Mean	0.07	0.672	0.386	0.082	2.82
Std. Deviation	0.05099	0.058052	0.08295	0.00447	0.30058
Minimum	0.04	0.58	0.28	0.08	2.50
Maximum	0.16	0.74	0.51	0.09	3.27

(Source: Copy of SPSS output)

Table No.3 shows descriptive analysis of variables of MCAB Ltd., it can be seen that the average CDR was 0.07 (7 percent), CRDR was 0.672 (67.2 percent), IDR was 0.386 (38.6 percent), ROA was 0.082 (8.2 percent) and ROE was 2.82 (282 percent). The standard deviation value of ROE is highest among variables with 0.3006 (20.06 percent), which shows that it is the most unstable variable.

Hypotheses Analysis

A) Correlation Analysis

To prove the first hypothesis, the Pearson Correlation coefficient was run using SPSS. For this purpose, liquidity ratios were assumed to be independent variables, and profitability ratios were used as Dependent variables.

Table 4: Correlation analysis of ROA and Independent Variables of the banks

Variables		CDR		CRDR		IDR	
		MRB	MCAB	MRB	MCAB	MRB	MCAB
ROA	Pearson Correlation	-0.219	-0.219	0.609	-0.886	0.301	0.836
	Sig. (2-tailed)	0.724	0.723	0.276	0.045	0.622	0.078
	N	5	5	5	5	5	5

(Source: Copy of SPSS output)

From Table No.4, we can see that the correlation coefficient of -0.219 between ROA and CDR of MRB is insignificant as $p = 0.724 > 0.05$. Therefore, there exists a negative but insignificant relationship between CDR and ROA. Whereas, the correlation coefficient of 0.609 between ROA and CRDR is insignificant as $p = 0.276 > 0.05$ proving that there exists a positive but insignificant relationship between CRDR and ROA. And, the correlation coefficient of 0.301 between ROA and IDR is also insignificant as $p = 0.622 > 0.05$, concluding the existence of a positive but insignificant relationship between IDR and ROA of MRB.

The correlation coefficient of -0.219 between ROA and CDR of MCAB is insignificant as $p = 0.723 > 0.05$. Therefore, there exists a negative but insignificant relationship between CDR and ROA. Whereas, the Correlation coefficient of -0.886 between ROA and CRDR is significant as $p = 0.045 < 0.05$. Therefore, there exists a negative and significant relationship between CRDR and ROA. And, correlation coefficient of 0.836 between ROA and IDR is insignificant as $p = 0.078 > 0.05$. Therefore, there exists a positive but insignificant relationship between IDR and ROA of MCAB.

Table 5: Correlation analysis of ROE and Independent Variables of the banks

Variables		CDR		CRDR		IDR	
		MRB	MCAB	MRB	MCAB	MRB	MCAB
ROE	Pearson Correlation	0.691	0.809	-0.994	-0.327	0.028	-0.513
	Sig. (2-tailed)	0.196	0.097	0.001	0.592	0.964	0.376
	N	5	5	5	5	5	5

(Source: Copy of SPSS output)

Table No.5 shows the correlation coefficient of 0.691 between ROE and CDR of MRB is insignificant as p = 0.196 > 0.05. Therefore, there exists a positive but insignificant relationship between CDR and ROE. Whereas, the correlation coefficient of -0.994 between ROE and CRDR is significant as p = 0.001 < 0.05. Therefore, there exists a negative and significant relationship between CRDR and ROE. But, correlation coefficient of 0.028 between ROE and IDR is insignificant as p = 0.964 > 0.05. Therefore, there exists a positive but insignificant relationship between IDR and ROE of MRB.

Correlation coefficient of 0.809 between ROE and CDR of MCAB is also insignificant as p = 0.097 > 0.05. Therefore, there exists a positive but insignificant relationship between CDR and ROE. Correlation coefficient of -0.327 between ROE and CRDR is insignificant as p = 0.592 < 0.05. Therefore, there exists a negative and insignificant relationship between CRDR and ROE. Correlation coefficient of -0.513 between ROE and IDR is insignificant as p = 0.376 > 0.05. Therefore, there exists a positive but insignificant relationship between IDR and ROE.

B) Regression Analysis

To prove the second hypothesis, regression analysis was used to analyze the effects of liquidity management on profitability.

Table 6: Regression Analysis of MRB

Table 6a: Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.723[a]	.523	-.908	.00660

a. Predictors: (Constant), IDR, CDR, CRDR

Table 6b: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	3	.000	.365	.803[b]
	Residual	.000	1	.000		
	Total	.000	4			

a. Dependent Variable: ROA

b. Predictors: (Constant), IDR, CDR, CRDR

Table 6a shows a regression summary of the relationship between variables of MRB. R-square value of 0.523 shows that liquidity management has an effect of 52.3% on profitability. However, looking at the ANOVA table (table 6b), the f value is 0.365 which is statistically insignificant as p=0.803>0.05. So, it can be said that liquidity ratios of the MRB fail to significantly predict the level of Return on Assets. Thus, the null hypothesis will be accepted and concluded that liquidity management of MRB fails to predict the level of Return on Assets.

Table 6c: Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	1.000[a]	.999	.998	.03079

a. Predictors: (Constant), IDR, CDR, CRDR

Table 6d: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.591	3	.530	559.383	.031[b]
	Residual	.001	1	.001		
	Total	1.592	4			

a. Dependent Variable: ROE

b. Predictors: (Constant), IDR, CDR, CRDR

Table 6c. shows regression summary of the relationship between variables of MRB. R-square value of 0.999 shows that liquidity management has an effect of 99.9% on profitability. Looking at the ANOVA (Table 6d.), the f value is 559.383 which is statistically significant as p=0.031<0.05. So, it can be said that liquidity ratios of the MRB significantly predict the level of Return on Equity. Thus, the null hypothesis will be rejected and concluded that liquidity management of MRB significantly predicts the level of Return on Equity.

Table 7: Regression Analysis of MCAB Ltd.

Table 7a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.963[a]	0.927	0.706	0.00242

a. Predictors: (Constant), IDR, CRDR, CDR

Table 7b. ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.000	3	.000	4.203	0.341[b]
	Residual	.000	1	.000		
	Total	.000	4			

a. Dependent Variable: ROA

b. Predictors: (Constant), IDR, CRDR, CDR

Table 7a shows a regression summary of the relationship between variables of MCAB. R-square value of 0.706 shows that liquidity management has an effect of 70.6% on profitability. Looking at the ANOVA (Table 7b), the f value is 4.203 which is statistically insignificant as p=0.341>0.05. So, it can be said that the liquidity ratios of the MCAB fail to significantly predict the level of Return on Assets. Thus, the null hypothesis will be accepted and concluded that liquidity management of MCAB fails to predict the level of Return on Assets.

Table 7c: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.979[a]	0.958	0.832	0.12325

a. Predictors: (Constant), IDR, CRDR, CDR

Table 7d: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.346	3	0.115	7.597	0.259[b]
	Residual	0.015	1	0.015		
	Total	0.361	4			

a. Dependent Variable: ROE

b. Predictors: (Constant), IDR, CRDR, CDR

Table 7c. shows regression summary of the relationship between variables of MCAB. R-square value of 0.832 shows that liquidity management has an effect of 83.2% on profitability. Looking at the ANOVA (Table 7d), the f value is 7.597 which is statistically insignificant as p= 0.259>0.05. So, it can be said that the liquidity ratios of the MCAB fail to significantly predict the level of Return on Equity. Thus, the null hypothesis will be accepted and concluded that liquidity management of MCAB fails to predict the level of Return on Equity.

Conclusion

Liquidity management is an important component of the financial performance of any organization. Many studies and theories supported that liquidity management of an organization greatly affects profitability. On many occasions, organizations failed to achieve profitability due to poor maintenance of liquidity. Liquidity maintenance is of paramount importance in capital-intensive industries like banking. In this study, an attempt was made to analyze the effect of liquidity on profitability among two banks in Mizoram namely Mizoram Rural Bank and Mizoram Cooperative Apex Bank Ltd. It was found that banks failed to harvest the benefits of liquidity on profitability. The variables relating to liquidity fail to predict the level of profitability. So, to earn a higher profit in the coming years, banks should give extra care in maintaining their liquidity.

References

About Mizoram Rural Bank. (2018, July 20). Retrieved from Mizoram Rural Bank: http://www.mizoramruralbank.com/index.php/about-mizoram-rural-bank

Akter A & Mahmud K. (2014), "Liquidity-profitability relationship in Bangladesh banking industry", International Journal of Empirical Finance, Vol. 2 No. 4, pp. 143-151.

Bank Profile. (n.d.). Retrieved July 19, 2018, from Mizo Apex Bank: https://www.mizoapex.com/bank-profile.php

Bordeleau É & GrahamC(2010), "Impact of Liquidity on Bank Profitability", Financial Stability Department. Ottawa, Ontario: Bank of Canada.

Dahiyat A (2016), "Does liquidity and solvency affect banks profitability?", International Journal of Academic Research in Accounting: Finance and Management Sciences, Vol 6 No. 1,pp. 35-40.

Elsharif TA (2016), "The impact of liquidity management on profitability", Retrieved from Research Gate: https://www.researchgate.net/publication/309176083

Horvath et al. (2016), "How bank competition influences liquidity creation", Economic Modelling, Vol. 52, Part, pp. 155-161

Khan RA & Ali M (2016), "Impact of liquidity on profitability of commercial banks in Pakistan: An analysis of banking sector in Pakistan", Global Journal of Management and Business Research, Vol. 16, No. 1, pp. 53-59.

Malik MS et al (2016), "Impact of liquidity on profitability: A comprehensive case of Pakistan's private banking sector", International Journal of Eonomics and Finance, Vol. , No. 3, pp. 69-74.

Olarewaju OM & Adeyemi OK (2015), "Causal relationship between liquidity and profitability of Nigerian deposits money bank", International Journal of Academic Research in Accounting: Finance and Management Sciences, Vol. 5, No.2, pp. 165-171.

Owolabi SA et al (2011), "Investigating liquidity-profitability relationship in business organization: A study of selected quoted in Nigeria. British Journal of Economics", Finance and Management Science, Vol. 1, No. 2, pp. 11-29.

Sahyouni A & Wang M (2018), "The determinants of bank profitability: Does liquidity creation matter?", Journal of Economics and Financial Analysis, Vol. 2, No. 2,pp. 61-85.

JAL MARG VIKAS PROJECT OF NATIONAL WATERWAYS-1 (HALDIA TO VARANASI): A COMPARATIVE ANALYSIS WITH RESPECT TO RAILWAYS AND ROADWAYS

Goutam Bhowmik *
Saikat Dutta **

ABSTRACT

The study aims at evaluating the all-around viability of the Jal Marg Vikas Project (henceforth, JMVP) of National Waterways-1 (Stretch-1: Haldia- Varanasi), a World Bank Project, in terms of economic, commercial, environmental, and social costs. Apart from the analysis of non-financial factors in the form of SWOT analysis, the study evaluates the viability of the project in quantitative terms through 'Implicit Economic Cost' which combines commercial cost, environmental cost, accidental cost, and surface occupation cost. Such implicit cost for JMVP of NW-1 is compared with parallel roadways and railways to understand which mode of transportation is most viable/ suitable for freight movement from Haldia to Varanasi.

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

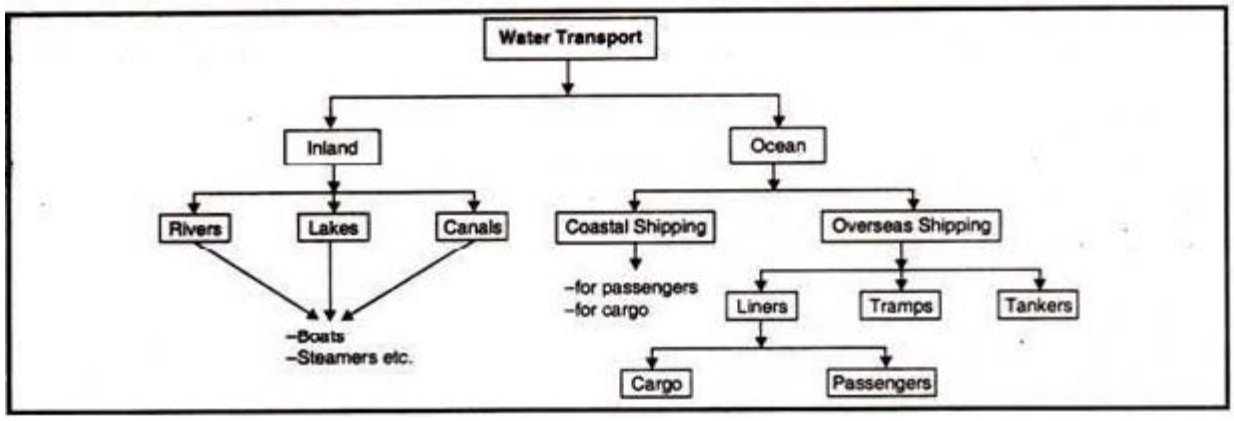
Introduction

Historically, societies have always been developed adjacent to a river, partly because it offered an efficient mode for traveling as compared to another mode of transportations over land. From ancient times, various civilizations use waterways as their main mode of transportation. In terms of freight movement, water transportation is still the largest mode of transportation in the modern era. Water transportation has several advantages to its credit. It is the cheapest eco-friendly mode of transportation. It operates on a natural track and hence does not require huge capital investment in the construction and maintenance of its track except artificial canals. It is most suitable for carrying bulky goods over long distances and as such has been playing a very significant role in bringing different parts of the world closer for foreign trade.

* Professor of Commerce
University of Gour Banga, West Bengal
Email: ramagoutambhowmik@gmail.com

** Assistant Professor
Department of Commerce, Sree Chaitanya Mahavidyalaya, West Bengal
Email: duttasaikat33@gmail.com

Figure 1: Different Types of Water Transportation



Water transportation is classified into two major heads – Inland water transport and Ocean water transport as shown in Chart 1. Ocean water transport includes both deep-sea transportation and coastal sea transportation. On the other hand, inland water transportation means, transportation within rivers, canals, and lakes.

Inland water transportation around the world is quite impressive. For example, Europe, France, Germany, Belgium, the Netherlands as well as Russia, have very extensive inland waterways including rivers and canals (Chand, 2020). Rhine Waterways (Germany), Germanic Baltic Low land, Danube River waterways (Eastern Europe), Mississippi River System (Northern America), St. Lawrence Waterways (Northern America), and Yang- the- kiang and Sikiang waterways (China) are some prominent waterways in the world.

Table 1: Indian National Waterways System up to 2016

NW	Waterway Stretch	Length (K.M)	Declared in Year
NW-1	Ganga-Bhagirathi-Hooghly River system (Allahabad-Haldia) in the States of Uttar Pradesh, Bihar, Jharkhand, and West Bengal	1620	1986
NW-2	River Brahmaputra (Dhubri-Sadiya) in the State of Assam	891	1988
NW-3	West Coast Canal (Kottapuram-Kollam) along with Udyogmandal and Champakara Canals – in the State of Kerala	205	1993
NW-4	Kakinada- Puducherry canals along with Godavari and Krishna rivers– in the States of Andhra Pradesh, Tamil Nadu, and Union Territory of Puducherry	1078	2008
NW-5	East Coast Canal integrated with Brahmani river and Mahanadi delta rivers in the States of West Bengal and Odisha	588	2008

Source: Reference Note, Lok Sabha Secretariat, 2015

Geographically, India is blessed with a huge network of rivers and interconnecting canals which makes it an ideal place for an efficient inland waterways system that can facilitate multifarious economic activities of different parts of the country. India has a 7,551 km coastline and about 14,500 km of navigable inland waterways. The country has been divided into 20 river units that include 14 major river basins. The remaining 99 river basins have been grouped into six river units. In 2008, India ranked 9th in terms of potentially navigable inland waterways (World Fact Book Report, 2008). But before 2016, only 5waterway stretches in India were declared as National Waterways, with a cumulative length of approximately 5802 K.Ms as shown in Table 1. Total freight movement through NWs during 2012-13, 2013-14, and 2015-16 are 23684728 Metric Ton (Mt.Ton) 16090878 (Mt. Ton), and 29129526 (Mt.Ton) respectively. In relative terms, these figures are merely 0.5% of the total freight movement of the country. It is widely believed that since the colonial period the huge potentiality of inland water transportation has been, by and large, remained unexploited despite the universal acceptance of the fact that waterways are fuel-efficient, environment-friendly, and more economical compared to rail and roadways. If we look at the scenario of inland waterways across the countries as shown in Table 2, India is far behind not only from the USA or Europe but also from Vietnam, Bangladesh, and other southeast Asian Nations.

But after 2013, the perception of the Indian Government was started to change as it took the Jal Marg Vikas Project (JMVP)of National Waterway - 1 (NW-1) with the assistance of the World Bank, and in 2016 the National Waterways Bill was passed in the Parliament to provide the legitimate shields to the all-river projects in India. The primary aim of the JMVP of the NW-1project is to bring down the logistics cost between Haldia and Varanasi and to provide an alternative mode of transport that will be environment-friendly and cost-effective. The project got a green signal in 2018 and it will be

expected to complete by 2023. The total cost of the project is calculated at approximately Rs. 5364 crores. The project aimed at enhancing the freight movement to27 million tons per year from the present capacity of 7 million tons per year. The other objective is to reduce the transportation load of this region from road and railways. It is estimated that directly and indirectly 75000 employments will be generated over the years.

Table 2: Freight Movement on Inland Waterways across Countries

Country	Percentage Freight Movement
USA	8.3
Europe	7.0
China	8.7
India	**0.5**
Bangladesh	40
Vietnam	10

Source: World Bank Report, 2017

Some major and minor infrastructural constructions are planned for the development of the project. These are as follows:

- Three multimodality terminals at Sahebgunj, Varanasi, and Haldia and development of port villages just next to the multimodality terminals;
- 1 new navigation lock at Farraka and 3 additional terminal sites;
- 10 ro-jetties and barge repair and maintenance facility;
- River training works and riverbank protection works at the proposed civil intervention sites;
- Maintaining Navigation Channel (Width-45 meters, Depth – from Haldia to Barh 3 meter, from Barh to Ghazipur 2.5 meters, from Ghazipur to Varanasi 2.2 meter)
- Dredging (10.8 million cubic meter silt per year);
- Development of famous river banks for tourism and religious purposes;
- Precautionary measures for saving of aquatic biodiversity and measures for the protection of turtles (Turtle Sanctuary at Varanasi) and dolphin (Dolphin sanctuary at Vikramshila) and
- Up-gradation of National Navigation Institute (at Patna) for the supply of skilled and trained human resources in the field of inland water navigation.

Despite all such developments, some criticisms were labelled against the project especially in the context of environmental implications and economic feasibility. The present paper attempts to evaluate the project by assessing both quantitative and qualitative inputs.

Review of Literature

Narayan and Raghuram (2006 assessed the viability of movement of passengers and freight by inland water transport in India. Sarkar et al. (2007) conducted a study on two major national waterways, NW1 (Ganges–Bhagirathi–Hoogly River system) and NW2 (Brahmaputra River system) to determine the viability of investments in them.

Sriraman (2010) attempted to understand various issues involved in the promotion of inland water transport mode to provide some long-term guidelines for policymaking and implementation.

Nagabhatla and Jain (2013) explained the historical background of the Inland Water Transport (IWT) sector and options that can channel its optimum efficiency. It also compared the river transportation

system with the surface road-rail network to gauge the contribution of IWT for green economic growth. The study concluded that the prospect of inland navigation looks promising, wherein issues on infrastructural gaps and institutional support are to be addressed suitably.

Praveen et al. (2015) explored the problems of the inland water transportation sector in Kochi. They highlighted many hurdles faced by the people for whom the water transportation system of Kochi is meant.

Praveen and Jegan (2015) explained the background of the inland water transport sector in India along with issues and challenges faced by the same. Nandita (2018) studied regular developmental works on the national waterways and pointed out challenges that can only be handled with a far-sighted approach as well as the diligent, righteous, and collaborative working of all stakeholders.

Kumariet al. (2019) highlighted the advantage of waterways over roadways in Kuttanad, Kerala. They discussed how the neglect of waterways and the growing preference for roadways have led to environmental pollution in the area.

Louiet al. (2020) studied the potential demand for inland waterways in the state of Kerala between Kollam and Thiruvananthapuram districts for a stretch of 74 km. They studied the social, technical, and economic feasibility of inland waterways and concluded that if the neglected navigation system is developed efficiently and economically, it will be a milestone in the development of sustainable transportation systems especially in terms of logistics movement and tourism.

Above mentioned review clearly showed that very little researches have been done so far on the all-around viability of the inland water transportation system of JMVP of NW-1. But the Government is claiming that JMVP of NW-1 will have a great economic prospect for India's transportation sector. Therefore, an all-around evaluation of the project by considering both quantitative (financial perspective), as well as qualitative factors (non-financial factors including environmental costs), will be necessary and relevant. The present study attempts to shed light on all these factors to provide a comprehensive assessment of JMVP of NW – 1.

Objectives of the Study

The general objective of the study is to evaluate the all-around viability of JMVP of NW-

1(Stretch-1: Haldia- Varanasi) in terms of economical, commercial, environmental, and social perspectives. The specific objectives are as under:

• To analyze the comparative economic cost of freight movement from Haldia to Varanasi through railways, roadways, and inland waterways.

• To make a SWOT analysis of JMVP of NW-1.

• To suggest measures to address the challenges associated with the JMVP of NW-1.

Methodology

The present study is both explorative and analytical in nature. The study is based on secondary data which were collected from different websites of national and international agencies. The focal point of the study is to estimate, analyze and compare the economic cost of freight movement of JMVP of NW-1 which combines both explicit and implicit costs with parallel rail and road corridors (existing and under construction) in this region. The economic cost is estimated by summing up four categories of costs – commercial cost (explicit cost), surface occupation cost (explicit cost), environmental cost (implicit cost), and accidental cost (implicit cost). The comparative economic cost is calculated using the operating costing method and the results are represented in composite cost units (i.e., Ton-Kilometer). Quantity of projected goods transported in 2020 from Haldia to Varanasi through NW-1 and distance from Haldia to Varanasi under three different modes of transportation are two basic multipliers that are being used for estimation of commercial cost, environmental cost, accidental cost, and surface occupation cost. Besides, the study individually analyses the underlying factors (e.g., energy efficiency, distance, pollution generated, etc.) that contribute heavily to choosing the best possible mode of transportation for the projected freight movement between Haldia to Varanasi.

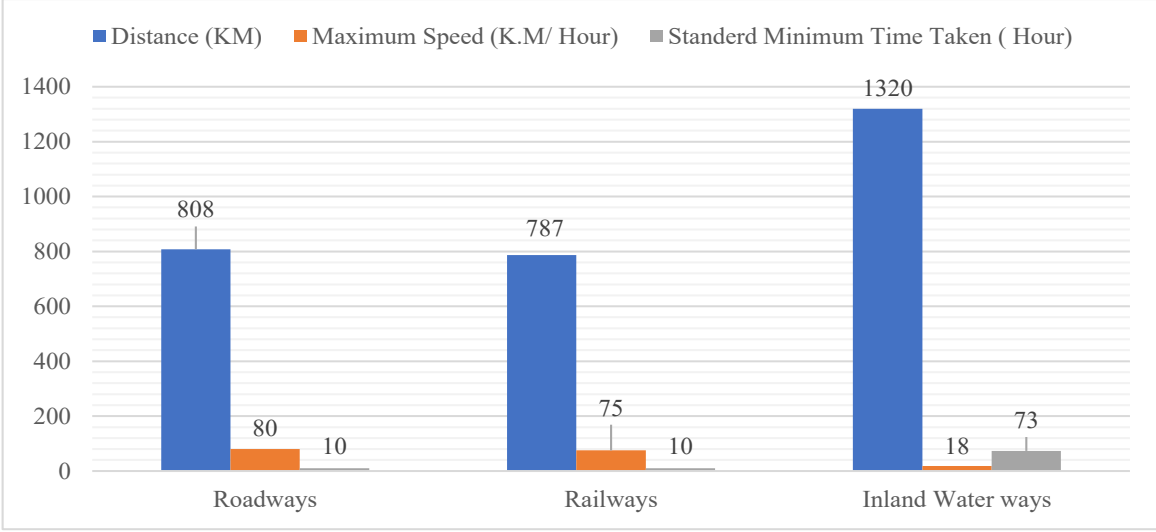
Analysis and Interpretations

Analysis of comparative economic cost under rail, road, and waterways can be presented in two broad heads – Component-wise Analysis and Composite Analysis.

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

Standard Minimum Time Required: Distance is the key factor in estimating the economic cost of freight movement from Haldia to Varanasi. Distance between Haldia to Varanasi under three different modes of transportation is different. As a result, the standard minimum time taken to carry the freight differs among the modes as shown in Chart 2.

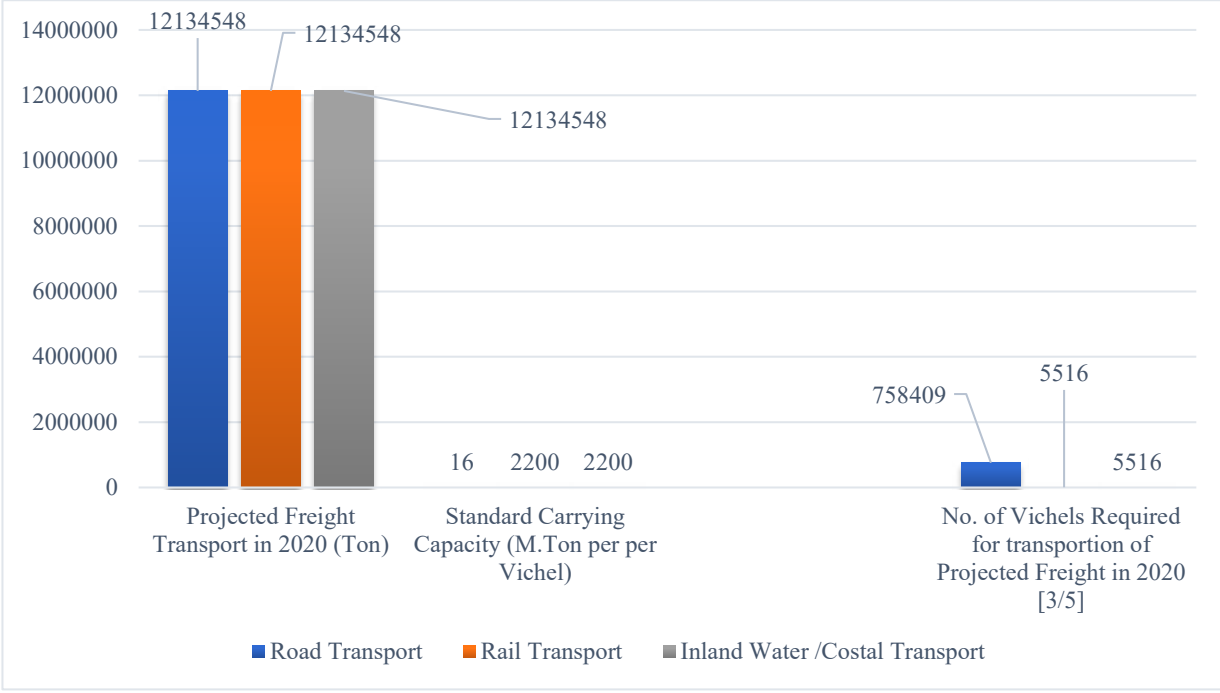
Figure 2: Standard Maximum Time Taken to Reach Varanasi from Haldia



From Chart 2, it is clear that inland waterways account for maximum distance, almost double in comparison to the other two modes. With the given average speed, we can calculate the expected time taken under three modes. Chart 2 revealed that road and rail transport ensure quick movement of goods in 10 hours whereas NW – 1 expected to take almost 73 hours (7-fold higher time) for the same. This means NW-1 rather provides a disincentive for minimizing normal loss (for perishable products) and gaining an extra edge to quick marketization of product.

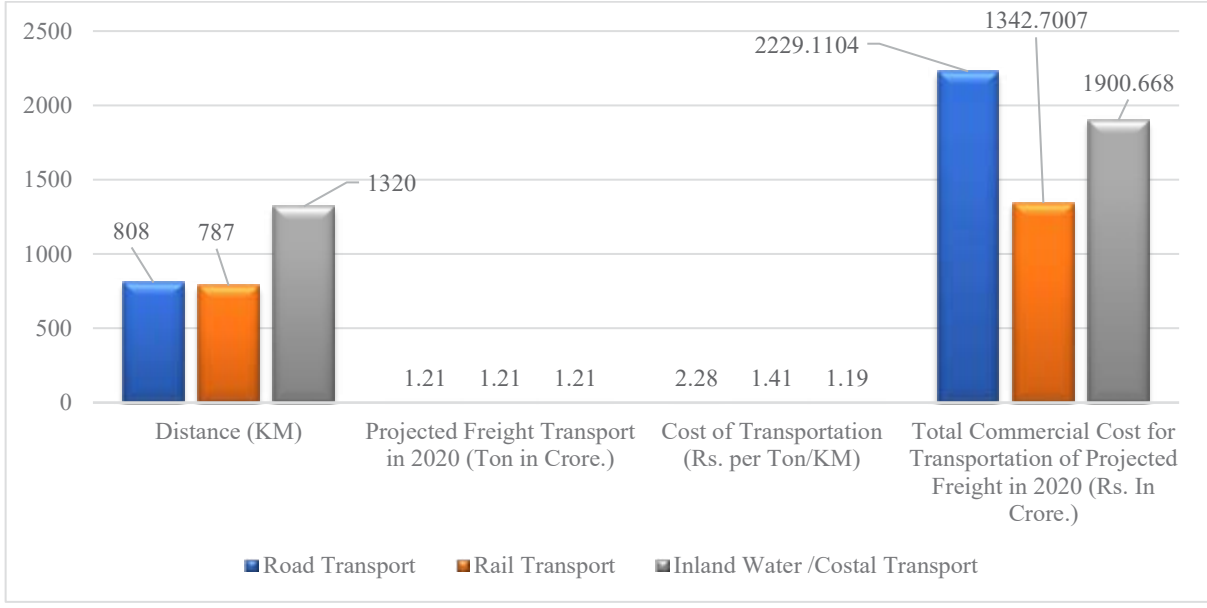
Congestion of Vehicles: The Ganga basin is the most densely populated part of India. That's why existing roads and railways in this region are facing tremendous congestion of vehicles. Chart 3 shows that railway and inland waterways required a smaller number of vehicles in comparison to roadways and therefore result in less congestion. But railways of this region are already overburdened. That is why inland waterways will be the new window of option for freight movement from Haldia to Varanasi and in the process expected to minimize the load and congestion, both for railways and roadways.

Figure 3: Number of Vehicles Required for Projected Freight Movement



Commercial Cost: Chart 4 shows that railway (Rs. 1342.7 crores) is the most economical mode for freight movement in terms of commercial cost as compared to roadways (Rs. 2229.11 crores) and inland waterways (Rs. 1900.67 crores). Although waterways offer the least cost in terms of per ton/KM (Rs. 1.19) but the model suffers from the distance count which is almost double of railways. So, distance plays a key role in favor of railways.

Figure 4: Commercial Cost for Projected Freight Movement from Haldia to Varanasi



Energy Efficiency: Chart 5 shows that Inland waterways will be the most energy-efficient mode of transportation as compared to road and railways to move the targeted freight from Haldia to Varanasi. Here, total energy consumption is the key factor and which is lowest for waterways (76884496 Liters) as compared to railways (93588915 Liters) and roadways (306887573 Liters).

Figure 5: Energy Consumption for Freight Movement from Haldia to Varanasi

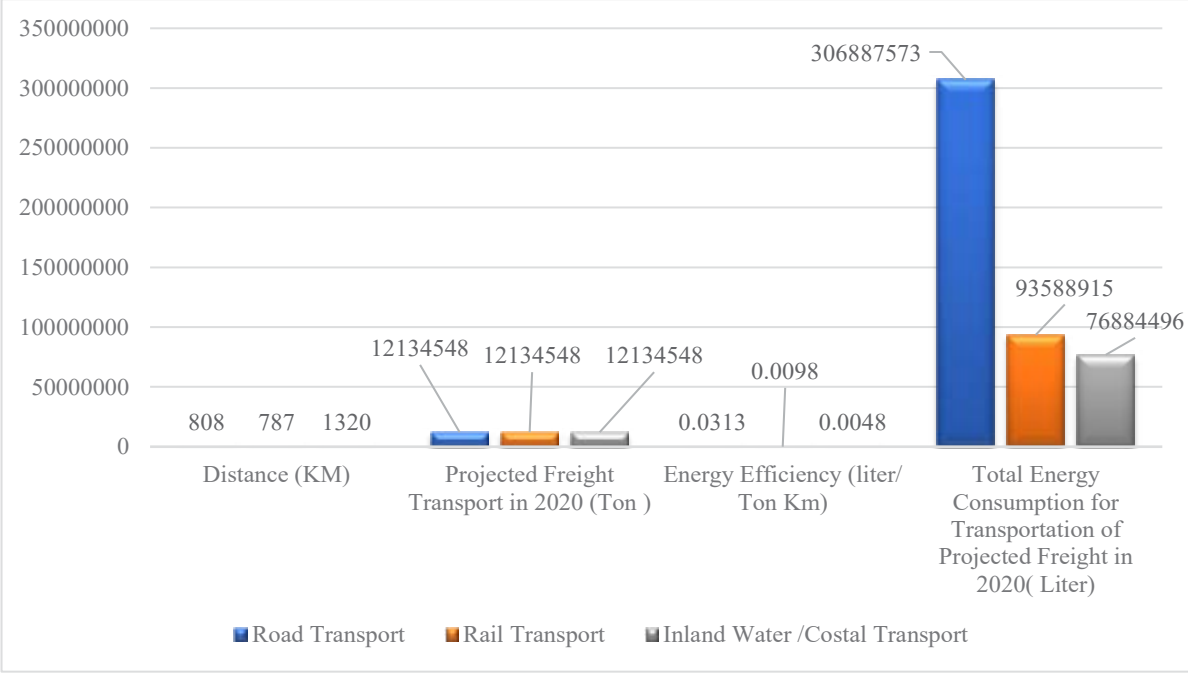
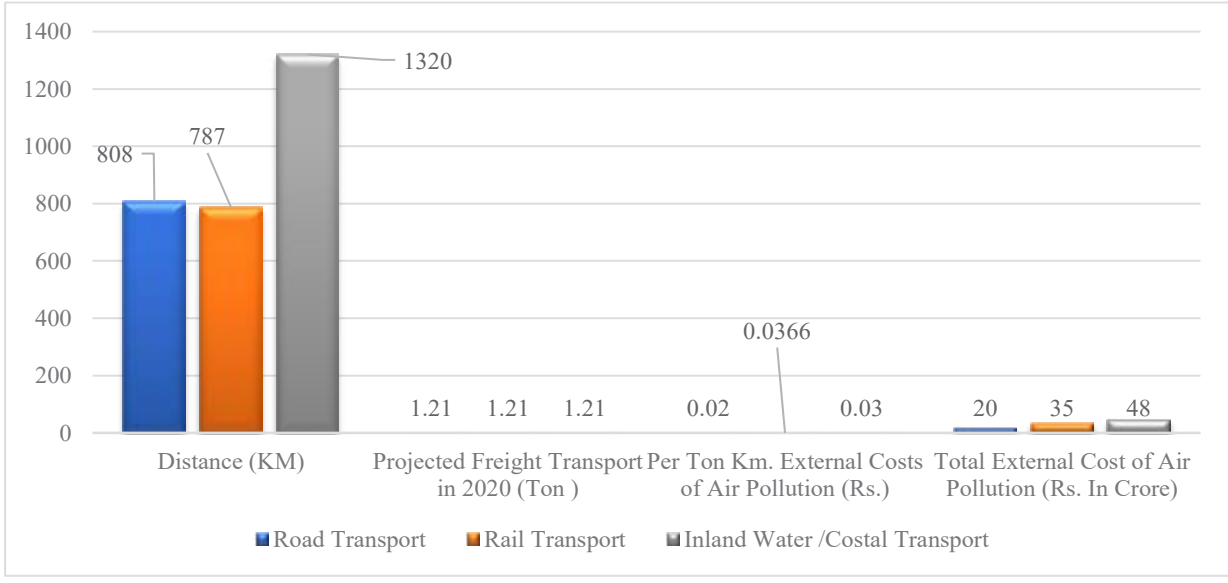


Figure 6: Air Pollution for Freight Movement from Haldia to Varanasi



Level of Air and Noise Pollution: Total environmental cost is the cumulative figure of the total external cost of air pollution and noise pollution. Chart 6 shows that external costs in terms of air

pollution under waterways will be much higher than railways and roadways if the projected goods are to be moved from Haldia to Varanasi. It is largely due to the distance involved under a waterway which is almost double in comparison to road and railways. Whereas, Chart 7 shows that waterway is zero noise pollution mode of transportation as compared to railways (Rs. 1.14 crore) and roadways (Rs. 3.13 crore).

Figure 7: Noise Pollution for Freight Movement from Haldia to Varanasi

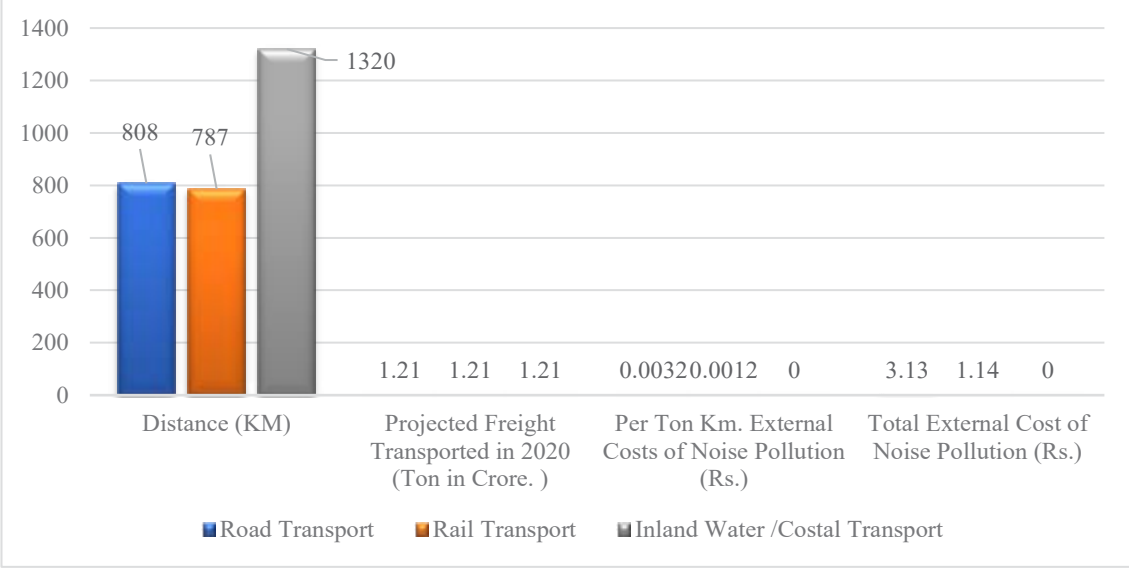
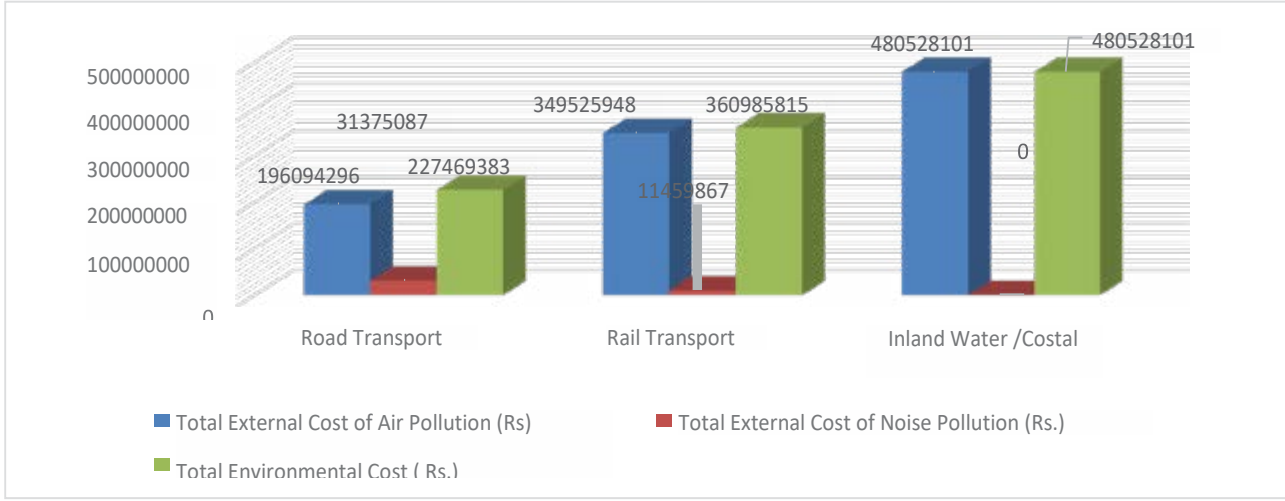


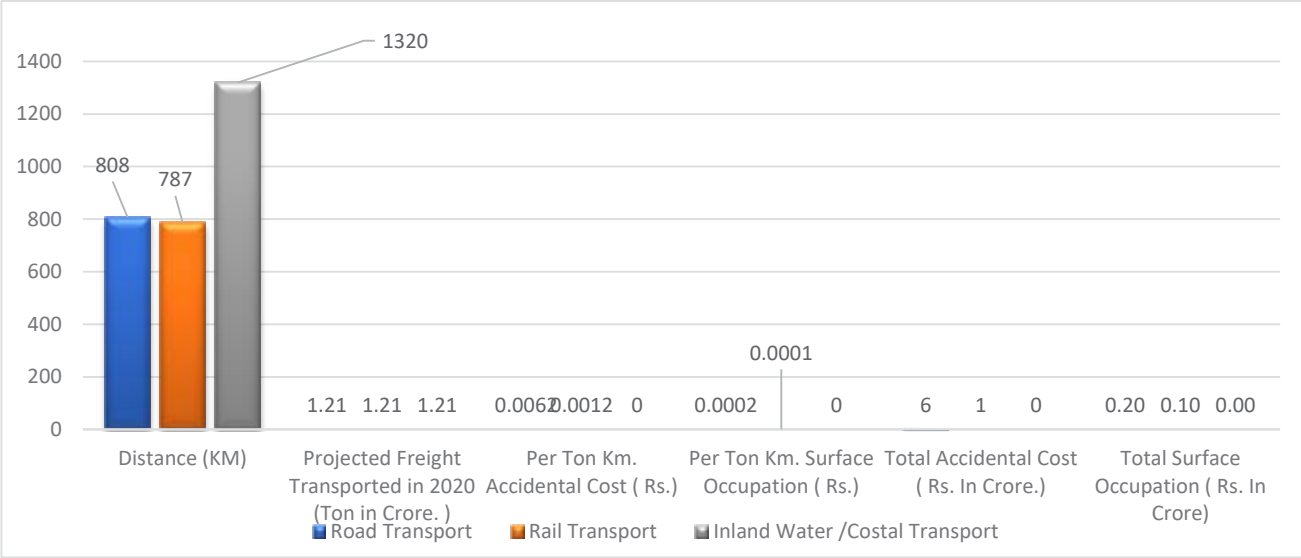
Chart 8 shows that the total environmental cost under inland waterways (Rs. 48.05 crores) is higher than rail (Rs. 36.1 crores) and roadways (Rs. 22.74 crores) so far as projected freight movement from Haldia to Varanasi is concerned.

Figure 8: Total Environmental Cost for Freight Movement from Haldia to Varanasi (Rs)



Accidental Hazards: We know that water vessels do not occupy any surface (garage etc.) and are more or less an accident-free mode of transportation. Chart 9 shows that the inland waterways account for zero accidental cost and surface occupation cost in comparison to roadways (Rs. 6.08 crore) and railways (Rs. 1.15 crore) while moving freight between Haldia to Varanasi.

