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Editorial

Orissa Commerce Association with a noble intent, is working continuously for the development of research & publication in India, by publishing '*Orissa Journal of Commerce*', a quarterly peer-reviewed research Journal for over four decades. The current Issue of the Journal comprises of eleven research papers and articles from diverse fields of commerce, management and public policy.

Infrastructure development is a key building block towards enhancing domestic economic growth and sustaining the higher growth trajectory. The *first article* elucidates the pros and cons of infrastructure financing/management through asset monetization. Along with the above aspects, this paper provides various perspectives on the asset monetization and its sustainability as a robust infrastructure financing tool. The *second paper* aims to analyse the growth of ESG mutual funds in India and evaluates their performances using standalone return and risk measures as well as widely recognised risk-adjusted measures, namely, Sharpe Index, Treynor Ratio, Sortino Measure, and Jensen's Alpha. The findings of the study proved that ESG investing not only leads to the accomplishment of sustainability goals of investors but also affords them higher returns than the traditional route to investing.

The *third paper* attempts to identify the plastic waste management practices on household plastic disposal and the challenges faced by the Government of Kerala. The structural equation modeling technique is used to measure the effectiveness of program. The result suggests to the Government of Kerala to invest more in effective waste management practices in each district and should try to reduce plastic waste by adapting innovative measures and encourage sustainable plastic waste management technologies at regional level. The *fourth paper* discusses the steps taken by the State Bank of India for the growth of entrepreneurship in the country and highlights the logical grounds on the basis of which provision for appropriate financial accommodation can be made.

The *fifth paper* examines the publication trend in the field of family firm IPOs with the help of bibliometric data extracted from Scopus because family ownership is a prominent feature of firms worldwide. The bibliometric analysis has been done using VOS viewer software and systematic literature review to objectively identify influential authors, seminal works, emerging topics and directions for future research. The systematic literature review reveals that family firms face a dilemma between private control benefits and the need to go public for the growth of the firm. The *sixth paper* intended to evaluate the effectiveness of DRTs (Debt Recovery Tribunals) in terms of recovery percentage and disposal time of debts of banks and financial institutions (FIs). An attempt has also been made to find the deficiencies in DRTs which are affecting their effectiveness and give recommendation for addressing the same. Findings of the study reveal that DRTs have not remained an effective mechanism for recovery of NPAs.

The *next paper* employed the ARIMA model, developed by Box and Jenkins in 1970, which relies on the previous values of the variable itself to forecast stock returns of one of the top IT companies listed on NSE i.e. Tata Consultancy Services Ltd. Results concluded that the ARIMA model had a strong capability of forecasting in the short-run. The *eighth paper* aims to provide widespread view of previous studies associated with debt financing and capital structure. For this purpose, a bibliometric analysis is performed with the aid of bibliometrix library along with biblioShiny tools in RStudio software. USA and China have been found as top contributing countries and also found most of the authors belong to the USA, China, Canada, UK etc.

The *next paper* made an effort to find out the impact of financial leverage on shareholders' return and financial performance of Top 100 National Stock Exchange companies in India. The Outcome illustrates that DER has a positive influence on ROE, CR and NPR which relating to the "Trade-off Theory" and has negative impact on EPS, ICR and TATR supporting "Pecking order Theory". The *tenth paper* aims to measure and compare the occupational stress level of teachers in Central, State, and Private universities of Assam. It also investigates the relative intensity of various stressors among the teachers. While unfolding the relative intensity of various stressors in different types of universities, the empirical findings contribute to stress research by offering insights into the stress issues encountered by university teachers.

The *last paper* provides an antecedents-outcome theoretical framework of work-life balance. The study extracts the data from Scopus and Web of Science databases. The prominent outcomes of WLB namely emotional exhaustion, turnover intention, job stress, burnout, organizational cynicism, organizational effectiveness, and psychological health were identified.

The readers will find this Issue in a different look with further enhanced quality and intellectual diversity.