Figure 9: Total Accidental and Surface Occupation Cost for Freight Movement from Haldia to Varanasi



the most favorable option on four counts (noise pollution, accidental cost, surface occupation cost, and economic cost per Ton-KM) whereas railway becomes most favorable on two counts (Commercial cost efficiency and energy efficiency). Considering 'Most Favourable' and 'Favourable' options concerning each parameter together, we can conclude that both railways and inland waterways are suitable options for freight movement between Haldia to Varanasi. The JMVP of NW-1 does not get any extra edge from its parallel railways if we do not stick to the per Ton-KM economic cost and take into account all other factors/components discussed under section 5.1.

Table 3: Computation of Estimated Economic Cost of Freight Movement by Road, Rail, and Inland Waterways from Haldia to Varanasi

Sl No.	Particulars	Roadways	Railways	Inland Waterways
	Estimated Commercial Cost			
1	**Distance (KM)**	**808**	**787**	**1320**
2	Standard Commercial Cost of Transportation (Rs.) (Per Ton KM)	2.28	1.41	1.19
3	Projected Freight Transported in 2020 (Ton)	12134548	12134548	12134548

4	**Total Commercial Cost for Projected Freight (Rs.) [1x2x3]**	**2235,47,49,708**	**134,65,33,879**	**1906,09,47,998**
Estimated Environmental Cost				
5	Per Ton Km. External Costs of Air Pollution (Rs.)	0.02	0.0366	0.03
6	**Total External Cost of Air Pollution Projected Freight (Rs.) [1x3x5]**	**19,60,94,296**	**34,95,25,948**	**48,05,28,101**
7	Per Ton Km. External Costs of Noise Pollution (Rs.)	0.0032	0.0012	0
8	**Total External Cost of Noise Pollution Projected Freight (Rs.) [1x3x7]**	**3,13,75,087**	**1,14,59,867**	**0**
9	**Total Environmental Cost Projected Freight (Rs.) [6+8]**	**22,74,69,383**	**36,09,85,815**	**48,05,28,101**
10	Energy Efficiency (liter/ Ton Km)	0.0313	0.0098	0.0048
11	**Total Energy Consumption for Projected Freight (Liter) [1x3x10]**	**30,68,87,573**	**9,35,88,915**	**7,68,84,496**
Estimated Accidental Cost				
12	Per Ton Km. Accidental Cost (Rs.)	0.0062	0.0012	0
13	**Total Accidental Cost for Projected Freight (Rs.) [1x3x12]**	**6,07,89,232**	**1,14,59,867**	**0**
14	Standard Carrying Capacity	**1 Truck (10 Tyres) = 16 M.Ton**	**1 Goods Train (40 Wagons)= 2200 M.Ton**	**1 Vessel= 2200 M.Ton**
15	No. of Vehicles Required for projected Freight [3/14]	**7,58,409**	**5516**	**5516**
16	Standard Maximum Speed (K.M/ Hour)	**80**	**75**	**18**
17	**Standard Minimum Time Taken (Hour) [1/16]**	**10**	**10**	**73**
Estimated Surface Occupation Cost				
18	Per Ton Km. Surface Occupation (Rs.)	0.0002	0.0001	0
19	**Total Surface Occupation Cost for Projected Freight (Rs.) [1x3x18]**	**19,60,943**	**9,54,989**	**0**
20	**Total Economic Cost for Projected Freight (Rs.) [4+9+12+19]**	**2264,49,69,265**	**1383,87,44,550**	**1954,14,76,099**

21	Per Ton Economic Cost for Transportation of Projected Freight (Rs.) [20/3]	1,866	1,140	1,610
22	**Estimated Per Ton Km Economic Cost (Rs.) [21/1]**	**2.30**	**1.44**	**1.21**
23	**Ranking**	**Third**	**Second**	**First**

Source: (i) ICAR-Central Inland Fisheries Research Institute, Report 6/02/2020,

(ii) Authors' Calculations

Figure 10: Per Ton Km Economic Cost for Freight Movement from Haldia to Varanasi

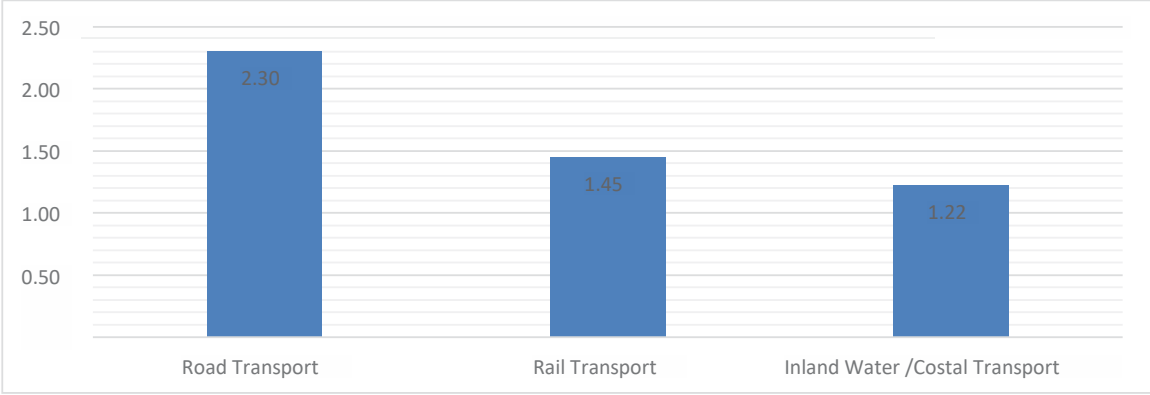


Table 4: Summary of Favourable Mode of Freight Movement under Different Factors

Factors/Parameters	Most Favourable	Favorable	Unfavourable
Commercial Cost Efficiency	Railway	Inland Waterways	Roadways
Energy Efficiency	Railway	Inland Waterways	Roadways
Air Pollution Efficiency	Roadways	Railways	Inland Waterways
Noise Pollution Efficiency	Inland Waterways	Railways	Roadways
Environmental Cost efficiency	Roadways	Railways	Inland Waterways
Accidental Cost Efficiency	Inland Waterways	Railways	Roadways
Surface Cost Efficiency	Inland Waterways	Railways	Roadways

Per Unit (Ton KM.) Economic Cost Efficiency	Inland Waterways	Railways	Roadways

SWOT Analysis of JMVP

The JMVP of NW-1 is the flagship project of the Indian inland waterways system. The fate of other inland waterway projects which are in the pipeline depends on the success of the JMVP of NW-1. As such, the JMVP of NW-1 has not only economic significance but also has huge policy implications in the days to come. So, Strength Weakness Opportunities and Threats (SWOT) Analysis of JMVP of NW-1 is essential to take into account all qualitative (non-financial) factors. The SWOT analysis for JMVP of NW-I is presented in the matrix on the next page under Chart 11.

Figure 11: SWOT Analysis of JMVP of NW-I

Strength	**Weakness**
• Minimal land acquisition • All-weather mode. • Low development cost. • Minimal traffic congestion. • Zero noise pollution • Zero accidental cost.	• The comparatively longer distance involved • Huge time-consuming mode of transportation. • A large number of river bends • The historically negated mode in India. • Lack of river management system. • Unsuitable for a small volume of freight
Opportunities	**Challenges**
• Huge scope of employment. • Less accident-prone mode • Revival of waterways by dragging of silt from the river bed. • As per Indo-Bangladesh protocol, the JMVP of NW-1 will be proposed to link up with NW-2 (Dhubri to Sadhia in Assam). • Reduce the burden from rail routes and roadways. • A huge possibility of infrastructural development in the river basin area.	• Securing Aviral Dhara of water in all monsoons. • Over dragging is harmful to the river system. • Maintaining permanent navigation facility • Possibility of a tug of war between states and central government w.r.t law and order, distribution of water and water resources of a river bed. • The JMVP of NW-1 is likely to face very high competition from the Eastern Dedicated Freight Corridor (EDFC) (Ludiana to Dankuni via Varanasi) in near future.

Findings and Conclusion

The above-noted discussion and analysis pointed out the following:

- ❖ Per Ton-KM. the economic cost of the inland waterway (Rs. 1.22) is the lowest for projected freight movement from Haldia to Varanasi. Railways occupied the next slot with Rs. 1.45 per Ton-KM.

- ❖ Distance between Haldia to Varanasi under three modes of transportation is the key factor. The advantages of inland waterways in terms of commercial cost, surface occupation cost, energy efficiency, etc. are counterbalanced (to a large extent) due to the comparative longer distance involved from Haldia to Varanasi (almost double in comparison of the other two modes).

- ❖ In the case of freight movement, time is also a crucial factor and, on that count, slow-moving vessels will create major obstacles for quick transportation and marketing of goods so far as waterways are concerned. It takes almost 7-fold more time to reach the destination as compared to railways.

- ❖ Maintaining the depth of the river within stretch-1 of NW-1 throughout the year will be the biggest challenge for project management. Normally in the dry season water flowing within the Ganga bed is very low. According to a survey generally, 80% of the total volume of water flows during the monsoon season. Rest 20% water flows in the dry season. According to the expert, this volume of water flow during dry seasons is not sufficient to maintain navigable depth.

- ❖ Moreover, the River Ganga is typically unpredictable for its flowing pattern, especially in Farraka Barrage region. So, maintaining a permanent navigation route will be a challenging task for project management.

- ❖ The EDFC will be the main competitor of the JMVP of NW-1 in the days to come. The EDFC will be the first choice for the corporates to transport their freight from Haldia to Varanasi for time-saving.

- ❖ Due to the Indian constitutional federal structure, the safety and security mechanisms of JMVP will be depending on respective state governments' cordial initiatives and cooperation. So, there is a maximum likelihood of some conflict among the states and the Central Government.

❖ The success of river management largely depends upon silt management for maintaining the required depth. Many environmentalists apprehend that silt extracting from the river bed of Ganga will be harmful to the river and the habitat around it.

Inland waterway is indeed the cheapest mode of transportation all over the world. But the nature of Indian rivers is different from the rivers of Europe, America, and other parts of the world. So, the general river control mechanism will not be effective for Indian rivers, especially in the case of the Ganga. The Ganga is very much bend- full and carrying a huge volume of silt with her water. These create hindrances in maintaining straight navigable waterways all over the year. Many environmentalists voiced against silt dragging and cited the case of Tista Barrage Project, Dammodar Valley Project, and Farracka Barrage Project which were unable to fulfill their targeted commercial and environmental objectives. It is alleged that a pan India lobby of the real estate sector is eying at the silt of the Ganga for their project purposes as silt of the Ganga is useful for construction work. So, the JMVP of NW-1is like a jackpot project for this lobby.

The major drawback of the JMVP of NW-1 is the distance between Haldia and Varanasi. This distance is almost double in comparison to roadways and railways. As a result, it is more time-consuming than railways and roadways. Moreover, when EDFC will become fully operational, then the EDFC will be the cheapest option for quick and bulk movement of goods. Despite the above, the JMVP of NW-1 has huge other economic potentialities, like generating employment, promotion of tourism, etc. The JMVP of NW-1 should not be treated as a competing mode of transportation against rail and roadways. The govt. should set its objectives in such a manner that JMVP of NW- 1 emerged as a supplementary mode of transportation with parallel railways and roadways. Otherwise, the JMVP of NW-1 cannot compete with another mode of transportation in the long run and it will lose its significance.

Limitations of the Study and Policy Implications

The present study has some limitations imposed by time and money constraints. These are as follows:

• Apart from road, rail, and inland waterways, other modes of transportations, like air, pipeline, etc. are not taken into consideration for the study.

• Only freight movements of JMVP of NW-1 are analyzed, but other economic benefits like, tourism, leisure transport, passenger movement are not taken into consideration.

Despite having these minor limitations, the study highlighted the comparative and comprehensive position of JMVP both in terms of quantitative and qualitative parameters. Such a comparative analysis will help in framing or revising policies regarding the development of other national waterways in general and JMVP of NW-1 in particular.

References

Chand, S. (2020). Water Transport: Inland Waterways and Ocean Transport. Your article library.

Kumari, M., Syamaprasad, S. and Das, S. (2019). Inland Waterways as an alternative and Sustainable Transport in Kuttanad Region of Kerala, India. Advances in Water Resources Engineering and Management, 39, 245-257.

Loksava Secretariat (2015). Development of Waterways in India. Parliament Library and Reference, Research, Documentation and Information Service, 1-13.

Louis, T.R., Longhinos, B., Adhin, C.P. and Kartik, S. (2020). Feasibility Study on Sustainable Development of Inland Navigation under Changing Traffic Scenario of Kerala: A Case study. Journal of the Institution of Engineers, 101, 523-534.

Nagabhatla, N. and Jain, P. (2013).Assessing the Potential Role of Inland water navigation for Green Economy. Journal of Environmental Professionals Srilanka, 2(1), 25-37.

Nandita, k. (2018). Reckonings of Inland waterways transport System in India. Indian Journal, 6(2), 172-185.

Narayan, R. and Raghuram, G. (2006).Viability of Inland Water Transport in India. Indian Institute of management Ahmadabad.

Praveen, S. and Jegan, J. (2015). Key Issues and Challenges for Inland Water Transportation Network in India. International Journal for Scientific Research and Development, 3(10), 653- 658.

Praveen, S., Rajkumar, S., Bhagavti, P. and Jegan, J. (2015).A case Study on Inland Water Transportation System in Kochi City Region. International journal of Technological research in Engineering, 2(11), 2802-2806.

Sarkar, P.K., Mathur, V. and Maitri, V. (2007).Potentiality of Economic Gain from Inland Water Transportation in India. Saga Journal, 1, 45-52.

Sriraman, S. (2010). Long Term Perspectives on Inland Water transport in India. RITES Journal, 1-14.

http://www.Inland Water Ways Authority of india.nic.in.

http://www. ICAR.Org.in.

http://www.worldbank.org.

PERFORMANCE EVALUATION OF DEBT MUTUAL FUND SCHEMES IN INDIA

Dr. Saurabh Pandey *

ABSTRACT

Purpose of the study: Spectacular changes and several financial innovations marked a new era in the Indian capital market. The entry of mutual funds is a crucial event of this era. Mutual funds mopped up a large quantum of household saving and emerged as an important institutional investor in the capital market but still MFI at a nascent stage in India in comparison to other developed nations. Still, people parked their savings with traditional investment avenues. The centre of discussion of this study is to examine the financial performance of MF schemes for increased investment in MFs.

Methodology: In the study financial performance of debt category mutual fund are examined. To examine the financial performance of fund different financial measures are employed i.e. Sharpe, Treynor, Alpha, R2, Information ratio, beta (β), Standard Deviation (σ),

Main Findings: The comparative analysis of the study reveals – The pecuniary examination results exhibit at individual stage public sector MFS has outperformed in five different sub-categories of selected debt MFs and in three sub-categories of debt private sector has outperformed But, in the overall context, it has been found there is no significant differences between private and public sector as one fund offset the performance other. In addition, almost all the mutual fund schemes are less risky and yield an excess return than the benchmark index, and all selected debt categories funds yield nearly very close returns among themselves i.e., around 8% - 10%.

Applications of this study: This study assists both the investors as well as mutual fund companies. Investors are get benefitted by knowing which sector, category, and mutual fund schemes meet their investment objectives.

Novelty/ Originality of this study: Plethora of studies done before but no study will fulfill the objective. Therefore, the study is focused to examine all sub-categories of debt MFs on a daily NAV basis

Keywords: Mutual Fund Schemes (MFs), Financial Performance evaluation, Mutual Fund Schemes (MFs), Net Asset Value (NAV),

* Assistant Professor (Guest Faculty)
Allahabad Degree College, Prayagraj (U.P)

Introduction

With the development of financial markets, diverse investment instruments have also proliferated along with it. Such instruments have provided ample scope for the investors to affect multiple investments and enable them to earn reasonable returns with minimum risk. Mutual funds are such investment vehicles that have reformed the entire investment world. (USSEC, 2010). SEBI 1993 - "Mutual Fund means a fund established in the form of a trust by a sponsor to raise money through the sale of units to the public under one or more schemes for investing in securities following these regulations".

The mutual fund industry was introduced in India with the enactment of UTI in 1963 and has grown through manifold phases, initially from a state of monopoly to that of being controlled by market forces. Many new AMCs (Asset Management Companies) have entered the process and some existing AMCs have been acquired or got merged with others. The mutual fund industry, through its unique aspect of less risk (compared to the stock market) and better returns (vis-à-vis traditional financial products), has come as a boon to the middle class and has attracted a huge amount of investment. The mutual fund industry has been facing tremendous growth in its number of AMC, schemes, and AUM (Asset Under Management) since its inception (1964). In 1964 there was 1 AMC and 1 MFS (Mutual Fund Scheme) circulated in the market with ₹ 0.3 billion asset size (AUM) but as of 31st March 2018, there have been 42 AMCs and 1,998 MFS are circulated in the market with ₹ 21,360 billion asset size (AUM). Therefore, it is clear that the Indian mutual fund industry is in the growth phase and has a large investors base. But in respect of the world's developed countries, America and Europe have the highest share in world mutual fund assets i.e., 50% and 36% respectively, whereas the share of India in the world's open-ended mutual fund assets is only 0.62% (ICI Factbook 2017). In the SEBI report (2017) on 'Financial Assets and Liabilities of Household Sector,' it was noticed that gross financial household savings are ₹ 14,04,847 crore and people have invested only ₹ 12,765 crores in Indian mutual fund schemes which are approximately 1% of household savings invested in mutual funds that is why the mutual fund industry is at a nascent stage in comparison to other developed countries. One of the main reasons for not having substantial growth in the mutual fund industry is the lack of awareness and trust in policymakers and companies among investors. Panda T. K. and Tripathy N. P. (2002), Singh J. and Chander S. (2004), Desigan G., Kalaiselvi S. and Anusuya L. (2006), Parihar B. B. S., Sharma R. and Parihar D. S. (2009), Pandey A. (2011).

Therefore, the investors are not acquainted with the different investment avenues and offers which are given by mutual fund companies, because the periphery of the Indian mutual fund industry is very wide, there are 42 AMCs regulated in the market among them 7 are public and 35 belongs to the private sector and they offer 1,941 schemes, each scheme has a direct plan as well as a regular plan, and each plan has a dividend and growth option. Due to the lack of direct personal relationship between prospective investors and mutual fund companies, the investors are in dilemma to know which sector and which particular fund perform best and meet their investment objectives.

In most surveys and financial reports, it has been found that – the majority of investors prefer to invest their savings in traditional investment avenues like banks, post-office, fixed deposits, etc. because of their risk-averse nature. Therefore, this study is focused to attract those potential investors who are ready to park savings with debt mutual funds at very low risk and get more return than traditional investment options...

The present study has intended to raise four research questions. Firstly, the study examines the existing literature by providing a robust result. Secondly, the study has examined the performance of selected mutual fund schemes with the help of different standard statistical measures like Sharpe, Treynor, Jensen Alpha, R-Squared, and Beta. Thirdly, the study examines the overall performance of debt categories funds to know which sector is performing well. Further, the conclusion & observation, and suggestion of the study are presented in sections VII & VIII respectively.

Review of Literature:

There is plethora of studies are available in both national and international. They extensively addressed the issues of financial performance (risk & return relationship) by employing different performance measures.

During the early years, the rate of return was the only measure of performance. Risk measurement is considered an important tool to judge the performance of mutual funds. Markowitz (1952) & Tobin (1958) suggested risk measures in terms of variability of returns. Treynor (1965), Sharpe (1966), and Jensen (1968) compared the returns of professionally managed portfolios to that of some standard benchmark. Cumby & Glen (1990) and Lahbitant (1995) found funds underperforming their benchmark. Murthi et al. (1997) proposed problems associated with traditional performance measures as identifying the appropriate benchmark, not accounting for the cost of the transaction, and measuring performance in terms of efficiency. It indicates that fund managers are not efficiently performing their job. Pui & Jusoh (2012) found the performance of equity fund investing in the Malaysian stock market depends on the risk level of the funds and fund size and turnover have no impact on equity fund performance. Vidal-García et al. (2016) found strong evidence of persistence in daily mutual fund return over the quarterly measurement period and confirms that superior performance is a short-lived phenomenon.

In India, Chander (2000) found the funds outperformed while Singh & Singla (2000) found that funds underperformed their benchmark, and Gupta (2001) found mixed results. Galagedera & Silvapulle (2002) found that funds were efficient in the long term. In 2004, Gupta & Gupta and Rao et al. found funds outperforming their benchmark. Linand Chen (2008) found the number of efficient funds higher in the year 2003 than in 2001 and 2002. Soongswang & Sanohdontree (2011) found varied outcomes. Jitendra & Anindita (2015) found tax saving MFs have outperformed as compared to their market return and the performance of public sector tax saving MFs are not satisfactory, Satish & Shakti (2016), Nala & Gautami (2018) found mutual fund return has a direct relationship with benchmark return, and market timing. Me-

hta, M. C., & Kaur, H. (2018). found that the investors prefer more debt schemes as compared to equity/ growth-oriented which indicates that the investors in India are risk-averse and prefer a fixed return on their investment.

The objective of the Study: The gaps found in the literature review following objective are framed for the study: - "To analyze and compare the performance of debt open-ended mutual fund schemes for the private and public sector".

The hypothesis of the Study:

H0: There is no significant difference in the performance of debt open-ended mutual fund schemes between private and public sectors.

H1: There is a significant difference in the performance of debt open-ended mutual fund schemes between the private and public sectors.

Methodology:

❖ **Description of Data, Variables and Model & Method used :**

Data: The study is purely based on secondary data and the study focus to examine the performance of mutual fund schemes for this data has been collected from the CRISIL database (CMFRF), RBI, NSE, and different journal and magazine.

Table: 1 Variable Description:

Sr. No	Variables	Definition	Source and Year
1.	R_p	Return of portfolio	Daily NAV of selected schemes is drawn CRISIL database from 1st April 2013-31st March 2018.
2.	R_f	Risk-Free return	91 days Treasury bill weekly return is taken from RBI website from 1st April 2013 to 31st March 2018 (average - 7.48%). After that convert weekly data into daily by taking the average of the week and dividing by 365.
3.	R_m	Return of Market	CRISIL Composite Bond Fund Index CRISIL Composite Bond Fund Index is taken from the CRISIL database from 1st April 2013-31st March 2018

4	**Return calculated =** (Closing value- Opening Value/Opening Value)*100		
	Statistical Model and Methods Employed		
5.	Financial Performance of Mutual Fund Schemes between private and public sector	**Risk and Return:** Sharpe measure (SR) and Treynor measure (TR) **Jensen Alpha (α):** Stock Selection Ability **R-Squared (R^2):** Correlation between Fund and Benchmark Return **Information Ratio:** Measure portfolio return over benchmark return **Beta (β) and Standard Deviation (σ):** Measure Volatility and intensity of risk.	For Analysis Microsoft Excel 2010 Used

❖ **Description of Measures:**

The Performance evaluation of selected sample mutual fund schemes has been evaluated based on the following measures:

Table: 2 Identification and Specification of the Measures

Sr. No	Measures	Description	Interpretation	Formula
1.	**Average Annual Growth Rate (AAGR)**	AAGR is the average increase in the value of an individual investment, portfolio, asset, or cash stream over a period of a year.	It is calculated by taking the arithmetic mean of a series of growth rates.	$$AAGR = \frac{Sum\ of\ return\ of\ different\ Periods}{Number\ of\ Periods}$$
2.	**Sharpe Ratio**	Sharpe ratio indicates excess return over the risk-free return. It	The higher Sharpe indicates higher relative to the amount of	$$RVAR_p = \frac{R_p - R_f}{\sigma_p}$$

		measures the total risk associated with a fund	risk taken	
3.	**Treynor Ratio**	Treynor ratio is similar to Sharpe ratio. It also measures excess return over the risk-free return but it measures only the market(systematic) risk associated with the fund through β	A higher Treynor ratio indicates better fund performance gives a higher return with lower market risk of the fund.	**$RVOL_p = \frac{R_p - R_f}{\beta_p}$**
4.	**Jensen Alpha Ratio**	Alpha measures the gap between a fund's actual return and expected return through measuring β. It examines the adequacy of portfolio diversification	Higher alpha shows better fund performance correlates to the market due to funding manager-wise decisions through measuring systematic risk.	**Alpha = $R_p - [\ R_f + \beta_p (R_m - R_f)]$**
5.	**Beta (β)**	Beta is fairly used to measure the market risk (systematic risk). It indicates the level of volatility associated with the	Beta > 1 = High risky Beta < 1 = Low risky Beta = 1 = Average.	**Beta (β) =** $\frac{Covariance\ of\ Index\ and\ Stock\ return}{Variance\ of\ Index\ return}$

		fund as compared to the benchmark or stock market		
6.	**R-Squared**	R-Squared ($\mathbf{R^2}$) measures the correlation between fund's movement and benchmark index return. It describes the fund's volatility and market risk.	R–squared values range between 0 and 1, whereas 0 represents no correlation and 1 represents a full correlation	**Correlation** $\frac{\boldsymbol{Covarience\ of\ index\ and\ portfolio\ return}}{\boldsymbol{\sigma\ of\ Portfolio\ return * \sigma\ of\ Index\ return}}$
7.	**Standard Deviation (σ)**	σ Measures the total risk associated with the fund. It evaluates the volatility by measuring the degree to which the fund fluctuates concerning its mean return	Higher σ shows more volatile funds and vice versa. Hence lower σ should be good and safe i.e., σ near to its mean return	**σ** = Square root of the variance
8.	**Information Ratio**	Information ratio measures the portfolio return over the benchmark return through tracking error	The higher information is better.	**Information Ratio =** $\frac{Active\ Return}{Tracking\ Error}$

❖ **Sample Selection**

Debt Categories Mutual Funds							
		Public	**Private**	**Total**	**Public**	**Private**	**Total**
1.	Gilt Fund	12	3	15	3	3	6
2.	Credit Risk Fund	10	3	13	2	2	4
3.	Dynamic Bond Funds	13	4	17	4	4	8
4.	Short Duration Fund	15	2	17	2	2	4
5.	Money Market Fund	6	2	8	2	2	4
6.	Low Duration fund	16	4	20	3	3	6
7.	Ultra-Short Duration Fund	10	3	13	3	3	6
8.	Liquid Funds	19	4	23	3	3	6
	Total	**101**	**25**	**126**	**22**	**22**	**44**

Table: 3 - Particulars of Selected Sample Schemes

❖ **Classification of Schemes:** Debt fund is categorized in eleven sub-categories which are as follows:

1. **Gilt Funds:** Gilt funds are those funds that invest at least 80% of total assets in government securities across maturity. It generates fixed interest with minimum risk.
2. **Credit Risk Funds:** These mutual funds invest at least 65% investment of total assets in higher rating corporate bonds. Because these bonds have higher credit ratings and less probability of default.
3. **Corporate Bonds:** These mutual funds make a minimum of 80% investment of total investments in the highest-rated bonds issued by corporates/companies.
4. **Dynamic Bond Funds:** As the name suggests these funds are dynamic in terms of the composition and maturity profile. The objective behind the dynamic fund is to deliver an 'optimal' return in both rising and falling scenarios. The investment makes across the duration and depends on the fund manager's decision and portfolio management.
5. **Medium to Long Duration Funds:** These categories of funds mainly invest in those securities of debt and money market whose maturity period is more than seven years (Macaulay duration).
6. **Medium Duration Funds:** These funds also make investments in money market and debt securities but the maturity period is 3 to 4 years
7. **Short Duration Funds:** These funds also invest in money markets and debt securities, but as the name suggest these categories of the fund have less maturity period (Macaulay duration) amid 1 to 3 years

8. **Money Market Funds:** These funds invest in highly liquid cash and cash equivalent securities of mutual funds that have credit ratings and offer high liquidity with a low level of risk and maturity of money market instruments up to 1 year.
9. **Low Duration Funds:** These funds hold the investment in the debt and money market for 6-12 months.
10. **Ultra-Short Duration Funds**: These funds invest in money markets and debt securities and the maturity period these funds are very less i.e., 3 to 6 months.
11. **Liquid Funds:** These funds invest in the debt and money market whose maturity is up to 91 days only.

Empirical Result and Discussion:

The financial performance of debt category schemes is examined and compared among eight categories of debt mutual fund schemes and details are discussed from table **4 to 12** which are as follows:

1. Gilt Funds:

Table: 4 Comparison of Financial Performance of Gilt Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private:	7.99	0.0411	0.0605	0.0082	0.1319	-0.0075	0.1796	0.2643
1. DHFL Pramerica Gilt Fund – Growth								
2. Aditya Birla Sun Life Government Securities Fund - Regular Plan - Growth	9.51	0.0474	0.0646	0.0128	0.1535	0.0037	0.2559	0.3490
3. IDFC G Sec Fund - Investment Plan - Regular Plan - Growth	8.49	0.0383	0.0594	0.0096	0.1187	-0.0036	0.2153	0.3339
Public:	9.03	0.0466	0.0656	0.0114	0.1437	0.0001	0.2237	0.3153
1. Canara Robeco Gilt Fund - Regular Plan - Growth								
2. SBI Magnum Gilt Fund – Growth	10.13	0.0531	0.0767	0.0152	0.1367	0.0079	0.2446	0.3534
3. UTI Gilt Fund - Growth	9.70	0.0537	0.0740	0.0134	0.1507	0.0042	0.2266	0.3119

Source: Computed

The above table 4 exhibits that in the private sector, among the selected Gilt fund the Aditya Birla Sun Life Government Securities Fund shows the highest 5 years AAGR i.e., 9.51%, and outshine in another financial measure are Sharpe .0474, Treynor .0646, Alpha .0128, R^2 .1535 and IR .0037, the β.2559 and σ.3490. In the public sector among the selected fund, SBI Magnum Gilt Fund yields the highest 5 years AAGR i.e., 10.13%, and performance in another measure are Sharpe .0531, Treynor .0767, α .0152, R^2 .1367, IR .0079, β .2446 and σ.3534.

In the overall public sector SBI Magnum Gilt fund yields slightly better returns with a similar amount of risk premium taken.

2. Credit Risk Funds:

Table: 5 Comparison of Financial Performance of Credit Risk Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private:	8.79	0.1293	0.1900	0.0129	0.1323	-0.0014	0.0734	0.1078
1. Kotak Credit Risk Fund - Growth								
2. ICICI Prudential Credit Risk Fund - Growth	8.65	0.1370	0.2146	0.0125	0.1163	-0.0025	0.0624	0.0977
Public:	8.91	0.1416	0.2090	0.0134	0.1310	-0.0006	0.0687	0.1015
1. UTI Credit Risk Fund - Growth								
2. SBI Credit Risk Fund - Growth	9.48	0.2818	0.7792	0.0162	0.0373	0.0035	0.0211	0.0585

Source: Computed

Above table 5 depict that in the private sector ICICI Prudential Credit Risk Fund is outperformed other selected private-sector funds by providing a high return with less risk premium taken. Whereas, SBI Credit Risk fund is outshined in the public sector by providing high returns with the least risk premium taken. In the overall perspective, SBI Credit Risk Fund is outperformed by providing the highest return (AAGR) in terms of both total risks (SR), market risk (TR) with the least risk premium (β, σ). In addition, it yields an excess return than the benchmark index as per IR.

3. Dynamic Bond Funds:

Table: 6 Comparison of Financial Performance of Dynamic Bond Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private	8.04	0.0399	0.0573	0.0081	0.1388	-0.0074	0.1909	0.2738
1. IDFC Dynamic Bond Fund - Regular Plan – Growth								
2. Tata Dynamic Bond Fund - Regular Plan – Growth	8.80	0.0340	0.1591	0.0285	0.0130	0.0166	0.1976	0.9244
3. BNP Paribas Flexi Debt Fund – Growth	8.63	0.0283	0.0865	0.0119	0.0306	-0.0004	0.1659	0.5069
4. HDFC Dynamic Debt Fund – Growth	8.58	0.0518	0.0702	0.0103	0.1555	-0.0032	0.1863	0.2525
Public	7.70	0.0360	0.0497	0.0069	0.1498	-0.0099	0.1959	0.2705
1. SBI Dynamic Bond Fund – Growth								
2. Canara Robeco Dynamic Bond Fund - Regular Plan-Growth	8.57	0.0493	0.0680	0.0102	0.1501	-0.0032	0.1918	0.2645
3.UTI-Dynamic Bond Fund – Growth	9.47	0.0912	0.1460	0.0147	0.1113	0.0033	0.1119	0.1792
4. Union Dynamic Bond Fund – Growth	6.53	0.0226	0.0302	0.0027	0.1600	-0.0190	0.1763	0.2355

Source: Computed

As per the above table 6, in the private sector, all funds yield very close return among themselves, therefore based on only return cannot judge which fund is best. Further, the performance of selected funds is examined through different financial measures and the result shows that the Tata Dynamic Bond is understood. Whereas, in the public sector UTI Dynamic Bond is outshined almost all parameters because it yields a relatively higher return with a similar amount of risk taken. From the overall performance perspective, the public sector UTI dynamic bond fund is outperformed by providing the highest return (AAGR) with less risk premium taken (SR, TR, β, and σ) and it yields excess return than the benchmark (IR).

4. Short Duration Funds:

Table: 7 Comparison of Financial Performance of Short Duration Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private	8.07	0.1282	0.1844	0.0103	0.1380	-0.0067	0.0609	0.0875
1. Axis Short Term Fund – Growth								
2. Reliance Short Term Fund – Growth	8.28	0.1164	0.1675	0.0110	0.1377	-0.0052	0.0716	0.1031
Public	8.20	0.1326	0.1964	0.0108	0.1301	-0.0058	0.0596	0.0883
1. SBI Short Term Debt Fund – Growth								
2. UTI Short Term Income Fund - Institutional – Growth	8.57	0.1460	0.2255	0.0122	0.1197	-0.0031	0.0581	0.0896

Source: Computed

The above table 7 of short duration fund exhibits that in the private sector Axis short term fund is the best because it yields a relatively higher return in both total risk and systematic risk situation along with this it is highly correlated with the benchmark return. On the other hand, in the public sector among the selected short-term fund UTI Short Term Income Fund is best because it provides a relatively higher return in both total risk and systematic risk situation along with this it positively correlates with the benchmark index return and the diversification of the portfolio is quite efficient and less volatile than SBI Short Fund.

In the overall performance perspective, the public sector UTI short-term income fund is outperformed because it provides a high return with a relative amount of risk premium taken in its sector and similar to the private sector. In addition, as per the IR, the entire selected fund both in the public and private sector yields a negative return similar to benchmark index return.

5. Low Duration Funds:

Table: 8 Comparison of Financial Performance of Low Duration Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private	8.09	0.2912	0.8558	0.0111	0.0330	-0.0064	0.0132	0.0388
1. Invesco India Treasury Advantage Fund – Growth								
2. Reliance Low Duration Fund – Growth	8.31	0.3874	1.3173	0.0120	0.0247	-0.0048	0.0092	0.0312
3. ICICI Prudential Savings Fund – Growth	8.71	0.3629	0.9710	0.0134	0.0399	-0.0020	0.0140	0.0375
Public	8.27	0.3681	1.4355	0.0118	0.0188	-0.0051	0.0083	0.0325
1. SBI Magnum Low Duration Fund – Growth								
2. UTI Treasury Advantage Fund - Institutional – Growth	8.60	0.4577	1.7337	0.0131	0.0199	-0.0027	0.0076	0.0289
3.Canara Robeco Savings Fund - Regular Plan – Growth	8.19	0.2889	0.7639	0.0114	0.0408	-0.0056	0.0153	0.0404

Source: Computed

The above table 8 exhibits that in the private sector Reliance Low Duration Fund is best, by providing a relatively higher return (AAGR) with a similar amount of risk premium taken (SR, TR). Whereas, in the public sector UTI Treasury Advantage Fund is outshined by yield higher return with a relatively less amount of risk taken. In the overall performance perspective of selected low duration category funds, all funds yield around 8% return and among them, the best performing fund is the public sector UTI Treasury Advantage Fund because it yields relatively higher (AAGR) in terms of total risk (SR) and market risk (TR) at less volatility i.e., Risk (β, σ). In addition, all selected funds in both sectors yield a negative return than the benchmark index.

6. Ultra-Short Duration Funds:

Table: 9 Comparison of Financial Performance of Ultra Short Duration Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private	7.81	0.3448	1.3038	0.0101	0.0200	-0.0084	0.0078	0.0296
DSP Ultra Short Fund - Regular Plan – Growth								
DHFL Pramerica Ultra Short-Term Fund – Growth	8.64	0.4342	2.3097	0.0133	0.0101	-0.0025	0.0058	0.0307
Franklin India Ultra Short Bond Fund - Super Institutional – Growth	9.44	0.4980	2.1569	0.0163	0.0152	0.0032	0.0076	0.0329
Public	8.10	0.5284	2.0145	0.0112	0.0196	-0.0063	0.0056	0.0214
SBI Magnum Ultra Short Duration Fund – Growth								
BOI AXA Ultra Short Duration Fund - Regular – Growth	8.76	0.3649	0.9722	0.0136	0.0402	-0.0016	0.0056	0.0378
UTI Ultra Short-Term Fund – Growth	8.40	0.4130	1.6889	0.0123	0.0171	-0.0042	0.0074	0.0301

Source: Computed

In the private sector, Franklin India Ultra-Short Bond is best in selected private category funds because it outstands in almost all parameters. On the other hand, the SBI Magnum Ultra Short Duration fund is quite efficient in selected public sector funds because it provides a relatively higher return with a similar amount of risk premium taken along with this it is positively correlated with the benchmark (as per R^2).

Hence, it is evident to say that in overall view the private sector Franklin India Ultra-Short Bond Fund is outperformed because it outstands in almost all parameters. It provides the highest return with a relative amount of risk premium taken (both total and systematic risk) along with this the portfolio of the fund is adequately diversified as per market trend and the most important thing is that generates excess return than benchmark whereas rest fund gives negative return than the benchmark index.

7. Liquid Funds:

Table: 10 Comparison of Financial Performance of Liquid Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private	8.15	0.5125	1.7420	0.0114	0.0247	-0.0059	0.0066	0.0225
1. India bulls Liquid Fund - Existing Plan – Growth								
2. JM Liquid Fund - Growth	8.17	0.5319	1.9937	0.0115	0.0203	-0.0058	0.0058	0.0217
3. Aditya Birla Sun Life Liquid Fund - Regular Plan – Growth	8.15	0.4971	1.6807	0.0114	0.0250	-0.0060	0.0068	0.0231
Public:	8.07	0.5113	1.7944	0.0111	0.0232	-0.0065	0.0062	0.0219
1. UTI Liquid Cash Plan - INSTITUTIONAL Plan – Growth								
2. BOI AXA Liquid Fund - Retail – Growth	8.09	0.5290	1.9533	0.0112	0.0209	-0.0064	0.0058	0.0213
3. SBI Liquid Fund – Growth	8.04	0.5144	1.8947	0.0110	0.0210	-0.0067	0.0058	0.0215

Source: Computed

It is apparent from above table 10 that all the selected liquid yields around 8% return in 5 years. So based on only return cannot say which fund is best. But when these funds are examined on the basis based on different financial performance measures, it can be easy to say that JM Liquid Fund

is outperformed. In addition, in the public sector BOI, AXA Liquid Fund is outperformed in terms of risk and return relationship. In the overall performance perspective, JM Liquid Fund is outperformed by providing a high return with less per unit of risk premium taken in both the private and public sectors. Further, it was also found that all funds generate a negative return than the benchmark (IR).

8. Money Market Funds:

Table: 11

Comparison of Financial Performance of Money Market Funds

Scheme Name	5 Years AAGR	Sharpe Ratio	Treynor Ratio	Jensen Alpha Ratio	R-Squared	Information Ratio	Beta of Portfolio	Standard Deviation
Private:								
1. Reliance Money Market - Growth	8.07	0.5137	1.9528	0.0111	0.0198	-0.0065	0.0057	0.0218
2. Aditya Birla Sun Life Money Manager Fund – Growth	8.18	0.5167	1.8987	0.0115	0.0211	-0.0057	0.0061	0.0224
Public:								
1. UTI Money Market Fund - Institutional – Growth	8.10	0.5138	1.8414	0.0112	0.0222	-0.0063	0.0061	0.0220
2. SBI Savings Fund - Growth	8.12	0.3666	1.2592	0.0113	0.0242	-0.0061	0.0090	0.0311

Source: Computed

In the private sector, Aditya Birla Sun Life Money Manager Fund is outstood in almost all financial parameters, it provides a high return in terms of total risk (SR), the portfolio is adequately diversified (α), and more positively correlates with the benchmark index (R^2). On the other hand, in the public sector, UTI Money Market Fund is outperformed because it yields high returns with a relative amount of risk taken. In the overall perspective, the private sector Aditya Birla Sun Life Money Market fund is outperformed in terms of return with a relative amount of risk premium taken. In addition, all selected yield around 8% return and are negatively associated with the benchmark index.

9. Test of Significance:

For different sub-categories of debt mutual funds, performance measures - Sharpe ratio, Treynor, etc. have been calculated. To compare the overall performance of mutual funds of private and public sectors, the mean value for all schemes under public and private sectors of all sub-categories of each category has been calculated separately. To check the difference between public and private t-test has been applied.

H_o: There is no significant difference in the performance of open-ended mutual fund schemes between the private and public sector

Table 12: Overall Performance of all Sub Categories of Debt Mutual Fund Schemes

Debt			
H0: There is no significant difference in mean			
Mean		**t-test**	**P- Value**
Public	**Private**		
8.4577	8.3258	0.8675	0.1968
0.2595	0.2511	0.6613	0.2571
0.8226	0.8556	-0.4210	0.3386
0.0115	0.0118	-0.3604	0.3607
0.0817	0.0751	0.9381	0.1784
-0.0040	-0.0038	-0.1574	0.4381

Source: Computed

The above table 12 shows that the P-value of the test statistic for evaluation of the difference in the mean value of each measure of financial performance for all sub-categories is greater than 0.05 (at 95% confidence level). Therefore, the null hypothesis has not been rejected. It is apparent to say that "there is no significant difference in the performance of open-ended mutual fund schemes between the private and public sector".

But when we individually analyze and compare the performance of different sub-categories of debt mutual fund schemes. It was found that in different category different sector is outperformed but from an overall performance perspective, there is no significant difference between them. This may be because one fund's performance offsets the performance of others, among themselves.

Conclusion:

This study makes a comparison between private and public sectors by selecting 44 debt mutual fund schemes based on daily NAV. To examine financial performance - Sharpe & Treynor measure used to know the total risk and systematic risk associated with the fund returns, Jensen Alpha is used to examine the portfolio diversification fund managers' efficiency as per market trend, R^2 is used to measure the correlation of funds return with benchmark index return, and beta is used to measures volatility in funds return.

The financial performance of selected debt MFs result exhibits that the overall performance of both public and private sectors is the same. In the study debt, MFs are divided into eight sub-categories and in five sub-categories public sector MFs are outperformed i.e., Gilt Fund, Credit Risk Fund, Dynamic Bond Funds, Short Duration Fund, Money Market Fund. Whereas, private sector funds are outperformed in the following three sub-categories of debt MFs are - Low Duration fund, Ultra-Short Duration Fund, Liquid Funds.

Therefore, the performance winning ratio of the public sector is more than the private sector (i.e., five times public and three times Private has outperformed). Hence, the public sector is more efficient in debt categories funds. But when the financial performance is examined, with an overall perspective, it has been found that there is no significant difference in the performance of the debt category.

Hence it can be evident to say that at an individual level, there is a difference in the performance of different categories of debt funds but in collective there is no significant difference among them. In addition, almost all the mutual fund schemes are less risky and yield an excess return than benchmark index, and all selected debt categories funds yield nearly very close return among themselves i.e., around 8% - 10%

Hence it can be evident to say that at an individual level, there is a difference in the performance of different categories of debt funds but in collective there is no significant difference among them. In addition, almost all the mutual fund schemes are less risky and yield an excess return than benchmark index, and all selected debt categories funds yield nearly very close return among themselves i.e., around 8% - 10%

Suggestions: In the study, it was found that all debt categories funds yield 7% - 10% return, which was more or less similar to returns on deposit in bank FDs. Therefore, Mutual fund companies or AMCs need to offer the products under the debt category, which are affordable, reasonable in returns as well as competitive against low risk assured returns of government-sponsored saving schemes like post office saving, fixed deposits to attract low-risk appetite investors.