Hope the readers will enjoy reading this Issue and encourage us to stride forward.

Dr. Malay Kumar Mohanty
(Managing Editor)

Infrastructure Financing through Asset Monetization: Is it Sustainable in the Long-run?

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Keywords

Asset monetisation, National monetisation pipeline, National infrastructure pipeline, Toll operate transfer, India

JEL Classification

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Abstract: Infrastructure development is a key building block towards enhancing domestic economic growth and sustaining the higher growth trajectory. Therefore, creating new and upgrading existing infrastructure will be critical to improve India's global competitiveness. Nevertheless, financing infrastructure projects continues to remain the most difficult aspect to tackle with. The National Infrastructure Pipeline (NIP) envisages investing Rs. 100 trillion on infrastructure projects across various States during the five years up to 2025. The Government of India has recently launched a four-year National Monetisation Pipeline (NMP) worth an estimated Rs. 6 trillion, with an aim to unlock value of hitherto unutilized or underutilized public assets in the brownfield projects by engaging the private sector and to tap the operational efficiencies of private sector along with the management of existing physical infrastructure. In addition, this paper provides various perspectives on the asset monetization and its sustainability as a robust infrastructure financing tool.

1. Introduction

Infrastructure development is a key building block towards enhancing domestic economic growth and sustaining the higher growth trajectory. Therefore, creating new and upgrading existing infrastructure will be critical to improve India's global competitiveness. Infrastructure development being labour-intensive, leads to increase in employment opportunities. Furthermore, strong backward linkages of infrastructure development with other labour-intensive sectors of the economy such as steel and cement, fuels aggregate demand in the domestic economy. All of this together could lead to a virtuous cycle of higher investments, growth and employment generation in the economy (Mohanty *et al.*, 2022). Hence

the intended policy objective of the National Infrastructure Pipeline (NIP) is a step in that direction. The NIP envisages investing Rs. 100 trillion on infrastructure projects across various States during the five years up to 2025. It promotes collaborations and joint ventures with strong global infrastructure developers. Infrastructure projects under NIP will receive an equal share of contribution in terms of capital expenditure from the Centre and States of 39% each while private sector share being 22%. Furthermore, the PM Gati-Shakti initiative will provide the much-needed administrative imperative on the infrastructure sector which is expected to hasten the pace of implementation. Nevertheless, financing infrastructure projects continues to remain the most difficult aspect to deal with.

Against this backdrop, the Government of India has recently launched a four-year National Monetisation Pipeline (NMP) worth an estimated Rs. 6 trillion, with an aim to unlock value in brownfield projects by engaging the private sector. The government has proposed to monetize assets of 5 key sectors. These five key sectors cover 13 core sectors. The details of monetization value of these 13 core sectors are presented in the Table 1 and their relative shares and trends are depicted through Figure 1 and 2.

Table 1: Sector-Wise Monetisation Pipeline over FY 2022-25

<i>S. No.</i>	<i>Sector</i>	<i>Monetization Value (Rs. Crore)</i>
1	Roads	1,60,200
2	Railways	1,52,496
3	Power Transmission	45,200
4	Power Generation	39,832
5	Telecom	35,100
6	Warehousing	28,900
7	Mining	28,747
8	Gas Pipeline	24,462
9	Other Pipelines & Other Assets	22,504
10	Aviation	20,782
11	Urban Real Estates	15,000
12	Ports	12,828
13	Stadiums	11,450

Source: National Monetisation Pipeline (Vol. II), NITI Aayog

2. Asset Monetization and PPP

Ever since the advent of public-private partnership (PPP) project delivery models in India, there have been many issues discussed and debated in the literature on the implementation efficiency of PPP projects (Jagannathan & Soneji, 2019; Kelkar *et al.*, 2015). In response to the problems, the government has come up with many schemes to sustain the private party interests in PPPs. With the start of asset

monetization (AM) policy, the government is entering into yet another dimension of private sector investment through AM. AM, though relatively new, has been existing in the form of Toll Operate Transfer (TOT) models as a part of the PPP framework (Cherkos & Jha, 2021).