This study is also not free from the limitation as it is restricted only to take 44 debt mutual fund schemes NAV for five years, hence the result may lead to a certain level of bias. Research is a continuous process that provides opportunities for future researchers; however, further research can be carried out by taking more schemes in another category (Equity & Hybrid) along with some other parameters like expense ratio, exit load, etc. and the researcher may apply DEA techniques, Fama-French three-factor models and Carhart four-factor models for the analysis.

References

Sharpe W. F. (1966), "Mutual Fund Performance", Journal of Business, vol. 39, no. 1, pp. 119- 38,

Bhuvaneswari and Selvam (2010). Market timing ability of Indian mutual fund managers under

Blake D., Caulfield, T., Loannidis, C. and Tonks, L. (2015). *New evidence on mutual fund performance: A comparison of alternative bootstraps methods*. Discussion paper P1-1404, Pension Institute,

Cao Charles, Simin T. T. & Wang Y. (2011). Do mutual fund managers time market liquidity? conditional models. Available at: http://ssrn.com/abstract=1910764.

Cuthbertson, K., Nitzsche, D. and O'Sullivan, N. (2010). The market timing ability of UK mutual funds. *Journal of Business, Finance and Accounting*, Vol. 37, No. 1, pp.270–289.

Dhar, J., & Mandal, K.(2014). Market timing abilities of Indian mutual fund managers: An empirical analysis. *Decision*, *41*(3), 299-311.

Digital evolution CRISIL AMFI August 2018 Report pp.21

Goodwin, Th.H., 1998, "The Information Ratio", *Financial Analysts Journal* July-August, pp.34-43

Grinblatt, M., Titman, S. and Wermers, R. (1995). Momentum investment strategies, portfolio

Gudimetla, A. (2015). Timing and selectivity in Indian sector mutual funds performance. *International Journal of Research and Development – A Management Review (IJRDMR)*, Vol. 4, No. 3, pp.2319–5479.

Henriksson, R.D. and Merton, R.C. (1981). On market timing and investment performance II: holdings. *Journal of Financial Economics*, 86, 724-758.

Chander R.(2000), *"Performance Appraisal of Mutual Funds in India",* Finance India, vol. 14, no. 4, 1256-1261,.

Gupta A.(2001), *"Mutual Funds in India: A Study of Investment Management",* Finance India, vol. 15, no. 2, pp. 631- 637,.

Huang J. Wang Y. (2010). The timing ability of government bond funds: Evidence from portfolio holdings. Working Paper, Pennsylvania State University and University at Albany-SUNY.

International Journal of Technical Research and Applications, Vol. 4, No. 1, pp.94–101.

Jiang G. J., Yao T. & Yu T. (2007). Do mutual funds time the market? Evidence from portfolio

Journal of Financial Market, 16, 279-307.

Kumar, R. (2016). Conditional models in performance evaluation of mutual funds in India.

Leite, P. and Cortez, M. (2009). Conditioning information in mutual fund performance evaluation:Portuguese evidence. *European Journal of Finance*, Vol. 15, Nos. 5–6, pp.585–605.

London. Bollen, N.P.B. and Busse, J.A. (2004). Short-term persistence in mutual fund performance. *Review of Financial Studies*, Vol. 18, No. 2, pp.569–597.

Pandey, A.,(2011) Investors' Behaviour: Mutual Funds, *SCMS journal of Indian Management, 8(1), 28-32.*

performance, and herding: a study of mutual fund behavior. *American Economic Review*, Vol. 85, No. 5, pp.1088–1105.

R.Sivaram Prasad and B.Srinivas, (2012). A Study of selection of mutual fund schemes by investorswith reference to Andhra Pradesh. *ZENITH International Journal of Business Economics & Management Research* Vol.2 Issue 2, PP: 112-117

Sawicki, J. and Ong, F. (2000). Evaluating managed fund performance using conditional measures: Australian evidence. *Pacific-Basin Finance Journal*, Vol. 8, No. 4, pp.505–528

statistical procedures for evaluating forecasting skills. *Journal of Business*, Vol. 54, No. 4, pp.513–534.

Tan, Ö.F. (2015). Mutual fund performance: evidence from South Africa. *Emerging Markets Journal*,Vol. 5, No. 2, pp.49–57.

Ojha, S. C. (2017). Performance Evaluation of Mutual Funds: A Study of Selected Equity Diversified Mutual Funds in India.

Treynor J. L. (1965). How to rate management of investment funds. *Harward Business Review,* vol.43, no. 1, pp. 63-75, Jan-Feb.

Tripathy, N. (2017). Efficiency of mutual funds and performance measurement in India: an empirical investigation. *International Journal of Business Excellence*, *13*(2), 217-237.

Yuxing Yan (1999). Measuring the timing ability of mutual fund managers. *Annals of Operational Research,* Vol.87, pp.233-243.

POST-MERGER FINANCIAL PERFORMANCE OF ACQUIRING BANKS: A STUDY OF SELECTED BANK MERGERS IN POST-REFORMS INDIA

Avishek Roy *

ABSTRACT

This paper has studied five separate bank mergers in India by applying statistical hypothesis testing on banking ratios and 'S' scores calculated using the Bankometer model developed by Shar et al(2010). The aim is to assess whether the financial position and solvency scores of the acquiring banks have improved in the years following the merger.

The banking ratios analyzed in the paper were identified from a study of relevant literature. 'S' scores were calculated by using the Bankometer equation. The hypotheses formed were tested using either paired T-Test or single sample T-Test depending on data availability. Values of banking ratios as well as data for computing ' S' scores were collected from the annual reports of the acquiring banks.

Post-merger, both operational incomes, operational expenses, and capital adequacy of ICICI Bank and the HDFC bank improved. However, their ROE, ROA, and employee productivity did not grow significantly. Also, their credit creation or asset quality failed to register any statistically significant improvement. After the merger, the operational incomes of Kotak Mahindra Bank and State Bank of India did not show any statistically significant increase. Kotak Mahindra Bank's operational expenses decreased and its interest-earning assets showed greater efficiency compared to SBI. For both banks, loan volumes had increased but asset quality did not improve significantly post-merger.

Of all the mergers studied, except for that of SBI with its associate banks and Bhartiya Mahila Bank and ICICI Bank-Sangli Bank, Bankometer scores of the acquiring banks improved in the post-merger period.

Keywords: Bank mergers, Bankometer, T-Test, Ratio Analysis

Introduction

In the last two decades, there have been several instances of mergers- both of private sector and public sector banks. Many important bank mergers occurred at a time when the entire Indian banking

* Assistant Professor, Department of Business Administration,
Dinabandhu Andrews Institute of Technology and Management
Email: avishekroyonline@gmail.com

sector was struggling with the problem of rising levels of Non-Performing Assets (NPA) and plummeting bank profitability. However, looking at the mergers that took place during this period, it may well appear that many of the banks that were acquired were either financially weak, loss-making, had huge accumulated NPAs, or were much smaller in size compared to the acquiring banks. Global Trust Bank (GTB) was merged with the Oriental Bank of Commerce (OBC) in FY2004. As of FY2002-03, GTB had sustained a net loss of Rs2.73 billion and had gross and net NPAs of Rs9.16 billion and Rs6.48 billion respectively. The gross and net NPA ratios were 25.8% and 19.8%. There was also a pronounced difference in the relative sizes of the banks. While OBC had 989 branches, GTB only had 87. The employee strength of OBC was 13507 while that of GTB stood at 1314 only (Gupte (2004)).

Prior to being merged with ICICI Bank in FY2007-08, Sangli Bank Limited had posted a loss of Rs. 29 crores as of 31.03.2006. Also, Sangli Bank had only 198 branches against ICICI Bank's 750 branches. Moreover, the majority of Sangli Bank's branches were rural branches while ICICI Bank had branches all over India (ICICI Bank (2007)).

ICICI bank's takeover of Bank of Rajasthan (BOR) occurred more under regulatory pressure than for commercial considerations (Business Standard (2013).

In FY2019-20, several public sector banks merged with each other. This set of mergers brought down the number of public sector banks from twenty-seven to just twelve. Here too, many of the acquired public sector banks were facing the twin challenge of rising NPAs and eroding profitability due to the regulatory need for higher NPA provisioning (Table1).

Table 1: Financial highlights of public sector banks acquired by other bank in FY 2019-20

Acquired public sector Bank		Net Profits (Rs Crores)	Return on Assets (%)	Return on Equity (%)	NIM (%)	NNPA ratio (%)	Capital adequacy ratio (%)
Oriental Bank of Commerce	FY18-19	55	0.02	0.46	2.73	5.93	12.73
	FY17-18	(5872)	-2.31	-51.14	2.18	10.48	NA
United Bank of India	FY18-19	NA	NA	NA	NA	NA	NA
	FY17-18	(1454)	NA	NA	2.30	16.49	12.62
Syndicate Bank	FY18-19	(2588)	-0.87	-21.34	2.42	6.16	14.23
	FY17-18	(3223)	-1.05	-26.68	2.44	6.28	12.24
Andhra Bank	FY18-19	(2786.12)	-1.09	-0.28	3.31	5.73	13.68
	FY17-18	(3412.52)	-1.46	-0.47	3.33	8.48	11
Corporation Bank	FY18-19	(6332.98)	-3.14	-46.21	3.05	5.71	12.30
	FY17-18	(4053.94)	-1.67	-36.50	2.32	11.74	9.23
Allahabad Bank	FY18-19	(8334)	-3.48	NA	2.58	5.22	12.51
	FY17-18	(4674)	-1.96	NA	2.20	8.04	NA

In the backdrop of turmoil in the banking sector, assessing the impact of merging relatively smaller, financially troubled, or loss-making banks with other banks; on the profitability and financial stability of the acquiring banks can be of research interest. This paper studies five recent instances of bank mergers in the Indian banking sector. The aim is to assess how the financial performance of the acquiring banks has evolved after being merged with the target banks. The paper tries to achieve its objective by (i) analyzing specific banking ratios and by (ii) using the Bankometer model.

Literature Review

Al-Hroot (2015) has compared the financial performance of the Jordan Ahli Bank before and after its merger with the Philadelphia Bank. It analyses a set of twelve ratios (profitability, liquidity, leverage, and cash flow ratios) using statistical hypothesis testing with paired sample T-Test. The paper found that while profitability and leverage ratios improved significantly in the post-merger period, liquidity ratios did not.

Athma and Bhavani (2017) have analyzed the impact of mergers on the branch and employee productivity of the State Bank of India and HDFC Bank. The key parameters chosen were per branch and per employee deposits, advances, and Net Profits. For both banks, there were significant differences in the productivity ratios in the pre and post-merger periods.

Gattoufi et al (2009) have used Data Envelopment Analysis (DEA) to assess the impact of mergers and acquisitions on the technical efficiency of banks involved in consolidation. The paper has found a limited but positive impact of mergers and acquisitions on the performance of commercial banks of the Gulf Cooperation Council (GCC).

Kaur and Kaur (2010) have analyzed how mergers have affected the cost efficiency of banks in the post-liberalization period. The technique used is non-parametric Data Envelopment Analysis (DEA). Results indicate that mergers have increased cost efficiency in the merging banks. However, empirical results also suggest that merging strong and weak banks adversely affects the asset quality of the stronger banks. Such mergers also do not produce significant efficiency gains for the participating banks. The authors have therefore recommended that mergers should not be viewed as a means of bailing out weak or financially distressed banks.

Khan (2021) has assessed the financial performance of Punjab National Bank and HDFC Bank by comparing their GP margin, NP margin, OP margin, ROCE, ROE, and Debt/Equity ratio values from before and after their mergers with Nedungadi Bank and Centurion Bank of Punjab respectively. To test the statistical significance of the difference, an independent sample T-Test was used. Results have indicated that the merged banks can obtain efficiency and gains through mergers.

Edward and Manoj (2019) analyze the liquidity position, operational performance, profitability position, and the overall financial position of the State Bank of India after its merger with its associate banks. Under each parameter, a set of ratios were included. T-Test results indicate that none of the performance parameters improved or varied significantly in the post-merger period compared to the pre-merger period.

Gourlay et al (2017) attempt to examine the efficiency benefits obtained by scheduled commercial banks from mergers that took place during 1991-92 and 2004-05. The paper uses the methodology of Begetoft and Wang(2005). Results indicate considerable efficiency gains for the merging banks. The chief source of such gains is the synchronization of diverse product mixes. The paper found that mergers between distressed and strong banks exhibit persistent efficiency growth over time. However, such efficiency increments did not occur right from the base year, indicating that the initial boost in efficiency was not built upon.

Ambika (2015) analyses how the financial position of ICICI Bank was affected after it was merged with the Bank of Rajasthan. Paired T-Test was used to assess whether any statistically significant improvement was noticed in the values of various ratios of ICICI Bank in the post-merger period. At the time of the merger, the Bank of Rajasthan was facing financial distress while ICICI Bank was financially strong. The T-Test results show that the financial performance of ICICI bank did not improve significantly after merging with Bank of Rajasthan. This supports the conclusions drawn by Kaur and Kaur(2010).

Mathur and Sharma (2021) use the CAMEL model to analyze the financial performance of the State Bank of India both before and after its merger with its subsidiary banks. Ratios relevant to the CAMEL model have been used in the analysis. In the post-merger period, SBI's share price, deposits, advances, the number of branches, and customers has increased. However, the bank's capital position suffered and the burden of bad loans also increased. The merger has also failed to improve the profitability of the bank and ensure sustained earnings growth.

Sreshtha et al (2017) use the comparison of financial ratios along with the T-Test technique to analyze the post-merger financial performance of Nepalese financial institutions that underwent mergers. The paper found that post-merger, the loan quality and profitability of the banks deteriorated significantly in most cases.

Tanwar (2016) used the CAMEL model to conduct a pre and post-merger financial performance appraisal of acquiring banks in four cases of mergers that occurred between 2006 and 2010. Contrary to Kaur and Kaur(2010), this paper recommends mergers between weak and unviable banks for the sake of their rehabilitation, saving jobs, and utilizing block assets. Also, in line with global trends, the Indian banking system should be restructured through mergers and acquisitions.

Objectives

The paper analyses specific instances of bank mergers in India since the year 2000 in order to compare the financial performance and soundness of the acquiring banks both before and after the merger. The objective is to assess whether the financial performance of the acquiring banks has improved in the post-merger period.

Data and Methods

Instances of bank mergers studied

The following instances of bank mergers were selected for study:

Table 2: Instances of bank mergers studied

Acquiring bank	Target bank(s)	The financial year of the merger
ICICI Bank	Sangli Bank Limited	FY2007-08 (April 19, 2007)
	Bank of Rajasthan	FY2010-11 (August 13, 2010)
HDFC Bank	Centurion Bank of Punjab	FY2008-09 (May 23, 2008)
Kotak Mahindra Bank	ING Vysya Bank	FY2015-16 (April 01, 2015)
State Bank of India	State Bank of Patiala State Bank of Hyderabad State Bank of Bikaner & Jaipur State Bank of Mysore State Bank of Travancore Bhartiya Mahila Bank	FY2017-18 (April 01, 2017)

Source: Compiled by author

The mergers chosen for study (Table 2) pertain to both public and private sector banks. The choice of mergers was influenced by two factors.

- The merger should have been implemented at least two financial years before FY 2020-21
- Annual report data for at least five financial years before the merger should be available

Both of these two factors stem from the methodology adopted by this paper for ascertaining a merger's effect on an acquiring bank's financial performance.

Methodology

To achieve its objectives, this paper has carried out statistical hypothesis testing on banking ratios and

Bankometer scores. For analyzing the financial ratios of the acquiring banks, a list of dimensions was chosen. Under each dimension, a group of related ratios was selected.

Table 3: Dimensions and ratios used

Dimension	Banking ratio used	Abbreviation used
Profitability	Return on Assets	ROA
	Return on Equity	ROE
	Net profits	NP
Earnings capability	Interest Income	INTR
	Non-interest income	NNTR
	Net Interest Income	NII
	Net Interest Margin	NIM
Employee productivity	Business per employee	BPE
	Profit per employee	PPE
Credit expansion	Credit Deposit ratio	CD ratio
Capital adequacy	Capital adequacy ratio	CA ratio
Asset quality	Net Non-Performing Assets ratio	NNPA ratio
Cost reduction	The ratio of Current and Savings accounts	CASA ratio
	Cost to Income ratio	CI ratio

Source: Compiled by author

The "Bankometer model" was introduced by Shar et al(2010) following the recommendations of IMF(2000) and after analyzing other models like CAMEL, CLSA, VAIC, etc for gauging a bank's performance and vulnerability to bankruptcy. The model tries to assess the extent to which a bank may be susceptible to financial distress in the near future by computing 'S' values and comparing these values to predetermined standards set by the model. Here 'S' stands for solvency. To calculate 'S' values, the following equation is used:

S = 1.5* CA+1.2* EA +3.5 * CAR+0.6*NPL+0.3*CI+04*LA (Shar et al(2010))

S = Solvency

CAR = Capital Adequacy Ratio

CA = Capital to Assets Ratio

EA = Equity to Assets Ratio

NPL = Non Performing Loans to Loans Ratio

CI = Cost to Income Ratio

LA = Loans to Assets Ratio

The Bankometer model categorizes banks into three categories based on their 'S' values:

- 'S' value >70: Super sound banks
- 'S' value <50: Insolvent banks
- 'S' value between 50 and 70: Banks in the grey zone

Values for the banking ratios (listed in Table3) pertaining to the number of years before and after a merger were extracted from the annual reports of the acquiring banks. 'S' values for the acquiring banks were calculated for the same years. Variations in the pre and post-merger values of the banking ratios and the 'S' scores of the acquiring banks in each case of the merger were assessed by testing statistical hypotheses using the Student's T-Test technique. The T-Test is a hypothesis-testing technique for small sample sizes (n<30).

Table 4: List of hypotheses

Null Hypothesis (H0)	Alternate Hypothesis (H1)
$ROA_{BM}=ROA_{AM}$	$ROA_{BM}<ROA_{AM}$
$ROE_{BM}=ROE_{AM}$	$ROE_{BM}<ROE_{AM}$
$NP_{BM}=NP_{AM}$	$NP_{BM}<NP_{AM}$
$INTR_{BM}=INTR_{AM}$	$INTR_{BM}<INTR_{AM}$
$NNTR_{BM}=NNTR_{AM}$	$NNTR_{BM}<NNTR_{AM}$
$NII_{BM}=NII_{AM}$	$NII_{BM}<NII_{AM}$
$NIM_{BM}=NIM_{AM}$	$NIM_{BM}<NIM_{AM}$
$BPE_{BM}=BPE_{AM}$	$BPE_{BM}<BPE_{AM}$
$PPE_{BM}=PPE_{AM}$	$PPE_{BM}<PPE_{AM}$
CD $ratio_{BM}$=CD $ratio_{AM}$	CD $ratio_{BM}$<CD $ratio_{AM}$
CA $ratio_{BM}$=CA $ratio_{AM}$	CA $ratio_{BM}$<CA $ratio_{AM}$
nnpa $ratio_{BM}$=NNPA $ratio_{AM}$	NNPA $ratio_{BM}$>NNPA $ratio_{AM}$
CASA $ratio_{BM}$=CASA $ratio_{AM}$	CASA $ratio_{BM}$<CASA $ratio_{AM}$
CI $ratio_{BM}$=CI $ratio_{AM}$	CI $ratio_{BM}$>CI $ratio_{AM}$
$S\text{-}Score_{BM}$=$S\text{-}Score_{AM}$	$S\text{-}Score_{BM}$<$S\text{-}Score_{AM}$

Source: Author

BM: Before Merger; AM: After Merger

In each case, the null hypothesis postulates that there was no significant difference in the values of the ratios before and after the merger. The alternate hypotheses postulate that values for all ratios and variables, except for the NNPA ratio and the CI ratio, have increased significantly after the merger. Two different variations of the Student's T-Test technique were used depending on the number of years elapsed between the merger and the FY2020-21. As of FY2020, less than five financial years have passed since the following bank mergers:

- The merger of State Bank of India (SBI) with its associate banks and Bhartiya Mahila Bank
- Kotak Mahindra Bank-INGVysya Bank

Hence, a **single sample T-Test** had to be used in these two cases. All other mergers took place more than five financial years before FY2020. Therefore, the hypotheses related to the other mergers were tested using **paired sample T-Test** technique. The manner in which this paper utilizes paired sample T-Test closely follows Al-Hroot(2015) and Patel(2018). The financial year in which a merger took place is regarded as the "base year". Sample1 comprises Ratio values and S-Scores for relating to the years preceding the merger; whereas those relating to the years following the merger makeup Sample2. Depending on the availability of annual report data, the exact number of years differs in each merger analyzed.

Table 5: Pre and Post-merger years for T-Test

Merger	Type of T-Test	Pre-merger period	Post-merger period
ICICI Bank and Sangli Bank	Paired	2003-2007	2009-2013
ICICI Bank and Bank of Rajasthan	T-Test	2003-2010	2012-2019
HDFC Bank and Centurion Bank of Punjab		2001-2008	2010-2017
Kotak Mahindra Bank and ING Vysya Bank	Single	2010-2015	2017
SBI and its associate banks and	sample	2010-2017	2019
Bhartiya Mahila Bank	T-Test		

Source: Author

Data Sources

The paper makes use of secondary data. Data values for the ratios (in Table 3) as well as the data needed for calculating 'S' values used in the Bankometer model were extracted from the annual report of the acquiring banks (Table 2). The annual reports were downloaded from the websites of the respective banks.

Results of Hypothesis Testing

Tables 6 to 10 show the results of hypothesis testing on banking ratios and variables

Table 6: Merger of ICICI Bank and Sangli Bank (Paired T-Test)

Ratio/variable	t		Result
	Table (df=4)	calculated	
ROA	2.13	0.215918	H0 accepted
ROE		-3.372369*	H0 accepted
NP		6.854875*	H0 rejected
INTR		18.426828*	H0 rejected
NNTR		4.981545*	H0 rejected
NII		16.12442*	H0 rejected
NIM		3.057731*	H0 rejected
BPE		-1.847673	H0 accepted
PPE		0.953463	H0 accepted
CD ratio		0.732541	H0 accepted
CA ratio		7.890518*	H0 rejected
NNPA ratio		-2.177391*	H0 accepted
CASA ratio		13.070153*	H0 rejected
CI ratio		-5.172357*	H0 accepted

Source: Computed by author

** Significant at 5%*

ICICI Bank's merger with Bank of Rajasthan occurred within three years of the former bank's merger with Sangli Bank Limited. Hence, the data used for testing the hypothesis relating to both mergers overlap with each other. The results obtained (Table 7) to are similar to the previous case (Table 6).

Table 7: Merger of ICICI Bank and Bank of Rajasthan (Paired T-Test)

Ratio/variable	t		Result
	Table (df=7)	calculated	
ROA	1.90	1.129328	H0 accepted
ROE		-3.724335*	H0 accepted
NP		5.085394*	H0 rejected
INTR		14.36775*	H0 rejected
NNTR		6.169573*	H0 rejected
NII		14.373228*	H0 rejected

NIM	13.365846*	H0 rejected
BPE	-1.744107	H0 accepted
PPE	0.544008	H0 accepted
CD ratio	-1.391605	H0 accepted
CA ratio	3.446767*	H0 rejected
NNPA ratio	0.140981	H0 accepted
CASA ratio	7.688816*	H0 rejected
CI ratio	-2.933136*	H0 accepted

Source: Computed by author

* Significant at 5%

HDFC bank's Net Profits, ROA, interest, and non-interest income increased after the merger. However, the bank's ROE did not improve. Similar to ICICI bank, employee productivity failed to improve post-merger. Credit creation, as well as capital adequacy, improved after the merger. However, asset quality and the CI ratio showed no signs of improvement (Table8).

Table 8: Merger of HDFC Bank and Centurion Bank of Punjab (Paired T-Test)

Ratio/variable	t		Result
	Table (df=7)	Calculated	
ROA	1.90	4.111327*	H0 rejected
ROE		-0.58437	H0 accepted
NP		5.683607*	H0 rejected
INTR		6.377685*	H0 rejected
NNTR		8.607814*	H0 rejected
NII		6.842299*	H0 rejected
NIM		3.41288*	H0 rejected
BPE		1.133518	H0 accepted
PPE		1.330654	H0 accepted
CD ratio		7.503783*	H0 rejected
CA ratio		5.950367*	H0 rejected
NNPA ratio		-2.298964*	H0 accepted
CI ratio		-1.275053	H0 accepted

Source: Computed by author

* Significant at 5%

Kotak Mahindra Bank's (KMBL) interest and non-interest income decreased after the merger. However, the bank's ROA, ROE improved. Earning efficiency of the interest-earning assets increased as indicated by improvement in NIM. The merger however failed to positively impact the asset quality of KMBL. The ratio of operational costs to income improved after the merger while the CASA ratio did not (Table 9).

Table 9: Merger of Kotak Mahindra Bank and ING Vysya Bank (Single sample T-Test)

Ratio/variable	t		Result
	Table (df=5)	Calculated	
ROA	2.02	3.492151*	H0 rejected
ROE		3.262755*	H0 rejected
NP		-11.403728*	H0 accepted
INTR		-10.464871*	H0 accepted
NNTR		-10.817987*	H0 accepted
NII		-13.216501*	H0 accepted
NIM		3.195774*	H0 rejected
BPE		-5.971107*	H0 accepted
PPE		-3.050851*	H0 accepted
CD ratio		2.831925*	H0 rejected
CA ratio		2.106352*	H0 rejected
NNPA ratio		-4.245959*	H0 accepted
CASA ratio		-12.472697*	H0 accepted
CI ratio		3.636856*	H0 rejected

Source: Computed by author

* Significant at 5%

After the merger, the interest and non-interest income of SBI did not improve from pre-merger standards. However net profits, ROA, and ROE increased. Employee productivity shows mixed results. While BPE did not increase from pre-merger values, PPE did. Ratios relating to asset quality (NNPA ratio), capital adequacy (CA ratio), or cost-related ratios (CASA ratio, CI ratio) did not show improvements (Table 10).

Table 10: Merger of SBI and its associate banks and Bhartiya Mahila Bank (Single sample T-Test)

Ratio/variable	t		Result
	Table (df=7)	calculated	
ROA	1.90	9.649528*	H0 rejected
ROE		10.130098*	H0 rejected
NP		14.604022*	H0 rejected
INTR		-8.698215*	H0 accepted
NNTR		-6.046164*	H0 accepted
NII		-9.33142*	H0 accepted
NIM		1.652032	H0 accepted
BPE		-6.659585*	H0 accepted
PPE		15.903713*	H0 rejected

CD ratio	5.808865*	H0 rejected
CA ratio	0.562744	H0 accepted
NNPA ratio	-1.871997	H0 accepted
CASA ratio	0.089797	H0 accepted
CI ratio	-7.458453*	H0 accepted

Source: Computed by author

* Significant at 5%

Table11 shows the results of hypothesis testing on Bankometer (solvency) scores

Table11: T-Test results for Bankometer scores

Merger	Type of T-Test	df	t-value		Result
			Table	Calculated	
ICICI Bank and Sangli Bank	Paired	4	2.13	0.953463	H0 accepted
ICICI Bank and Bank of Rajasthan	T-Test	7	1.90	4.114051*	H0 rejected
HDFC Bank and Centurion Bank of Punjab		7	1.90	7.633445*	H0 rejected
Kotak Mahindra Bank and ING Vysya Bank	Single	5	2.02	2.478191*	H0 rejected
SBI and its associate banks and Bhartiya Mahila Bank	sample T-Test	7	1.90	-0.403046	H0 accepted

Source: Computed by author

* Significant at 5%

The solvency scores of ICICI bank showed statistically significant improvement after the merger with Bank of Rajasthan but not after its merger with Sangli Bank. Similarly, SBI's solvency scores failed to show statistically significant improvement after the merger with acquiring its associate banks and Bhartiya Mahila Bank. In all other cases, the solvency scores of the acquiring banks improved in the post-merger period.

Discussion

Certain similarities may be noticed in the statistical hypothesis testing results of ICICI Bank and the HDFC bank. The mergers improved Net Profits and operational earnings (interest income, non-interest income, and net Interest margins) of the banks. However, for both banks, the Cost to Income (CI) ratio did not show a statistically significant decrease after the merger. This indicates that the mergers increased both operating incomes as well as operational expenses.

However, no statistically significant improvements were noted in the ROA and ROE of ICICI Bank. For HDFC Bank, ROA showed improvements although ROE did not. Thus, improvements in net profits, interest, and non-interest income were not sufficient relative to the increase in assets or shareholder's equity caused by the merger.

Per employee productivity ratios (BPE and PPE) also did not improve. Thus, increase in the number of employees did not lead to a proportionate increase in credit creation or profit growth.

Another point to note is that for both ICICI Bank and the HDFC bank, the CD ratio and NNPA ratios did not register statistically significant decrements after the merger. This suggests that despite the addition of new branches due to the mergers, credit uptake did not improve for these two banks. Failure to improve asset quality points to the possibility of addition to NPAs of the acquired banks into the books of the acquiring banks. Both ICICI Bank and the HDFC bank made their acquisitions at a time when the world economy was impacted by the 2008-09 financial crises and the Eurozone. In the years following the mergers, banks grew cautious in extending fresh loans dampening the credit-deposit (CD) ratio. Also, the cascading effect of international financial turbulences on the Indian economy may have had a likely impact on the NPA reduction efforts of the banks.

A single sample T-Test was used for testing the hypothesis on mergers involving Kotak Mahindra Bank and Stat Bank of India. So, it tried to assess whether any statistically significant increase or decrease was noted in various banking ratios/variables and solvency scores in the year immediately following the merger compared to the years preceding the mergers.

For both banks, there was no statistically significant increase in operational incomes in the year immediately following the merger. However, the CI ratio of Kotak Mahindra Bank showed a statistically significant decrease, while that of SBI did not. This is indicative that the operational expenses of Kotak Mahindra Bank had decreased. Also, Kotak Mahindra Bank's NIM had increased in a statistically significant manner but that of SBI did not. Therefore, it may be argued that interest-earning assets of Kotak Mahindra Bank showed greater efficiency.

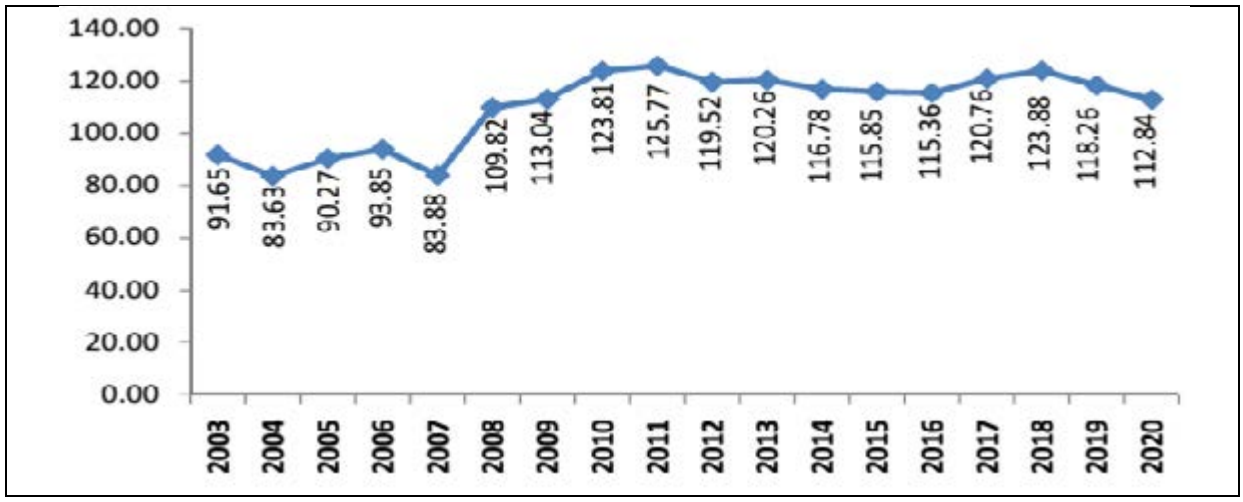
ROA, ROE, CD ratio, and BPE of both banks increased significantly after the mergers. This indicates that credit-making activities of the banks increased post-merger.

Since the NNPA ratios of the banks did not decrease significantly, it may be inferred that neither of the banks registered improvements in their asset quality after the mergers.

Figures 1 to 4 depict the trends noticed in the 'S' values of the banks in the years before and after the mergers. All the banks fall in the category of "Super sound" banks as they have maintained S values above 70.

Figure1 shows that 'S' values of ICICI Bank surged after it merged with Sangli Bank (FY07-08). However, T-Test results do not show any statistically significant increase (Table10). The rise in S values was maintained after the merger with the Bank of Rajasthan (FY10-11). Here the increase in S values in the post-merger period was statistically significant (Table11).

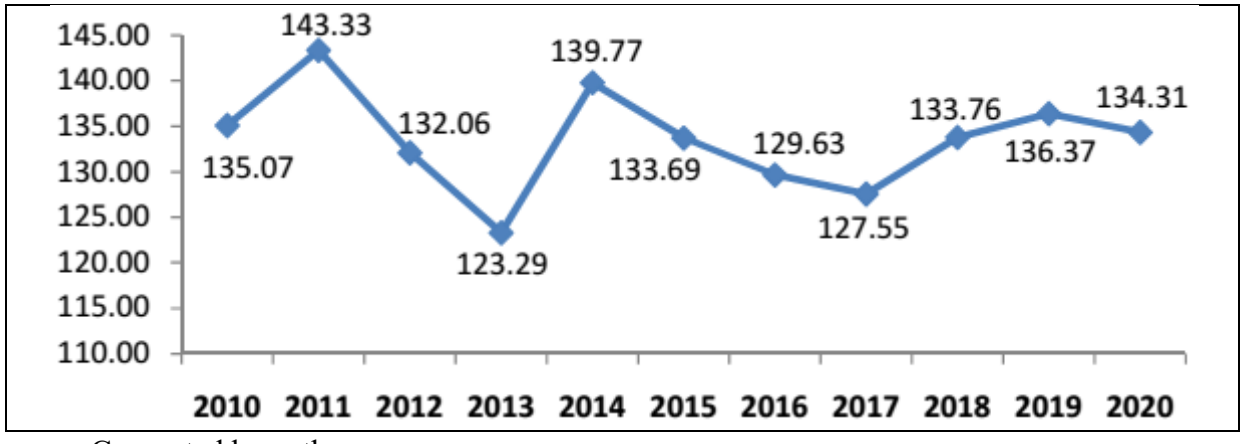
Figure 1: Bankometer scores for ICICI Bank



Source: Computed by author

S values of Kotak Mahindra Bank (Figure2) have shown successive rising and falling trends in the years prior to its merger with ING Vysya Bank (FY15-16). T-Test results (Table11) indicate that the rise in S values from the pre-merger years is statistically significant.

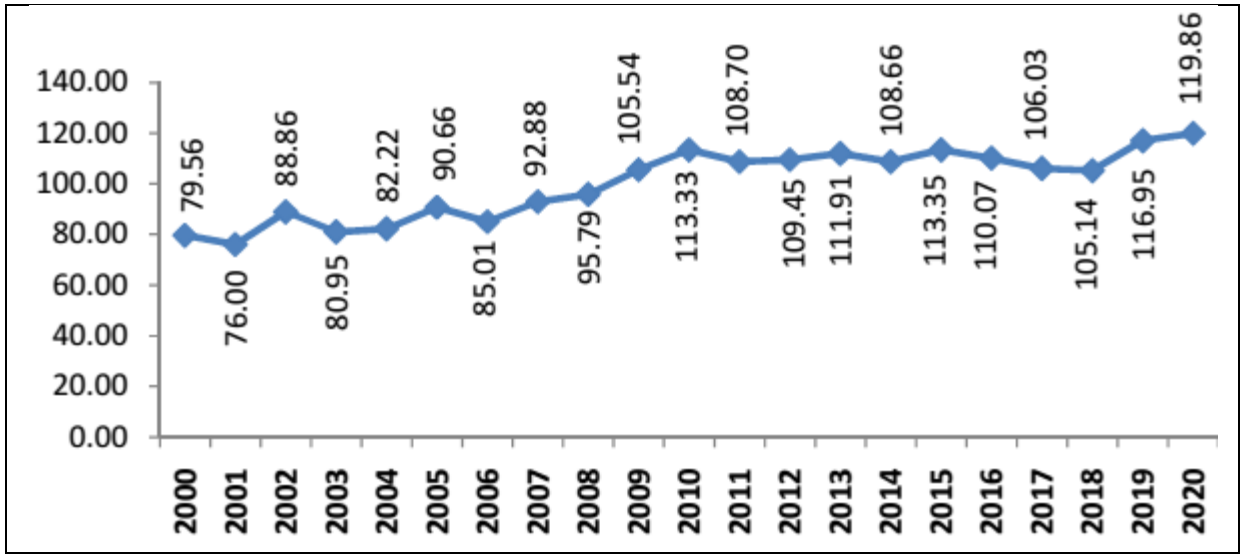
Figure 2: Bankometer scores for Kotak Mahindra Bank



Source: Computed by author

S values of HDFC bank (Figure3) had already shown a rising trend when the bank merged with Centurion Bank of Punjab (FY08-09). Here too the increase in S values from the pre-merger period was statistically significant (Table11).

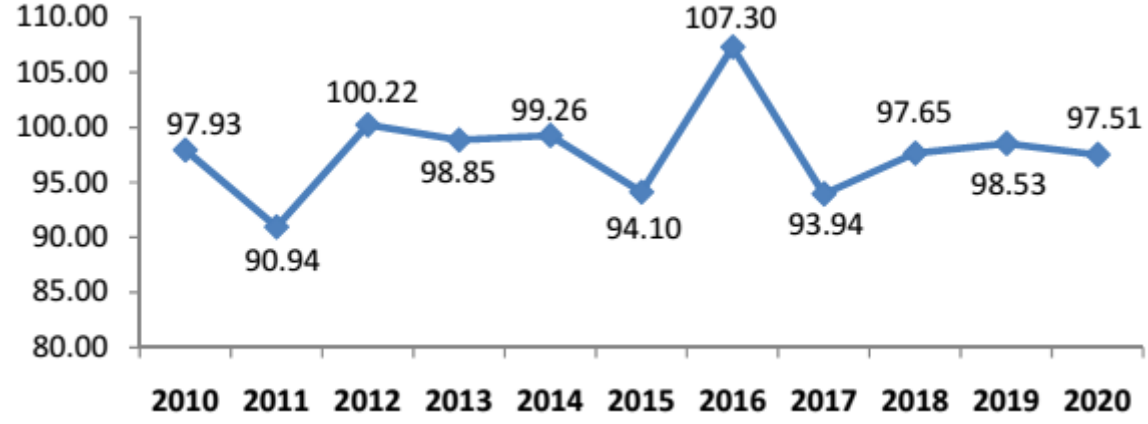
Figure 3: Bankometer scores for HDFC Bank



Source: Computed by author

For State Bank of India, T-Test results do not show any statistically significant increase in S values (Table11).

Figure4: Bankometer scores for State Bank of India



Source: *Computed by author*

Conclusion

The present paper was an attempt to study five specific bank mergers in India for assessing how the mergers affected the financial performance and solvency of the acquiring banks.

From the analysis, it may be concluded that post-merger, the Net Profits and operational incomes of ICICI Bank and HDFC bank have improved. However, despite growth in these variables, credit uptake, asset quality, employee productivity, and rates of returns on assets and equity failed to show any statistically significant improvement.

For Kotak Mahindra Bank and SBI, neither operational incomes nor asset quality had improved. However, credit uptake had improved indicated by improvement in CD ratio and BPE. Also, SBI had improved its Net Profits as well as PPE. Both these variables did not improve for Kotak Mahindra Bank.

It is yet to be seen whether, in the long run, the acquiring banks are able to raise their Net Profits, return on assets, and equity and lower their NPA rates. That will be the ultimate parameter to judge the success of their acquisitions.

Reference

Achini, Ambika(2015): A Study on Merger of ICICI Bank and Bank of Rajasthan, Sumedha Journal of Management, Volume: 4, Issue : 3, ISSN: 2322-0449, pp124-136

Al-Hroot, Yusuf Ali Khalaf (2015): Pre and Post-Merger Impact on Financial Performance: A Case Study of Jordan Ahli Bank, European Journal of Business and Management, Vol.7, No.36, ISSN 2222-1905

Athma,P and Bhavani,A (2017): Mergers in Banking Sector in India: An Analysis of Pre & Post Merger Performance of SBI & HDFC Bank, IOSR Journal of Business and Management, p-ISSN: 2319-7668,PP 07-16

Business Standard (2013): Retrieved from: https://www.business-standard.com/article/finance/bank-of-rajasthan-to-merge-with-icici-bank-110051900028_1.html

Edward, Dr Aloysius and Manoj,Dr Jyothi(2019) Analysis of Pre And Post-Merger Financial Performance of SBI Associate Banks, International Journal of Research and Analytical Reviews, Volume 6, Issue 2, ISSN 2349-5138

Gattoufi,Said;Al-Muharrami,Saeed and Al-Kiyumi,Aiman(2009):The impact of mergers and acquisitions on the efficiency of GCC banks, Banks and Bank Systems, Volume 4, Issue 4

Gourlay, Adrian; Ravishankar, Geetha;Weyman-Jones,Tom(2017): Non-Parametric Analysis of Efficiency Gains from Bank Mergers in India, Discussion Paper Series, Department of Economics, Loughborough University

Gupte, Yatin V(2004): Retrieved from: https://web.archive.org/web/20150622232834/http://www.crisil.com/Ratings/Brochureware/News/GTBOBC_020804.PDF

ICICI Bank(2007): Retrieved from: https://www.icicibank.com/managed-assets/docs/about-

us/2007/RBI%20approves%20amalgamation%20of%20Sangli%20Bank%20with%20ICICI%20Bank.pdf

IMF (2000): Occasional paper 192, April 2000

Kaur,Pardeep and Kaur, Gian(2010): Impact of Mergers on the Cost Efficiency of Indian Commercial Banks, Eurasian Journal of Business and Economics Vol3 (5), pp27-50.

Khan, Azeem Ahmad(2021): Merger and Acquisitions (M&As) In The Indian Banking Sector In Post Liberalization Regime, International Journal of Accounting and Financial Management Research, Vol.2, Issue 1,ISSN : 2249-6882

Mathur, Shaifali and Sharma, Aditi(2021):The CAMEL Model Analysis of Pre Merger and Post Merger Profitability of State Bank of India Ltd. and its Associates, Global Economy: Opportunities & Challenges

Patel,R (2018): Pre & Post-Merger Financial Performance: An Indian Perspective, Journal of Central Banking Theory and Practice, 2018, 3, pp. 181-200

Shar, Amir Hussain, Muneer Ali Shah and Hajan Jamali, (2010). Performance Evaluation of Banking Sector in Pakistan: An Application of Bankometer. International Journal of Business and Management. 5(9), 81-86.

Shrestha,Magina;Thapa,Ram Kumar;Phuyal,Ram Kumar(2017): A Comparative Study of Merger Effect on Financial Performance of Banking and Financial Institutions in Nepal, Journal of Business and Social Sciences Research , Vol. 2, No. 1 & 2, pp. 47-68

Tanwar,Dr. Nidhi(2016): A study on the performance analysis of banks in India after mergers and acquisitions, International Journal of Commerce and Management Research, Volume 2; Issue 12, ISSN: 2455-1627

SHAPING THE MIND OF AN ACCOUNTANT

Dr. Radhanath Pyne *

ABSTRACT

In one line we can draw the crux of the issue that the technical approach to accounting masks the moral aspect of the discipline. The training of an accountant is still lagging in shaping the moral mind of an accountant. Instantly, we are getting the result by the explosion of moral turpitude of the accountants and auditors in several financial frauds throughout the world. The paper discusses the theories of developing a moral mind which is also relevant to an accountant too. It highlighted some major developments in moral theories along with some cases which show that greed trumps the morality of an accountant today. Thus, it requires the community to adopt a principle called 'moral courage'. The need of the hour felt to merge the ethical codes of the professional institutes. However, this brief write-up ends with an observation that there is a long way to travel in the path of morality to give a proper shape of mind of an accountant to whom the investors can trust with.