While there is a push toward asset creation, on the other side, there is the humongous task of asset maintenance management. As assets are created for an extended period, asset maintenance is a crucial part of the lifecycle of the created asset. Asset monetization is one such mechanism through which the maintenance pressure on the government can be released so that the greater focus is laid on infrastructure asset creation. *“Asset monetization, also referred to as assets or capital recycling, is the method of leasing out ‘idle’ capital in government assets to private parties to operate and manage those assets for a specific period with an upfront payment of some capital”* (NITI Aayog, 2021). However, the asset ownership will remain with the government while the facility will be leased out to a private party for a particular lease period. According to the NITI Aayog, “AM will have dual benefits. First, it releases the maintenance management pressure on the government, and secondly, it helps tap into the management and operational efficiencies of the private sector. The driver for asset monetization is beyond its fiscal impact. It is not just a funding mechanism, but an overall paradigm shift in infrastructure operations, augmentation and maintenance” (Kant, 2021). It will help in tapping the operational efficiencies of private sector. However, a key attraction for AM is the absence of project completion risk, since the monetized projects have been operational for at least two years. This is a significant factor given the poor track record of infrastructure project implementation in the country.

To boost the infrastructure development, Government of India has finalized the national monetization plan which will include railway stations and tracks, and also 26, 700 km of roadways, 28,608 circuit km power transmission lines, 6 gigawatts of hydroelectric and solar power assets, 2, 86, 255 kilometres fiber assets and 14, 917 telecom sector towers, 3930 km of petroleum pipelines, and 8,154 km of natural gas pipe lines.

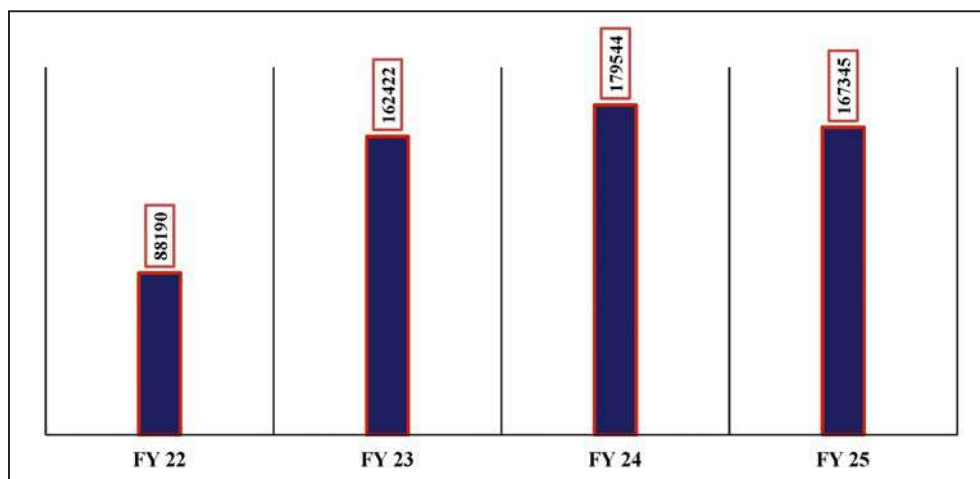


Figure 1: Indicative Value of the Monetisation Pipeline Year-wise (Rs. Crore)

Source: National Monetisation Pipeline (Vol. II), NITI Aayog

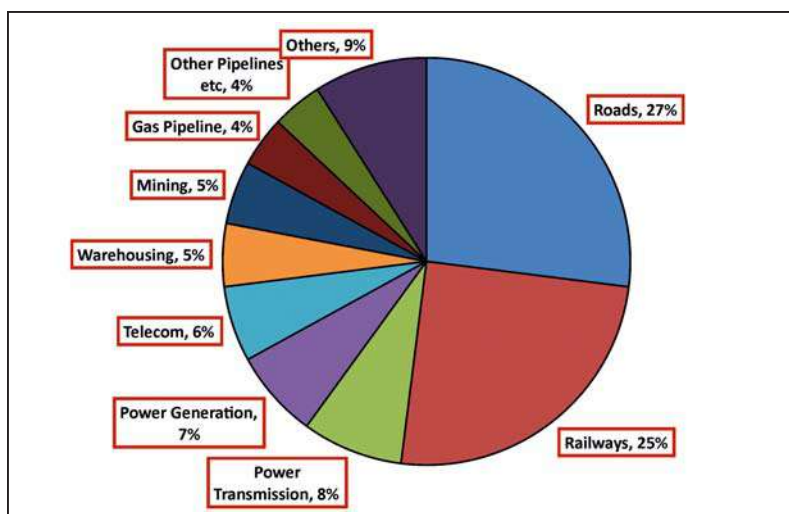


Figure 2: Share of Sectors in Terms of Indicative Monetisation Value in NMP

Source: National Monetisation Pipeline (Vol. II), NITI Aayog

Besides, according to the National Monetisation Pipeline, 160 coal mining assets with an estimated worth of Rs. 28,747 crore have been identified for monetization during FY 2022-25. About 761 mineral blocks are expected to be put on auction during this period.

3. Asset Monetization: Options and Progress

3.1. Asset Monetization Options

In the perspective of asset monetization, the two broad options considered are toll operate transfer (TOT) and the InvIT (Infrastructure Investment Trusts). Apart from these, structured bonds without or with restricted alternative to the government and asset concessions like for instance, airport concessions and station redevelopment, are also other options. One of the main advantages of all existing assets monetization is that there is no construction risk involved, which otherwise is present initially in any large infrastructure project (new assets). Hence, it is anticipated that existing assets earn greater value than new projects.

3.1.1. Toll Operate Transfer

The National Highway Authority of India (NHAI) introduced the toll-operate-transfer (TOT) model with an objective of monetizing the operational national highways. As part of the comprehensive bidding process under the TOT model, the NHAI transfers the toll collection rights along with operation and maintenance obligations for 30 years to a private developer in exchange of an upfront lump sum concession fees. Under this model, a bundle of assets (operational national highways) is transferred, which allows the investor to offset the risks of one project against another. Further, as only the operational national highways are awarded, investors need not have construction skills to participate in

the bidding process. Since 100% Foreign Direct Investment (FDI) is permitted in this sector under the automatic route, foreign investors have actively participated in the TOT bidding process so far. The introduction of Fastag mechanism has enhanced transparency in toll collections and as a result, it has augmented attractiveness of the TOT model itself.

3.1.2. Infrastructure Investment Trusts

Infrastructure Investment Trusts (InvITs) are like mutual funds that pool money from investors and are regulated by the Securities and Exchange Board of India (SEBI). There are 19 registered InvITs in India as on September 13, 2022. InvITs allow developers to monetize revenue generating infrastructure assets, while enabling investors or unit holders to invest in these assets without actually owning them. Therefore, given this basic structure of InvITs, the InvIT investor is more passive unlike the TOT investor who is supposed to actively manage the assets. For instance, the magnitude of demand risk in an InvIT depends on the combination of toll roads and those with disposal payment concessions like annuity or Hybrid Annuity Model (HAM). One hand, InvITs may comprise purely toll road assets and on other hand it consists of those that are only composed of HAM projects. Speaking of private InvITs, although there is no generation of revenue for the public sector, the development of InvITs enables the effective monetization of private infrastructure assets and this generates additional space in the balance sheets of the developers for use in new projects.

3.1.3. Structured Bonds

In structured bonds, the risk of intermittent variability of revenue is not directly transferred to the bondholder although claims are broadly issued on the basis of revenue streams. Bondholders' realizations will be unaffected until the revenue receipts are adequate to meet the requisite bond payments. In case of a flexible rate bond, there might be variation in accordance with the changes in indexed rate. Rating of structured bonds critically hinges on the adequacy of cash flows; for instance, the rating would be high if the future bond payments are secured by a cash flow that is adequate enough.