Introduction

A student learns accountancy in high school or undergraduate class. A student first acquainted herself with the subject of accountancy. At that age, she has already developed the adaptability to understand the process with tender rationality. Then also she carries the ethical or moral bent of mind garnered from her family and the perspective and some of them are inborn. Inborn virtues and morals of individuals are considered to be one of the decisive factors forming the ethics of this profession She also possessed the knowledge of distinguishing good or bad and by formal education, she had constructed a frame of value justifying right or wrong. With this backdrop, she starts learning the theory and practice of accountancy. The techniques of the subject may push him to post-graduate academic courses or may attract her to build a professional career in accountancy. But in the advanced study of accountancy which remains back-seated, is the use of a moral frame of mind. It varies from person to person and has gained little importance in the syllabi of both patterns of courses, either academic or professional. The question remains then how ethical behavior is formed? In short, it can be said that an analysis of the formation of the ethics and ethical behavior of professional accountants can be performed by analyzing the influence of two factors – virtues and environment. The formation of the virtues of accountants is predetermined by inborn personal features and the potentiality of the ethics of professional accountants' standardization of ethics. Since accountants have to respond to environmental effects based on the norms of professional ethics, they unquestionably impact

* Associate professor,
Department of Commerce, S. A. Jaipuria College, Kolkata
Email: radhanathp@yahoo.com

these relationships as well. Professional competence and due care are closely linked with such virtues as a sense of duty, accuracy, and attractiveness. Loyalty to the client or employer most often includes the necessary maintenance of confidentiality of information about that client or employer (Spalding, Oddo, 2011). Though the subject accountancy is based partly on laws, codes, and regulations and partly on techniques derived out of it, it always required a rationally prudent form of mind, for its application

But the prudence does not come magically to a person. It needs a proper culture and environment to prosper. The word 'prudence' signifies the quality of seeing the future in advance. As this is not technical knowledge it is inherited partly from the books and partly from the community and family. The process of development of prudence is not included in the syllabus. A student has to derive it from the ultimate result. Lastly which is still ignored in the training of an accountant is the shaping of the moral mind. The technical approach to accounting masks the moral aspect of the discipline and the accounting educational process serves to suppress students' moral reasoning and independent thinking two attributes vital to accounting practice. In the following paragraphs, we shall discuss the growing importance of ethical propriety over other qualifications of an accountant. The exposed financial crimes throughout the world prove its necessity to be more trustworthy to the investors and demand moral metrics within them that have been theorized as under.

Theories of Moral Development

There are several theories of moral development through which a would-be accountant has to go through. The moral mind takes shape from the tender age of a person, much before one selects his subject of study on a particular profession (Pyne, 2020). As morality develops from childhood the common and established theories of moral development also handle the issue from its initial phases. Piaget (1932) has developed the theory of morality concerning childhood especially from the age of four to eleven. He divided morality into two stages, stage one comprises Heteronymous morality and the other stage is Autonomous morality. Kohlberg (1969) develops the theory of moral development with three levels and each level is divided into two stages. The levels are Pre-conventional, Conventional, and Post-Conventional. The levels are expanded in stages to specify the development patterns. Gilligan (1982) dealt with morality from the perspective of women. Her theory consists of three stages. She talked about the orientation toward individual survival, the goodness of self-sacrifice, and the morality of non-violence.

James Rest (1979, 1986) developed the neo-Kohlbergian approach of moral theory where he marked the fluidity of the different stages of Kohlberg. He developed DIT (Defining Issues Test) through multiple choice questionnaires to measure the individual's level of cognitive moral development. The first component of Rest's model is the recognition stage. He identifies the following three findings concerning recognition i) Individuals have difficulty interpreting even the simplest of moral situations and the increasing difficulty level reduces moral behavior. ii) Differences exist between individuals concerning "their sensitivity to the needs and welfare of others". Some only recognize that their actions affect others when the effect is most

severe. iii) The ability to interpret moral situations is developed over time. Older individuals interpret moral situations better than younger individuals (Rest, 1983). Jones(1991) reviews the existing model of the moral judgment process and presents his own. His model includes the following stages a) The first component of moral integrity, magnitude of consequences represents the relative harm or good that arises from a moral act. b) The second dimension of moral intensity represents the degree of society's overall agreement that a moral action is good or evil. Social consensus may influence the vividness related to a moral issue because the issue may receive extreme public attention. c) The third element of moral intensity the probability of effect represents the decision that makes certain that a particular action will be pursued and the likelihood that this section will result in the predicted consequences. d) Temporal immediacy, the fourth component of moral intensity represents how quickly the predicted consequences of a moral act will be realized. e) The fifth component of moral intensity is proximity which represents the moral agent's perception of nearness with those affected by the moral act f) The final element of moral intensity concerns the distribution of the consequences of an action. It is a function of a number of the number of people that will be affected by and relative harm or benefit that arises from action. Jones described this function as an inverse relationship. However, Jones also highlighted the bias where an individual may not see themselves as independent moral agents. There are other theories like Social Cognition Theory and Moral Domain-Theory which are out of the scope of discussion in this article.

But today the researchers have moved ahead to measure the moral consequences. They call it neuroethics which explores remarkable insights into what happens in the brain when a person is thinking about ethical and moral issues. Two major parts of the brain are involved in moral ideation --- the "emotional brain" and "the frontal lobes: the seat of understanding". The emotional brain or limbic system includes the amygdale which applies emotional meaning to environmental stimuli. Hippocampus is also an important component of the anterior cingulated cortex which involves emotional self-control.

Morality and Accountancy

From the historical oversight, morality has strong bondage with accountancy. The connection though less absolute was present in Adam Smith's Theory of Moral Sentiment. According to Smith, there is no economic man, on the one hand, and a moral man on the other hand each of them acting according to his specific motivations and ends including antagonistic ones. Accounting is closely connected with morality, ethics, and religion (Horomnea, 2001) and requires a useful application of those to handle huge accounting information of the market to curb the fraudulent practice. Karven (1993) in the study of management and accounting has compared strategic ethics with professional deontology understanding the axiology to examine the values of the field. But accounting reality is limited to a "recordable reality". Here ethics is placed between the border between reality according to what is supposed to be the truth.

Three R's, which are relevant in accounting and audit, are respect, responsibility, and result supporting businessman in defining ethical direction to follow. Respect is an attitude towards organizational resources

and to the environment. Responsibility includes the responsibility towards the clients and colleagues and the result means understanding how results are obtained. These three R's and the moral foundation of an accounting professional create public trust, which is again backed by moral reasoning abilities (MRA) of Certified Public Accountants. Eynon et al (1997) find that the MRA of small firms' CPAs is lower than other accounting practitioners and lower than average college students. Prior research also confirms that as age and experience of CPAs of big firms increase, moral reasoning abilities decrease. There are certain positive factors that increase the MRAs like the involvement of a female accountant in the profession. Another factor like the undergraduate courses of professional ethics has a positive impact on the MRAs of the CPAs even twenty to twenty-five years later. This is measured by Eynon et al (1997) with the help of a psychometric instrument, DIT (Defining Issues Test).

So, from the above discussion, it is imperative that to shape the mind of an accountant, morality plays a leading role. It is also true that morality is not only related to the curriculum of accounting, it is developed with the development of a human being from his childhood along with his community and environment. The principle of integrity requires being straightforward and honest in all professional and business relationships. Integrity is one of the good features, that needs to be rooted in personal character to be practically applied (Kretzschmar & Bentley, 2013). In the opinion of D de Cremer, D Mayer and M. Schminke (2010) integrity are particular principles whose practical application enables knowing the way of ethical behavior at any time. Adhering to the principle of objectivity an accountant should not allow bias, conflict of interest, or undue influence of others to override professional or business judgments. To behave objectively, an individual must have a strong character and self-confidence to be able to disregard personal interests and behave correctly (Hartman, 1998). A study was conducted based on Rest's model(1986) and studies by L.Trevino, G. R. Weaver and S. J. Reynolds(2006) recognize that the ethical behavior of individuals depends on four components --- psychological process, moral sensitivity, moral judgment, moral motivation, and moral character. The study's results have shown that the perceived ethical behavior of accountants is predetermined by their virtues. Now in the latter part of the paper, we shall discuss the problems faced devoid of the moral fabric of mind in the professional field, as per the opinion of the experts and institutes.

Marking the change, the noted personality of accounting Steve Zeff commented, "By 1980, a deterioration in professional values appears to have set in"(2003). The independence of an auditor is a long-drawn issue. But more careful research is needed why such independence is threatened. Perhaps one reason is the ethical compromise of the auditors. To make their report unqualified they carry the mantle of their clients. Recently, Michael Rapoport(2020) wrote that regulators have found about one-third of the investigated Big Four audits to be deficient. He raised the matter of consulting, noting that in 2019 Deloitte earned 22% of its revenue from auditing but 60% from consulting(2020, January). SEC (2016) has also raised a charge against Gregory Bedner of E & Y who built a close relationship with the client by spending $109000. So, the question remains whether the auditors have any bias or they deliberately sacrifice their integrity to put the professional sanctity in question.

We know the difference between a technically competent person and a professional. Professionals are backed by the institutes as they have to obey the codes. They are enjoying the privilege from the society due to their expertise which is only directed to the service to the society. But their behavior proves wrong and it is mainly due to their low moral stand.

There is certain demeanor followed by the accountants which are considered 'acts discreditable to the profession' in the AICPA Code of Professional Conduct because they develop harm in the reputation of one's professional career. Judging the ethical importance in the profession the IESBA (International Ethics Standards Board for Accountants) has revised its code by introducing five fundamental principles like integrity, objectivity, professional competence and due care, confidentiality, and professional behavior. In explaining the term professional behavior it said in its subsection 115 that only the convergence of the two codes (AICPA and IESBA) is not sufficient but the accountant has to develop moral conduct in professional activities and the personal behavior that strengthen the professionalism by increasing public trust. The ICAS (Institute of Chartered Accountants) in a discussion paper added a new separate principle named 'moral courage' which is defined as 'the ability to exhibit fortitude and a constant determination to exert professional skepticism (Burden, 2016). Though ACCA (The Association of Chartered Certified Accountants) which has a broader mission than ICAS criticized the principle of' moral courage' by saying that this principle 'would threaten the clarity of the current set of principles', lack of professionalism, and the improper choice is considered as social crimes. The State Board of Accountancy has taken disciplinary action due to the use of poor judgment (2008-14) (State Boards of Accountancy, 2016). Social crimes are the individual activities for which other members of society suffer. This wrongful activity of an individual evolves from not maintaining a good moral character. It is known as 'moral turpitude' which may arise out of practice also. Moral turpitude is considered contrary to a community standard of justice, honesty, or good morals. It goes against the public interest.

Personal behavior in practice is so important that sometimes it overlaps professional competence. The irrational personal behavior of an auditor with clients impedes the independence of an auditor. It gives rise to a conflict of interest. Some of the examples are cited before with the names of the CFOs who expended unjustified amounts for the client. So, in the AICPA code, a principle of professional behavior is included where the moral turpitude is defined. It encroaches on a commitment to moral conduct.

Now the question remains which is the basic qualification required to be an accountant? Previously it was the traditional training like under or postgraduate qualification or the professional qualification. In the wake of disruptive technology today, the accountant should gain knowledge of blockchain, big data, or artificial intelligence for system audits. But still, it is not considered that moral bent of mind is to be nurtured simultaneously along with the traditional qualification. In practical life, it is seen that major irregularities in the accounting field are due to the 'moral turpitude' of the accountants. Directly or indirectly, they are instrumental in different scams. Research has shown on more than one occasion teaching

accounting ethics can shape the morality of the accountants. But the reluctance of imparting the training in a moral frame proves that the accounting fraternity still does not believe in the ethical shaping of the mind of an accountant. They are chasing the technical gap to be bridged rather than frame a moral mind of an accountant.

Personal and Professional Behaviour

There is certain demeanor followed by the accountants which are considered 'acts discreditable to the profession' in the AICPA Code of Professional Conduct because they develop harm in the reputation of one professional career. Judging the ethical importance in the profession the IESBA (International Ethics Standards Board for Accountants) has revised its code by introducing five fundamental principles like integrity, objectivity, professional competence and due care, confidentiality, and professional behavior. In explaining the term professional behavior it said in its sub section 115 that only the convergence of the two codes (AICPA and IESBA) is not sufficient but the accountant has to develop moral conduct in professional activities and the personal behavior that strengthen the professionalism by increasing public trust. The ICAS (Institute of Chartered Accountants) in a discussion paper added a new separate principle named 'moral courage' which is defined as 'the ability to exhibit fortitude and a constant determination to exert professional skepticism (Burden, 2016). Though ACCA (The Association of Chartered Certified Accountants) which has a broader mission than ICAS criticized the principle of' moral courage' by saying that this principle 'would threaten the clarity of the current set of principles', lack of professionalism, and the improper choice is considered as social crimes. The State Board of Accountancy has taken disciplinary action due to the use of poor judgment (2008-14) (State Boards of Accountancy, 2016). Social crimes are the individual activities for which other members of society suffer. This wrongful activity of an individual evolves from not maintaining a good moral character. It is known as 'moral turpitude' which may arise out of practice also. Moral turpitude is considered contrary to a community standard of justice, honesty, or good morals. It goes against the public interest.

Personal behavior in practice is so important that sometimes it overlaps professional competence. The irrational personal behavior of an auditor with clients impedes the independence of an auditor. It gives rise to a conflict of interest. Some of the examples are cited before with the names of the CFOs who expended unjustified amounts for the client. So, in the AICPA code, a principle of professional behavior is included where the moral turpitude is defined. It encroaches on a commitment to moral conduct.

Observation

Now the question remains which is the basic qualification required to be an accountant? Previously it was the traditional training like under or postgraduate qualification or the professional qualification. In the wake of disruptive technology today, the accountant should gain knowledge of blockchain, big data, or artificial intelligence for system audits. But still, it is not considered that moral bent of mind is to be

nurtured simultaneously along with the traditional qualification. In practical life, it is seen that major irregularities in the accounting field are due to the 'moral turpitude' of the accountants. Directly or indirectly, they are instrumental in different scams. Research has shown on more than one occasion teaching accounting ethics can shape the morality of the accountants. But the reluctance of imparting the training in a moral frame proves that the accounting fraternity still does not believe in the ethical shaping of the mind of an accountant. They are chasing the technical gap to be bridged rather than to frame a moral mind of an accountant.

References:

Burden, A (2016). What is Moral Courage?, ICAS Website, November 4, http://bit.ly/3270OC4)

Cremer, De D., Mayer, D , Schminke, M (2010). Guest Editors Introduction on Understanding Ethical Behaviour and Decision Making: A Behavioural Ethics Approach, Business Ethics Quarterly, 20-1, 1-6

Eynon, G. Hill, N. T Stevens K. T.(1993) Factors that influences the Moral Reasoning Abilities (MRA) of Accountants: Implication for the Universities and the Profession, Journal of Business Ethics, 1297-1309

Gilligan, C (1982). In a different voice: Psychological Theories and Women's Development, Cambridge MA: Harvard University Press.

Hartman, E (1998). The Role of Character in Business Ethics, Business Ethics Quarterly, vol 8, Issue 3, 547-59

Horomnea, E(2001). 'Tratat de contabilitate. Concepte, principia, stadarde, aplica ii, vol 1 , Sedcom Libris, Lasi

Jones,T.M (1991). Ethical Decision Making by Individuals in Organisation: An Issue – Contingent Model, Academy of Management Review, 16:2 pp 366-95

Kerven, G. Y. (1993). La Culture Reseau, Eska, Paris

Kohlberg, L (1969). Stage and Sequence: The Cognitive Development Approach to Socialisation, In Handbook of Socialisation Theory and Research Edition, D. A. Goslin, Chicago.

Kretzschmar, L Bentley, W (2013). Applied Ethics and Tertiary Education in South Africa: Teaching Business Ethics in the University of South Africa, Verbunm et Ecclesia, 34(1).

Piaget, J.(1932). The Moral Judgement of the Child, Kegun Paul, London, UK.

Pyne, R(2020). Moral and Ethical Issues in Accounting, Elegant Publication, Kolkata, India

Rapoport, M. (2020). What goes Wrong When Accounting Firms become Consultants, Quartz, January 13, http://bit.ly/2SOKO6R.

Rest, J. (1983) Morality in P. Mussen ed Handbook of Child Psychology 4th edn., vol 3 Cognitive Development, J. Flarell and E. Markman vol ed., New York, John Wiley & Sons

Rest, J. R (1979). Development in Judging the Moral Issues, Minneapolis MN: University of Minnesota Press

Rest, J.(1986). Moral Development: Advances in Research and Theory, Praeger Publishers, Journal of Management, vol. 32, No.6, 951-990

Spalding Jr., A. D., Oddo, A (2011). Its time for principles – Based Accounting Ethics, Journal of Business Ethics, 99(1), 49-59

State Boards of Accountancy(2016). Accounting in the Public Interest, http://bit.ly/2v1yIxp

Trevino, L., Weaver, G. R., Reynolds, S. J. (2006) Behavioural Ethics and Organisation Studies, Vol 17, No. 2, 16-26

Zeff, S (2003) How the US Accounting Profession got where it is today, Accounting Horizons, December

A STUDY ON COMPARATIVE PERFORMANCE ANALYSIS OF SBI & LIC MUTUAL FUNDS IN INDIA

C. Ramshesh *

Dr. S. Sreenivas **

ABSTRACT

The study attempts to evaluate the past performance of selected open-ended equity funds. The study is based on the secondary data restricted for a period of 2 years i.e., 1st April 2018 to 31st March 2020. It has been segregated the data based on quarters. The study has been done on two mutual fund companies namely, the Life insurance corporation of India, and the State bank of India to analyze the performance of selected schemes namely "SBI Equity hybrid fund Direct plan growth, LIC Equity hybrid fund direct plan growth. The objective of this research work is to analyze the financial performance of selected open-end fund schemes through statistical analysis of the statistical parameters like correlation coefficient, beta, Sharpe ratio, Treynor ratio, information ratio, Sortino ratio. The calculation part of the correlation coefficient has been implemented between the quarters of the same company, and the same statistical tool has been used to measure the relationship between Nav,& Sensex of 4 quarters. In addition to this, it has measured the relationship between the same quarters of LIC & SBI.

Introduction

A mutual fund is one such domain in financial instruments where it gives an eye-opening to not only researchers but also the investors. The most important characteristic of the mutual fund is it pools money from different investors and invests in various financial instruments such as stocks bonds, short-term money market instruments, etc. One of the good features of the mutual fund is it helps investors who are very oblivious in capital markets. Based on their risk appetite they would go for investment in various financial avenues. Especially, the small investors don't have sound knowledge, sufficient time, experience, and more over they don't have resources to help them for accessing the capital markets. They have to take the assistance of an intermediary which helps them to achieve their objectives by taking professional expertise.

* Research Scholar,
Acharya Nagarjuna University, Guntur.

** Professor
T.J.P.S. COLLEGE, Guntur
Research Supervisor
Acharya Nagarjuna University,Guntur.

Primary Objective:-

To make comparative performance analysis of Life Insurance Corporation & State Bank of India Mutual fund companies of 4 quarters.

Secondary Objectives:-

i) To know the correlation coefficient of LIC & SBI.

ii) To know the correlation coefficient of BSE Sensex with LIC & SBI.

iii) To know the correlation coefficient of LIC & SBI within the quarters respectively.

iv) To know the Sharpe ratio, Treynor ratio, information ratio, beta, risk, return, of LIC & SBI for the quarter ended.

Need and Significance of Study:-

As far as this study is concerned It has relied upon the time-bound such as Quarter1, Quarter2, Quarter3, Quarter4 of two companies namely LIC Mutual fund and SBI Mutual fund companies. The two reasons behind segregating the time factor are the market is high volatility due to the influence of both external and internal factors. Such as supply & demand, monetary policy, government policy, inflation, international issues, company profits, company governance. The second reason is the research has done in a minimum way to assess the correlation coefficients between the quarters, within the quarters of the same company and comparison of NAVS' of two companies, comparison of NAV and Sensex values quarter ended period. In addition to this implementation of Sharpe ratio, Sortino ratio, information ratio, and Treynor ratio.

Literature Review:-

The literature review on mutual fund performance evaluation is very large. The following are a few works of literature review regarding this study.

1. Mishra, Rehman (2000) the performance of the mutual fund is measured with the help of using lower partial moment risk i.e., downside risk it has measured by considering only those returns which are below a pre-specified target rate like risk-free rate.

2. Ramasamy et al,(2003) agreed that three parameters in mutual fund performance are consistent historical data (Performance), Size of funds, Cost of the transaction have a greater impact on the performance.

3. Panwar et al,(2005) measured the residual variance (RV) as the measure of mutual fund portfolio diversification. RV has a direct impact on Sharpe fund performance.

4. Agrawal (2006), An empirical study: The Indian mutual fund industry pricing mechanism on its valuation

5. Sukhwinder Singh et al(2012) Measured performance evaluation of selected open-ended mutual funds in India. It was examined the comparative performance of selected open-ended schemes and the benchmark index is BSE 30. The statistical tools are implemented are a reward to variability & volatility, beta

Research Methodology:-.

1. Data:-

The data has been collected from secondary sources, It includes NAV values has collected from AMFI and BSE Sensex values has collected from bseindia.com. The scheme's names are equity hybrid fund direct plan growth in both the companies.

2. Period Of Study:-

The period of study has been done for 2 years i.e., 1st April 2018 to 31st March 2020.

3. BenchMark index:-

For conducting this study the BSE index 200 has been chosen as the benchmark index.

Tools Used for Data Analysis:-

1. Sharpe Ratio:- Sharpe (1966) is an index of a portfolio performance measure, commonly known as the ratio of reward to variability. It is the ratio of the fund portfolio's average excess return divided by the standard deviation of returns and it is given by:-

$$sharpe\ ratio = \frac{Rrm - Rf}{\sigma m}$$

Rrm= Mean return on mutual fund portfolio

Rf= Risk-free return

$\boldsymbol{\sigma}$m= Standard deviation of excess return.

2. Treynor Ratio:- The ratio measures the relationship between the fund's additional return over the risk-free and fund volatility measured by β. It is also explained as the risk premium earned per unit of risk taken. It is calculated as the mean return of the portfolio in excess of the risk-free return divided by the portfolio beta.

$$\text{Treynor ratio} = \frac{Rrm - Rf}{\beta i}$$

Rrm= Mean return on mutual fund portfolio

Rfm= Mean risk-free return.

$\boldsymbol{\sigma}$ = Standard deviation of excess return

3. Beta:- Beta is also called systematic risk it represents the volatility in the net asset values of the fund. Nav value will be more responsive to a fund with respect to changes in the market fluctuations. Beta is calculated by relating the returns on a mutual fund with the returns in the market. There are 3 criteria are there is β:-

If β>1:- It indicates that the security is more volatile than the market.

If β<1:- It indicates that the security is less volatile than the market.

If β=1:- It indicates that the security moves with the market.

$$\beta_i = \frac{\text{cov ri, rm}}{Var_m}$$

$B_{i=}$market beta of asset i

Cov=Covariance

Var=Variance

$R_{m=}$Average expected rate of return on the market.

R_i= Expected return on an asset i

Information ratio:- The information ratio was developed by Treynor and black, in the year 1973. It assesses the managerial ability skill to produce an excess return from a benchmark index. The information ratio is sometimes called the appraisal ratio. In other words, it is defined by the residual return of the portfolio return when compared to its residual risk.

$$\text{Information ratio} = \frac{\text{Rt}-\text{Bt}}{\text{w}}$$

Where

(R_t-B_t)= Difference between the fund return and the index return. This is called active return.

R_t= Portfolio return

B_t= Benchmark return.

W= Standard deviation of the active return. This is also called a tracking error.

Sortino Ratio:- Sortino ratio is an alteration of the Sharpe ratio, but the Sortino ratio has given much emphasis on downside deviation rather than the standard deviation. It concentrates only those returns falling below a user-specific target or required rate of return are considered risky. It has drawn attention that even **NOBEL LAUREATE HARRY MARKOWITZ** When he developed modern portfolio theory in 1959. The derivation of downside deviation has evolved in Henry Markowitz's theory, the downside deviation is relevant to measure risk would be more appropriate rather than the standard deviation to the investors.

In the early 1980's Dr. Frank Sortino did extensive research to come up with an improved measure to risk-adjusted return. According to Sortino, Brian Rom's idea at investment terminologies to call new measure the Sortino ratio. The first reference of this ratio was in a financial executive magazine (August 1980) and the first calculation was published in a series of articles in the journal of risk management (September 1981).

S=(R-T)/TDD.

Where R= the average period return.

T= the target or required rate of return for the investment strategy under consideration.

The Sortino ratio 'S' defined as

S=(R-T)/TDD

Where R= the average period return.

T=the target or required rate of return for the investment strategy under consideration.

TDD=The target downside deviation.

Target downside deviation (TDD):- TDD is defined as the root mean square of the deviations of the realized returns under performance of 'O'

$$\text{TDD}= \sum_{i=1}^{n} p_i(0,x)^2$$

Limitation of the study:-,

1) This paper has been confined to open-ended schemes namely SBI equity hybrid fund direct plan growth, LIC equity hybrid fund direct plan growth. The secondary data has been collected for a period of 2 years.
2) Time is too short to conduct the study due to the shortage of time only.

Data analysis & interpretation:-

Table:-1 Correlation Coefficients of LIC & SBI for the year ended 2018-2019

		SBI 2018-2019			
	Quarters	**Q1**	**Q2**	**Q3**	**Q4**
LIC 2018-2019	**Q1**	0.616			
	Q2		0.705		
	Q3			0.987	
	Q4				0.113

Sources:- Authors compilation.

Table:-2 Correlation Coefficients of LIC & SBI for the year ended 2019-2020

		SBI 2019-2020			
	Quarters	**Q1**	**Q2**	**Q3**	**Q4**
LIC 2019-2020	Q1	-0.505			
	Q2		0.641		
	Q3			0.949	
	Q4				0.997

Sources:- Author compilation.

Table:-3 Correlation Coefficients of SBI Mutual fund for the year ended 2018-2019

Quarters	**Q1**	**Q3**
Q2	0.271	
Q4		0.524

Sources:- Author compilation

Table:- 4 Correlation Coefficients of SBI Mutual fund for the year ended 2019-2020

Quarters	**Q1**	**Q3**
Q2	-0.079	
Q4		-0.390

Sources:-Author compilation.

Table:-5 Correlation Coefficient of LIC Mutual fund for the year ended 2018-2019

Quarters	**Q1**	**Q3**
Q2	-0.480	
Q4		0.417

Sources:- Author compilation.

Table:-6 Correlation Coefficient of LIC Mutual fund for the year ended 2019-2020

Quarters	Q1	Q3
Q2	0.267	
Q4		-0.617

Sources:- Author compilation.

Table:-7 Correlation Coefficient of Sensex and State Bank of India mutual fund for the year ended 2018-2019

		SBI 2018-2019			
	Quarters	Q1	Q2	Q3	Q4
SENSEX 2018-2019	Q1	0.510			
	Q2		0.962		
	Q3			0.885	
	Q4				0.931

Sources:- Author compilation.

Table:-8 Correlation Coefficient of Sensex and State Bank of India mutual fund for the year ended 2019-2020

		SBI 2019-2020			
	Quarters	Q1	Q2	Q3	Q4
SENSEX 2019-2020	Q1	0.931			
	Q2		0.914		
	Q3			0.969	
	Q4				0.973

Sources:- Author Compilation.

Table:-9 Correlation Coefficient of Sensex and LIC Mutual fund for the year ended 2018-2019

		LIC 2018-2019			
	Quarters	Q1	Q2	Q3	Q4
SENSEX 2018-2019	Q1	0.535			
	Q2		0.094		
	Q3			-0.624	
	Q4				-0.183

Sources:- Author compilation

Table:-10 Correlation Coefficient of Sensex and LIC Mutual fund for the year ended 2019-2020.

		LIC 2019-2020			
	Quarters	**Q1**	**Q2**	**Q3**	**Q4**
SENSEX 2019-2020	**Q1**	-0.247			
	Q2		0.538		
	Q3			-0.824	
	Q4				-0.344

Sources:-Author compilation

Table- 11 Calculation of following ratios of SBI for the year ended 2018-2020

Components	**State Bank of India 2018-2019**				**State Bank of India 2019-2020**			
	Q1	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Total return	1.2%	0.2%	3.3%	4.6%	2.4%	-0.1%	5.0	-1.0%
Stdedev(daily)	0.4%	0.5%	0.7%	0.4%	0.6%	0.8%	0.4%	2.0%
Stddev(annualized)	3.3%	4.0%	5.7%	3.4%	4.6%	6.2%	3.4%	15.6%
No of trading days	64	61	60	62	64	61	60	62
Risk free rate	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Specific risk free rate	1.333%	1.271	1.25	1.292	1.333	1.27	1.25%	1.29
Beta	0.586	0.685	0.427	0.553	-0.071	-0.05	0.1	-0.006
Sharpe ratio	-40.05	-31.96	-21.335	-36.202	-28.67	-20.41	-35.55%	-14.74
Treynor ratio	-2.255	-1.851	-2.850	-2.251	18.515	25.53	-12.04%	36.26
Sortino ratio	0.586	0.685	0.427	0.553	-0.026	-0.036	0.016	-0.024
Information ratio	197.03%	-100.4%	0.018%	-69%	1.1%	26%	-3.6%	13%

Sources:- Author Compilation

Table: 11 exhibits the state bank of India mutual fund performance between 2018 and 2020 quarter-wise performance by considering the above financial values. In the year 2018-2019 the maximum total return of SBI mutual fund performance is 4.6% in Q4 and the minimum total return is -0.1% in Q2, in the next year 2019-2020 the maximum return is 5 in Q3 and the minimum return is -1.0%. In the year 2018-2019, the maximum standard deviation is 0.7% in Q3, the minimum standard deviation is 0.4% in Q1&Q4 respectively. In the next subsequent year, the maximum standard deviation is 2.0% in Q4and the minimum standard deviation is 0.4% in Q3. The maximum Annualized standard deviation of SBI mutual fund is 15.6% Q4 in the year 2019-2020 and the minimum standard deviation is 3.3% Q1 in 2018-2019. Under the specific risk-free rate, the maximum value is 1.333%

Q1 2018-2019 and the same value and the same quarter in the next subsequent year i.e., 2019-2020. And the minimum value is 1.25% in Q3 2018-2019 and the same value is there for the next subsequent year i.e., 2019-2020. The highest beta value in the year 2018-2019 is 0.685 in Q2 and the minimum beta value is 0.427 in the next subsequent year 2019-2020 the maximum value is 0.1 in Q3 and the minimum value is -0.071 in Q1. In the year 2018-2019 the maximum Sharpe ratio value is -21.34 in Q3 and the minimum value is -40.05 in Q1 it means each additional unit of risk is taking the investor is losing the value of -21.34 and -40.05 respectively. And the next subsequent year 2019-2020 the minimum value of SBI Mutual fund is -35.55 and the maximum value is -14.74. For each additional unit of risk is taking the value is losing -35.5% and -14.74% respectively. In the year 2018-2019, the maximum Treynor ratio is -1.85% and the minimum Treynor ratio is -2.85% it means for each unit of undiversifiable risk taken the maximum amount of value is lost with -1.85% and the minimum amount of value is losing -2.85%. in the next consecutive year the maximum value is 36.26% in Q4 and the minimum value is -12.04% in Q3 it means for every additional unit of undiversifiable risk taken the maximum return is 36.26% reciprocal of this is for every additional unit of undiversifiable risk is taken the investor is loosing -12.04%. In the year 2018-2019, the maximum Sortino ratio is 0.685 in Q2 and the minimum value of the Sortino ratio is 0.427 Q3. The next year 2019-2020 the maximum Sortino ratio is 0.016 in Q3 and the minimum value is -0.036 in Q2. The higher the Sortino ratio is better. The maximum information ratio during the period of study is 197.03% in Q1 and the minimum value is -100.4% Q2 2018-2019, in the next subsequent year 2019-2020 the maximum value is 26% in Q2 and the minimum value is -3.6% in Q3.

Table:-12 Calculation of following ratios of LIC for the year ended 2018-2020

Components	**LIC 2018-2019**				**LIC 2019-2020**			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total return	1.8%	-3.0%	-1.9%	3.8%	-3.3%	-0.7%	-5.3%	23%
Stdedev(daily)	0.5%	0.6%	0.8%	0.5%	0.6%	0.8%	1.03%	2.1%
Stddev(annualized)	3.9%	5.0%	5.9%	3.7%	4.4%	6.2%	8.15%	16.8%
No of trading days	64	64	60	62	64	63	62	63
Risk free rate	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Specific risk free rate	1.33%	1.33%	1.25%	1.3%	1.33%	1.31%	1.3%	1.31%

Beta	0.112	0.227	0.037	0.034	-0.065	-0.12	0.072	0.15
Sharpe ratio	-33.53	-27.306	-21.633	-35.96	-30.4	-21.20	-0.165	-6.45
Treynor ratio	-11.71	0.227%	-34.13	-39.21	21.120	11.04	-18.69	-7.155
Sortino ratio	-0.584	-0.291	-0.017	-0.015	-0.026	-0.036	0.016	-0.024
Information ratio	-84%	-91.6	7.14%	47.62%	15.48%-	-63.52%	-31.53%	-29.05%

Sources:- Authors' compilation.

Results & Discussions:-

The Pearson correlation coefficient r can take a range of values from -1 to +1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association that is as the value of one variable increases so does the value of the other variables. A value less than 0 indicates a negative association. That is as the value of one variable increases the value of the other variable decreases. Tables:-1 summarizes the correlation coefficient results of LIC & SBI 2018-2019 are Q1 =0.61, 0.71,0.98, and 0.11 respectively. Similarly Table:-2 the correlation coefficient of SBI& LIC 2019-2020 are Q1 = -0.50, 0.64, 0.94, 0.99 respectively.

Table:-3, To evaluate and interpret the relationship between one quarter to another quarter intra correlation coefficient, is a good method from the investors' point of view because the correlation coefficient of SBI Mutual fund for the year ended 2018-2019 Q1&Q2 is 0.271 and Q3&Q4 is 0.524 respectively. Table 4 summarise SBI 2019-2020 Q1 & Q2 is -0.079, Q3 &Q4 is -0.390 respectively. In a similar way Table: 5 summarizes the correlation coefficient of LIC mutual fund for the year ended 2018-2019 Q1&Q2 is -0.480 Q3&Q4 0.417 respectively. Table:-6 projected the values of intra-correlation coefficient of LIC Mutual fund for the year ended 2019-2020 Q1 & Q2 0.267, Q3&Q4 -0.617 respectively. Table:- 7 represented the correlation coefficient values of Sensex & SBI Mutual fund for the year ended 2018-2019 are as follows:- Q1 0.51 0.962,0.88,0.93 respectively. Table:- 8 represents the correlation coefficient of Sensex & SBI Mutual fund for the year ended 2019-2020 are as follows:- Q1=0.93,0.91,0.96,0.97 respectively. Table:-8 represents the correlation coefficient of Sensex & SBI Mutual fund for the year ended 2019-2020 are as follows:- Q1=0.931,0.914,0.969,0.973 respectively. Table:-9 represents the correlation coefficient of Sensex

& LIC 2018-19 are as follows:- Q1:-0.53, 0.09, -0.62,-0.18 respectively. Table:-10 represents the correlation coefficient of Sensex & LIC 2019-2020 are as follows:- Q1:- -0.24,0.53,-0.824,-0.344 respectively. Table:-12 exhibits the LIC Mutual fund performance from 2018 to 2020 quarter-wise performance by considering the above financial values. In the year 2018-2019 the maximum total return of LIC mutual fund performance was 3.8% in Q4 and the minimum return -3.0%. In the next year 2019-2020, the maximum return is 23% in Q4 and the minimum return is -5.3%. In 2018-2019 the maximum standard deviation (daily) in Q3 is 0.8% and the minimum standard deviation is 0.5% in Q4&Q1 respectively. In the year 2018-2019 maximum annualized standard deviation is 5.9% in Q3 and the minimum is 3.7% in Q4 in the consecutive year the highest annualized standard deviation is 16.8% in Q4 and the minimum is 4.4% respectively. Specific risk factors were almost the same in all the quarters during the period of study. In 2018-2019 the highest beta value is 0.03 in Q3 and the lowest beta value is 0.11 in Q1, in the next year the highest beta value is 0.15% in Q4 and the lowest beta value is -0.12% respectively. The maximum Sharpe ratio is -21.63 and the minimum value is -35.9 and the next year i.e., 2019-2020 the maximum value is -0.165 and the minimum value is -30.4 respectively. For each additional unit of risk is taking the maximum value is losing -21.63 and the minimum value is -35.9. In the next year, the maximum value is losing -0.16 and the minimum value is -30.4. In 2018-2019, the maximum Treynor ratio is 0.227 and the minimum value is -39.21% respectively in the next year the maximum Treynor ratio is -18.69 and the minimum value is -21.12. It means for each unit of undiversifiable risk taken the maximum amount of value is gaining 0.227 and the losing the value is -39.215 in the next consecutive year the maximum value is 21.120 it means for each unit of undiversifiable risk taken the maximum amount of value is gaining is 21.120 in a similar way for each unit of undiversifiable risk taken the amount of value is loosing -18.69. In the year 2018-2019 maximum Sortino ratio is -0.015 in Q4 and the minimum Sortino ratio is -0.584 in the next year 2019-2020 the maximum Sortino ratio is 0.016 in Q3 and the minimum Sortino ratio is -0.036 respectively. The higher the ratio better it is. The maximum information ratio during the period of study is 47.62 in Q4 and the minimum value is -91.6 in the next year the maximum value is 15.48 and the minimum value is -63.5% respectively.

Conclusion & Scope for further research:-It is concluded that the correlation coefficient of LIC & SBI during the period of study is positive relation except -0.505 in Q1. During the period of study, the intra correlation coefficient is positive in the year 2018-2019 and negative in the next subsequent year. There is having inversely relationship between the Q1&Q2 of LIC Mutual fund in the year 2018-2019. And the direct relationship is there between the Q3&Q4. In the next year 2019-2020, there is having direct relation between Q1&Q2 and the inversely proportionate is there in Q3&Q4 of LIC Mutual fund. During the period of study 2018-2019 correlation coefficient of SBI Mutual fund is a direct relationship between the Q1&Q2 and Q3& Q4. In the next subsequent year 2019-2020 inverse relationship between Q1&Q2 and Q3&Q4. The correlation coefficient of LIC Mutual fund for the year ended 2018-2019 is

inversely proportionate of Q1& Q2 and directly proportionate of Q3 &Q4. In the next consecutive year first & second quarters are directly proportionate and the next immediate quarters i.e., Q3& Q4 inversely proportionate. The correlation coefficient of Sensex and SBI Mutual fund the two year periods of all quarters are positively correlated. The two years of correlation coefficient of Sensex & LIC mutual fund in the year 2018-2019 are positively correlated of Q1&Q2 and the immediate quarters of the same year are inversely proportionate. In the next consecutive year 2019-2020 Q1, Q3, Q4 are inversely proportionate, and directly proportionate is Q2 only. The Sharpe, Treynor, Sortino, and information ratios are maximum negative way.

Scope for further research:-

In addition to the time-bound factor, it would be better to add Jensen alpha, Fama model, M-squared model by comparing with different schemes, with different stock exchanges, the broader scope is there to implement and compare.

References:-

Nimalathasan .B & Gandhi R.K.(2012) Mutual fund financial performance analysis:- A comparative study on equity diversified schemes and equity mid cap schemes. International journal of Multidisciplinary Management Studies 2(3) 91-106.

Nadia,L.N. & Mora, N.B.R (2018) A comparative analysis of mutual fund schemes.

Gruber, M. 1996 "Another puzzle:- The growth in actively managed mutual funds," Journal of Finance, 51,783-810.

S.Narayana Rao, M.Ravindran, " Performance evaluation of Indian Mutual funds." Working paper http:// Papers.ssrn.com/ abstract-id=433100.

Guhu S. (2008) Performance of Indian Equity Mutual funds Vis-à-vis their style benchmark, the ICFAI Journal of Applied Finance 49-81.

Security Analysis & Portfolio Management PHI Publication by S.Kevin.

Websites:-

www.moneycontrol.com

www.amfiindia.com

www.bseindia.com

www.valueresearch.com

PERFORMANCE EVALUATION OF EQUITY SCHEMES OF SELECTED FUND HOUSES OF INDIA: WITH SPECIAL REFERENCE TO COVID ERA

Dr. Vikas Kumar *
Shashank Srivastav **

ABSTRACT

"If the human is the most intelligent animal on this planet Earth, Nature is his Mother". Last year, the time has gone as in a state of war, or say, a biological war against an unseen virus. At that time, probably Stock Markets of the world were the only market that was open and it was replicating the adversity that was going to be caused by the pandemic over the economy. Mutual Funds, where people normally invest to mitigate the risk, were also going in red and seeming risky. Today after the year has passed, it is time to analyze the performance of the mutual funds and their fund managers and how much they have been successful to mitigate the risk for their investors. The present paper focuses on analyzing the performance of selected 30 Equity mutual fund schemes of different AMCs on the parameter of their 12 monthly return ranging from Jan.2020 to Dec.2020. Data of all the schemes have been collected from secondary sources and Nifty50 has been selected as Benchmark for comparison. All the data has been worked on after compilation and results have been drawn through the tools like Standard Deviation, Beta, Sharpe, Treynor, Jensen Alpha, and M2 measure. The return of a 10-year gov bond has been used for a Risk-free rate.

Keywords: Equity; Mutual Funds Performance Evaluation; Risk; M2; Modigliani; Investment; Covid

Introduction

Equity mutual funds are that category of mutual funds which is inclined towards the equity shares investment. A mutual fund is a pool of savings that channelizes investors' funds towards the capital market. Equity funds invest particularly and majorly in equity shares of the listed companies. The decision of investment and selectivity is taken by the fund manager. This study covers open-ended equity mutual fund schemes with direct plan and growth options only. Open-ended schemes are all those schemes in which

* Assistant Professor, Commerce
Government P.G. College, Obra, Sonbhadra, U.P.
Email: drvikasone@gmail.com

** Professor, T.J.P.S. COLLEGE, Guntur
Research Supervisor
Acharya Nagarjuna University, Guntur.

investment can be made at any time and also can be withdrawn without having any fixed term. Direct plan means the investors' purchase of a scheme is directed by him only and not any agent and therefore the commission rate for investment comes down to its minimum. The growth option means the dividend paid off by the invested companies will be reinvested and not disbursed to the investor.

Mitigation of the risk through diversification of the portfolio and to overpass the return of the benchmark through strategic investment is the prime motto of an asset management company. The recently the ended year 2020 is no doubt one of the most unpredictable years in the history of world stock markets. The risk exposure enlarged and reached a new depth in this period. The Sensex which was at around 42000 in Jan-Feb 2020 came to the bottom of about 27000 in April-May 2020. The result was that it hit the perception of mutual fund investors as they were worried about their return and the capital invested. Any investor who wants to safeguard himself from the innocent risk of the stock market chooses the path of mutual funds to plan his investment for a better return. But with such a hit and the downgrade, many investors started thinking to withdraw their equity investments. Capabilities are examined in adversities. The present study tries to examine the mutual fund houses in terms of their performance in adversity.