Nevertheless, in a majority of cases this will lead to less cash on hand with the public authority. As a mitigating measure, issuance of structured bonds can be phased vis-à-vis periodicity of future cash flows with varied risk profiles which will then be subscribed by different categories of investors as per their respective risk appetite levels. On the one hand, bonds having lower risk profiles may be more attractive to risk averse investors such as, large domestic pension and insurance funds, while on the other hand, the more risky assets may be favourable to foreign pension funds which look to invest in emerging markets in the quest of higher returns.

3.1.4. Asset Concession / Sales

Asset concession/sales mode of monetization consists of mining assets, real estate transactions and other monetization projects such as station redevelopment and airport concessions. The framework of the concession, the bid parameter, etc. depicts the success and realization of revenue.

3.2. Asset Monetization: Progress

In the roads sector, the central government has already monetized assets worth Rs. 23,000 crore. In the power sector, five assets have been monetized through a PowerGrid InvIT raising Rs 9,500 crore, and

coal mining generated Rs. 40,000 crore and mining of minerals fetched Rs. 18,700 crore. These successful examples of asset monetization in the infrastructure sector should encourage achieving the ambitious targets of NMP, going forward.

The NHAI has drawn up a list of 100 more operational highways with a total length of 7,000 km to be monetized through the toll-operate-transfer mechanism by 2024-25 with a target to raise Rs. 65,000 crore. The Indian railways are looking at raising Rs. 1 trillion over 10 years through monetization of the dedicated freight corridors, once these are commissioned. Another high-potential area of brownfield asset monetization is gas and oil pipelines. IOCL itself is slated to raise Rs. 1 trillion from its crude oil pipeline, product pipeline and natural gas pipeline. Similarly, HPCL and GAIL are also exploring their asset monetization plans.

4. Advantages of Asset Monetization

Asset monetization is the need of the hour as it eases the maintenance management pressure on the government and enhances national productivity through private sector contribution by tapping their efficiencies. The asset monetization program offers an array of benefits to the economy. These are:

- The asset monetization program helps in converting the ‘idle capacity to active capacity’; thereby contributes to national income and output.
- It will help in raising the efficiency and productivity of the assets due to private sector participation and will create additional employment opportunities in the economy.
- It opens-up generation of new sources of revenue for the government which can be used for financing new/existing infrastructure projects.
- Active and efficient use of assets will improve the production process and will provide improved quality goods and services to the consumers.
- It will lead to value-added collaboration between public and private sector and will foster synergy for the infrastructure development.

5. Asset Monetization: Issues and Challenges

A stable and well-designed regulatory environment plays a crucial role for the success of asset monetization, apart from selecting the suitable model for monetization. This is more pertinent in case of infrastructure assets as they are critically dependent on regulated tariffs for their revenue streams. For private monetization transactions, there could also be other operational issues. For example: handling of disputes between the concessionaire authority and the concessionaire. The success of asset monetization would also depend on the manner in which such issues are addressed and resolved. Lack of clarity on various regulatory issues may impact the value realized from monetization or even impede the monetization process itself.

Monetization does not generate the best value for money all the time. For example, for NHAI, the key challenge pertains to the use of funds generated through asset monetization. The existing debt burden of NHAI prohibited additional borrowing, as indicated in the budget of this year (2022-23). Therefore, would the fund augmented through asset monetization be utilized to give up the current debt or would it be utilized to launch new projects? If it is to pay-off the current debt,

then there has to be a careful appraisal between the value of borrowed capital and the value of capital augmented through asset monetization. NHAI's present borrowing is at very competitive rates, due to tax benefits, and it is likely that the value of capital augmented through asset monetization might really be higher. In this case, asset monetization will indeed decrease the funds available with NHAI since with monetization it will lose control over an income flow which is presently utilized to facilitate lower cost borrowings.

Likewise asset monetization in case of railways depends upon urban real estate market and value realization happens in larger cities. But after post-Covid scenario there has been reassessment of the need for physical space in metros. This may lead to inherent challenges in the near future, but can be mitigated putting these assets in prime location.

6. Way Forward

Infrastructure development is essential for faster economic development. Hence, Government of India is strategizing for the best possible opportunities for the development of the infrastructure sector through asset monetization. Asset monetization is critical in bringing efficiency and optimization in the use of assets through private-public collaboration. It will open-up the fiscal space for public sector by trading on the idle assets. The asset monetization program will further leverage to take the best from global institutional investors. It will attract global institutional investors such as Sovereign Wealth Funds (SWFs), Pension Funds (PFs) etc. to invest in India through the NMP initiatives. Asset monetization will certainly promote sustainability and will boost the economy through its multiplier effects. However, amidst all these positives, the above-mentioned regulatory issues and challenges need to be progressively weighed-in for asset monetization to sustain as a robust infrastructure financing tool in the long-term.

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Growth and Performance Measurement of ESG-themed Mutual Funds in India: An Empirical Investigation

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Abstract: The world is witnessing a stupendous rise in Environmental, Social, and Governance (ESG) investment practices due to changing dimensions of risks and consequent clamour for the adoption of sustainable practices. In this scenario, ESG-themed mutual funds have provided an alternative route to ESG investing. This study aims to analyse the growth of ESG mutual funds in India and evaluate their performance using standalone return and risk measures as well as widely recognised risk-adjusted measures, namely, Sharpe Index, Treynor Ratio, Sortino Measure, and Jensen's Alpha. With respect to growth, the study found that the industry is still in its infancy though a steady and positive momentum is seen both in terms of number as well as assets under their management. Without taking into account the social perks of sustainable investment, the results of the performance analysis revealed Quant ESG Equity Fund to be the best performer. Interestingly, the study also found that all the sample funds have 'beaten the market' and earned superior returns. The findings of the study substantiate that ESG investing not only leads to the accomplishment of sustainability goals of investors but also affords them returns higher than the traditional route to investing.

1. Introduction

Society never ceases in its pursuit of growth. However, with growth not only comes opportunities but also challenges. These challenges have given rise to sustainable development practices and adherence to ESG in recent years.

ESG is a philosophy that incorporates environmental, social, and governance factors in business and investment decisions. It originated from the term "responsible investment". At the heart of ESG-based investing is the recognition that global challenges such as climate change, biodiversity loss, unemployment, terrorism, and data privacy and protection are creating newer risks for business enterprises. Only those businesses which consider and discount these risks in their business models would be able to sustain in the long term. In this scenario, an ESG investor evaluates the performance

of an enterprise not just based on financial parameters but also on non-financial metrics which involves an assessment of ethical, responsible, and eco-friendly practices adopted by it. Moreover, numerous research studies have substantiated that those businesses that incorporate ESG factors in their core corporate strategy are able to enjoy reputational advantages and better profit margins in the long run (Govindarajan and Amilan, 2013; Laskar and Maji, 2017). Thus, through ESG-based investing, investors not only aim to do their bit in promoting sustainability but also expect to earn higher returns in the long run.

1.1. ESG Mutual Funds: A Route to ESG Investing

ESG mutual funds are thematic funds that seek to invest in socially responsible companies that perform well on ESG parameters. To construct its portfolio, a fund can adopt several investment approaches with varying complexity and comprehensiveness. The ‘exclusionary or avoidance’ approach excludes investment in companies that are engaged in the production of lethal weapons, tobacco, alcohol or are embroiled in major controversies involving social values or violation of ethical standards. The ‘inclusionary screening’ approach pursues the inclusion of companies that are compliant with international norms of ESG philosophy such as sustainable development goals. This also includes a ‘best-in-class’ approach where the focus is to invest in companies that achieve above certain ESG score thresholds. Sometimes, investment is made in “low ESG score companies that show high propensity to transition to higher ESG, and/or where the fund engages in shareholder activism through voting to change company behaviour and practices” (Boffo and Patalano, 2020). The approaches are not mutually exclusive and fund houses could simultaneously apply more than one approach for portfolio construction and/or management. Here, the emphasis is on long-term value creation rather than short-term opportunism.