Literature Review

Mishra (2001) Has performed a study on mutual funds' performance for four years from 1992 to 1996. The study focused on public sector mutual funds with a sample size of 24 schemes. The tools used were Sharpe, Treynor, and Jensen Alpha. The study concluded a dismal return-wise performance.1

Roy & Deb (2003) In their study the researchers evaluated a sample of 89 Indian mutual fund schemes measuring with both unconditional and conditional forms of CAPM model. It explains how conditionality improved the performance of mutual fund schemes, causing alphas to shift towards the right and reducing the number of negative timings.2

Kumar Vikas (2010) There are evaluated selected 20 schemes of 5 mutual fund companies. The data collected were the monthly NAV from 1st January 2002 to 31st December 2009. This holistic 120 months data were analyzed through the standard deviation, beta, coefficient of determination, Sharpe, Treynor, Jensen Alpha. The study concluded that 20 equity schemes showed better returns as compared to the depth and balance scheme.3

Anand and Murugaiah (2011) In this paper, an attempt has been made to examine the components and sources of investment performance to attribute it to specific activities of Indian fund managers. For this purpose, Fama's methodology is adopted here. The study covers the period between April 1999 and March 2003 and evaluates the performance of mutual funds based on 113 selected schemes having exposure more than 90% of corpus to equity stocks of 25 fund houses.4

Kumar Vikas (2012) Has examined the sensitivity of the funds to the market fluctuations in the terms of Beta. The researcher used open-ended schemes of mutual funds and analyzed their performance with risk-return adjustment, the model suggested by Sharp, Treynor, and Jensen.5

Kumar Vikas and Poddar (2014) In this paper the researcher evaluated the performance of HDFC mutual funds open-ended schemes with growth options. The period of the study was from 2008 to 2013 and the benchmark was BSE100. For the analysis of the performance statistical tools like average, standard deviation, beta, coefficient of determination, and the risk-adjusted performance measures suggested by Treynor and Sharpe were employed.6

Krishnaprabha (2016) Has performed a comprehensive study on mutual fund schemes' performance analysis by using risk-adjusted performance measures and Sharpe ratio, Treynor ratio, and Jensen Alpha, which measures the market selectivity of the fund manager.7

Vikas Choudhary and Preeti Chawla (2016) In this paper the researchers tried to examine the performance of equity schemes of mutual funds based on selectivity and market timing abilities of fund managers in the security market. Market timing skills relate to the ability of fund managers to correctly assess the direction of the market and position their portfolios accordingly. The study which is based on the Jenson Measure and Treynor-Mazuy Model.8

Research gap

After the study of the above literature, it was found that there is a need for study on the performance evaluation of Indian mutual funds in the Corona Crisis of last year. There are seven parameters upon which all these schemes have been tested in this study and this provides a very fine picture of the performance of mutual funds and their fund managers at the time when it was a big challenge to retain the returns earned by the investors.

Significance of this study

The basic objective of an investor while investing in a mutual fund is to have a better return and minimal risk in comparison to the market. Covid-19 was an absolute challenge for every fund manager and therefore it becomes important to evaluate the performance of those fund houses and managers that whether they have been able to sustain the basic objective of mutual fund investing or they have underperformed in the period of the market outbreak. This will be helpful for both the investor and the financial advisors to have a better overview of the performance of some highest-rated mutual fund houses of India.

Limitations of the study

The study covers only 30 schemes of the renowned and reputed fund houses of India for a period of only

12 months ranging from 1st January 2020 to 31st December 2020. All the selected schemes are open-ended equity schemes with Direct Plan and Growth Option only. The benchmark selected is Nifty50.

Scope for further research

Evaluating the performance of mutual funds is an ongoing process and a never-ending task. The present study focuses on measuring and evaluating the performance of 30 selected equity schemes of mutual fund companies. The period of study is only 12 months which can be increased further for an extensive study over mutual fund performance. The tools used are standard deviation, beta, Sharpe, Treynor, Jensen Alpha, and M2. More tools can be further used for analysis. The benchmark is taken Nifty50. More research can be done by using other benchmarks also. The study is strictly focused on equity mutual funds with a Direct plan and Growth option. Further research can be done by using other classes of mutual funds also.

Research methodology

Collection of data

The monthly NAV of the selected 30 open-ended equity schemes has been collected and compiled in MS-Excel. The source of NAVs is the data available from the Association of mutual funds of India (AMFI).

Period of study

The period of history ranges from 1st January 2020 to 31st December 2020.

Benchmark index

Since all the schemes are open-ended equity schemes therefore Nifty50 has been used as the benchmark index for evaluating the performance of the selected mutual fund schemes.

Risk-free rate

A risk-free rate of return is the minimum return that an investor may get without having any risk. For the present study, a 10-year government bond yield has been selected as a risk-free asset on the average rate of 1st January 2020 up to 31st December 2020. The monthly average yield came to 0.506375 which is taken as 0.5 in the paper.

Tools Used

To measure risk standard deviation and beta has been used. For assessing the returns using its adjusted

measures Sharpe ratio, Treynor ratio, and Jensen Alpha measure has been used, and to go deeper into the analysis M2 measure has also been included in the study. The definition, description, and interpretation of every tool have been given in their respective tables. All the figures in the tables given below have been approximated to the fourth digit after the decimal.

Analysis and Interpretation

Table-1 List of Schemes under Study

1	HDFC Equity Fund-Direct-Growth
2	HDFC Equity Savings Fund-Direct-Growth
3	HDFC Retirement Savings Fund-Equity Plan-Direct Plan
4	Axis Long Term Equity Fund-Direct-Growth
5	Axis Dynamic Equity Fund-Direct-Growth
6	Axis Equity Saver Fund-Direct-Growth
7	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth
8	Aditya Birla Sun Life Equity Fund-Direct-Growth
9	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth
10	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth
11	DSP Equity Fund-Direct-Growth
12	DSP Equity Opportunities Fund-Direct-Growth
13	DSP Equity Savings Fund-Direct-Growth
14	DSP Top 100 Equity Fund-Direct-Growth
15	ICICI Prudential Focused Equity Fund-Direct-Growth
16	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth
17	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth
18	L&T Equity Fund-Direct-Growth
19	L&T Equity Savings Fund-Direct-Growth
20	L&T Focused Equity Fund-Direct-Growth
21	Mirae Asset Equity Savings Fund-Direct-Growth
22	SBI Equity Savings Fund-Direct-Growth
23	SBI Focused Equity Fund-Direct-Growth
24	SBI Focused Equity Fund-Direct-Growth
25	SBI Magnum Equity ESG Fund-Direct-Growth
26	UTI Core Equity Fund-Direct-Growth
27	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth
28	UTI Equity Fund-Direct-Growth
29	Canara Robeco Bluechip Equity Fund-Direct-Growth
30	Franklin India Equity Fund-Direct-Growth

Source: Compiled

Table-1 shows the different schemes under study. As per the objective of the study, a total of 30 schemes have been selected from 11 different Mutual Fund houses operating in India.

All the selected schemes' monthly data (NAV) has been collected and returns have been calculated.

Table-2 Average Monthly Returns

Rank	Scheme	AMR (%)
1	UTI Equity Fund-Direct-Growth	2.8396
2	ICICI Prudential Focused Equity Fund-Direct-Growth	2.2446
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	2.1940
4	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	2.1063
5	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	2.0986
6	DSP Equity Fund-Direct-Growth	2.0320
7	Axis Long Term Equity Fund-Direct-Growth	2.0203
8	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	1.9678
9	SBI Focused Equity Fund-Direct-Growth	1.9607
10	Aditya Birla Sun Life Equity Fund-Direct-Growth	1.9212
11	Franklin India Equity Fund-Direct-Growth	1.8401
12	DSP Equity Opportunities Fund-Direct-Growth	1.7432
13	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	1.6954
14	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	1.6658
15	SBI Focused Equity Fund-Direct-Growth	1.6481
16	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	1.6377
17	UTI Core Equity Fund-Direct-Growth	1.6328
18	SBI Magnum Equity ESG Fund-Direct-Growth	1.6178
19	L&T Equity Fund-Direct-Growth	1.5817
20	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	1.4680
21	L&T Focused Equity Fund-Direct-Growth	1.4487
22	DSP Top 100 Equity Fund-Direct-Growth	1.2525
23	Mirae Asset Equity Savings Fund-Direct-Growth	1.2487
24	HDFC Equity Fund-Direct-Growth	1.1141
25	Axis Equity Saver Fund-Direct-Growth	1.1071
26	SBI Equity Savings Fund-Direct-Growth	1.1070
27	L&T Equity Savings Fund-Direct-Growth	1.0356
28	Axis Dynamic Equity Fund-Direct-Growth	0.9720
29	DSP Equity Savings Fund-Direct-Growth	0.8789
30	HDFC Equity Savings Fund-Direct-Growth	0.8312
	AMR of the Benchmark	**1.6479**

Source: Compiled

Table-2 shows the average monthly return (AMR) earned by all the selected schemes in a hierarchical order. The average monthly return of Nifty50 was 1.648%. The top performer in the terms of AMR was the UTI equity fund followed by ICICI Prudential focused equity and Canara Robeco blue-chip equity. Of the 30 analyzed schemes, 14 schemes performed above the market index in the terms of average monthly returns, while the return of SBI focused equity came exactly as the market, and

the rest were below the market. The performance of Axis dynamic equity fund, DSP equity savings, and HDFC equity savings was least in the category and lowest in comparison to the benchmark.

Table-3 Standard Deviation

Rank	Scheme	SD
1	Axis Dynamic Equity Fund-Direct-Growth	3.8616
2	HDFC Equity Savings Fund-Direct-Growth	4.2690
3	Axis Equity Saver Fund-Direct-Growth	4.3476
4	Mirae Asset Equity Savings Fund-Direct-Growth	4.6242
5	SBI Equity Savings Fund-Direct-Growth	4.8044
6	L&T Equity Savings Fund-Direct-Growth	4.8282
7	DSP Equity Savings Fund-Direct-Growth	5.2956
8	L&T Focused Equity Fund-Direct-Growth	7.9621
9	ICICI Prudential Focused Equity Fund-Direct-Growth	8.3086
10	Canara Robeco Bluechip Equity Fund-Direct-Growth	8.4379
11	Axis Long Term Equity Fund-Direct-Growth	8.8972
12	SBI Focused Equity Fund-Direct-Growth	9.1585
13	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	9.7297
14	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	9.7895
15	UTI Equity Fund-Direct-Growth	9.8193
16	SBI Magnum Equity ESG Fund-Direct-Growth	9.8536
17	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	9.8620
18	SBI Focused Equity Fund-Direct-Growth	9.8710
19	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	9.9020
20	L&T Equity Fund-Direct-Growth	9.9312
21	DSP Equity Fund-Direct-Growth	9.9742
22	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	10.0494
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	10.3185
24	Franklin India Equity Fund-Direct-Growth	10.4774
25	DSP Equity Opportunities Fund-Direct-Growth	10.5480
26	DSP Top 100 Equity Fund-Direct-Growth	10.5751
27	Aditya Birla Sun Life Equity Fund-Direct-Growth	10.7762
28	HDFC Equity Fund-Direct-Growth	10.8499
29	UTI Core Equity Fund-Direct-Growth	11.0163
30	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	11.0352
	SD of the Benchmark	**10.0025**

Source: Compiled

Table-3 shows the Standard Deviation (SD) of the selected schemes. Standard deviation denotes the total risk measure of the fund. It means the higher the value of the standard deviation the higher will

be the total risk carried by the fund. The standard deviation of Nifty50 came to 10.0025. Out of all the selected schemes 21 schemes performed better than the market in this category. It means these 21 schemes were less risky in comparison with the benchmark. The top performers were Axis dynamic equity fund, HDFC equity savings fund, and Axis equity saver fund, while the performance of HDFC equity fund, UTI core equity Fund, and Aditya Birla Sun Life equity advantage fund was the lowest among the selected schemes because of having high SD. It may also be noted that the top funds in this parameter had SD much below the benchmark, while those lowest performers didn't have SD much higher than the market. It means that among the sample of 30 schemes, good funds are exceptionally good, and bad are not much worse in comparison to the benchmark.

Risk Return Grid: A One-view Glimpse

Now to make the above analysis simple and to provide one view glimpse of how the fund has provided returns and how they have deviated, the following is the risk-return grid where all the schemes have been divided under 4 broad categories-

Category-1 Low Return Low Risk

This category consists of schemes whose average returns as well as standard deviation are lower than the benchmark.

Category-2 High Return Low Risk

This category consists of schemes whose average returns are higher than the market while the standard deviation is lower than that. This is the prime moto of any mutual fund house and this category suggests those mutual funds schemes that have succeeded in that.

Category-3 High Return High Risk

This category consists of those schemes whose average returns as well as the standard deviation are higher than the market index.

Category-4 Low Return High Risk

Here those schemes are listed whose average monthly returns are lower than the market while the standard deviation is higher than that. This is absolutely against the prime motto of any mutual fund house.

Table-4 Risk Return Grid of Mutual Funds Schemes compared to Nifty50

Category 1 **LOW RETURN, LOW RISK**	Category 2 **HIGH RETURN, LOW RISK**
(i) Axis Dynamic Equity Fund-Direct-Growth *(ii)* HDFC Equity Savings Fund-Direct-Growth *(iii)* Axis Equity Saver Fund-Direct-Growth *(iv)* Mirae Asset Equity Savings Fund-Direct-Growth *(v)* SBI Equity Savings Fund-Direct-Growth *(vi)* L&T Equity Savings Fund-Direct-Growth *(vii)* DSP Equity Savings Fund-Direct Growth *(viii)* L&T Focused Equity Fund-Direct-Growth *(ix)* SBI Magnum Equity ESG Fund-Direct-Growth *(x)* ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth *(xi)* L&T Equity Fund-Direct-Growth	*(i)* ICICI Prudential Focused Equity Fund-Direct-Growth *(ii)* Canara Robeco Bluechip Equity Fund-Direct-Growth *(iii)* Axis Long Term Equity Fund-Direct-Growth *(iv)* SBI Focused Equity Fund-Direct-Growth *(v)* HDFC Retirement Savings Fund-Equity Plan-Direct Plan *(vi)* Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth *(vii)* UTI Equity Fund-Direct-Growth *(viii)* SBI Focused Equity Fund-Direct-Growth *(ix)* UTI Long Term Equity Fund (Tax Saving)-Direct-Growth *(x)* DSP Equity Fund-Direct-Growth
Category 3 **HIGH RETURN, HIGH RISK**	**Category 4** **LOW RETURN, HIGH RISK**
(i) Aditya Birla Sun Life Frontline Equity Fund-Direct Growth *(ii)* Franklin India Equity Fund-Direct-Growth *(iii)* DSP Equity Opportunities Fund-Direct-Growth *(iv)* Aditya Birla Sun Life Equity Fund-Direct-Growth *(v)* Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	*(i)* ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth *(ii)* DSP Top 100 Equity Fund-Direct-Growth *(iii)* HDFC Equity Fund-Direct-Growth *(iv)* UTI Core Equity Fund-Direct-Growth

Source: Compiled data

Table-4 presents the risk-return grid of the selected mutual fund schemes. After the classification, it was found that 11 schemes fall under Category-1, 10 schemes fall under Category-2, 5 schemes under Category-3, and 4 schemes under Category-4. These 10 schemes that fall under category 2 fulfilled the basic objective of mutual funds as compared to the capital market while those 4 schemes under Category-4 went opposite the objective.

Table-5 Beta

Rank	Scheme	Beta
1	Axis Dynamic Equity Fund-Direct-Growth	0.3739
2	HDFC Equity Savings Fund-Direct-Growth	0.4160
3	Axis Equity Saver Fund-Direct-Growth	0.4245
4	Mirae Asset Equity Savings Fund-Direct-Growth	0.4579
5	L&T Equity Savings Fund-Direct-Growth	0.4639
6	SBI Equity Savings Fund-Direct-Growth	0.4781
7	DSP Equity Savings Fund-Direct-Growth	0.5120
8	L&T Focused Equity Fund-Direct-Growth	0.7704
9	ICICI Prudential Focused Equity Fund-Direct-Growth	0.7984
10	Canara Robeco Bluechip Equity Fund-Direct-Growth	0.8376
11	Axis Long Term Equity Fund-Direct-Growth	0.8588
12	SBI Focused Equity Fund-Direct-Growth	0.8674
13	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	0.9546
14	UTI Equity Fund-Direct-Growth	0.9610
15	DSP Equity Fund-Direct-Growth	0.9623
16	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	0.9730
17	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	0.9745
18	SBI Focused Equity Fund-Direct-Growth	0.9752
19	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	0.9756
20	SBI Magnum Equity ESG Fund-Direct-Growth	0.9801
21	L&T Equity Fund-Direct-Growth	0.9812
22	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	1.0024
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	1.0201
24	Franklin India Equity Fund-Direct-Growth	1.0263
25	DSP Equity Opportunities Fund-Direct-Growth	1.0353
26	DSP Top 100 Equity Fund-Direct-Growth	1.0474
27	Aditya Birla Sun Life Equity Fund-Direct-Growth	1.0630
28	HDFC Equity Fund-Direct-Growth	1.0658
29	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	1.0695
30	UTI Core Equity Fund-Direct-Growth	1.0868
	The beta of the Benchmark	**1**

Source: Compiled

Table-5 shows rank-wise listed schemes in the terms of beta. Beta is a measure of systematic risk. If a scheme has a beta greater than one, then that scheme or fund is considered riskier than the market. On the other hand, if a scheme has a beta of less than one then it is concluded that the fund is less risky than the market. So, from this interpretation, we can observe from Table-5 that out of all the selected schemes, 21 schemes have proved more or less a better beta, i.e., less than one. Axis Dynamic Equity and HDFC equity savings are the best performers in this parameter, although these top performers in this category had not performed well as per AMR. In other words, the top-seven funds under this parameter have reduced the systematic risk to half or even lower than the benchmark.

Table-6 Sharpe

Rank	Scheme	Sharpe
1	UTI Equity Fund-Direct-Growth	0.2383
2	ICICI Prudential Focused Equity Fund-Direct-Growth	0.2100
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	0.2008
4	Axis Long Term Equity Fund-Direct-Growth	0.1709
5	Mirae Asset Equity Savings Fund-Direct-Growth	0.1619
6	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	0.1614
7	DSP Equity Fund-Direct-Growth	0.1536
8	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	0.1509
9	SBI Focused Equity Fund-Direct-Growth	0.1480
10	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	0.1456
11	Axis Equity Saver Fund-Direct-Growth	0.1396
12	Aditya Birla Sun Life Equity Fund-Direct-Growth	0.1319
13	Franklin India Equity Fund-Direct-Growth	0.1279
14	SBI Equity Savings Fund-Direct-Growth	0.1263
15	SBI Focused Equity Fund-Direct-Growth	0.1254
16	Axis Dynamic Equity Fund-Direct-Growth	0.1222
17	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	0.1221
18	L&T Focused Equity Fund-Direct-Growth	0.1192
19	DSP Equity Opportunities Fund-Direct-Growth	0.1179
20	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	0.1160
21	SBI Magnum Equity ESG Fund-Direct-Growth	0.1134
22	L&T Equity Savings Fund-Direct-Growth	0.1109
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	0.1103
24	L&T Equity Fund-Direct-Growth	0.1089

25	UTI Core Equity Fund-Direct-Growth	0.1028
26	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	0.0982
27	HDFC Equity Savings Fund-Direct-Growth	0.0776
28	DSP Equity Savings Fund-Direct-Growth	0.0715
29	DSP Top 100 Equity Fund-Direct-Growth	0.0712
30	HDFC Equity Fund-Direct-Growth	0.0566
	Sharpe of the Benchmark	**0.1148**

Source: Compiled

Table-6 shows the Sharpe ratio of all the selected schemes. Sharpe ratio is the *Reward to Variability Ratio,* which is calculated as the excess return earned over a risk-free rate for one unit of total risk involved. It was developed by ***William Forsyth Sharpe***, an American Economist in the year 1966. The Sharpe greater than 3 is considered excellent and greater than 2 is good. The Sharpe greater than 1 but less than 2 is generally not acceptable while the Sharpe of less than 1 is considered bad.

Now as Table-6 shows the Sharpe ratio of all the selected schemes is less than one which is not a good measure. UTI equity fund performed the best in terms of Sharpe ratio followed by ICICI Prudential focused equity and Canara Robeco bluechip equity, while the performance of HDFC equity fund, DSP top 100 equity fund, and DSP equity savings fund was the lowest among the selected schemes. The Sharpe ratio of the market index was calculated at 0.1148 and thus we see that 20 out of 30 schemes, surpassed the market and provided, more or less, higher Sharpe than the benchmark index.

Table-7 Treynor

Rank	Scheme	Treynor
1	UTI Equity Fund-Direct-Growth	2.4346
2	ICICI Prudential Focused Equity Fund-Direct-Growth	2.1852
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	2.0224
4	Axis Long Term Equity Fund-Direct-Growth	1.7702
5	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	1.6386
6	Mirae Asset Equity Savings Fund-Direct-Growth	1.6349
7	DSP Equity Fund-Direct-Growth	1.5919
8	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	1.5377
9	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	1.5019
10	SBI Focused Equity Fund-Direct-Growth	1.4980
11	Axis Equity Saver Fund-Direct-Growth	1.4300
12	Aditya Birla Sun Life Equity Fund-Direct-Growth	1.3369

13	SBI Focused Equity Fund-Direct-Growth	1.3236
14	Franklin India Equity Fund-Direct-Growth	1.3058
15	SBI Equity Savings Fund-Direct-Growth	1.2695
16	Axis Dynamic Equity Fund-Direct-Growth	1.2624
17	L&T Focused Equity Fund-Direct-Growth	1.2316
18	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	1.2268
19	DSP Equity Opportunities Fund-Direct-Growth	1.2008
20	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	1.1630
21	L&T Equity Savings Fund-Direct-Growth	1.1545
22	SBI Magnum Equity ESG Fund-Direct-Growth	1.1405
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	1.1154
24	L&T Equity Fund-Direct-Growth	1.1024
25	UTI Core Equity Fund-Direct-Growth	1.0424
26	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	0.9948
27	HDFC Equity Savings Fund-Direct-Growth	0.7963
28	DSP Equity Savings Fund-Direct-Growth	0.7400
29	DSP Top 100 Equity Fund-Direct-Growth	0.7185
30	HDFC Equity Fund-Direct-Growth	0.5762
	Treynor of the Benchmark	**1.1479**

Source: Compiled

Table-7 shows the calculated Treynor ratio of all the selected schemes. Treynor ratio is the *Reward to Volatility ratio* and is calculated as excess return earned over the risk-free rate per unit of systematic risk, i.e., Beta. It was propounded first in the year 1965 by ***Jack Lawrence Treynor***, an American Economist**.**

Under this parameter, UTI equity fund came to the best followed by ICICI Prudential focused equity and Canara Robeco bluechip equity. These three schemes had Treynor more than 2. While HDFC equity fund came to the bottom. 21 schemes have Treynor, more or less, better than the benchmark. A Higher Treynor ratio as compared to the market indicates that an investor who has invested in a mutual fund to form a well-diversified portfolio did receive adequate return per unit of systematic risk undertaken.

Table-8 Jensen Alpha

Rank	Scheme	Alpha
1	UTI Equity Fund-Direct-Growth	1.2364
2	ICICI Prudential Focused Equity Fund-Direct-Growth	0.8281
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	0.7324

4	Axis Long Term Equity Fund-Direct-Growth	0.5344
5	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	0.4786
6	DSP Equity Fund-Direct-Growth	0.4272
7	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	0.3785
8	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	0.3720
9	SBI Focused Equity Fund-Direct-Growth	0.3413
10	Mirae Asset Equity Savings Fund-Direct-Growth	0.2230
11	Aditya Birla Sun Life Equity Fund-Direct-Growth	0.2008
12	Franklin India Equity Fund-Direct-Growth	0.1619
13	SBI Focused Equity Fund-Direct-Growth	0.1523
14	Axis Equity Saver Fund-Direct-Growth	0.1197
15	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	0.0768
16	L&T Focused Equity Fund-Direct-Growth	0.0644
17	SBI Equity Savings Fund-Direct-Growth	0.0581
18	DSP Equity Opportunities Fund-Direct-Growth	0.0547
19	Axis Dynamic Equity Fund-Direct-Growth	0.0428
20	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	0.0150
21	L&T Equity Savings Fund-Direct-Growth	0.0030
22	SBI Magnum Equity ESG Fund-Direct-Growth	-0.0073
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	-0.0333
24	L&T Equity Fund-Direct-Growth	-0.0447
25	UTI Core Equity Fund-Direct-Growth	-0.1148
26	HDFC Equity Savings Fund-Direct-Growth	-0.1463
27	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	-0.1490
28	DSP Equity Savings Fund-Direct-Growth	-0.2089
29	DSP Top 100 Equity Fund-Direct-Growth	-0.4499
30	HDFC Equity Fund-Direct-Growth	-0.6093
	Alpha of the Benchmark	**0**

Source: Compiled

Table-8 shows the measure of Jensen Alpha. The higher positive value of Alpha indicates the better performance of the fund. It is the regression of excess return of the schemes with an excess return of the market acting as dependent and independent variables respectively. It was developed by ***Michael Jensen***, an American Economist in the year 1968. Alpha decades good market timing ability of fund managers as regard investment in the securities.

Here also UTI equity fund shows the highest value of alpha, followed by ICICI prudential and Canara Robeco. Among all the 30 selected schemes, 9 schemes showed the negative Alpha which

means that their fund managers were not able to earn enough returns for the amount of risk taken. Since the alpha of benchmark remains 0, top-4 funds under this category reported a significantly higher alpha.

Table-9 Modigliani Risk Adjusted Measure (M2)

Rank	Scheme	M2
1	UTI Equity Fund-Direct-Growth	2.8832
2	ICICI Prudential Focused Equity Fund-Direct-Growth	2.6003
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	2.5081
4	Axis Long Term Equity Fund-Direct-Growth	2.2092
5	Mirae Asset Equity Savings Fund-Direct-Growth	2.1194
6	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	2.1148
7	DSP Equity Fund-Direct-Growth	2.0363
8	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	2.0090
9	SBI Focused Equity Fund-Direct-Growth	1.9802
10	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	1.9560
11	Axis Equity Saver Fund-Direct-Growth	1.8967
12	Aditya Birla Sun Life Equity Fund-Direct-Growth	1.8191
13	Franklin India Equity Fund-Direct-Growth	1.7794
14	SBI Equity Savings Fund-Direct-Growth	1.7637
15	SBI Focused Equity Fund-Direct-Growth	1.7539
16	Axis Dynamic Equity Fund-Direct-Growth	1.7227
17	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	1.7214
18	L&T Focused Equity Fund-Direct-Growth	1.6918
19	DSP Equity Opportunities Fund-Direct-Growth	1.6789
20	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	1.6604
21	SBI Magnum Equity ESG Fund-Direct-Growth	1.6347
22	L&T Equity Savings Fund-Direct-Growth	1.6096
23	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	1.6029
24	L&T Equity Fund-Direct-Growth	1.5894
25	UTI Core Equity Fund-Direct-Growth	1.5285
26	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	1.4818
27	HDFC Equity Savings Fund-Direct-Growth	1.2761
28	DSP Equity Savings Fund-Direct-Growth	1.2157
29	DSP Top 100 Equity Fund-Direct-Growth	1.2117
30	HDFC Equity Fund-Direct-Growth	1.0661
	M2 of the Benchmark	**1.6479**

Source: Compiled

Table-9 shows the M2 measure of all the selected schemes. The Modigliani Risk-Adjusted Performance (RAP) (M^2 or Modigliani- Modigliani) measure was developed by Nobel Laureate ***Franco Modigliani*** along with his granddaughter ***Leah Modigliani*** (that's why it is called M2) in the year 1997. This measure depicts the risk-adjusted return of the portfolio. It is an extension of the Sharpe ratio and makes it more intuitive to interpret. M2 is calculated by multiplying Sharpe with standard deviation and then adding a risk-free rate.

Under this parameter also, UTI equity fund performed the best, followed by ICICI Prudential focused equity and Canara Robeco blue-chip equity fund, while HDFC equity fund's performance again came at the bottom among the selected sample. M2 of the benchmark came 1.6479 and thus we can say that 20 out of 30 schemes outperformed the market index by more or less margin.

Table-10 Overall Rankings of the Selected Schemes

Final Rank	Scheme	#AMR	#SD	#Beta	#Sharpe	#Treynor	#Alpha	#M2	Final Marks
1	ICICI Prudential Focused Equity Fund-Direct-Growth	2	9	9	2	2	2	2	**189**
2	UTI Equity Fund-Direct-Growth	1	15	14	1	1	1	1	**183**
3	Canara Robeco Bluechip Equity Fund-Direct-Growth	3	10	10	3	3	3	3	**182**
4	Axis Long Term Equity Fund-Direct-Growth	7	11	11	4	4	4	4	**172**
5	Mirae Asset Equity Savings Fund-Direct-Growth	23	4	4	5	6	10	5	**160**
6	UTI Long Term Equity Fund (Tax Saving)-Direct-Growth	5	19	19	6	5	5	6	**152**

7	HDFC Retirement Savings Fund-Equity Plan-Direct Plan	8	13	13	8	8	8	8	**151**
8	DSP Equity Fund-Direct-Growth	6	21	15	7	7	6	7	**148**
9	Axis Equity Saver Fund-Direct-Growth	25	3	3	11	11	14	11	**139**
10	SBI Long Term Equity Fund-Direct-Growth	9	18	18	9	10	9	9	**135**
11	SBI Focused Equity Fund-Direct-Growth	15	12	12	15	13	13	15	**122**
12	SBI Equity Savings Fund-Direct-Growth	26	5	6	14	15	17	14	**120**
13	Axis Dynamic Equity Fund-Direct-Growth	28	1	1	16	16	19	16	**120**
14	Aditya Birla Sun Life Equity Advantage Fund-Direct-Growth	4	30	29	10	9	7	10	**118**
15	L&T Focused Equity Fund-Direct-Growth	21	8	8	18	17	16	18	**111**
16	Aditya Birla Sun Life Equity Fund-Direct-Growth	10	27	27	12	12	11	12	**106**
17	Franklin India Equity Fund-Direct-Growth	11	24	24	13	14	12	13	**106**
18	Aditya Birla Sun Life Focussed Equity Fund-Direct-Growth	13	14	17	17	18	15	17	**106**
19	L&T Equity Savings Fund-Direct-Growth	27	6	5	22	21	21	22	**93**

20	DSP Equity Opportunities Fund-Direct-Growth	12	25	25	19	19	18	19	**80**
21	Aditya Birla Sun Life Frontline Equity Fund-Direct-Growth	14	22	22	20	20	20	20	**79**
22	SBI Magnum Equity ESG Fund-Direct-Growth	18	16	20	21	22	22	21	**77**
23	HDFC Equity Savings Fund-Direct-Growth	30	2	2	27	27	26	27	**76**
24	ICICI Prudential Long Term Equity Fund (Tax Saving)-Direct-Growth	16	23	23	23	23	23	23	**63**
25	DSP Equity Savings Fund-Direct-Growth	29	7	7	28	28	28	28	**62**
26	L&T Equity Fund-Direct-Growth	19	20	21	24	24	24	24	**61**
27	ICICI Prudential Retirement Fund-Pure Equity-Direct-Growth	20	17	16	26	26	27	26	**59**
28	UTI Core Equity Fund-Direct-Growth	17	29	30	25	25	25	25	**41**
29	DSP Top 100 Equity Fund-Direct-Growth	22	26	26	29	29	29	29	**27**
30	HDFC Equity Fund-Direct-Growth	24	28	28	30	30	30	30	**17**

Source: Compiled

Table 10 shows the overall result of all the analyses performed. It ranks all the schemes from 1 to 30. All the schemes have been ranked firstly on the grounds of all the seven parameters used, i.e., Average

Monthly Return (AMR), Standard Deviation (SD), Beta, Sharpe Ratio, Treynor Ratio, Jensen Alpha, and M2. A scheme that stood at the first position in any of the parameters was given the mark 30. For coming second in the same parameter, it was given 29 and for third position 28 and so on. The scheme that came at 30th position in a parameter was given 1 mark. The same procedure is followed in all seven parameters. Then for every scheme, its total marks in all the seven parameters were calculated and thus final marks have been drawn. The scheme that got the highest final marks was given the Final rank of 1 and a scheme with the lowest final marks was given the overall rank of 30. In this way, all the selected 30 equity mutual fund schemes have been ranked from 1 to 30. In the case of a tie where two or more schemes got the same final marks, the ranking has been done based on its average monthly returns. If the return is higher the scheme is given a higher rank than the scheme having the same final marks.

Conclusion

The entire conducted analysis can be bifurcated under two broad heads- Risk analysis based on SD and Beta, and Return analysis based on AMR, Sharpe, Treynor, Alpha, and M2. SD shows that there are very few schemes among the given sample that had SD higher than the benchmark. Top-20 schemes under SD analysis have been more or less, successful in lowering down the risk in comparison to the entire market, as their SD was much below the market index. On the parameter of average monthly returns, UTI equity fund performed the best followed by ICICI prudential focused equity. Although UTI equity fund came at the first position in the terms of average monthly returns, Sharpe, Treynor, Jensen Alpha, and M2; the overall final rank 1 is awarded to ICICI prudential focused equity, for the reason UTI equity fund did not perform well in terms of risk whereas ICICI prudential focused equity performed better than UTI equity in terms of risk. In the terms of standard deviation which is a measure of total risk, UTI equity came at 15th rank while ICICI prudential focused equity stood at 9th rank. Rank 1 in terms of standard deviation and beta was received by Axis dynamic equity fund but its return was much disappointing and it stood at the bottom at 28th position. So, it can also be inferred that the scheme which received the highest rank in terms of monthly returns did not perform well in terms of risk, whereas those schemes which performed well in terms of standard deviation and beta (risk) did not perform well in terms of average monthly returns. There are very few schemes that have remained moderate in both parameters. The funds like HDFC equity, DSP Top100, and UTI Core equity, were the least performers among the selected sample according to the above analysis. They had higher risk exposure and very disappointing returns.

Overall, we can conclude that the funds which gave high returns were mostly not consistent, and those who were consistent and had lesser deviations couldn't provide attractive returns in this period. "Mutual fund investments are subjected to market risk..." therefore, it cannot be said for any fund that it had protected the returns on the corpus, as the Covid period was not good for any economy or any stock exchange of the globe and the dent in the economy was felt during the mid of 2020. But today when we

have come over and moved on in the era of 2021 the analysis of equity mutual fund schemes gives us a better idea to plan our investments in the future.

References

Mishra B, (2001), "A study of Mutual Funds in India", un published Research paper under the aegis of Faculty of Management Studies, University of Delhi.

Roy & Deb (2003), " The Conditional Performance of Indian Mutual Funds in India" http://papers.ssrn.com/sol3/papers.cfm?abstract_id=593723

Kumar Vikas, 2010. Mutual Funds in India: Growth and Performance. ERT Publication, Pvt.Ltd., Varanasi.

Anand, S., and V. Murugaiah. 2011. "Analysis of Components of Investment Performance - An Empirical Study of Mutual Funds in India." SSRN Electronic Journal. https://doi.org/10.2139/ssrn.961999.

Kumar Vikas, 2012. Performance Evaluation of Open ended Schemes of Mutual Funds, Sumedha Journal of Management, Vol. 1, Iss. 1

Kumar Vikas, Poddar., 2014. Performance Evaluation of HDFC Mutual Funds, Sumedha Journal of Management, Vol. 3, Iss. 2

Krishnaprabha, S. 2016. "Performance Evaluation of Selected Mutual Funds in India." Asian Journal of Research in Social Sciences and Humanities. https://doi.org/10.5958/2249-7315.2016.00507.4.

Choudhary, Vikas, and P. Chawla. "Selectivity and market timing ability of fund managers in India: An analysis of selected equity mutual funds." IOSR Journal of Economics and Finance (2016): 75-83.

M. Jensen, The performance of mutual funds in the period 1945-1964, Journal of Finance, 23 (1968), 389-416.

J. Treynor, How to Rate Management of Investment Funds, Harvard Business Review, 43 (1965), 63-73.

J. Treynor and K. Mazuy, Can Mutual Funds Outguess the Market? Harvard Business Review, 44 (1966), 131-136.

Sharpe, William F. "Mutual Fund Performance." The Journal of Business, vol. 39, no. 1, 1966, pp. 119–138. JSTOR, www.jstor.org/stable/2351741

William F. Sharpe, The Journal of Portfolio Management Oct 1994, 21 (1) 49-58; DOI: 10.3905/jpm.1994.409501

Modigliani, Franco (1997). "Risk-Adjusted Performance". Journal of Portfolio Management. 1997 (Winter): 45–54.

Modigliani, Leah (1997). “Yes, You Can Eat Risk-Adjusted Returns”. Morgan Stanley U.S. Investment Research. 1997, 1–4.

Websites

https://www.amfiindia.com/net-asset-value/nav-history

https://www1.nseindia.com/products/content/equities/indices/historical_index_data.htm

https://countryeconomy.com/bonds/india

https://tradingeconomics.com/india/government-bond-yield

PARADIGM SHIFT OF CUSTOMERS' ATTITUDE TOWARDS DIGITAL BANKING OPERATIONS DUE TO COVID 19 – AN EMPIRICAL STUDY

Dr. D.N. Mishra *
Debashree Biswas **
Anindita Bosu ***

ABSTRACT

The Global economy has been severely affected by the COVID 19 pandemic. The strict lockdown greatly influences the customers' financial transactions habits. The present research paper is attempted to find out the paradigm shift of customers' attitude towards digital banking operations during the pandemic period in the selected geographical area of Odisha state in India. For this purpose, a field survey has been conducted and conclusions have been drawn after analyzing the 246 valid responses. The paper also studies the effect of the difference in demographic factors of selected respondents over digital banking transactions. The study is also concerned with the various competitive advantages enjoyed and inconveniences faced by respondents for acceptance of the digital mode of banking. The study concludes that the Covid 19 has a positive impact on the volume of digital transactions but the demographic features of consumers have no full effect on the selection of various modes of digital transactions. The paper also identifies the various factors which influence the acceptance of digitalization for transactional purposes which will help the banks and other regulating authorities to improve their services which in turn help the non-digitalized customers to shift their transactional behavior towards digitalization as it has become the need of the hour.

Keywords: Covid 19, Banking, Digital Transactions, Demographic Features, Customers

* Principal
DAV School of Business Management
Bhubaneswar

** Ph.D. Scholar
P.G. Department of Commerce, Utkal University
Bhubaneswar

*** Ph. D Scholar
P.G. Department of Commerce, Utkal University
Bhubaneswar

Introduction

The Indian economy has been witnessing many economic, financial, and technological alterations by the reason of initiations of many exertions by the government and other regulating authorities. 'Digital India' is one of such movements, aiming at the cashless and paperless economy, encouraged by Indian banking and other financial sectors with their effective collaborations. The event of digitalization was getting acceptance by Indian people when the outbreak of the Covid 19 pandemic forced nationwide lockdown, for which digitalized services have spurred. To control the spread of the virus, the economic and allied activities were disrupted physically for a certain period of days. The government of India and the Reserve Bank of India urged for the usage of the digital infrastructure of the country as technology resembled to be a savior by permitting all types of digital operations. With the various checkpoint mechanisms over coronavirus, digital transactional activities are leveraged in a phased manner. Even, unlock period evidenced the preference of people for being online and virtual, instead of physical, due to the recognition of paper notes as probable carriers of the virus. Data from the National Payments Corporation of India (NPCI) reveal the continued elevation of digital transactions during Covid-19 lockdown levels as people continue to prefer contactless payments. As many as 180 crore transactions, amounting to ₹3.29-lakh crore, took place on the Unified Payments Interface (UPI) platform in September 2020, against 161 crore transactions, involving ₹ 2.98-lakh crore, in August 2020. (https://www.thehindubusinessline.com/) UPI transactions outgrew cards, net banking, and mobile wallets ascended with 120 percent growth in 2020 and became the most preferred mode of payment, especially for tier II and III cities. Tier-II and III cities contributed to 54 percent of digital transactions in 2020, demonstrating a 92 percent growth in just one year. (https://www.business-standard.com/) The present paper studies the customer behavior towards offline - online substitution in the context of one of the catastrophic economic statuses. The study is concerned with the survey of digital banking transactional behavior of customers in the Khordha district of Odisha state in India before and during the pandemic period.

Review of Literature

De Rahul, et.al. (2020) found in their study that the Covid-19 pandemic has largely affected the digital usage of people in all aspects of work and life. This changing behavior of people towards digitalization largely depends upon the situation of social distancing during the pandemic.

G., Sudha and et al. (2020) revealed in their article that the Covid-19 pandemic has increased the transaction behavior of the people through digital payments. Their study concluded that the modes of payment by respondents are different in pre and during the lockdown. People preferred digital payments more than traditional payments. Also, it is being stated that the buying behavior and its respective modes of payment are affected by the Covid-19 pandemic.

Hashem, T.N. (2020) studied the impact of the Covid 19 pandemic on customer behavior towards online shopping. The authors found that the pandemic has changed the behavior of consumers towards online

shopping and e-payments which increased during lockdown and quarantine periods. It was also revealed that this pandemic influenced females more as compared to males in digital transactions like e-shopping and e-payments.

Podile & Rajesh (2017) attempted to know the perception of the Indian public towards cashless transactions in their research paper. The result of their study revealed that cashless transactions are positively adopted by the Indian public but some have negative perceptions like a security threat, network issues, excessive transaction cost, lack of technological knowledge of users, etc. which are holding them back to adopt this system.

Das, A. and et al. (2020) found in their study that the Covid 19 has a positive impact on the digital mode of payment and also has increased the use of mobile apps for payment transactions during the lockdown period. People adopted different modes of electronic payment because of easiness of use and less cost of a payment transaction.

Baicu, C.G., and et al. (2020) examined the aftereffect of the Covid 19 out breaking on the behavior of consumers on retail banking in Romania in their research article. They came up with the conclusion that the pandemic has a positive and direct influence on customers' attitudes towards internet and mobile banking but customers' trust in banks regarding the safety and security of using the internet and mobile banking intervening in the adoption of it.

Bagewadi and Dhingra (2020) found in their research paper that people have switched to online banking and payment services during the lockdown period. They also revealed customers have adopted different digital modes for financial transactions like mobile wallets, UPI, mobile banking, etc. The authors forecasted in their study that there is a probability of a wide positive response on acceptance of online banking by Indian customers.

Parimalarani & Meena (2020) presented in their study that customer satisfaction and digital banking service have a positive significant relationship during the covid-19 period. Customers are greatly satisfied with the mobile banking service and moderately with the ATM service of banks during the lockdown period. Research Gap and Research Problem Covid 19 outbreak is the root cause of various lockdown measures initiated by both Government of India and State governments resulting in adverse effects to the entire global economy including Pan-India. The pandemic interrupted the routine activities of every people including their transactional behavior. In this scenario, the advancement in Information and Communication technology emerged as the bridging role to support the entire system. Many banks noticed the consumers' shift towards digital banking during the pandemic period. There has been wide discussion on the economic impact of Covid 19, but there is limited evidence on their relationship across geographical or demographical groups. In this research paper, the study was made on the consumers' behavior towards digital banking during the pandemic period.

Objectives of the Study

• To study the customer's attitude towards digital banking transactional behavior pre and during COVID 19 out breaking.

• To study the impact of demographic factors on customers' digital banking operational behavior.

• To study people's outlook regarding various parameters for acceptance of digital operations.

Hypotheses of the Study

• H1: There is a significant influence of the Covid 19 period on customers' digital banking transactional behavior.

• H2: There is a significant relationship between the customer's demographic features and their digital banking transactional culture.

Research Methodology

Data Collection: Primary data is collected through questionnaires and secondary data collected from different articles, working papers, journals, websites and newspaper articles, etc.

Period of Study: March 2019 to March 2021

Research Design: Descriptive Research design is followed in this research paper.

Sample size & Sampling Method: The data were collected from 246 respondents of the Khordha district of Odisha by using the random sampling method.

Variables of the Study

• Control Variable: COVID 19

• Independent Variable: Customer's Attitude

• Mediating Variable: Demographic factors

1. Age

2. Gender

3. Educational Qualification

• Dependent Variable: Digital Banking

Statistical Tools for Analysis:

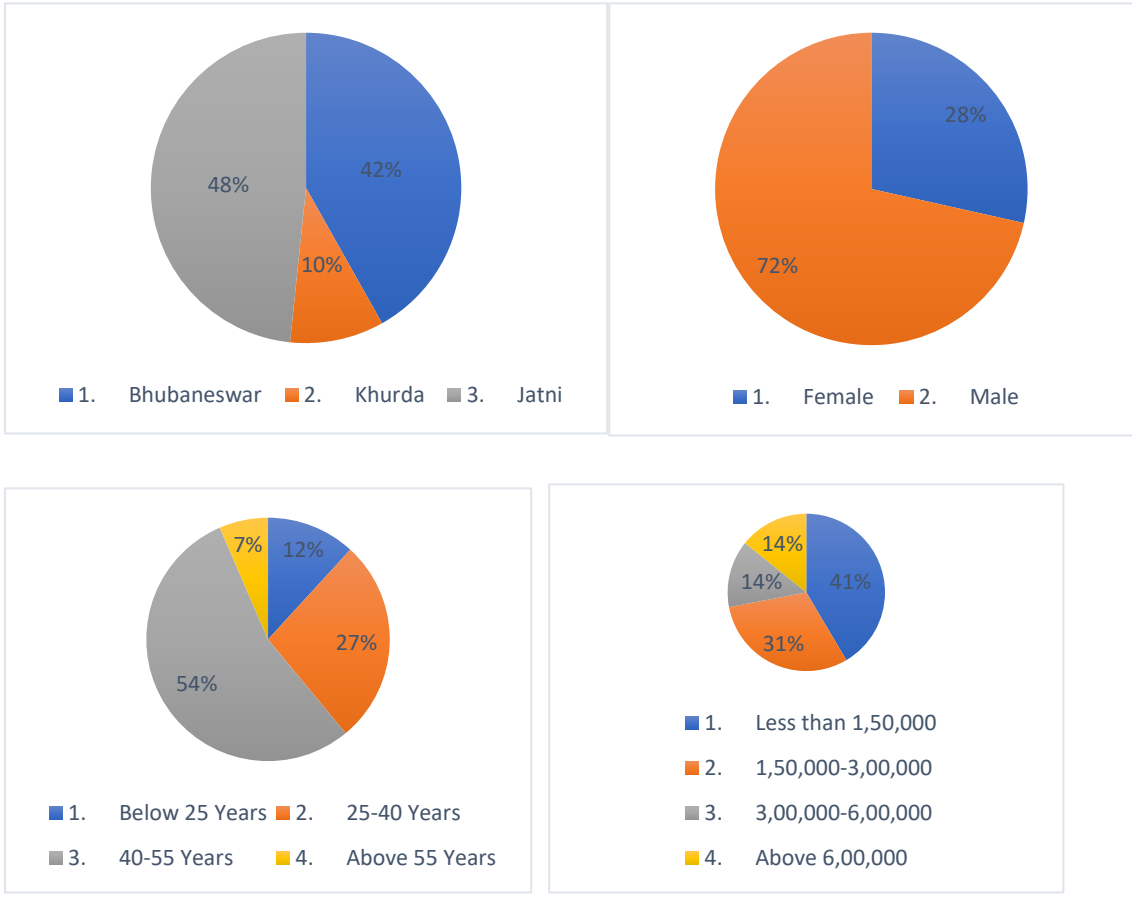
• By paired t-test, we can analyze whether the Covid 19 period has made any shift in people's behavior towards the use of various modes of non-digital transactional manner.

• By chi-square, we can conclude whether the demographic features make any difference towards the use of various modes of non-digital transactional manner during the Covid 19 period.

• By 5 points Likert scale ranking, we can order the parameters based on which people are willing to accept digitalization for transactional purposes. Data Analysis and Interpretation Analysis of data collected is categorized into two sections. Section 'A' shows the demographic characteristics of the sample respondents and Section 'B' shows the questionnaire analysis as per the study objectives and hypothesis.

Section A

Figure 1. Demographic Features of Respondents



The above figure presents the demographic features of the respondents with respect to their geographical location, gender, age groups, and annual income. This depicts that the majority of the respondents are male. Most of the respondents belong to 40 to 55 years of age. The majority of randomly selected respondents earn an annual salary of less than Rs 1,50,000.

Section B

Primitive Analysis:

This part of the analysis is aimed to examine whether the Covid period has made any changes in the customer's preference for cash usage. It also studies the frequency of using cash by customers for transactional purposes. The frequency of cash usage has a reverse relationship with the usage of digital modes of transactions. Any decrease in cash usage indicates an equivalent increase of digital modes and vice versa.

Figure 2. Frequent use of cash before and during COVID Period

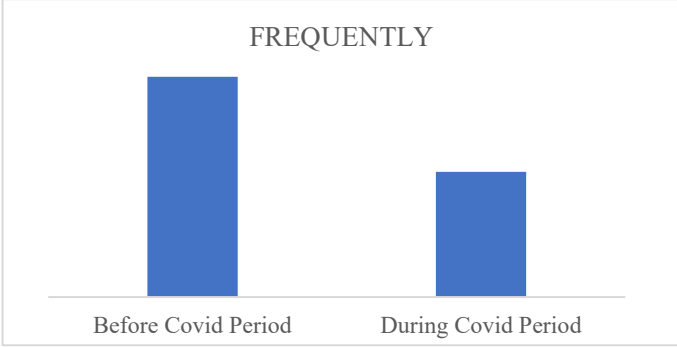


Figure 2 compares the number of customers to use cash frequently for transactional purposes before the Covid period and during the Covid period. The table interprets that number of customers to use cash frequently during the Covid period has decreased. Thus, we can state that customers have reduced their cash transactions during the Covid period and have shifted to the digital mode of transactions.

Figure 3. Use of cash before and during COVID Period

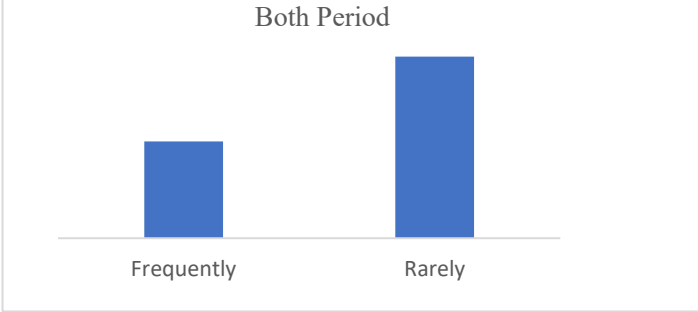
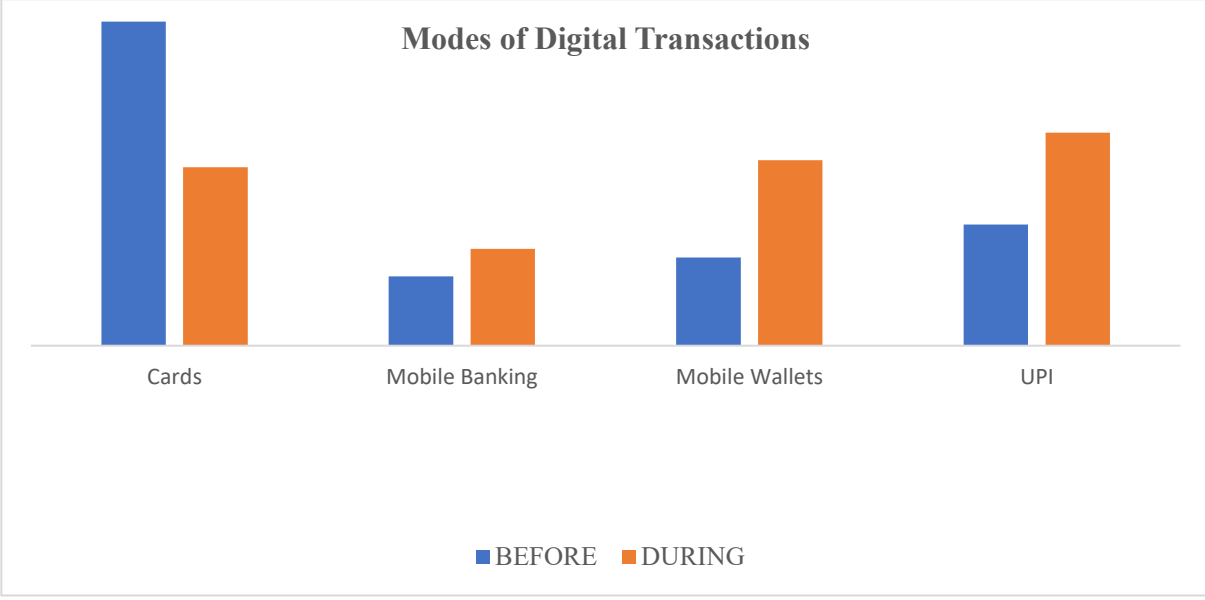


Figure 3 presents the usage of cash in both periods before and during the Covid pandemic. It displays that the total number of customers to use cash frequently in both periods is less than the number of customers to use cash rarely. Thus, it can be interpreted that reduction of cash usage by customers for transactional purposes shifts them to the use of digital transactions.

Statistical Analysis:

This part of the analysis deals with the various statistical tools used for hypothesis testing. T-test is being used to examine whether the Covid period has made any changes in the preference of various modes of digital transactions among customers. Chi-square test examines the effect of demography in the preference of digital transactional modes among customers. The likert scale ranks the factors which influence the preference of digital transactional behavior among customers.

Figure 4. Number of Customers Using Various Modes for Digital Transactions



(Source: Authors' Survey)

The debit and credit card users were more before the Covid period. Except for debit and credit cards, the customers of the other three modes of digital transactions have increased during the Covid period. For further analysis, a paired-sample t-test has been conducted for hypothesis testing.

H_1: There is a significant influence of the Covid 19 period on customers' digital banking transactional behavior.

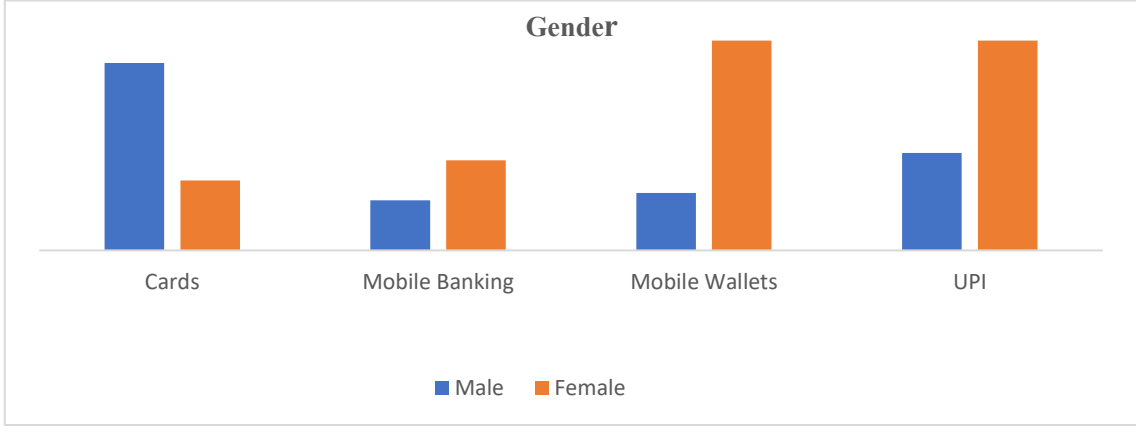
Table 1. Statistics of t-Test: Paired Two Sample for Means

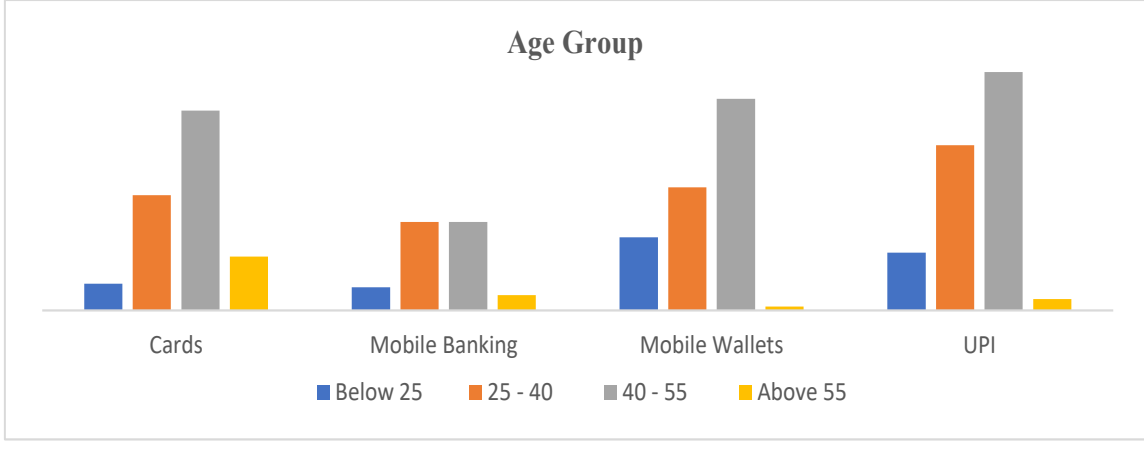
	During Covid period	Before Covid period
Mean	97.25	87
Observations	4	4

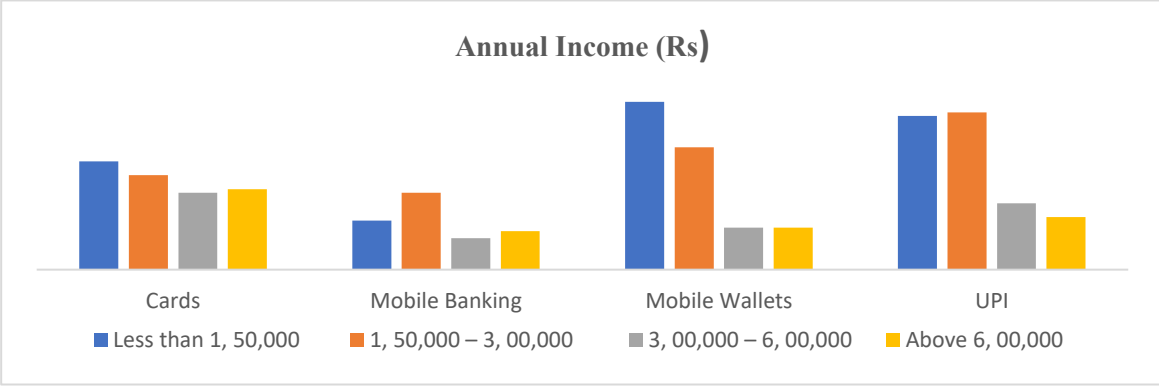
Degree of freedom	3
P(T<=t) two-tail	0.774509
t Stat	0.313391
t Critical two-tail	3.182446

With the degree of freedom 3 and significance level of 0.05, the calculated t is less than the table value of t. Also, the p-value is more than 0.05. Thus, we fail to accept the hypothesis and thus it can be stated that Covid 19 has not made any significant difference in the use of various modes of digital transactional behavior among respondents.

Figure 5: Demographic distribution of customers using various modes of digital transactions







(Source: Authors' Survey)

Figure 5 categorizes the number of customers using various digital modes of the transaction according to their demographic features of gender, age, and annual income. It is being examined whether the digital transactional behavior of customers varies due to differences in selected demographic features. The chi-square test, for hypothesis testing, gives the p-value which helps in determining the acceptance of the stated study hypothesis.

H_2**:** There is a significant relationship between the customer's demographic features and their digital banking transactional culture.

Table 2: Statistics of chi-square test

Demographic Variables	Hypothesis	P-Value	Remarks
Gender	There is a significant relationship between the customer's gender and their banking transactional culture during the Covid period.	4.49	Not Accepted
Age Group	There is a significant relationship between the customer's age and their banking transactional culture during the Covid period.	0.00	Accepted
Annual Income	There is a significant relationship between the customer's annual income and their banking transactional culture during the Covid period	0.04	Accepted

From the above table, it is being stated that

- The demographic feature of gender doesn't have any relationship with customers' digital banking transactional modes.

- With the age difference, there is a change in customers' preference towards various digital transactional modes.
- With the difference in annual income, there is a change in customers' preference towards various digital transactional modes.

Table 3. 5 Point Likert Scale Ranking

Factors	Likert Score	Weighted Likert Score	Ranks
Trust	1152	4.682927	2
Awareness	1094	4.447154	7
Fluency	1149	4.670732	3
Safety and Security	1132	4.601626	4
Acquaintance	1129	4.589431	6
Easiness	1162	4.723577	1
Usefulness	1131	4.597561	5

(Source: Authors' findings)

The Likert scale is a preferred statistical tool to rank the respondent's opinion in terms of the degree of agreement or disagreement on a topic. 5-point Likert scale, with score 1 – 5 for strongly disagree to strongly agree respectively, has been used in this study to get respondents' opinion regarding various factors which influences acceptance of digital modes of transactions. 'Easiness' comes first in the Likert ranking with the highest total weighted score of 4.723 which states that the majority of the respondents agreed that the use of digital banking transactions is easy. 'Awareness' gets the last rank with the least total weighted score of 4.447 which states that the Covid period has not significantly increased the awareness of digital transactional mediums.

Conclusion

Covid 19 pandemic has multifarious gloomy effects on every country causing a shrinking of economic activities. Had there not been digital banking services, the financial activities would have stopped entirely making the economy paralyzed. The vicious cycle is inescapable for India also. The study deals with some banking customers and their perpetual behavior on their deviation from non - digital to digital transactions. A major district like Khordha, of Odisha state in India, has shown a positive response towards the operation of digital transactional behavior among customers. It is concluded that the frequency of using mobile banking, mobile wallets, and UPI has shown a positively sloped trend during the Covid period, except cards. But it has also been analyzed that the preferences by customers among digital modes remained the same as before the Covid period. It has also been con-

cluded that the gender factor doesn't influence the choice of digital modes but, the decision of selecting digital mode varies according to age and annual income. Also, the study presents the preference factors which encourage customers to accept digitalization for transactional purposes. This will help non-digitalized customers to shift their behavior towards digitalization as this has become the need of the hour.

References

Bagewadi, A., Dhingra, D. (2020). Analysis of Banking Sector in India: Post Covid-19, International Journal of Research and Analytical Reviews, 7(3), 299-308.

Baicu, C.G., Gârdan, I. P., Gârdan, D.A., Epuran, G., (2020). The impact of COVID-19 on consumer behavior in retail banking. Evidence from Romania, Management & Marketing. Challenges for the Knowledge Society, 15, 534-556. DOI: 10.2478/mmcks-2020-0031.

Das, A., Das, S., Jaiswal A., Sonthalia, T. (2020). Impact of COVID-19 on Payment Transactions, Statistics and Applications, 18(1), 239-251.

De, Rahul, Pandey, N., Pal, A, (2020), Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice, International Journal of Information Management, 55.

G.Parimalarani (2020). Customer's Perception on Effectiveness of Digital Banking services during Covid-19 Lockdown period, South African Journal of Economic and Management Sciences, 23(10). https://doi.org/10.4102/ sajemsin. v23i2.7129.

Hashem, T.N. (2020). Examining the Influence of COVID 19 Pandemic in Changing Customers' Orientation towards E-Shopping, Modern Applied Science, 14(8), 59-76.

Podile , Rajesh (2017). Public Perception on Cashless Transactions in India, Asian Journal of Research in Banking and Finance, 7(7), 63-77.

Sudha,G., Sornaganesh,V., Thangajesu, S.M., Chellama A.V., (2020). Impact of Covid-19 Outbreak in Digital Payments, International Journal for Innovative Research in Multidisciplinary Field, 6(8),159-164.

Thangajesu. M., Sathish, Sermakani. R., Sudha. G., (2020). A study on customers attitude toward the E-Wallet Payment System, International Journal of Innovative Research in Technology, 6(12) "Digital payments rise in Covid times, but then so does cash in circulation", https://www.thehindubusinessline.com/), 5 Oct 2020 "Online transactions grew 80% in 2020 driven by tier 2, 3 cities" (https://www.business-standard.com/), 12 Jan 2021

A STUDY ON STOCK MARKET PERFORMANCE OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS

Priyanka P S *
Ann Abraham **

ABSTRACT

Stock markets are regarded as an integral part of our financial system. They immediately echo every major happening in the world. Hence, they are considered as the barometer of the prevailing economic situation of the country. This study evaluates the stock market performance of public and private sector banks in terms of return and risk. It also analyzed whether there was a variation in the return and risk of public and private sector banks within its class. The study revealed that private sector banks fare much better than public sector banks in terms of return and risk. Within the class of public and private sector banks, there is no significant difference between risk and return.

Keywords: Stock market, stock market performance, risk, return, public sector banks, private sector banks

Introduction

Stock market performance is the indicator of the stock market as a whole or a specific stock. It gives a signal to the investors about their future move. The movement in the price of a stock and indexes gives the idea of the near future trend of the stock, sector, or the economy as a whole. As the financial domain is an inevitable part of the economy, the stock market performance works as an indicator of the overall performance of the economy. The stock market index typically gives the overall performance of the market or a specific sector.

* Final Year M.Com Student,
Department of Commerce
CMS College Kottayam, Kerala

** Assistant Professor,
Department of Commerce, CMS College Kottayam, Kerala
Email: ann.abraham@cmscollege.ac.in

The banking sector is the section of the economy devoted to the holding of financial assets of others, investing those financial assets as leverage to create more wealth, and regulation those activities by government agencies. This sector acts as the lubricant for the movement of the economy. For the study, banks in both the public sector and private sector are selected. "Public sector banks" are those where the majority of the stake in the bank is held by the government. "Private sector banks" are banks where greater parts of share or equity are held by the private shareholders and not by the government.

Review of Literature

Jeyanthi and Divya (2019) stated that capital market investment is always exposed to high risk and high return. So every investor has to exploit timely investment strategies to endure in the market and obtain the benefit of making a profit by trading securities. Shanavas (2018) stated that the stock market is one of the investment avenues which offers maximum return with a higher rate of risk. The volatility of the stock price decides the degree of risk and return one investor can earn from the stock market. So information regards to the stock price volatility help the investor to make the best investment decisions. William and Vimala (2015) examined the volatility of equity share price by analyzing the market volatility of the selected banks using various statistical tools and concluded that volatility of the closing prices was similar for all the banks selected for the study. Boobalan (2014) analyzed different companies to understand the price behavior of the shares, the signals are given by them, and the major turning points of the market price and concluded that these factors can assist the investment decisions in the Indian market.

Statement of the Problem

Most of the investors are interested in putting their money in stocks which give them higher returns and have less risk. Banks are an integral part of our financial system and there might be a variation in the risk and return enjoyed by the public sector and private sector banks. Within its class also, the performance of public and private sector banks may vary in terms of risk and return. The study tries to examine these factors and throw light on whether there is a significant difference in the stock market performance of public and private sector banks.

Objectives of the Study

i. To examine the interbank stock market return and risk of both public sector and private

sector banks.

ii. To examine the intrabank stock market return and risk of both public sector and private sector banks.

Hypotheses of the Study

i. There is no significant difference between the stock market return of both public sector and private sector banks.

ii. There is no significant difference between the stock market risk of both public sector and private sector banks.

iii. There is no significant difference between the stock market return of banks within the same group of both the public and private sectors.

iv. There is no significant difference between the stock market risk of banks within the same group of both the public and private sectors.

Research Methodology

The study was based on secondary data. The top five public sector and private sector banks based on the market capitalization were selected to constitute the sample. The data required for the study were collected from official websites like bseindia.com. T-test was used to analyze the interbank study of public sector and private sector banks over the years and ANOVA was used to analyze the intragroup study of public sector and private sector banks over the years. The analysis period taken for the study is 10 financial years i.e. from 2011-12 to 2020-21.

The banks taken for the study were:

- Public sector banks: SBI, BANK OF BARODA, PNB, BANK OF INDIA, IDBI
- Private sector banks: HDFC, ICICI, AXIS BANK, KOTAK MAHINDRA, INDUSIND BANK

Data Analysis and Interpretation

1) Interbank Study of Return of both Public Sector and Private Sector Banks

PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
YEARS	SBI	BANK OF BARODA	PNB	BANK OF INDIA	IDBI	YEARS	HDFC	ICICI	AXIS BANK	KOTAK MAHIND	INDUSIND BANK
2011-12	-29.36	-18.48	-28.15	-30.74	-38.78	2011-12	-97.81	-22.37	-19.21	34.86	37.23
2012-13	4.2	-16.44	-30.25	-18.32	313.75	2012-13	29.28	29.04	24.66	30.54	38.29
2013-14	-3.992	23.106	18.52	-18.77	-21.72	2013-14	32.62	34.91	30.12	33.28	44.95
2014-15	-81.05	-91.53	-120.5	-10.33	28.06	2014-15	49.66	-80.35	-15.2	83.68	89.51
2015-16	-37.69	1.8996	-67.08	-90.35	15.02	2015-16	9.01	-32.61	-25.86	-62.65	18.69
2016-17	66.81	34.539	96.51	62.60	18.82	2016-17	45.34	30.47	20.74	39.12	59.11
2017-18	-13.32	-14.89	-14.25	-24.38	11.33	2017-18	41.52	7.017	10.41	29.6	38.43

2018-19	42.78	-1.65	13.41	16.67	-52.99	2018-19	31.63	59.62	68.23	40.24	3.807
2019-20	-56.91	-112.6	-145.08	-158.06	-103.29	2019-20	-110.01	-18.23	-89.61	4.59	-198.4
2020-21	103.1	66.729	33.35	131.15	126.92	2020-21	89.36	101.9	110.1	55.25	174.9

(Source: Computed data)

PUBLIC SECTOR BANKS		PRIVATE SECTOR BANKS	
BANK	**10 Years Average Return**	**BANK**	**10 Years Average Return**
SBI	-0.55	HDFC	12.06
BANK OF BARODA	-12.93	ICICI	10.94
PNB	-24.35	AXIS BANK	11.44
BANK OF INDIA	-14.05	KOTAK MAHINDRA	28.85
IDBI	29.71	INDUSIND BANK	30.65
TOTAL AVERAGE RETURN	**-4.43**	**TOTAL AVERAGE RETURN**	**18.78**

(Source: Computed data)

For analyzing the relationship between the return of the public and private sector, the T-test was applied. Based on the test result, $t(6)= 2.2423, p = 0.033$, the null hypothesis is rejected and hence it is concluded that there is a significant difference between the stock market return of public sector and private sector banks. Private sector banks fare much better than public sector banks.

Interbank Study of Risk of Both Public Sector and Private Sector Banks

	PUBLIC SECTOR BANKS						PRIVATE SECTOR BANKS					
YEARS	SBI	BANK	PNB	BANK OF INDIA	IDBI	YEARS	HDFC	ICICI	AXIS BANK	KOTAK MAHIND	INDUSIND BANK
2011-12	35.26	32	32.05	39.31	35.83	2011-12	84.5	36.62	39.46	32.63	36.23
2012-13	28.26	30.42	31.47	32.45	28.47	2012-13	18.77	26.35	28.97	22.67	23.97
2013-14	31.83	44.15	42.87	55.26	33.04	2013-14	29.14	36.28	43.16	32.24	43.85
2014-15	96.93	89.09	88.03	42.73	46.93	2014-15	19.78	85.95	87.22	26.37	24.89
2015-16	35.87	50.13	40.08	42.46	50.39	2015-16	17.37	34.17	33.99	57.64	26.5
2016-17	30.13	38.38	40.35	36.09	32.05	2016-17	14.61	31.64	28.42	19.4	22.66
2017-18	38.74	46.19	63.36	54.41	49.12	2017-18	13.32	29.94	26.01	17.6	18.62
2018-19	29.21	42.08	43	46.28	39.7	2018-19	15.72	30.59	29.5	25.33	26.07
2019-20	45.57	48.04	44.34	45.27	61.18	2019-20	59.98	40.52	44.9	35.13	76.48
2020-21	42.29	51.6	45.95	56.57	60.5	2020-21	34.85	47.77	54.14	39.05	63.21

(Source: Computed data)

PUBLIC SECTOR BANKS		PRIVATE SECTOR BANKS	
BANK	**10 Years Average Risk**	**BANK**	**10 Years Average Risk**
SBI	41.41	HDFC	30.80
BANK OF BARODA	47.21	ICICI	39.98
PNB	47.15	AXIS BANK	41.57
BANK OF INDIA	45.08	KOTAK MAHINDRA	30.81
IDBI	43.72	INDUSIND BANK	36.25
TOTAL AVERAGE RISK	**44.91**	**TOTAL AVERAGE RISK**	**35.88**

(Source: Computed data)

For analyzing the relationship between the risk of the public and private sector, the T-test was applied. Based on the test result, t(6)= 3.6151,p = 0.00558**,** the null hypothesis is rejected and hence it is concluded that there is a significant difference between the stock market risk of public sector and private sector banks. Public sector banks face more risks in comparison to private sector banks.

2) Intragroup Study of Return of Both Public Sector and Private Sector Banks

The calculated returns of selected public sector banks are as follows:

Table 5: Returns of Public Sector Banks

YEARS	SBI	BANK OF BARODA	PNB	BANK OF INDIA	IDBI
2011-12	-29.36	-18.48	-28.15	-30.74	-38.78
2012-13	4.2	-16.44	-30.25	-18.32	313.75
2013-14	-3.992	23.106	18.52	-18.77	-21.72
2014-15	-81.05	-91.53	-120.5	-10.33	28.06
2015-16	-37.69	1.8996	-67.08	-90.35	15.02

2016-17	66.81	34.539	96.51	62.60	18.82
2017-18	-13.32	-14.89	-14.25	-24.38	11.33
2018-19	42.78	-1.65	13.41	16.67	-52.99
2019-20	-56.91	-112.6	-145.08	-158.06	-103.29
2020-21	103.1	66.729	33.35	131.15	126.92
TOTAL AVERAGE	**-0.5432**	**-12.9316**	**-24.352**	**-14.053**	**29.712**

(Source: Computed data)

Table 6: ANOVA Test Result for Analysing Public Sector Banks Returns

Source of Variation	SS	Df	MS	F	P-value	F-value
Between Groups	17425.49	4	4356.374	0.699649	0.596261	2.578739
Within Groups	280193	45	6226.511			
Total	297618.5	49				

(Source: Computed Data)

Based on the test results, the null hypothesis is not rejected. It means that there is no significant difference between the stock market return of banks within the same group of the public sectors.

The calculated returns of selected private sector banks are as follows:

Table 7: Returns of Private Sector Banks

YEARS	HDFC	ICICI	AXIS BANK	KOTAK MAHINDRA	INDUSIND BANK
2011-12	-97.81	-22.37	-19.21	34.86	37.23
2012-13	29.28	29.04	24.66	30.54	38.29
2013-14	32.62	34.91	30.12	33.28	44.95

2014-15	49.66	-80.35	-15.2	83.68	89.51
2015-16	9.01	-32.61	-25.86	-62.65	18.69
2016-17	45.34	30.47	20.74	39.12	59.11
2017-18	41.52	7.017	10.41	29.6	38.43
2018-19	31.63	59.62	68.23	40.24	3.807
2019-20	-110.01	-18.23	-89.61	4.59	-198.4
2020-21	89.36	101.9	110.1	55.25	174.9
TOTAL AVERAGE	**12.06**	**10.9397**	**11.438**	**28.851**	**30.6517**

(Source: Computed Data)

For analyzing the relationship between the return of private sector banks, ANOVA was applied. The results are as follows:

Table 8: ANOVA Test Result for Analysing Private Sector Banks Returns

Source of Variation	SS	Df	MS	F	P-value	F -value
Between Groups	4028.956	4	1007.239	0.251616	0.907175	2.578739
Within Groups	180138.7	45	4003.083			
Total	184167.7	49				

(Source: Computed data)

Based on the test results, the null hypothesis is not rejected. Hence it can be concluded that there is no significant difference between the stock market return of banks within the same group of the private sector.

3) Intragroup Study of Risk of Both Public Sector and Private Sector Banks

The calculated risk of selected public sector banks are as follows:

Table 9: Risk of Public Sector Banks

YEARS	SBI	BANK OF BARODA	PNB	BANK OF INDIA	IDBI
2011-12	35.26	32	32.05	39.31	35.83
2012-13	28.26	30.42	31.47	32.45	28.47
2013-14	31.83	44.15	42.87	55.26	33.04
2014-15	96.93	89.09	88.03	42.73	46.93
2015-16	35.87	50.13	40.08	42.46	50.39
2016-17	30.13	38.38	40.35	36.09	32.05
2017-18	38.74	46.19	63.36	54.41	49.12
2018-19	29.21	42.08	43	46.28	39.7
2019-20	45.57	48.04	44.34	45.27	61.18
2020-21	42.29	51.6	45.95	56.57	60.5
TOTAL AVERAGE	**41.409**	**47.208**	**47.15**	**45.083**	**43.721**

(Source: Computed data)

Table 10 ANOVA Test Result for Analysing Public Sector Banks Risks

Source of Variation	SS	Df	MS	F	P-value	F -value
Between Groups	239.9897	4	59.99742	0.256691	0.904058	2.578739
Within Groups	10518.04	45	233.7342			
Total	10758.03	49				

Based on the test results, the null hypothesis is not rejected. Hence it can be concluded that there is no significant difference between the stock market risk of banks within the same group of the public sector.

The calculated risk of selected private sector banks are as follows:

Table 11: Risk of Private Sector Banks

YEARS	HDFC	ICICI	AXIS BANK	KOTAK MAHINDRA	INDUSIND BANK
2011-12	84.5	36.62	39.46	32.63	36.23
2012-13	18.77	26.35	28.97	22.67	23.97
2013-14	29.14	36.28	43.16	32.24	43.85
2014-15	19.78	85.95	87.22	26.37	24.89
2015-16	17.37	34.17	33.99	57.64	26.5
2016-17	14.61	31.64	28.42	19.4	22.66
2017-18	13.32	29.94	26.01	17.6	18.62
2018-19	15.72	30.59	29.5	25.33	26.07
2019-20	59.98	40.52	44.9	35.13	76.48
2020-21	34.85	47.77	54.14	39.05	63.21

(Source: Computed data)

Table 12: ANOVA Test Result for Analysing Private Sector Banks Risks

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	1009.37	4	252.3426	0.741231	0.568912	2.578739
Within Groups	15319.68	45	340.4372			
Total	16329.05	49				

(Source: Computed data)

Based on the test results, the null hypothesis is not rejected. Hence it can be concluded that there is no significant difference between the stock market risk of banks within the same group of the private sector.

Conclusion

The study was conducted to analyze the performance of the stock market based on risk and return of the public sector and private sector banks. From the study, it was found that return and risk from both sectors vary. The inter-group comparison throws light on the fact that private sector banks have more returns and less risk in comparison to public sector banks. The intra group comparison evidences the fact that with the public sector and private sector banks there is no significant difference in risk and return. All these findings are leading to the conclusion that the stock market performance is a key factor that can measure and anticipate the risk and return of a specific industry or a sector or a company. Based on this information the investors can use their funds wisely.

References

Boobalan, C. (Jan-March, 2014, Vol.2, Issue.4). Technical Analysis in Select Stocks of Indian Companies

International Journal of Business and Administration Research Review, 26-36.

Jeyanthi, A., & Divya, D. (June 2019, Volume 6, Issue 6). Risk and Return Analysis of Selected Banking Stocks in India. *JETIR*, 864-873.

S, Kevin. (2018). *Security Analysis and Portfolio Management.* Delhi: PHI Learning Private Limited.

S, Shanavas. (October 2018, Volume 5, Issue 10). Comparative Study on the volatility of share price of private and public sector Banking Companies. *JETIR*, 138-149.

William, A. J., & Vimala, A. (Jul 2015, Vol. 3, Issue 7). A Study on Equity Share Price Volatility of Selected Private Banks in (NSE) Stock Exchange. *Impact Journals*, 87-96.

INTER-DEPENDENCE OF STOCK MARKET AND COMMODITY MARKETS IN INDIA: A STUDY

Sheikh Maruf Rahman *
Dr. Parimal Kr. Sen **

ABSTRACT

The commodity market has been in existence from time immemorial. It has been only recently been formalized in India and has since been found to be an emerging market. This paper tries to explore how the commodity market and the stock market are related to each other. It has been found that the markets are very much independent of each other and do not much affect each other. Hence, these two markets can be an advantageous avenue for the diversification of investments in India.

Keywords:- Co-integration, Granger Causality, VAR, Variance Decomposition, Impulse Response Function.

Introduction

The commodity market is considered an emerging market in India. The commodity market is prevalent around the world since time immemorial. Although organized commodity exchange started in India with the establishment of the Bombay Cotton Trade Association back in 1875, it became more popular with the creation of the Multi Commodity Exchange of India Ltd (MCX) in 2003. Its main sectoral indices are MCXAGRI, MCXMETAL, and MCX ENERGY. Few studies have been carried out to explore the relationship between the commodity market and the stock market in the Indian context. Most research has been carried out considering individual products or commodities but the market as a whole has not been explored. In this paper, we would like to explore if there is any long-run relationship or any causal relationship between the Commodity Market, represented by the indices MCXAGRI, MCXMETAL, and MCX ENERGY, and the Stock Market represented by BSE SENSEX. The objective of the

* Ph.D. Research Scholar,
University of Calcutta, Business Management Department

** Associate Professor (WBES)
Goenka College of Commerce & Business Administration

paper is to see if an interrelationship exists between these two markets. This will help us to find out if diversification of portfolio is possible or not between these two markets. The data has been collected from the official website of the Multi Commodity Exchange of India (mcxindia.com) on 05/01/2019. Daily data has been taken from 01/01/2007 to 31/12/2018, spanning a period of 12 years.

Literature Review

Yamori,2011 analyzed data from the Japanese market and it was found that the correlation between the stock market and the commodity market was negative and nearly zero unto 2006. After that from 2008, it is found to be increasing.

Bansal et.al (2014) studied how commodity futures help in portfolio diversification. The study used the mean-variance optimization method to derive the optimum portfolio mix as to how the usage of commodity futures changes in accordance with the risk aversion level of the investors. The study shows that by adding commodities to the portfolio the return increases without compromising the risk level.

Shehzad et.al. (2014) carried out a multivariate analysis of the commodities market and the stock market. For the period 2004-2012 25 stocks and 3 commodity futures contracts were used. The study showed that commodity future return has a higher correlation with unexpected inflation in comparison to the stock market.

Periasamy & Sathish, (2015) studied the relationship between the commodity market and the stock market from 2008 to 2013. Here they found out that there is a positive correlation between the stock market and the commodity market and these two markets move similarly.

Singh & Singh, (2015), studied the correlation between the stock market and the commodity market during a business cycle for the period 2003-2011 wherein the returns of the stock market and the commodity market were compared. It was revealed that the stock market is less volatile when compared with the stock market. In the study, it was found out that in the short run the correlation between these two markets is low, but was moderate in the long run.

Boyrie & Pavlova, (2016), analyzed how the commodity market and the stock market react in emerging economies. Using the Dynamic Conditional Correlation (DCC) Model it was found out that in emerging markets like Asia there is less correlation between these two markets when compared with developed economies. It was also found out that agricultural commodities and precious metals impart better diversification opportunities in developing economies.

Ray, (2013) studied the relationship between gold price and the stock market indices from 1990-2011 by using the Granger causality test. He found that gold prices and the stock market are cointegrated in the long run. The study also revealed that there is an inverse relationship between the gold price and the stock market.

Sadorsky,(1999) analyzed the relation between stock market prices and oil prices. By using VAR, it was found that there is a relationship between the two variables.

Hence, it can be seen that past research on various commodity and stock indices have shown that there is some correlation between these two markets but mostly in the foreign markets. In fact, it has been seen that there is a possibility of diversification among these two markets. This paper tries to see if this is true in the Indian context also. This will help to find new avenues to diversify portfolios.

Research Methodology

Augmented Dicky Fuller Test:

Econometric analysis can be performed on a data of stationary nature. A process is said to be stationary if its mean and variance remain unchanged over time i.e., a time series is said to be stationary if its probability distribution remains unchanged as time proceeds. The problem with non-stationary data is that the standard regression process will lead to incorrect results. Hence, time series have to be checked to know whether the series is stationary or non-stationary (random walk) with unit root. For this, Augmented the Dickey-Fuller (ADF) test and Phillips-Perron (PP) Test is most common to formally test for non-stationarity of a time series. Testing for non-stationarity is equivalent to testing for the existence of the unit root, thus, the following model is applied:

$$\Delta Y_t = \delta Y_{t-1} + \sum^{k} \alpha \Delta Y_{t-1} + e_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where e_t is the white noise error term

The hypothesis is as follows;

H_0: The series is non-stationary

H_1: The series is stationary

Granger Causality Test

We would also like to see if there is any causal relationship between the various indices

taken into consideration. A causal relationship will show whether one market influences the other market. It can be uni-directional or bi-directional. Uni-directional means that only one market affects the other market, whereas bi-directional means both the markets influence each other. For this, we use Granger's causality model to observe whether the return has a causal relationship between them. In Granger's Causality, there are bivariate regressions of the under-mentioned form:

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \ldots + \alpha_1 Y_{t-1} + p_1 X_{t-1} + \ldots + \beta_1 X_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \ldots + \alpha_1 X_{t-1} + p_1 Y_{t-1} + \ldots + \beta_1 Y_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

For all possible pairs of (X, Y) series in the group. Where ε_t and μ_t are two white noise random disturbance terms.

Johansen's Co-integration Test

The Johansen (1988) (1991, 1995) procedure tests the presence of a long-run relationship between the variables and performs the Co-integration analysis. If the two or more series are found to be co- integrating, consider a VAR of order p:

$$Yt = A_1 y_{t-1} + \ldots\ldots\ldots\ldots\ldots + A_p y_{t-p} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

We may rewrite this VAR as,

$$\Delta y_t = \Pi Y_{t-1} + \Sigma \Gamma \Delta Y_{t-i} + \varepsilon_t$$

Were,

$$\Pi = \Sigma A_i - I, \; \Gamma_i = -\Sigma A_i$$

Vector Auto Regression (VAR) Model

After applying Granger's causality test, we carry out the Vector Auto Regression (VAR) Model. In a VAR model, all the variables are endogenous. Vector autoregression (VAR) is used for analyzing the dynamic impact of random disturbances on the system of variables. Here, we see how each variable affects itself and also the other variables at various lags.

Variance Decomposition Analysis and Impulse Response

The variance decomposition analysis has been applied to find out the extent up to which the selected indices are influenced by each other. While impulse response functions find the effects of a shock to one endogenous variable on to the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.

Analysis and Findings

Unit Root Test (Table-1)

Variable	ADF TEST				PHILIPS-PERRON TEST				Order of Integration
	Levels		1st Difference		Levels		1st Difference		
	t-stat	Prob	t-stat	Prob	t-stat	Prob	t-stat	Prob	
AGRI	-1.65969	0.7688	-53.6992	0.0001	-1.9634	0.6205	-54.4317	0.0000	I(1)
METAL	-1.66385	0.7670	-55.7209	0.0000	-1.72114	0.7419	-55.7128	0.0000	I(1)
ENERGY	-1.97911	0.612	-52.0853	0.0000	-2.17926	0.5005	-52.2612	0.0000	I(1)
SENSEX	-2.87554	0.1707	-50.6637	0.0000	-2.7397	0.2205	-50.6388	0.0000	I(1)

The first step in this paper is to see whether there exists a unit root or not. Table-1 shows the outcome of the unit root test. It has been found in both ADF&P-P tests the null hypothesis of unit root at level is not rejected since the probability value is higher than five percent, which signifies that the variables are non-stationary. But after 1st difference, in each series, the probabilities are less than zero, whereby signifies we can reject the null hypothesis of the two tests (ADF&P-P) i.e., the variables are stationary. Hence it means that the indices are non-stationary at level but stationary at 1st difference i.e., all are integrated at order one. This signifies that a co-integration test can be carried out.

LAG Order Selection Criteria (Table-2)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	2640.287	NA	1.97e-06	-1.785497	-1.777383	-1.782576
1	34858.15	64326.61	6.65e-16	-23.59509	-23.55451	-23.58048
2	34965.09	213.2285	6.25e-16*	-23.65668*	-23.58365*	-23.63039*
3	34976.87	23.46591	6.27e-16	-23.65382	-23.54833	-23.61585

Next, to carry out co-integration tests and VAR, we have to select the optimal lag length. Lag length identifies the number of periods earlier which affects the present. There are many techniques to select an optimal lag length. Table-2 provides the optimal lag order selection based on various criteria. Here the star (*) shows the guideline to select the optimal lag length which is required for this particular model. Here we see that according to the entire criterion it is observed that the second lag is chosen because it gives the lowest value among all the sets of values observed.