In recent years a considerable number of ESG investors have routed investments through ESG mutual funds owing to its obvious advantages. An investor may want to contribute to sustainable investment but may not have expertise or access to sophisticated data analysis techniques to assess the companies on ESG parameters. Mutual funds provide this expertise and have advantages over direct investment such as diversification, small capital investment, etc. This has led to the huge popularity of ESG funds globally. For instance, ESG funds recorded an inflow of \$649 billion worldwide in 2021 as compared to \$542 billion and \$285 billion in 2020 and 2019, respectively (Kerber and Jessop, 2021). In India too, ESG momentum is picking up at a fast pace with many ESG-themed products being launched by the industry. In this scenario, evaluation of the growth of Indian ESG mutual funds and their performance is an issue of research worth exploring.

2. Review of Literature

Assessment of mutual fund industry has received considerable attention from researchers and practitioners across the world. This section reviews the literature on the performance evaluation of traditional funds and thereafter, sustainable funds.

Friend *et al.* (1962) conducted a comprehensive study of 152 US mutual funds from 1953 to 1958 and found no evidence that they were able to earn superior returns than the benchmark index. The

study also attempted to explore the relationship between portfolio turnover, expense ratio, and returns and found no strong association.

Sharpe (1966) in his pioneering study of 34 open-ended mutual funds over a span of 9 years (1954-1963) found an approximately linear relationship between fund returns and variability. His research led to the development of the reward-to-variability ratio which is a well-accepted performance evaluation tool even today. The ratio could be also used to rank the funds in order of their performance.

Treynor and Mauzy (1966) studied a sample of 57 open-ended balanced and growth funds from 1953 to 1962 to examine whether managers were able to 'outguess' the market and adjust their portfolios accordingly. The study did not find any statistical evidence that managers possess that ability and therefore concluded that they should not be held accountable for not foreseeing the market fluctuations. However, that does not mean that managers cannot provide investors with better than market returns. It would, however, be due to their ability to identify under and over-priced companies and take appropriate steps rather than an ability to 'outguess' it.

Jensen (1968) conducted a study to analyse whether the funds were able to outperform the market due to the superior selectivity skills of fund managers. The returns of 115 open-ended mutual funds from 1955 to 1964 were evaluated by regressing excess fund returns with excess market returns with given systematic risk. Using Capital Asset Pricing Model (CAPM), he developed a performance evaluation model called 'Jensen's Alpha'. Since this model assumes that a fund's systematic risk remains stationary, its performance is a result of the fund manager's selectivity skills exclusively. Jensen's alpha is considered a prominent selectivity performance measurement model.

Fama (1972) developed another selectivity performance measure called 'Fama Decomposition Model'. The model suggested that the observed return from a fund can be attributed to the superior stock selection abilities of a fund manager (selectivity) as well as his ability to predict and time the market (market timing). Selectivity can further be broken down into net selectivity and compensation for diversification.

Van *et al.* (2001) attempted to evaluate the performance of mutual funds when the return distributions are skewed and discovered that the classic Sharpe Ratio yields unsatisfactory results in such situations. On the basis of the Put Strategy Simulation Study, they were able to substantiate that downside risk is a better barometer of performance and propounded 'Sortino Measure' as a performance evaluation tool.

Bhuva and Bantwa (2020) evaluated the performance of selected large and mid-cap mutual fund schemes between 2007 and 2011 using average returns and measures like Sharpe, Treynor, Jensen, and Fama. With an exception of two, all the sample funds performed better than the market although they were exposed to higher risk. No significant difference was found in the returns of large-cap and mid-cap funds in the long term.