JOHANSEN Co-Integration Test (Table-3)

Hypothesized no of CE(s)	Eigen Value	RANK TEST (TRACE)			RANK TEST (MAX-EIGEN VALUE)		
		Trace Stat.	Critical Value (0.05)	Prob.**	Max-Eigen Stat.	Critical Value (0.05)	Prob.**
None*	0.007620	56.53317	63.87610	0.1776	22.62759	32.11832	0.4456
At most 1*	0.006039	33.90558	42.91525	0.2928	17.91885	25.82321	0.3834
At most 2*	0.004086	15.98673	25.87211	0.4936	12.11177	19.38704	0.4048
At most 3*	0.001309	3.874962	12.51798	0.7602	3.874962	12.51798	0.7602

Now that we have identified the optimum lag length, we apply the Johansen test of co-integration. Here we see all the P-Value to be above 5% level of significance. The null hypothesis(H_0) signifies the absence of co-integration among the variables and the alternative hypothesis (Ha) signifies the existence of co-integration among the variables. In the above table, we see that both the test statistics (trace statistics & max-eigenvalue) suggest that there is no co-integration among the variables as all the p-values are above 5% significance level. This means that there is no long-run relationship between the commodity markets and the stock market.

VAR Equation (Table-4)

	AGRI	ENERGY	METAL	SENSEX
AGRI(-1)	1.007992	-0.004878	0.003726	-0.013107
	(0.01849)	(0.03126)	(0.01894)	(0.02542)
	[54.5284]	[-0.15607]	[0.19673]	[-0.51570]
	0.0000*	0.876	0.844	0.6061
	AGRI	**ENERGY**	**METAL**	**SENSEX**
AGRI(-2)	-0.010408	0.006027	0.002344	0.015483
	(0.01851)	(0.03130)	(0.01897)	(0.02545)
	[-0.56230]	[0.19256]	[0.12358]	[0.60837]
	0.5739	0.8473	0.9016	0.543
	AGRI	**ENERGY**	**METAL**	**SENSEX**
ENERGY(-1)	0.004840	0.994732	-0.003074	-0.010428
	(0.01086)	(0.01836)	(0.01112)	(0.01493)
	[0.44580]	[54.1851]	[-0.27630]	[-0.69855]
	0.6557	0.0000*	0.7823	0.4848
	AGRI	**ENERGY**	**METAL**	**SENSEX**
ENERGY(-2)	-0.007444	0.001643	0.001993	0.008095
	(0.01086)	(0.01836)	(0.01113)	(0.01493)
	[-0.68554]	[0.08949]	[0.17911]	[0.54219]
	0.493	0.9287	0.8579	0.5877

	AGRI	ENERGY	METAL	SENSEX
METAL(-1)	0.094704	0.389711	0.970942	0.020909
	(0.01826)	(0.03087)	(0.01871)	(0.02510)
	[5.18689]	[12.6232]	[51.9017]	[0.83292]
	0.0000*	0.0000*	0.0000*	0.4049
	AGRI	**ENERGY**	**METAL**	**SENSEX**
METAL(-2)	-0.091698	-0.386866	0.023417	-0.019644
	(0.01824)	(0.03084)	(0.01869)	(0.02508)
	[-5.02705]	[-12.5432]	[1.25299]	[-0.78326]
	0.0000*	0.0000*	0.2102	0.4335
	AGRI	**ENERGY**	**METAL**	**SENSEX**
SENSEX(-1)	-0.007056	0.054738	0.003129	1.069373
	(0.01349)	(0.02280)	(0.01382)	(0.01854)
	[-0.52321]	[2.40062]	[0.22648]	[57.6768]
	0.6008	0.0164*	0.8208	0.0000*
	AGRI	**ENERGY**	**METAL**	**SENSEX**
SENSEX(-2)	0.005678	-0.056589	-0.002095	-0.071483
	(0.01349)	(0.02282)	(0.01383)	(0.01855)
	[0.42080]	[-2.48019]	[-0.15154]	[-3.85298]
	0.6739	0.0131*	0.8796	0.0001*
	AGRI	**ENERGY**	**METAL**	**SENSEX**
C	0.028290	0.014704	-0.001601	0.010971
	(0.00955)	(0.01615)	(0.00978)	(0.01313)
	[2.96253]	[0.91064]	[-0.16368]	[0.83564]
	0.0531	0.3625	0.87	0.4034

Since there exists no co-integration among the variables, we apply VAR. The above table shows that returns of Agri at lag 0 are influenced by returns of Agri at lag 1. This means that past Agri market conditions affect the present Agri market. Further, we can also see that past market conditions of metal also affect Agri. Returns of Energy at lag 0 are influenced by Energy at lag 1 and Metal at lag 1 & lag 2 and Sensex at lag 1 & lag 2. Metal at lag 0 is influenced by metal at lag 1. Sensex at lag 0 is influenced by itself at lag 1 & lag 2. Hence, we can see that returns off Agri are influenced both by itself and by returns of metal. Returns of Energy are affected by itself and also by returns of metal and Sensex. In the case of both metal and Sensex, each influence only itself.

Granger-Causality Test (Table-5)

NULL HYPOTHESIS	F-STATISTIC	PROBABILITY	DECISION
LENG does not Granger Cause LAGR	3.95229	0.0193	Reject H_0
LAGR does not Granger Cause LENG	1.58914	0.2043	Don't Reject H_0
LMET does not Granger Cause LAGR	14.4856	5.00E-07	Reject H_0
LAGR does not Granger Cause LMET	6.81325	0.0011	Reject H_0
LSX does not Granger Cause LAGR	0.07037	0.9321	Don't Reject H_0
LAGR does not Granger Cause LSX	1.47064	0.2299	Don't Reject H_0
LMET does not Granger Cause LENG	82.2485	2.00E-35	Reject H_0
LENG does not Granger Cause LMET	2.23962	0.1067	Don't Reject H_0
LSX does not Granger Cause LENG	4.34423	0.0131	Reject H_0
LENG does not Granger Cause LSX	0.77759	0.4596	Don't Reject H_0
LSX does not Granger Cause LMET	0.50467	0.6038	Don't Reject H_0
LMET does not Granger Cause LSX	0.73819	0.4781	Don't Reject H_0

The outcome of the short-run Granger causality test is presented in the above table. It is observed that bi-directional causality exists between MCXMETALS and MCXAGRI, which means both markets influence each other. Also, there exists unidirectional causality between from MCXENERGY to MCXAGRI, from MCXMETAL to MCXENERGY, and from BSESENSEX to MCXENERGY. This means MCXENERGY affects MCXAGRI, MCXMETAL affects MCXENERGY and BSESENSEX affects MCXENERGY.

Variance Decomposition of Agri (Table-6)

Period	S.E.	LAGR	LENG	LMET	LSX
1	0.010191	100.0000	0.000000	0.000000	0.000000
2	0.014512	99.51943	0.032638	0.443381	0.004554
3	0.017800	99.34972	0.036642	0.606299	0.007335
4	0.020557	99.26244	0.034409	0.693158	0.009993
5	0.022975	99.20654	0.030521	0.750169	0.012774
6	0.025153	99.16543	0.026468	0.792350	0.015749
7	0.027148	99.13208	0.022881	0.826094	0.018949
8	0.028998	99.10296	0.020068	0.854585	0.022386
9	0.030729	99.07615	0.018198	0.879585	0.026063
10	0.032361	99.05050	0.017367	0.902149	0.029984

This study uses variance decomposition to forecast and investigate the dynamic relationship among the various variables. Here, 10 periods interval is used to provide a literal breakdown of the change in the value of the variables in a given period arising from a change in the same variable in addition to another variable in the previous period. The result of variance

decomposition of MCXAGRI is given in the above table. It shows that in the short-run own shock to MCXAGRI accounts for 100% and in the long run it is 99.05050%. The other variables do not cause much variation in the long run as well as the short run.

Variance Decomposition of Energy (Table-7)

Period	S.E.	LAGR	LENG	LMET	LSX
1	0.017231	0.749272	99.25073	0.000000	0.000000
2	0.025246	0.725676	96.63781	2.545948	0.090567
3	0.031197	0.726170	95.89524	3.253491	0.125098
4	0.036145	0.734785	95.52662	3.599213	0.139379
5	0.040461	0.746705	95.30042	3.807281	0.145598
6	0.044330	0.760357	95.14375	3.947984	0.147910
7	0.047861	0.775077	95.02614	4.050718	0.148069
8	0.051123	0.790541	94.93257	4.129949	0.146939
9	0.054167	0.806567	94.85481	4.193624	0.144994
10	0.057026	0.823050	94.78796	4.246473	0.142517

The variance decomposition of MCXENERGY given in the above table shows that in the short-run own shock or innovation to MCXENERGY accounts for 99.25073% fluctuations in MCXENERGY and in the long run an innovation or shock to MCXENERGY is 94.78796% fluctuation in MCXAGRI meaning that shock has come down in the long run as compared to the short run of its shock. In period 2(two), short-run MCXMETAL can cause 2.545948% variation in MCXENERGY and it has increased in the long run and causes 4.246473% fluctuations in MCXENERGY.

Variance Decomposition of Metal (Table-8)

Period	S.E.	LAGR	LENG	LMET	LSX
1	0.010441	0.013557	3.628812	96.35763	0.000000
2	0.014549	0.018379	3.543477	96.43725	0.000891
3	0.017695	0.027208	3.495325	96.47583	0.001634
4	0.020334	0.038815	3.456419	96.50234	0.002424
5	0.022644	0.052946	3.421137	96.52262	0.003300
6	0.024718	0.069511	3.387590	96.53863	0.004272
7	0.026612	0.088468	3.354965	96.55122	0.005346
8	0.028361	0.109791	3.322860	96.56083	0.006522
9	0.029993	0.133462	3.291055	96.56768	0.007799
10	0.031524	0.159468	3.259423	96.57193	0.009177

The variance decomposition of MCXMETAL is given in the above table. It is seen that in the short run own shock or innovation to MCXMETAL accounts for 96.35763% fluctuations in

MCXMETAL and in the long run an innovation or shock to MCXMETAL has minutely increased to 96.57193%. fluctuations in MCXMETAL. In the short run, MCXENERGY can cause 3.628812% variation in MCXMETAL and it has decreased in the long run to cause 3.259423% fluctuations in MCXMETAL.

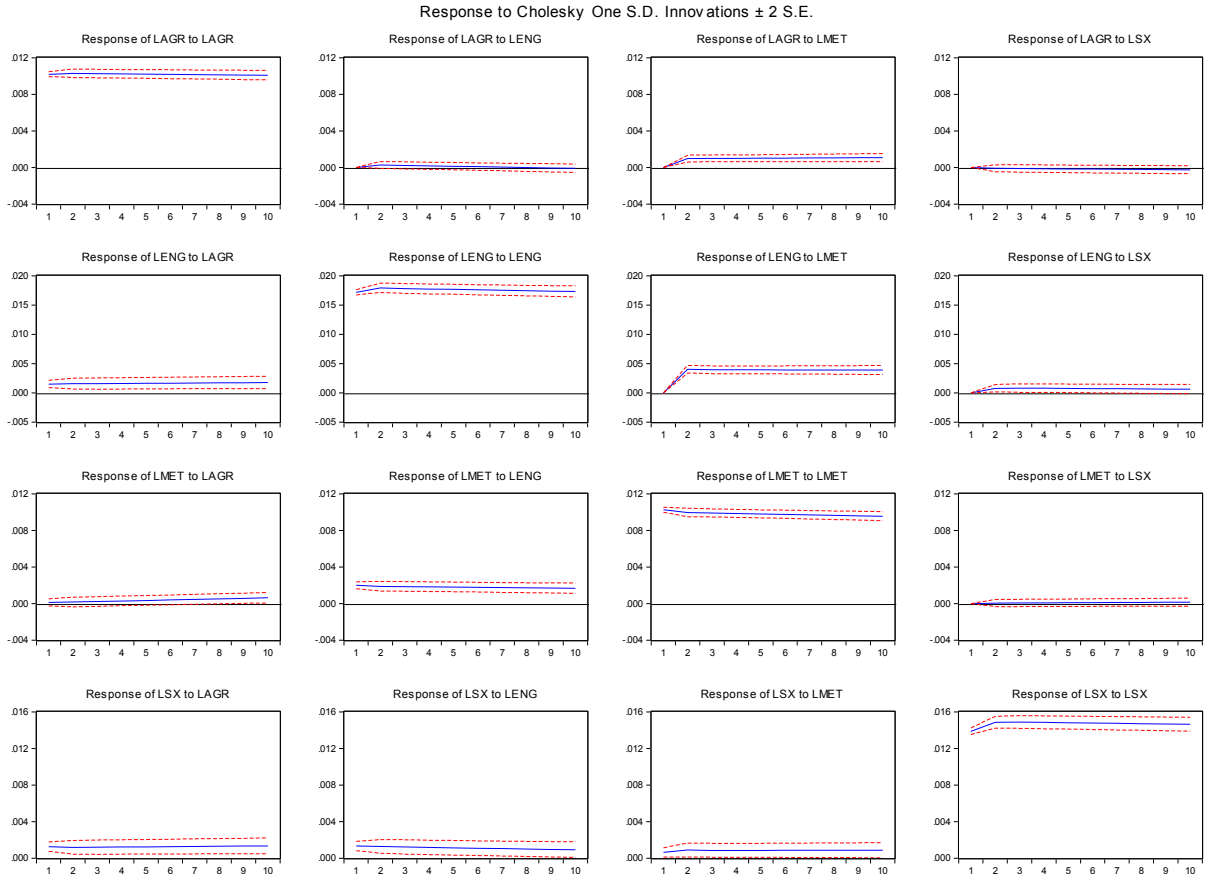
Variance Decomposition of Sensex (Table-9)

Period	S.E.	LAGR	LENG	LMET	LSX
1	0.014011	0.786222	0.883084	0.196295	98.13440
2	0.020504	0.699447	0.796381	0.275088	98.22908
3	0.025403	0.676983	0.747078	0.290350	98.28559
4	0.029482	0.672661	0.711925	0.298244	98.31717
5	0.033046	0.675527	0.682714	0.303652	98.33811
6	0.036246	0.681981	0.656662	0.307862	98.35349
7	0.039172	0.690517	0.632603	0.311400	98.36548
8	0.041882	0.700394	0.609963	0.314523	98.37512
9	0.044415	0.711205	0.588429	0.317371	98.38299
10	0.046800	0.722709	0.567816	0.320029	98.38945

The variance decomposition of BSE SENSEX also shows that its shock in the short run causes 98.13440% variation in BSE SENSEX. In the long run, its shock increases to 98.38945% fluctuations in BSE SENSEX. The other variable does not affect BSE SENSEX much.

Impulse Response Function

An impulse response can be defined as the reaction of a system, in response to an external change i.e., the impulse response analysis investigates the influence of random shock on the market's impulse responses of returns in various markets to a shock in their own and other market innovations. A one standard deviation shock to x causes significant increases (decreases) in y form periods (determined by the length of period for which the SE bands are above 0 or below 0 in case of decrease) after which the effect dissipates. Over here it is observed that there is no influence of one market over the other i.e., the markets are independent.



Conclusion

The ADF and the P-P tests confirm the stationarity of the selected series. They are integrated of order 1(one). From co-integration analysis, we see that there is no co-integration among the series. The Granger Causality tests show that bi-directional causality exists between MCXMETAL and MCXAGRI. Unidirectional causality exists between from MCXENERGY to MCXAGRI, from MCXMETAL to MCXENERGY, and from BSE SENSEX to MCXENERGY. The VAR result shows that returns of Agri at lag 0 are influenced by Agri at lag 1 and Metal at lag 1& lag 2. Returns of Energy at lag 0 are influenced by Energy at lag 1 and Metal at lag 1 & lag 2 and Sensex at lag 1 & lag 2. Metal at lag 0 is influenced by metal at lag 1. Sensex at lag 0 is influenced by itself at lag 1 & lag 2. The variance decomposition shows that shocks or innovations mostly affect each series on itself both in the short run and in the long run. The impulse response function shows that shocks in one series do not affect the other series. Hence, in general, it can be concluded that the markets are independent of each other. In short, we can say the markets are mostly independent of each other. There is little interdependence between the markets. This can be a sign of good portfolio diversification.

References

Bansal, Y., Kumar, S., & Verma, P. (2014). Commodity Futures in Portfolio Diversification: Impact on Investor's Utility. Global Business and Management Research: An International Journal, 6(2), 112-121.

Boyrie, M. E., & Pavlova, I. (2016). Linkages between Equity and Commodity Markets: Are Emerging Markets Different. Retrieved from: 42984-M-deBoyrie-Linkages-between-Equity-and-Commodity-Markets.pdf (aut.ac.nz)

Periasamy, P., & Sathish, R. (2015). A Study on Relationship Between Indian Commodity Market and Indian Stock Market With Special Reference To Exchanges In India – An Analytical Framework. I J A B E R, 13(8), 6323-6334.

Ray Sarbapriya,(2013), Casual Nexus between Gold Price Movement and Stock Market: Evidence from Indian Stock Market, Sciknow Publications Ltd. E 2013,1(1):12-19.

Sadorsky, P. (1999)-" Oil Pice Shocks and Stock Market Activity", Energy Economics 21, p. 449.

Shahzad, S. J., Raza, N., & Awan, A. H. (2014). Commodities and Stock Investment: A Multivariate Analysis. SAGE Open, 1-12.

Singh, A. K., & Singh, K. V. (2015). Correlation Analysis Between Commodity Market and Stock Market During A Business Cycle. International Journal of scientific research and management, 3(12), 3819-3829.

A PRIVATE PENSION MODEL FOR BANGLADESH – LESSON FROM CANADIAN EXPERIENCE

Dr. Bidhan Chandra Mazumder *
Dr. Kanchan Purohit **

ABSTRACT

The government has not yet guaranteed pension for private sector workers in Bangladesh where about 96.3% of the employed people working in both formal (13.6%) and informal (82.7%) private sectors. The formal private sector employers provide some gratuity or provident fund to their employees which cover only 10% of the old-age people of the country. Besides, 39.9% of the old-age people receive a few cash benefits (TK. 500 per month) from the government as Old Age Allowance. The central issue of this study is thus to focus on the implementation of private pension in Bangladesh. The study proposes a model for tax free private pension scheme by taking Canadian experience into account with some modifications. Considering to be fully funded by the pensioners, the study has attempted to examine the financial viability of the scheme. Levelling with the prevailing public pension system and basing on some assumptions and approximate data, the study has found that the Government of Bangladesh can sufficiently manage the proposed scheme by making a suitable investment of the members' contributed fund. The study also highlights some benefits, challenges, and implications of the proposed scheme.

Keywords: Private sector, pension, Canada, Bangladesh

Introduction

Financial security is one of the best security measures for old-age food, shelter, care and medicine. Most of the older people in Bangladesh are suffering from many basic human problems, such as shortage of food, senile diseases and absence of healthcare, etc. So, savings for old age is a protection for the senior citizens. But it is also certain that governments, particularly of a developing country like Bangladesh, cannot provide 100% guarantee of old-age financial security (i.e., pension

* Professor of Accounting
University of Chittagong, Email: bidhan@cu.ac.bd

** Professor of Accounting
Conestoga College Institute of Advanced Learning and Technology
Email: kpurohit@conestogac.on.ca

as Defined Benefit (DB)) for their senior citizens mainly because of lack of resources at the disposal of the government and large number of aging populations required to be supported. In effect, almost everywhere in the world, the individual responsibility for old-age pension is strengthened (Defined Contribution (DC)) (Chowdhury, 2017). It is highly unlikely that one program can properly address generous pension, thus many countries have adopted systems composed of different programs with various roles (Government of Canada (GOC), 2019a). As far as developed countries are concerned, Canada, the country ranked among top 10 pension systems in the world (Burgess, 2019), United States of America (USA), and United Kingdom (UK) have introduced multi-phase pension plans mostly designed in line with DB or DC principles. In Canada, individuals who do not have access to an employer sponsored pension plan also can voluntarily invest in some registered plans named Registered Retirement Savings Plan (RRSP) or Tax-Free Savings Account (TFSA), which are tax-favored vehicles (GOC, 2019a). But in Asia, although the retirement systems are improving gradually from time to time, they lack transparency and workers are not saving enough for retirement compared to their global peers. Here in many cases, only government offers national pension to the retired government servants and some Old Age Allowance (OAA) to the destitute in general; and a few private sector employers offer pension benefits to their employees. Similar trend happens in Bangladesh also. The formal and informal private sector employees of this country covering almost 96.3% of its factor market (Government of Bangladesh (GOB), 2018) still remain out of pension net under any considerations. However, the GOB has been providing OAA for more than a decade under Social Security Programs (SSP). But it still covers only 31.54% of old aged people with a base line of 11.10 million people by the year 2017-18 (GOB, 2019-20). So, the budget allocation for helpless elderly people needs to be increased gradually to cover all the elderly people of this kind. In this context, a private pension scheme developed by pensioners' own contribution could greatly save the GOB to keep the budget allocation using up to support other social security activities including OAA in particular. Under the above backdrop, this study attempts to suggest the GOB a model for introducing private pension in Bangladesh taking some experiences of the same of a developed country like Canada which has been honored to be one of the top 10 countries in the world considering its best pension plans for senior citizens. The authors have structured the study by taking seven sections sequentially into consideration, viz. introduction, rationale, objectives, scope, methods, analysis, and implications and concluding remarks with direction for further research.

Rationale of the Study

Old-age is a fundamental human concern for all people in all countries, and old-age pensions usually form a core component of a comprehensive social protection system. Bangladesh is one of the most densely populated countries in the world ranking the eighth-largest by population with

a large number of old people. The number of people over 60 years of age in Bangladesh is projected to increase from about 12.6 million (8% of total population) in 2017 to 20.7 million (11% of total population) by 2031 and 42.3 million people (20% of total population) by 2051 (Rashid, 2019). With an average life expectancy of around 73 years at present (Macrotrends, 2021) in this country, it is up taken that the old-age dependency ratio will gradually increase and the potential support ratio, on the other hand, will decrease because of old-age working incapacity, health shocks and illness, etc. Without adequate or with a very few numbers of savings or contributory pension schemes, most senior citizens will be the most vulnerable people in the society and be heavily dependent on society.

At present, there is no formal pension system directed towards the elimination of poverty of old people in Bangladesh at national scale, except for the employees in government services, some elderly destitute, and a very small number of private sector employees. Meanwhile, the GOB has intended in 2015-16 to introduce a Three-Tire Pension Program (TTPP), namely Citizens' Pension (CP), Private Sector Pension Program (PSPP), and Private Voluntary Pension (PVP), in Bangladesh (Byron, 2015), but there has been no progress yet. Moreover, in 2019-20, the government further talked about Universal Pension System (UPS) for all working people engaged in both formal and informal sectors, but again the development of this has found no more ways. In fact, providing economic shelter to the entire old-age people of Bangladesh is really a big challenge for the government because of resource constraint, corruption, and socio-economic condition. So, like other countries' practices in the world, earning individuals of Bangladesh, especially those who are in the private sector, should take their own initiatives to save for their old age under the control and supervision of the government in order to meet a basic standard of living.

Under this backdrop, this study is an attempt to suggest for private pension for old-age protection of the elderly people of Bangladesh.

Objectives of the Study

The main objective of this study is to propose a model for Private Pension Scheme (PPS) in Bangladesh after examining the Canada practice. The surrogate objectives in this context are:

1. To investigate the relevancy of the model in Bangladesh.

2. To examine the financial feasibility of the model in Bangladesh.

3. To indicate the challenges of the model if it is implemented in Bangladesh and suggest necessary measures to overcome the challenges.

Scope of the Study

This study has chosen the focus group from the population employed in both formal and informal private sectors of Bangladesh. The study also has assumed that the members of this group will be those who have monthly net earnings within the range of the salaries of public sector employees of Grade 20 to Grade 1. This is to facilitate the government to fix pension benefits for this group with an equal opportunity of the public sector employees.

The formal private sector employees comprise of around 13.6% (GOB, 2018) of total employed population of the country. Although the informal sector employees are reported to be 82.7% (GOB, 2018) of the total workforce in Bangladesh, most of them are ultra-poor (Shibli, 2019). The GOB has a plan to include the ultra-poor within pension coverage. But this study suggests for those who can earn monthly minimum around Taka (TK.) 8,000 (equivalent to the amount a public sector employee of Grade 20 earns (Appendix 1)) in Bangladesh currency. The rate of this group of people is around 10% (GOB, 2018) of the total employed population and there is no old-age security coverage available to them.

Under the above background, the study has taken the pay structure and the pension system of the public sector employees in Bangladesh into account to go through and the experience of Canada to review.

Methods of the Study

This study is basically a policy based descriptive one. It suggests a model for a PPS to implement in Bangladesh. It has examined the relevancy and financial feasibility of the model using secondary data in general. In this manner, the data helps forecast some hypothetical but relevant values relating to future pension. Then the study has followed some simple statistics to analyze the data.

Mostly related to Bangladesh context, the data has included 8th National Pay Scale (NPS) 2015; retirement age of public sector employees; current life expectancy; interest rates on fixed deposits and some long-term securities available in different banks, post office, and national savings bureau; annual tax-free income threshold; and the rate of taxes applicable for individuals for the assessment year 2020-21.

In presenting the data, the study has used both tabular and pictorial presentations. Then in analyzing the same, it has used some simple mathematics, viz. frequency, percentage, and average measure. Although the calculations are merely approximate estimates, the study has calculated future pension following the GOB's pension rule and other necessary guidelines. In this connection, the study has

calculated the future value of the return and investment by following the formula, A(1+rt)n(1+rt1) (meaning of the symbols used have been explained in Table 8). The study also has used Microsoft (MS) Excel for necessary calculations.

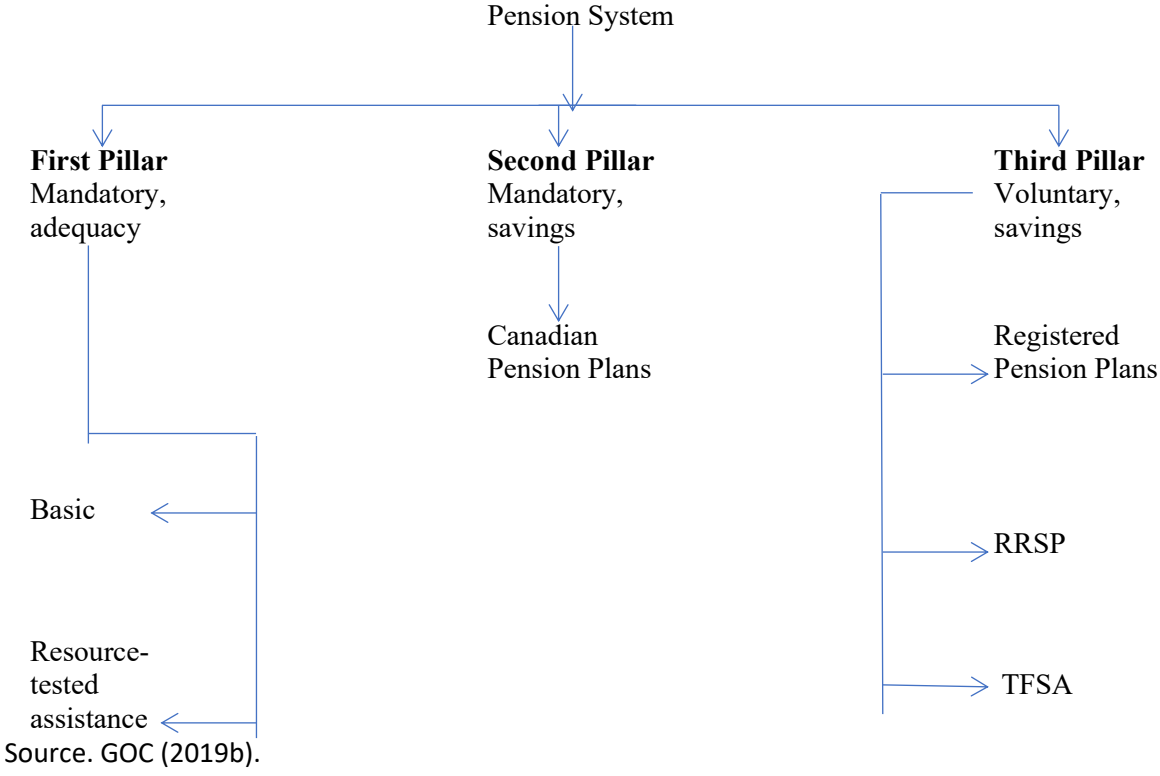
Analysis

This section has drawn a model for proposed PPS in Bangladesh based on a summary discussion on the prevailing pension systems both in Canada and Bangladesh. Then it has made a detailed plan for funding the system and finally, highlighted some challenges and suggestions to overcome those challenges in implementing the system.

Pension System in Canada

Canada, a developed country with a number of seniors (persons aged 65+) representing around 20% of total population (in 2018, the rate was 17% (Westmacott, 2020)), has a well-structured social welfare scheme in implementation. To ensure providing adequate benefits in a sustainable manner, the GOC has introduced multi-pillar pension systems with a mix of private and public pillars for the elderly people in the country. Chart 1 shows prevailing pensions in Canada under multi-pillar pension systems.

Chart 1. Canada's multi-pillar pension systems



Source. GOC (2019b).

Chart 1 reveals that pension systems under pillar one and two are government sponsored public pensions and pillar three are private occupational pensions. Pillar one includes basic or means-tested benefit which corresponds to the Old Age Security (OAS) and the resource-tested benefit which corresponds to the Guaranteed Income Supplement (GIS) under OAS program. The benefits under OAS and/or GIS program are financed out of general revenue on a Pay-As-You-Go (PAYG) (Collins, n.d.) basis.

Pillar two corresponds to the national contributory pension scheme named Canada Pension Plans (CPP) that provides earnings-related DB pensions on a partially funded basis. It required a legislated contribution rate constant at 9.9% for years 2019 and thereafter, but it is projected to be minimum 9.75% of contributory earnings for years 2022 to 2033 and 9.72% for years 2034 and thereafter (Actuarial Report, 2018).

Pillar three, on the other hand, consists of voluntary fully-funded schemes named Registered Pension Plans (RPP) and individual tax-assisted savings named RRSP or lately introduced TFSA. GOC (2019a) reported that designing mostly in line with DC or DB principles and having income replacement objective, the government has formed the employer-sponsored plan RPP with a view to provide the employee with a pension at retirement. Further it has introduced the tax-favored registered vehicle RRSP to help Canadians save for retirement or non-registered vehicle TFSA to allow them to turn taxable income into tax-free income for life. The individuals who do not have access to an employer-sponsored pension plan can voluntarily choose tax-favored vehicles to invest.

Except for OAS, all other pension schemes, both government-assisted and private, are subject to a prescribed limit of contribution/savings within a year and that index the limit to inflation every year. However, as old-age poverty reduction is the main focus of the GOC, it ensures providing a minimum pension benefit with GIS to the pensioners, especially to the low-income pensioners, after making necessary adjustments with their public and private pensions, if any. The coverage of private pensions in Canada through widespread voluntary provision was about 50% of all benefits in 2007 (Hinz et al., 2013) and above 50% in 2008 (Whitehouse, 2013). Menard (2017) found that private pension income plays a significant role in reducing the number of low-income seniors in Canada. He found that the number of the seniors having income below 35% of the average Canadian wage reduced from 60% to 35% when private pension income under Pillar 3 was added. An Organization for Economic Co-operation and Development (OECD) (2018) report revealed that among the half of OECD countries, Canada is one which encourages retirement savings in private pension plans by offering tax exemption benefits for contributions and return on investments. Whitehouse (2013) showed that tax incentives cost an average of about 50% of direct pension spending in Canada. Although the provision levies tax on RPP's income (with tax credit benefit) and RRSP's income (with tax deferred benefit) upon withdrawal, it makes TFSA's income free of tax. As a matter of fact, despite having literally pre-paid tax charged on TFSA contribution, the people, particularly who are at early years of working (Unnamed, 2016) and

earn low-income (Unnamed, 2017), have been showing their interest at an increasing rate to get registered with TFSA over RPP and RRSP.

Under the above backdrop, Table 1 shows the properties, in a summarized form, of the multi-pillar pension plans in Canada that will help to establish a comparative picture of pension plans and thereafter a model for private pension in Bangladesh.

Table 1. Summarized features of multi-pillar pension plans in Canada

Multifaceted pension plans	Important characteristics					
	Nature of savings	Returns	Limit of savings	Tax impact on income	Tax –filing	Public interest
OAS	Government support (public)	Based on income and stay in Canada	Not applicable	Taxable income	Required	No choice
CPP	Compulsory, partially funded (public)	Based on contribution	Prescribed limit	Tax credit	Required	Tied up with employment
RPP	Voluntary, fully funded (private)	Based on agreement	Based on agreement	Tax credit	Required	Declining in men but increasing in women
RRSP	Voluntary, fully funded (private)	Based on type of investment.	Prescribed limit	Tax deferred and payable at withdrawal	Required for income but not for savings	Declining
TFSA	Voluntary, fully funded (private)	Based on type of investment.	Prescribed limit	Tax free	Not required	Growing

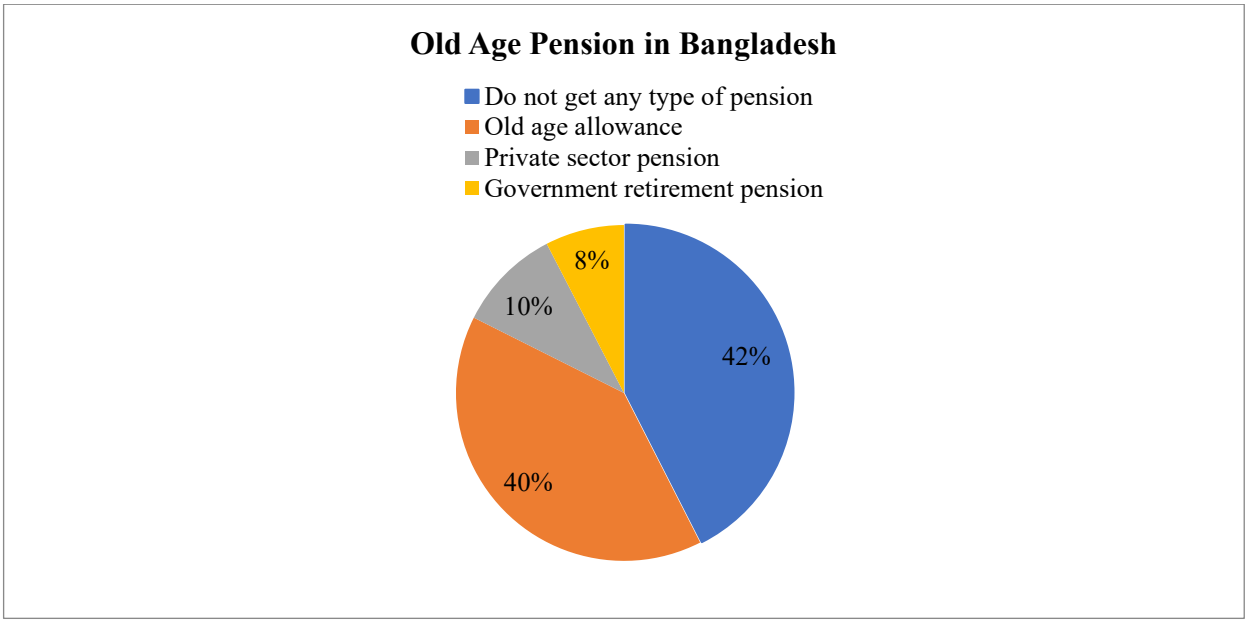
Source. Authors' compilation.

Henceforth, the following section highlights in brief the pension system currently prevailed in Bangladesh.

Pension system in Bangladesh

Although Bangladesh has made remarkable progress in reducing poverty, based on the international poverty line of $1.90 equivalent to TK. 4,560 (using 2011 purchasing power parity exchange rate) a day, from 43.8% in 1991 to 14.8% by 2016 (World Bank (WB), 2020), it has not yet overcome the old-age poverty curse. A large number of elderly people who were employed at their young ages do not receive any kind of financial supports either from government or from private sector employers and suffer from multifarious difficulties until before their death. Chart 2 shows the status of old-age pension in Bangladesh as of 2019.

Chart 2. Old-age pension status in Bangladesh as of 2019



Source. Unnamed (2019) quoted from Center for Policy Dialogue (CPD). The computer system has rounded up the figures 42.5, 39.9, and 7.6.

Chart 2 reveals that only 7.6% of the old-age population receives retirement pension and 39.9% of them receives OAA from the government, and 10% receives some kind of gratuity or Provident Fund (PF) from the private sector employers as of 2019 in Bangladesh. The remaining 42.5% of this group of people do not get any kind of pension. However, Chart 2 also indicates that the classification of pension system currently in practice in Bangladesh is: 1) Public Pension: OAA and Retirement Pension; and 2) Private Pension: Provident Fund.

Currently the GOB provides retirement pension benefits to the government, semi-government and autonomous sectors employees. Obtaining eligible pensionable service period of minimum 25 years of service or maximum 59 to 69 years of life (Appendix 2), the employees get retirement and receive pension until death at a prescribed rate which is fully unfunded and satisfies the properties of DB. In addition, they also get a general PF, the nature of which is DC.

Under retirement pension, the retirees receive total pension benefits at 50:50 after retirement, that is, 50% lump sum at retirement and the remaining 50% by monthly until before death, and even before the death of his/her spouse, where applicable. Due to the increase in life expectancy (Macrotrends, 2021), yearly increase in the number of pensioners (WB, 2018), matching benefits with inflation, etc., government expense for pension has been increasing in recent years. OAA, on the other hand, started in 1997-98 with a monthly pay of TK. 100 per person

and then increased to TK. 500 per person, covers only about 11% of the monthly consumption needs of TK. 4,560 of a person who lives on extreme poverty.

As to prevailing private pension in Bangladesh, the private sector employees usually receive CPF. Following the properties of DB and DC this pension system allows an equal contribution of employers to the fund along with the employees' contribution. Some organizations form PF only by the employees' contribution. Generally, taking a deposit equivalent to 5-10% of an employee's monthly salary, the entity concerned administers the fund by its own rules.

Under the above circumstances, the following section is an attempt to develop a model for private pension in Bangladesh.

Developing a Model for Private Pension Scheme in Bangladesh

The above scenarios indicate that the pension system in Canada is well-structured compared to the same in Bangladesh. A Canadian citizen can assume to receive a minimum pension guaranteed by the government at his/her old age but a Bangladeshi citizen cannot. Although the objective of OAS of Canada and OAA of Bangladesh are alike, there is a gulf of differences between them in their capacity, structure, policy and implication issues. A Canadian citizen can choose a portfolio investment of his/her income to multi-pillar pension schemes in order to maximize the pension and tax benefits at retirement that a Bangladeshi citizen cannot. Moreover, people from all occupations have an opportunity to get enrolled with a PPS in Canada which is totally absent in Bangladesh. The GOC governs most of the PPSs. Some of the PPSs offer tax benefits on contributions and others offer the same on income withdrawals. The PPS which allows tax free income at withdrawal and does not enforce the requirement of tax-filing for that income is becoming popular among the people who are the beginners at their works and who earn low income. Therefore, taking a lesson from Canadian multi-pillar pension scheme, this study suggests a tax-free scheme for the private sector employees in Bangladesh named Tax Free Private Pension Scheme (TFPPS) with some modifications in Table 2.

Table 2. Features of the proposed model that resembles to the Canada practice

Existing Canadian pension schemes are: CPP, OAS, RPP, RRSP, and TFSA

The proposed model would consider	Matching with the Canadian existing pension schemes
Single contribution of the pensioner who earns income.	RRSP and TFSA
Voluntary contribution	RRSP, RPP and TFSA
A prescribed limit of contribution	CPP, RRSP and TFSA
Tax free contribution and no tax-filing of it	RRSP
Tax free earnings after retirement and no tax-filing	TFSA

Contribution based benefits	CPP
Minimum 18 years of age for a person's eligibility	CPP and TFSA
Only government as regulator	CPP, RRSP and TFSA

Source. Authors' compilation.

Under the above backdrop, Table 3 shows the growth of TFPPS model.

Table 3. Model for proposed private pension scheme

Name of the Scheme	Beneficiary of the Scheme	Target Population (in %)	Benefit of the Scheme		Funding of the Scheme			Governing Body of the Scheme
			Name	Mode of Payment	Entity	Period	Mode of Fund	
Tax Free Private Pension Scheme (TFPPS)	Formal private sector	13.6%	Retirement benefit (pension)	Lump sum at retirement (50%)	Individual beneficiaries/ pensioners, i.e., members of the scheme	Pensionable service period (min. 25 years of service, and max. 60 years of life)	Members' individual contribution at an interval of a month or a year	Government
	Informal private sector excluding ultra-poor workers	10%		Monthly net pension until death (50%)				
Both contribution and withdrawal benefits are tax free.								

Source. Authors' formation.

Table 3 presents the proposed private pension scheme in the name of TFPPS covering 13.6% of the people serving in the formal private sector and 10% of the people involved in the informal private sector excluding ultra-poor workers in Bangladesh. The respective members of the scheme will receive pension at retirement payable 50% lump sum and the remaining 50% during the rest of life as monthly pension. The scheme will take members' single contribution at an interval of a month (or a year) for a pensionable service period (minimum 25 years of service or maximum 60 years of life) under the government administration.

But the crux of the matter is that the financing of the proposed benefit scheme. It is a big challenge for a developing country like Bangladesh. The following section presents the examination of the financial feasibility of the scheme.

Funding the Proposed TFPPS

As this study suggests for financing the proposed pension scheme exclusively by the beneficiaries' contribution, the following calculations will show a path to realize the way of financing the scheme.

Grade	Pensionable service-period (Years)	Last basic at retirement (TK.)	Monthly net pension (TK.)	Payable lump sum (50%) (TK.)	Grade	Pensionable service-period (Years)	Last basic at retirement (TK.)	Monthly net pension (TK.)	Payable lump sum (50%) (TK.)
Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl. 5	Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl. 5
20	43	20010	9005	2071150	10	37	38640	17388	3999240
19	43	20570	9257	2129110	9	36	53060	23877	5491710
18	43	21310	9590	2205700	8	36	55470	24962	5741260
17	43	21800	9810	2256300	7	36	63410	28535	6563050
16	41	22490	10121	2327830	6	36	67010	30155	6935650
15	41	23490	10571	2431330	5	36	69850	31433	7229590
14	37	24680	11106	2554380	4	36	71200	32040	7369200
13	37	26590	11966	2752180	3	36	74400	33480	7700400
12	37	27300	12285	2825550	2	36	76490	34421	7916830
11	36	30230	13604	3128920	1	36	78000	35100	8073000

Source. Appendix 1 and 3, and authors' calculation based on GOB's formula.

Table 4 figures that the private pensioners will get 50% pension as lump sum at retirement as per prevailing practice of public pension. While calculating this pension, the study has considered the amount at retirement equal to the amount of last basic mentioned in the NPS 2015 Gazette corresponding to each grade.

However, as per prevailing public pension rule, the pensioners will get the remaining 50% pension as monthly net pension until before death in general. In return, the private pensioners will contribute to the Private Pension Fund (PPF) monthly or yearly basis during their pensionable service periods at an equal instalment affordable to them.

As the public sector employees can participate in a PF scheme, in addition to their pension, by contributing 10% of their monthly basic salary in general, the private pensioners of different services corresponding to Grade 20 to Grade 1 also can contribute 10% of their monthly basic salary to the PPF. Taking the last basic of each Grade into consideration (assuming active salary increment and promotion will eventuate from time to time during the whole pensionable service period), Table 5 shows the determination of contributions to the PPF.

Table 5. Calculation of estimated contribution of a private pensioner by Grade

Grade	Pensionable service period (Years)	Monthly contribution (TK.)	Total contribution (TK.)	Grade	Pensionable service period (Years)	Monthly contribute-on (TK.)	Total contribution (TK.)
Cl.1	Cl.2	Cl.3 (10% of last basic)	Cl.4 = Cl.(3×2)×12 months	Cl.1	Cl.2	Cl.3 (10% of Last Basic)	Cl.4 = Cl.(3×2)×12 months
20	43	2001	1032516	10	37	3864	1715616
19	43	2057	1061412	9	36	5306	2292192
18	43	2131	1099596	8	36	5547	2396304
17	43	2180	1124880	7	36	6341	2739312
16	41	2249	1106508	6	36	6701	2894832
15	41	2349	1155708	5	36	6985	3017520
14	37	2468	1095792	4	36	7120	3075840
13	37	2659	1180596	3	36	7440	3214080
12	37	2730	1212120	2	36	7649	3304368
11	36	3023	1305936	1	36	7800	3369600

Source. Table 4, and authors' calculation.

Table 5 reveals the estimated amount a private pensioner of different capacities of earnings will contribute monthly to the PPF that will accumulate until his/her pensionable service period. In case of yearly contribution, the GOB can allow flexibility in making the contribution to the private pensioner in terms of the denomination of the contributed amount, i.e., a private pensioner can deposit the required contribution of a year by dividing it into any fractions convenient to him/her at different time during that year.

As to provide net monthly pension to the private pensioners, the GOB will require to raise a fund and the accumulation of this fund will take a period equal to the current life expectancy of the people of Bangladesh. Government can adjust this payment for those who will expire before or after the life expectancy period. However, Table 6 presents the computation for required fund.

Table 6. Computation of estimated fund the GOB will make to provide monthly net pension to a private pensioner by Grade

Grade	Monthly net pension (TK.)	Estimated fund (TK.)	Grade	Monthly net pension (TK.)	Estimated fund (TK.)
Cl.1	Cl.2	Cl.3 = Cl.2×168 years	Cl.1	Cl.2	Cl.3 = Cl.2×168 years
20	9005	1512840	10	17388	2921184
19	9257	1555176	9	23877	4011336
18	9590	1611120	8	24962	4193616
17	9810	1648080	7	28535	4793880
16	10121	1700328	6	30155	5066040
15	10571	1775928	5	31433	5280744
14	11106	1865808	4	32040	5382720
13	11966	2010288	3	33480	5624640
12	12285	2063880	2	34421	5782728
11	13604	2285472	1	35100	5896800

Source. Table 4 and authors' calculation.

Table 6 shows that the GOB needs to raise the estimated fund to provide postretirement monthly net pension to a private pensioner of different services in line with the public service Grades up to the period equivalent to the current life expectancy.

Now, if the contribution to proposed scheme is tax free, government may lose tax revenue. So, Table 7 approximates the calculation of government's total spending including the estimated tax revenue losses for a private pensioner until before his/her death (here up to average life expectancy).

Table 7. Calculation of total estimated spending of the government for a private pensioner by Grade

Grade	Lump sum pension (TK.)	Tax revenue losses (TK.)	Fund for monthly pension (TK.)	Total estimated spending (TK.)	Grade	Lump sum pension (TK.)	Tax revenue losses (TK.)	Fund for monthly pension (TK.)	Total estimated spending (TK.)
Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl. 5 = Cl. (2+3+4)	Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl. 5 = Cl. (2+3+4)
20	2071150	-	1512840	3583990	10	3999240	85803	2921184	7006227
19	2129110	-	1555176	3684286	9	5491710	114624	4011336	9617670
18	2205700	-	1611120	3816820	8	5741260	119844	4193616	10054720
17	2256300	-	1648080	3904380	7	6563050	136980	4793880	11493910
16	2327830	-	1700328	4028158	6	6935650	144756	5066040	12146446
15	2431330	-	1775928	4207258	5	7229590	150876	5280744	12661210
14	2554380	-	1865808	4420188	4	7369200	153792	5382720	12905712
13	2752180	-	2010288	4762468	3	7700400	160704	5624640	13485744
12	2825550	-	2063880	4889430	2	7916830	165240	5782728	13864798
11	3128920	-	2285472	5414392	1	8073000	168480	5896800	14138280

Source. Table 4 and 6, and authors' calculation.

Table 7 reveals that the approximate amount of total spending the GOB will require to provide with pension benefits to a private pensioner and to concede tax revenue losses for this purpose. Under this backdrop, it is now pertinent to examine that for this entire cost burden whether the GOB actually needs to create fund from its own sources through budget allocation.

The government can take a strategic plan to minimize or mitigate entirely this future cost burden by making profitable long-term investment of the pensioners' contribution to the PPF. Ignoring highly risky options like purchasing companies' shares or bonds from the share market where a regular and dynamic fund management is required, the government can choose to invest in long-term fixed income-based securities like savings certificates, postal fixed deposit scheme, deposit pension schemes or fixed deposit schemes of banks in Bangladesh those have strong financial base.

As per prevailing rules and practices, the interest rate on fixed deposit for three years and above in almost all banks in Bangladesh ranges from 6% to 10% (Bangladesh Bank (BB), n.d.), on postal fixed deposit is 11.28% for maximum three years and on different savings certificates of the GOB varies from 11.08% to 11.76% for maximum five years GOB, n.d.). On this occasion, the government can invest the private pensioners' contributions to a suitable portfolio of securities continually for the whole pensionable service period at an effective rate of 8% simple interest (average of 6% to 10%, as offered by majority of banks in Bangladesh) for a maximum five-year interval and compounded five yearly (as commonly applicable). Here Table 8 presents the calculation of what the government can approximately get as return along with the principal from these investments.

Grade	Investment period (year)	Total investment (TK.)	Investment plus return @ 8% at the end (TK.)	Return on investment (TK.)	Grade	Investment period (year)	Total investment (TK.)	Investment plus return @ 8% at the end (TK.)	Return on investment (TK.)
Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl.5 = Cl. (4 – 3)	Cl. 1	Cl. 2	Cl. 3	Cl. 4	Cl.5 = Cl. (4 – 3)
20	43	1032516	4118143	3085627	10	37	1715616	7952277	6236661
19	43	1061412	4233394	3171982	9	36	2292192	10141395	7849203
18	43	1099596	4385689	3286093	8	36	2396304	10602020	8205716
17	43	1124880	4486533	3361653	7	36	2739312	12119598	9380286
16	41	1106508	4628538	3522030	6	36	2894832	12807669	9912837
15	41	1155708	4834342	3678634	5	36	3017520	13350480	10332960
14	37	1095792	5079249	3983457	4	36	3075840	13608506	10532666
13	37	1180596	5472335	4291739	3	36	3214080	14220125	11006045
12	37	1212120	5618456	4406336	2	36	3304368	14619588	11315220
11	36	1305936	5777881	4471945	1	36	3369600	14908195	11538595

Source. Table 5, and authors' calculation.

Table 8 shows that only the return on investment is sufficient to meet private pensioners' lump sum pension liabilities along with tax revenue losses (Table 7) at retirement. The GOB can further invest this surplus and the accumulated principal contributions continually in suitable securities to support the budget for different priority-based activities, such as OAA, employment generation program for the poor, climate change confrontment, community health revitalization, vulnerable group development, etc. under the SSP. However, Table 9 reckons how the government would become financially strong upon meeting all obligations, viz. lump sum pension payable at retirement, tax revenue losses, and postretirement monthly net pension of a private pensioner by operating the proposed scheme.

Table 9. Calculation of surplus over meeting all spending relating to private pension by Grade

Grade	Return on investment at retirement (TK.)	Lump sum pension payable plus tax revenue losses (TK.)	Surplus return at retirement (TK.)	Principal investment accumulated at retirement (TK.)	Principal plus surplus return at retirement (TK.)	Postretirement monthly net pension over the life expectancy period (TK.)	Surplus over total spending relating to private pension (TK.)
Cl. 1	Cl. 2	Cl. 3	Cl. 4 = Cl. (2-3)	Cl. 5	Cl. 6 = Cl. (4+5)	Cl. 7	Cl. 8 = Cl. (6-7)
20	3085627	2071150	1014477	1032516	2046993	1512840	534153
19	3171982	2129110	1042872	1061412	2104284	1555176	549108
18	3286093	2205700	1080393	1099596	2179989	1611120	568869
17	3361653	2256300	1105353	1124880	2230233	1648080	582153
16	3522030	2327830	1194200	1106508	2300708	1700328	600380
15	3678634	2431330	1247304	1155708	2403012	1775928	627084
14	3983457	2554380	1429077	1095792	2524869	1865808	659061
13	4291739	2752180	1539559	1180596	2720155	2010288	709867
12	4406336	2825550	1580786	1212120	2792906	2063880	729026
11	4471945	3128920	1343025	1305936	2648961	2285472	363489
10	6236661	4085043	2151618	1715616	3867234	2921184	946050
9	7849203	5606334	2242869	2292192	4535061	4011336	523725
8	8205716	5861104	2344612	2396304	4740916	4193616	547300
7	9380286	6700030	2680256	2739312	5419568	4793880	625688
6	9912837	7080406	2832431	2894832	5727263	5066040	661223
5	10332960	7380466	2952494	3017520	5970014	5280744	689270
4	10532666	7522992	3009674	3075840	6085514	5382720	702794
3	11006045	7861104	3144941	3214080	6359021	5624640	734381
2	11315220	8082070	3233150	3304368	6537518	5782728	754790
1	11538595	8241480	3297115	3369600	6666715	5896800	769915

Source. Table 7 and 8, and authors' calculation.

Therefore, Table 9 clears up that by an efficient and effective fund management, it is possible to make up all spending under private pension scheme using the benefits from the PPF. The GOB will not require to allocate any new or additional fund in the budget either by extra tax charges or by borrowing or by other means for this purpose, rather it can continue reinvesting the surplus balance after meeting all pension obligations, or otherwise, can deposit the surplus fund to the national exchequer. These returns also can cover all costs of operating the fund and its investment and reinvestment. However, the following section reveals the probable challenges and suggestive measures to overcome the challenges of TFPPS.

Challenges and Suggestive Measures to Overcome the Challenges of the Proposed TFPPS

As the private sector employees of Bangladesh has been cherishing long for private pension and the GOB also is very keen to launch this pension in the country, the proposed TFPPS can lead to their vision.

Although there is no major financing problem the government would confront with the proposed TFPPS, a good number of ifs may arise while implementing it. A smooth and indiscriminate flow of earnings at an equal interval, preferably by month, of the target groups of people is the prerequisite to implement the proposed scheme. Moreover, leaving the service or being terminated from the service, becoming incapable to continue the scheme due to physical or mental disorder or death, losing intention to carry on the scheme under country's normal or abnormal economic conditions, trustworthiness of the scheme etc. may come up at any time in between accomplishment of the scheme. Keeping all these in view, Table 10 indicates the likely challenges and suggestive measures to overcome the challenges in implementing the proposed TFPPS.

Table 10. Likely challenges and overcoming measures to the proposed TFPPS

Challenges	Suggestive Measures
Administration	Government can include all local scheduled banks, insurance companies, and post offices under a separate legislative body.
Selection of Pay Scale/Grade of an individual pensioner/member	Pensioner/member will decide about the Scale/Grade that he/she will choose as per his/her affordability.
Execution of the scheme for such a long time over 35 to 43 years particularly for those who do not know whether they will persistently receive their earnings.	The GOB can apply minimum pensionable service period (25 years) to offer the pension benefit as per the rules applicable for public sector employees. If it happens before the minimum pensionable service period, upon cancellation of the membership, the incumbent member will receive his contributions accumulated up to the last deposit along with a simple market rate of interest applicable for savings bank account.
Keeping the members of the scheme updated with ready status of their contributions	Government can introduce the automation system for all kinds of dealings with the members along with the current status of their contributions to the PPF on a 24/7 basis and an available audited report of the financial records at an equal interval.
Trustworthiness of the scheme	The scheme should be adequately advertised in print, electronic, and social medias highlighting the positive points like flexibility of savings with satisfactory returns, tax free contribution and income withdrawals, life-long pension benefits, strong fund management with government supervision, etc.

Member's incapability to run the scheme due to physical or mental disorder or even death.	The government should take necessary measures as applicable for public sector employees.
Inability to repay the loan taken from the PPF, if allowed, under normal economic condition	The Government can allow the repayment annuity basis, or up to his/her last instalment payment of regular contribution. Even though he/she shows his/her inability to repay then the loan amount along with applicable interest can be adjusted with the receipt/pension as per the rule.
Inability to continue the regular instalment or to repay the loan taken from the scheme under abnormal economic condition	After allowing a certain period of time (maximum six months) with due notification to regularize the instalment or to repay the loan, the government can take necessary steps to close the scheme by the concerned member.
Using illegal income to contribute to the PPF	To Make sure that true income earners are the members of the TFPPS, the government can ask the members of the scheme, especially whose income are within the income of public sector employees under Grade 10 to Grade 1 (with monthly contribution of more than TK. 3,023 (Table 5)), to submit the income tax return in support of their sources of income.

Source. Authors' formation.

Against this backdrop, this study suggests to establish a legal framework for this TFPPS in order to keep focus group's trust unbroken and to keep the scheme serviceable

Implications and Concluding Remarks with Direction for Further Research

Private pension in Bangladesh is now one of the essential social safety measures as the country is heading to become a middle-income country by 2030 and to develop the socio-economic status to a zero-poverty line by 2040. But as of 2019 only about 10% of the old-age population receives some kind of gratuity or PF as private sector employees and 39.9% of them receives few cash benefits (TK. 500 per month) from the government as OAA. The remaining 42.5% of this group do not get any kind of pension although the GOB has been trying its best to introduce a universal pension system with multifaceted categories including private pension. But the implementation of this system is still a far reach. This study takes this opportunity to propose a model for private pension scheme named TFPPS for formal and informal private sector employees/workers/owners so that an old-age financial security is no more a crux for elderly people in Bangladesh. In this connection, the study attempts to examine a developed country experience like Canada which has acquired the rank of credit amongst 10 best countries in the world.

Among various criteria of Canadian multi-pillar pension systems, the proposed TFPPS considers the ones are i) minimum age of a person from private sector eligible for the scheme is 18 years, ii) the proposed scheme will take only pensioners' contributions for its formation, iii) being voluntary, the contribution would have prescribed limits, iv) non-enforcement of tax-filing requirements for tax free contributions, v) non-enforcement of tax-filing requirements for tax free income after retirement, vi) the contribution is only the source of benefits, and vii) the government will entirely regulate the scheme. In addition to these criteria, the study also tries to examine the financial feasibility of the scheme by taking some assumptions in line with

the public pension system currently prevailing in the country and it founds some positive indications in favor of the viability of the proposed scheme. The study shows that if the GOB implements the scheme, it not only can manage the fund for providing pension to the members of the scheme but also recover the tax revenue losses, if incurred, and deposit some surpluses over the entire spending to the government treasury to use those for funding its other social safety programs.

In conclusion, it is pertinent to note that although this paper is mostly based on hypothetical data and ignores time value of money in evaluating the data, the authors venture the hope that it will bring some useful messages to the concerned policy makers to cover much elderly people in the country under pension network. There is also a scope of further research in this area based on real income of target groups. Further, an empirical study of the target group opinion survey can ensure more authentic and supportive standing toward merit, demerit and challenges and the suggestions to overcome the challenges of proposed TFPPS.

References

Actuarial Report (2018). 30th Actuarial Report on the Canada Pension Plan. Retrieved on 30 December 2020 from https://www.osfi-bsif.gc.ca/Eng/Docs/CPP30.pdf

Bangladesh Bank (BB) (n.d.). Announced Interest Rate Chart of the Scheduled Banks (Deposit Rate). Retrieved on 27 July 2020 from https://www.bb.org.bd/fnansys/interestdeposit.php

Burgess, Matthew (2019). Canada Ranked among Top 10 Pension Systems in World — But We only Got a B. Retrieved on 27 April 2020 from https://business.financialpost.com/news/economy/these-are-the-worlds-best-and-worst-pension-systems

Byron, Rejaul Karim (2015). Bangladesh Govt. Plans Mandatory Pension Scheme for Private Sector, *The Daily Star*, 3 April. Retrieved on 13 August 2020 from https://www.thedailystar.net/frontpage/pension-pvt-service-holders-75304

Centre for Policy Dialogue (CPD) (2020). An Analysis of the National Budget for FY 2020-21, *Independent Review of Bangladeshe's Development (IRBD)*, Dhaka, 20 June, p.13. Retrieved on 9 August 2020 from https://cpd.org.bd/wp-content/uploads/2020/06/Presentation-on-CPD-Budget-Analysis-FY2021.pdf

Chowdhury, Dhiman (2017). Contributory Provident Fund in Private Sector is Long Overdue, *The Daily Observer*, 21 March. Retrieved on 13 August 2020 from https://www.observerbd.com/details.php?id=64507

Collins, Harper (n.d.). COBUILD Advanced English Dictionary, *HarperCollins*. Retrieved on 18 December 2020 from https://www.collinsdictionary.com/dictionary/english/pay-as-you-go

Government of Bangladesh (GOB) (2019-20). National Budget 2019-20, *Ministry of Social Welfare*, p.339. Retrieved on 23 October 2020 from https://mof.gov.bd/sites/default/files/files/mof.portal.gov.bd/budget_mof/12ef8f9a_7d14_45c9_9063_62cec54aab43/129_Social_English.pdf

(2018). Report on Labor Force Survey (LFS) 2016-17, *Bangladesh Bureau of Statistics (BBS)*, January, p.48-54. Retrieved on 14 November 2020 from http://203.112.218.65:8008/WebTestApplication/userfiles/Image/LatestReports/LFS_2016-17.pdf

(2015). Bangladesh Gazette, Additional, 15 December, p.10741-10742. Retrieved on 21 February 2021 from http://www.dpp.gov.bd/upload_file/gazettes/14850_76222.pdf

(n.d.). Savings Benefit Rate and Purchase Procedure, Postal Directorates. Retrieved on 10 August 2020 from http://www.bdpost.gov.bd/site/page/ac7d5cfe-11e9-441a-a1b4-61cde1245484/-

Government of Canada (2019a). Multi-Pillar Pension Systems: Lessons from Canada and Internationally, *Office of the Superintendent of Financial Institutions Canada (OSFIC)*. Retrieved on 16 December 2020 from https://www.osfi-bsif.gc.ca/Eng/Docs/ab20190206.pdf

(2019b). Tax-Free Savings Account (TFSA), *Canada Revenue Agency*. Retrieved on 2 January 2021 from file:///C:/Users/Lb140714/Downloads/rc4466-19e.pdf

Hinz, Richard, Holzmann, Robert, Tuesta, David and Takayama, Noriyuki (2013). Matching Contributions for Pensions: A Review of International Experience, *The World Bank (WB)*, p.28. Retrieved on 29 December 2020 from https://openknowledge.worldbank.org/bitstream/handle/10986/11968/735130PUB0EPI001070120date010025012.pdf?sequence=1&isAllowed=y

Macrotrends (2021). Bangladesh Life Expectancy 1950-2020. Retrieved on 8 August 2020 from https://www.macrotrends.net/countries/BGD/bangladesh/life-

expectancy#:~:text=The%20current%20life%20expectancy%20for,a%200.38%25%20increase%20from%202017

Ménard. Jean-Claude (2017). Canadian Retirement Income System: Successes and Challenges, *Office of the Superintendent of Financial Institutions, Canada*. Retrieved on 26 December 2020 from http://www.osfi-bsif.gc.ca/Eng/Docs/2017-06-22-jcm_pres.pdf

Mollah, Abdus Sattar (2019). Government Service: Entry and Retirement Age, *The Prothom Alo*, Print Version, 26 January. Retrieved on 29 July 2020 from https://www.prothomalo.com/opinion/article/1576212/%E0%A6%AA%E0%A7%8D%E0%A6%B0%E0%A6%AC%E0%A7%87%E0%A6%B6-%E0%A6%93-%E0%A6%85%E0%A6%AC%E0%A6%B8%E0%A6%B0%E0%A7%87%E0%A6%B0-%E0%A6%AC%E0%A7%9F%E0%A6%B8

Organization for Economic Co-operation and Development (OECD) (2018). Financial Incentives
and Retirement Savings. Retrieved on 25 December 2020 from https://www.oecd.org/daf/fin/private-pensions/Financial-Incentives-and-Retirement-Savings-2018-highlights.pdf

Rashid, Mamun (2019). Can we Develop a National Pension System? *Dhaka Tribune*, 13 June. Retrieved on 21 March 2020 from https://www.dhakatribune.com/opinion/longform/2019/06/13/can-we-develop-a-national-pension-system

Shibli, Abdullah (2019). Why Redefining the 'Poverty Line' is Necessary, *The Daily Star*, 26 February. Retrieved on 24 January 2021 from https://www.thedailystar.net/opinion/open-dialogue/news/why-redefining-the-poverty-line-necessary-1707106

Unnamed (2019). CPD Recommends Introducing Universal Pension Scheme for Bangladesh, *The Business Standard*, 6 November. Retrieved on 22 March 2020 from https://tbsnews.net/economy/40-65-plus-do-not-get-pension-cpd .

(2017). RRSPs Less Popular Since Creation of TFSA, *Canadian Broadcasting Corporation (CBC) News*. Retrieved on 13 January 2021 from https://www.cbc.ca/news/business/rrsp-tfsa-tax-1.3979822]

(2016). RRSPs vs. TFSAs: Comparing Canada's 2 Main Savings Plans, *CBC News*.

Retrieved on 13 January 2021 from https://www.cbc.ca/news/business/rrsp/tfsa-rrsp-tax-retirement-savings-1.3371418

Westmacott, Graham (2020). Retirement in Canada: Facts and Figures, *PWL Capital Inc.*, Ontario. Retrieved on 2 January 2021 from https://www.pwlcapital.com/wp-content/uploads/2020/01/2020-01-23_PWL_WP_Westmacott_Retirement-Canada-Facts-Figures.pdf

Whitehouse, Edward (2013). Policies to Encourage Private Pension Savings: Evidence from OECD Countries, *WB*, p.33-40. Retrieved on 29 December 2020 from https://openknowledge.worldbank.org/bitstream/handle/10986/11968/735130PUB0EPI001070120date010025012.pdf?sequence=1&isAllowed=y.

World Bank (WB) (2020). The World Bank in Bangladesh. Retrieved on 9 January 2021 from https://www.worldbank.org/en/country/bangladesh/overview

(2018). Bangladesh: Improving the Administration of Civil Service Pensions. *WB*. Retrieved on 16 January 2021 from https://openknowledge.worldbank.org/bitstream/handle/10986/30628/Bangladesh-Improving-the-Administration-of-Civil-Servcie-Pensions-Reform.pdf?sequence=1&isAllowed=y

Appendices

Appendix 1. Pay structure under 8th National Pay Scale 2015 in Bangladesh

Grade	Initial Basic (TK.)	Last Basic (TK.)	Grade	Initial Basic (TK.)	Last Basic (TK.)
1	78,000 (fixed)	-	11	12,000	30,230
2	66,000	76,490	12	11,300	27,300
3	56,500	74,400	13	11,000	26,590
4	50,000	71,200	14	10,200	24,680
5	43,000	69,850	15	9,700	23,490
6	35,500	67,010	16	9,300	22,490
7	29,000	63,410	17	9,000	21,800
8	23,000	55,470	18	8,800	21,310
9	22,000	53,060	19	8,500	20,570
10	16,000	38,640	20	8,250	20,010

Source. GOB (2015).

Appendix 2. Prevailing retirement age of public and private sector employees in Bangladesh

Categories of employees	Retirement age	
	Prevailing	Proposed
Public Sector:		
Employees (in general)	59 years	60 years
Employees in corporations	60 years	
Public university teachers	65 years	-
Justices	67 years	-
Employees those who are freedom fighters	69 years	-
Private Sector:		
Employees	60 years	-

Source. Mollah (2019).

This study considers retirement age of 60 years as common for all for the sake of calculation. However, public sector employees can retire after completion of minimum 25 years of service. In that case, the calculation of pension and other related accounts henceforth may change.

Appendix 3. Pensionable service period by Grade

Grade	Average age to start the service	Pensionable service period	Grade	Average age to start the service	Pensionable service period
Cl. 1	Cl. 2	Cl. 3 = 60 – Cl. 2	Cl. 1	Cl. 2	Cl. 3 = 60 – Cl. 2
20	18 years	43 years	10	24 years	37 years
19	18	43	9	25	36
18	18	43	8	25	36
17	18	43	7	25	36
16	20	41	6	25	36
15	20	41	5	25	36
14	24	37	4	25	36
13	24	37	3	25	36
12	24	37	2	25	36
11	25	36	1	25	36

Source. Appendix 2.

The consideration of different factors, such as examination result publication, official and bureaucratic dilatory actions, unemployment, etc. estimates that a student requires 2 years more on average from the year of obtaining respective examination certificate to manage a job in

Bangladesh. As Grade 9 is the threshold for the jobs under Grade 8 to Grade 1 (higher order of merit), their required time are the same.

Appendix 4. Income tax structure of individual for assessment year 2020-21

Taxable income slab	Income tax rate
Taka 0 to Taka 300,000 (For Female Taka 350,000)	0%
Take 300,001 to Taka 400,000	5%
Take 400,001 to Taka 700,000	10%
Take 700,001 to Taka 1,100,000	15%
Take 1,100,001 to Taka 1,600,000	20%
Take 1,600,001 and above	25%
Annual tax-free income threshold is Tk. 3.0 lakh for male and Tk. 3.5 lakh for female and taxpayers.	

Source. CPD (2020).

43rd ALL INDIA ACCOUNTING CONFERENCE AND INTERNATIONAL SEMINAR

Organised by

Department of Commerce,

Osamania University, Hyderabad

&

Indian Accounting Association,

Hyderabad Branch

Technical Session One:
Tax Accounting

Technical Session Two:
Digital Accounting

Technical Session Three:
Corporate Disclosure and Compliance

International Seminar I
International Seminar on Accounting Education

International Seminar II
International Seminar on Accounting Research

Prof. V. Appa Rao
Conference Secretary
Professor at Department of Commerce,
Osmania University
Hyderabad
Email: varkalaa@yahoo.com
Mob: 9849782193

◆◆◆

INDIAN ACCOUNTING ASSOCIATION – OFFICE BEARERS

President
Prof. G. Soral
Department of Accountancy & Statistics
Mohanlal Sukhadia University
Udaipur–313 001 (Rajasthan)

Vice President (Sr.)
Prof. M. L. Vadera
School of Business & Commerce
Manipal University,
Jaipur – 303 007

Vice President (Jr.)
Prof. Jas Raj Bohra
Faculty of Commerce and Management
Studies, Jai Narain Vyas University,
Jodhpur – 342 011(Rajasthan)

General Secretary
Prof. Sanjay Bhayani
Department of Business Management
Saurashtra University
Rajkot – 360 005 (Gujarat)

Treasurer
Prof. Arindam Gupta
Dept. of Commerce,
Vidyasagar University
Midnapore – 721102 (WB)

Chief Editor
Prof. Gabriel Simon Thattil
Department of Commerce School of Business
Management and Legal Studies, University of
Kerala, Thiruvananthapuram – 695581 (Kerala)

Joint Secretary
Dr. Prakash Sharma
Department of Accountancy & Business Statistics,
University of Rajasthan, Jaipur – 302004

Joint Treasurer
Dr. Ashok Agarwal
Department of Accountancy & Business Statistics,
University of Rajasthan, Jaipur – 302004

INDIAN ACCOUNTING ASSOCIATION (IAA)

EXECUTIVE COMMITTEE

JODHPUR, JANUARY- 2020

PRESIDENT	VICE PRESIDENT (Sr)	VICE-PRESIDENT (Jr)
Prof. G. Soral Department of Accountancy & Statistics Mohanlal Sukhadia University **Udaipur – 313 001(Rajasthan)**	**Prof. M. L. Vadera** School of Business & Commerce Manipal University, **Jaipur – 303 007**	**Prof. Jas Raj Bohra** Faculty of Commerce and Management Studies, Jai Narain Vyas University, **Jodhpur – 342 011(Rajasthan)**
GENERAL SECRETARY	**TREASURER**	**CHIEF EDITOR**
Prof. Sanjay Bhayani Department of Business Management Saurashtra University **Rajkot – 360 005 (Gujarat)**	**Prof. Arindam Gupta** Dept. of Commerce, Vidyasagar University **Midnapore – 721102 (WB**	**Prof. Gabriel Simon Thattil** Department of Commerce School of Business Management and Legal Studies, University of Kerala **Thiruvananthapuram-695581 (Kerala)**
JOINT SECRETARY	**JOINT TREASURER**	
Dr. Prakash Sharma Department of Accountancy & Business Statistics, University of Rajasthan, **Jaipur – 302004 (Raj.)**	**Dr. Ashok Agarwal** Department of Accountancy & Business Statistics, University of Rajasthan, **Jaipur – 302004 (Raj.)**	
Member (Ex-Officio)	**Member (Ex-Officio)- Editor**	**Member (Ex-Officio) - Editor**
Prof. B. Banerjee President IAA Research Foundation, **Kolkatta (WB)**	**Prof. Sudipti Banerjea** Retired Professor, Department of Commerce, University of Calcutta, **Kolkata (W.B.)**	**Prof. K. Sasikumar** Former Professor, Head & Dean, Department of Commerce, University of Kerala, **Thiruvananthapuram- 695581 (Kerala)**
Udaipur Elected Members		
Central Zone	**West Zone**	**East Zone**
Dr. Gautam Prasad, **Sagar**	Dr. Ravi Kant Modi, **Jaipur**	Dr. Ananda Mohan Pal, **Kolkata**
Dr. Pushpinder Mishra, **Lucknow**	Dr. Sailesh M Ransaria, **Rajkot**	
North Zone	**South Zone**	
Dr. Kamal Kant, **Chandigarh**	Prof.. Ram Chandra Gowda, **Bengaluru**	
	Prof.. M Sulochana, **Hyderabad**	
Jaipur Elected Members		
Central Zone	**West Zone**	**East Zone**
Dr.Kaustubh Jain	Dr.Varsha Sukhdev, **Akola**	Kajabaran Jana
Dr.Shailendra Singh	Dr.Vashishtadhar J. Dwivedi	Pradip Kumar Samanta
		Rabindra Kumar Swain,**Bhubaneswar**
North Zone	**South Zone**	
Dr.Aamir Khan, **NCR**	Dr.Gangadathan Nair D.	
Mr. Abdul Aziz Ansari, **NCR**	Prof. V. Ushakiran	
Dr Anil Kumar, **Delhi**		
Dr.Surender Singh, **Delhi**		
Jodhpur Elected Members		
Central Zone	**West Zone**	**East Zone**
Dr. Ashish Mathur, **Amarkantak**	Dr. Shiv Prasad, **Ajmer**	Dr. Dharen Kumar V Pandey, **Patna**
Dr. Anshu Gupta, **Gorakhpur**	Dr. Shivraj Singh, **Jaipur**	Dr. Satyajit Dhar, **Kolkatta**
North Zone	**South Zone**	
Result Not Declared due to technical issue	Dr. G. Naresh Reddy, **Hyderabad**	
	Dr. Ajesh S. R., **Thiruvananthapuram**	
Jodhpur Co-opted		
Central Zone	**West Zone**	**South Zone**
Dr. K.S. Thakur, **Gwalior**	Dr. K.A. Goyal , **Jodhpur**	Dr. R Sarvamangala, **Karnataka**
Dr. Pramod Kumar, **Agra**	Dr Manguram, **Jodhpur**	Dr. Swaminathan, **Karnataka**
Dr. Narendra Pratap Singh, **Lucknow**	Dr Meenu Maheswari, **Kota**	Dr.Vineeth Chandra K.S. **Alappuzha**
North Zone	**East Zone**	**43rd Conference Secretary**
Dr. J. K. Sharma , **Palwal**	Prof. Ashish Kumar Sana, **Kolkata**	Dr. V. Appa Rao, **Hyderabad**
Dr. Sunil Gupta, **Delhi**	Dr. Manas Naskar, South **Bengal**	
Dr. J L Gupta , **NCR**	Dr. Sabat Kumar Digal , **Bhuwaneswar**	
Special Invitee		
Dr. H. M. Korat, Saurashtra		Dr. Anthony Rodrigques, Goa
Dr. B. Maruthi Rao, Hyderabad		Dr. Ashish Kant Chaudhri, Varanasi
Dr. (CA) K. Ch. AVSN Murthy, Hyderabad (Accounts)		Dr. Shurveer Bhanavat, Udaipur (NATSE)

INDIAN ACCOUNTING ASSOCIATION

PAST GENERAL SECRETARIES

Prof. HS Kulshreshtha (Late) (1969-1978)	**Prof. Mukund Lal (Late)** (1978-1993)	**Dr. S.K. Singh** (1993-1994)
Prof. D Prabhakara Rao (1994-2013)	**Prof. G Soral** (2014-2016)	**Prof. Gabriel Simon Thattil** (2016-2019)

BRANCH SECRETARIES

AGRA **Prof. Pramod Kumar** (M) 09412261810	AHMEDABAD **Prof. Ketan Upadhyay** (M) 9426531851	AJMER **Prof. Shiv Prasad** (M) 9414007858
AKOLA **Dr. AM Raut** (M) 09403872151	AMARKANTAK **Dr. SS Bhadoria** (M) 09425737109	AVADH **Dr. Krishna Kumar** (M) 09415471235
ALAPPUZHA **Dr. Vineeth Chandra K S** (M) 09846526622	BAREILLY **Dr. AK Saxena** (M) 09411470074	BHOPAL **Dr. Sharda Gangwar** (M) 09893384038
BHUVANESHWAR **Prof.. Rabindra Kumar Swain** (M) 09437375400	BILASPUR **Dr. Amit Manglani** (M) 7587483579	CHANDIGARH **Dr. Tejinder Pal Singh** (M) 9872708901
DELHI **Dr. Anil Kumar** (M) 09810857745	DIBRUGARH **Dr. Ashit Saha** (M) 9435002727 - 7086073209	GOA **Mr. Anson Leopold Albuquerque** (M) 9158283580
GORAKHAPUR **Prof. AK Tiwari** M-09415339988	GUWAHATI **Prof. Sujit Sikidar** (M) 09864138864	GWALIOR **Dr. R. C. Gupta** (M) 09425339306
HYDERABAD **CA K Ch. AVSN Murthy** (M) 09848050475	JABALPUR **Dr. NC Tripathi** (M) 09425383514	JAIPUR **Prof. S.S. Modi** (M) 09829321067
JAMMU & KASHMIR **Prof. Syed Javed Kamili** (M) 09419095039	JODHPUR **Dr. J. R. Bohra** (M) 09414129076	JORHAT **Mr. Porag Sarmah** (M) 9435052624
KARNATAKA **Dr. BA Karunakara Reddy** (M) 09945421819	KERALA **Prof. Gabril Simon Thattil** (M) 09496275305	KOLKATA **Prof. Ananda Mohan Pal** (M) 09674383258
KOTA **Dr. Meenu Maheshwari** (M) 09461073979	LUCKNOW **Prof. Arvind Kumar** (M) 09415028817	MEGHALAYA **Dr. KC Kabra** (M) 09436309498 / 09436336235
MIRZAPUR **Dr. Vikash Kumar** (M) 09721907369, 8318003917	MUMBAI **Dr. P. G. Gopalakrishnan** (M) 09967211744	NCR **Dr. J.L. Gupta** Mob. 9868124224
NORTH MAHARASHTRA **Dr. AM Agrawal** (M) 9422771777	PATIALA **Dr. GS Batra** (M) 09855028013	PATNA **Mr. Dharen Kumar Pandey** (M) 09576628882 / 08900652564
PONDICHERRY **Dr. R Azhagaiah** (M) 09952474095	PUNE **Dr. G.Y. Shitole** M) 9322247148	RATLAM **Dr. Abhay Pathak** (M) 09827301320
SAGAR **Prof. JK Jain** (M) 09425436471	SALEM **Dr. T.P.J. Bharathi** (M) 9443499682	SANGANER **Dr. M. L. Vadera** (M) 09314240541
SAURASHTRA **Dr. Sanjay Bhayani** (M) 09687355199	SHIMLA **Dr. Ashish Nag** (M) 9805025126 9418188362	SOUTH BENGAL **Dr. Manas Naskar** (M) 9836660670
SOUTH GUJARAT **Dr. Heena S. Oza (M)** **9737114382**	THANE **Dr. Nishikant Jha** (M) 090048 83439	THANJAVUR **Dr. P. Jegan** (M) 9488888400
TIRUPATI **Dr. Suresh Babu** (M) 09393607035	TIRUCHIRAPPALLI **Dr. C. Paramasivan** (M) 0 9442384207	UDAIPUR **Dr. Shurveer S. Bhanawat** (M) 09414156021
VARANASI **Dr. Akhil Mishra** (M) 0 94507 07599	VISHAKHAPATNAM **Prof. V. Krishna Mohan** (M) 07780531136	

◆◆◆

INDIAN ACCOUNTING ASSOCIATION

PAST PRESIDENTS

S. No.	Name and Affiliation	Place
1.	**Shri Raghunath Rai** ***(Late),*** Chartered Accountant	**Varanasi**
2.	**Dr. SN Sen** ***(Late),*** University of Calcutta	**Kolkata**
3.	**Prof. SK Raj Bhandari** ***(Late),*** BHU	**Varanasi**
4.	**Dr. GD Roy** ***(Late),*** University of Calcutta	**Kolkata**
5.	**Prof. MC Bhandari** ***(Late),*** Chartered Accountant	**Kolkata**
6.	**Prof. KS Mathur** ***(Late),*** University of Rajasthan	**Jaipur**
7.	**Dr. R Rajagopalan** ***(Late),*** Former Addl. Secretary, Govt. of India	**New Delhi**
8.	**Prof. LS Porwal** ***(Late),*** University of Delhi	**Delhi**
9.	**Prof. HC Mehrotra** ***(Late),*** Agra University	**Agra**
10.	**Shri SM Dugar**, Ex-Member, Company Law Board, Govt. of India	**New Delhi**
11.	**Prof. SP Gupta** ***(Late),*** Rohilkhand University	**Bareilly**
12.	**Prof. Sukumar Bhattacharya** ***(Late),*** Chartered Accountant	**Kolkata**
13.	**Prof. Dool Singh** ***(Late),*** Kurukshetra University	**Kurukshetra**
14.	**Prof. MC Khandelwal**, Formerly of University of Rajasthan	**Jaipur**
15.	**Prof. B Banerjee**, Formerly of University of Calcutta	**Kolkata**
16.	**Prof. Chote Lal**, Formerly of BHU	**Varanasi**
17.	**Prof. NM Khandelwal**, Formerly of MDS University	**Ajmer**
18.	**Prof. UL Gupta** ***(Late),*** Formerly of JNV University	**Jodhpur**
19.	**Prof. KR Sharma**, Formerly of MLS University	**Udaipur**
20.	**Prof. Bhagwathi Prasad** ***(Late),*** Formerly of Karnataka University	**Dharwar**
21.	**Prof. Nageswar Rao**, VC, Indira Gandhi National Open University	**Delhi**
22.	**Prof. B Ramesh**, Goa University	**Goa**
23.	**Prof. K Eresi**, Bangalore University	**Bangalore**
24.	**Prof. Sugan C Jain** ***(Late),*** Formerly of University of Rajasthan	**Jaipur**
25.	**Dr. NM Singhvi**, Formerly of MDS University	**Ajmer**
26.	**Prof. B Mohan**, Sri Venkateswara University	**Tirupati**
27.	**Prof. BS Rajpurohit**, Formerly VC of JNV University	**Jodhpur**

28.	**Prof. MB Shukla**, MG Kashi Vidyapeeth	**Varanasi**
29.	**Prof. Ranjan K Bal**, Utkal University	**Bhubaneswar**
30.	**Prof. KV Achalapathy**, Osmania University	**Hyderabad**
31.	**Prof. Shirin Rathore**, Formerly of University of Delhi	**Delhi**
32.	**Prof. GL Dave**, Formerly of JNV University	**Jodhpur**
33.	**Prof. HS Oza**, Formerly of School of Commerce, Gujarat University	**Ahmedabad**
34.	**Prof. Umesh Holani**, Jiwaji University	**Gwalior**
35.	**Prof. K Sasi Kumar**, University of Kerala	**Thiruvananthapuram**
36.	**Prof. SS Modi**, Formerly of University of Rajasthan	**Jaipur**
37.	**Prof. Pratapsinh Chauhan**, Former VC, Saurashtra University	**Rajkot**
38.	**Prof. D Prabhakar Rao**, Formerly of Andhra University	**Visakhapatnam**
39.	**Prof. Arvind Kumar,** University of Lucknow	**Lucknow**
40.	**Prof. Karamjeet Singh,** Panjab University	**Chandigarh**
41.	**Prof. M. Muniraju,** Bangalore University	**Bangalore**
PAST CHIEF EDITORS OF IJA		
1.	**Prof. B Banerjee**, Formerly of University of Calcutta	**Kolkata**
2.	**Prof. KR Sharma**, Formerly of MLS University	**Udaipur**
3.	**Prof. JD Agarwal,** Indian Institute of Finance	**Noida**
4.	**Prof. Nageswar Rao**, VC, Indira Gandhi National Open University	**Delhi**
5.	**Prof. HS Oza**, Formerly of School of Commerce, Gujarat University	**Ahmedabad**
6.	**Prof. Umesh Holani**, Jiwaji University	**Gwalior**
7.	**Prof. S. S. Modi,** University of Rajasthan	**Jaipur**

◆◆◆

CALL FOR PAPERS

Indian Journal of Accounting is an official publication of Indian Accounting Association. It is a blind reviewed refereed indexed journal published twice a year, in June and December respectively with an ISSN-0972-1479. The scope of journal encompasses all areas of Accounting including Corporate Accounting, Auditing, Taxation, Management Accounting, Cost Accounting, Finance and Information Systems. Manuscripts should be addressed to **Dr.Gabriel Simon Thattil**, Chief Editor, Indian Journal of Accounting, Professor and Director, School of Business Management and Legal Studies, Kariavattom Campus, University of Kerala, Thiruvananthapuram- 695581 Kerala, Email: chiefeditorija@gmail.com

DISCLAIMER

The views expressed by the authors are not those of Indian Accounting Association or IJA. They represent the views of the authors alone. Authors need to ensure authenticity, originality and accuracy of reported facts, IJA will not be responsible for views expressed by the authors in the articles.

GUIDELINES FOR SUBMISSION

- All submitted manuscripts must be original. Paper submission must accompany a certificate/ declaration by the author(s) that the paper is his/ their original work and has neither been published nor submitted for publication elsewhere.
- Manuscript must be in MS Word processor in Calibri font 12 pt font size on A-4 size paper with 1" margin from all sides with 1.5-line spacing, and justified.
- References should appear at the end of the paper printed in single space with 10pt font size. References should be listed as per the APA Citation Format latest Edition.
- The length of the paper should be limited to approximately 12 pages including references (as per the specified layout) excluding tables and figures.
- Tables, figures, etc. should be serially numbered and duly acknowledged. Sources of the data need to be given below each table or figure.
- All but very short mathematical expressions should be displayed on a separate line and centered. Equations must be numbered consecutively on the right margin, using Arabic numerals in parentheses.
- Papers should have an abstract of about 150-250 words.
- The cover page of the paper should contain-Title of the paper, Name of author(s), Professional affiliation of author(s), Address for correspondence with email and telephone numbers.
- The name of the author(s) should not appear on the manuscript to facilitate blind review.
- Editorial decision regarding publication will be communicated within a month from receipt of the manuscript.

Dr. Gabriel Simon Thattil
Chief Editor
Indian Journal of Accounting (IJA)
Professor and Director, School of Business Management and Legal Studies
University of Kerala, Thiruvananthapuram- 695581

RNI NO.: MPENG01246/12/1/2014-TC
ISSN-0972-1479(PRINT) 1 ISSN-2395-6127 (ONLINE)
REGD. NO. : 429/68-69

INDIAN JOURNAL OF ACCOUNTING (IJA)

MEMBERSHIP SUBSCRIPTION RATES FOR THE JOURNAL

	INDIA		OUTSIDE INDIA	
	Annual	Life Membership	Annual	Life Membership
Individuals	₹ 500	₹ 3600	$ 50	$ 200
Institutions	₹ 2000	₹ 8000	$ 150	$ 500

To be a member of IAA pay membership fee online from following link
http://indianaccounting.org/memberregistration.php

Dr. Gabriel Simon Thattil
Chief Editor, Indian Journal of Accounting
Professor and Director, School of Business Management and Legal Studies, University of Kerala
Web: indianaccounting.org Email: chiefeditorija@gmail.com
Mob: 09496275305

This Journal is sent free of charge to all members of Indian Accounting Association

Printed in India by Prof. Dr. Gabriel Simon Thattil at St. Joseph Orphanage Press, Changanacherry
Published by him on behalf of the Indian Accounting Association, Udaipur-313001, Rajasthan