Since the present study specifically deals with the performance evaluation of sustainable mutual funds, the earlier studies in this area are discussed as follows.

Naffa and Fain (2020) examined whether investors should invest in sustainable funds to achieve their sustainability goals without sacrificing returns. The study covered a period of 4 years from 2015 to 2019 and found that these funds generate superior risk-adjusted returns even after discounting for

transaction costs. Further, these funds do not suffer from under-diversification because of the adequate size and liquidity of capital markets.

Yue *et al.* (2020) examined whether an investment in sustainable funds creates additional risks in investing. Through quantitative analysis, the study attempted to compare the performance of 30 sustainable and 30 traditional funds. Annual returns, standard deviations, and risk-adjusted measures like Sharpe, skewness, and kurtosis were computed and analysed. It was found that although sustainable funds were not riskier as compared to traditional funds, no evidence suggests that these funds generate superior returns, vis-à-vis, traditional funds or even a benchmark index. These findings were consistent with the findings of Bauer *et al.* (2005), Kreander *et al.* (2005), and Renneboog *et al.* (2011) who were not able to determine whether sustainable or traditional investments were more profitable.

Apart from the above-mentioned studies, literature on specific ESG fund performance was found to be extremely limited in number. Moreover, not a single research study was found in the Indian context which gives rise to the research gap and led to the present study.

3. Objectives and Hypotheses of the Study

3.1. Objectives of the Study

To fill the research gap, this study attempts to achieve the following objectives:

- To assess the growth in the number and Assets Under Management (AUM) of ESG funds in India.
- To evaluate the performance of ESG equity funds on the basis of annualised returns, portfolio total risk, downside risk, beta; and risk-adjusted return measures such as Sharpe, Treynor, Jensen's alpha, and Sortino.

3.2. Hypotheses of the Study

Keeping in line with the objectives, the following hypotheses are framed:

- H₀₁: The growth of ESG mutual fund industry is (not) significant in India.
- H₀₂: Performance of ESG mutual funds is (not) significantly divergent from each other.
- H₀₃: Performance of ESG mutual funds is (not) significantly divergent from the benchmark index.

4. Research Methodology

The study is empirical in nature and utilises secondary sources of information for analysis. Various parameters such as the number of ESG funds launched in the Indian market over the years, total inflows into the sector, and AUM have been used to assess the growth of this sector. For this, the data has been sourced from the SEBI and other reports and websites.

There were eight ESG-themed funds in India as of December 31, 2021 which form the sample for this study. The details of the schemes are provided in table 1. The performance of each fund has been analysed for two periods, namely: (i) for the year 2021 (i.e., from January 1, 2021 to December 31, 2021), and (ii) from the inception of each fund till December 31, 2021. To construct their performance metrics, the study uses daily Net Asset Value (NAV) data obtained from the Association of Mutual Funds of India (AMFI) official website.

National Stock Exchange (NSE)'s Nifty 50 has been used as a benchmark index to measure the funds' 'Alpha'. Nifty 50 represents the weighted average of the 50 largest Indian companies listed on NSE. The study uses the daily closing price for the corresponding period to compute market returns. To bring uniformity and afford calculations, only those dates were considered for which NAV as well as Nifty 50 closing price data was available. Suitable adjustments in line with accepted norms have been done here. The closing price data for Nifty 50 was extracted from NSE's official website.

Return of a fund in period i has been calculated as follows:

$$R_i = \frac{(S_i - S_{i-1})}{S_{i-1}} \quad (1)$$

Where

S_i = NAV of a fund at the end of period i

S_{i-1} = NAV at the end of period $i-1$.

A similar methodology is adopted in computing returns from the market by taking into account daily closing price data.

The cumulative returns of the fund as well as the market are annualised using the next mentioned formula.

$$R_p = ((1 + r_1) (1 + r_2) \dots (1 + r_n))^{1/n} - 1 \quad (2)$$

Where

R_p = Annualised returns of fund p

$r_1, r_2, \dots, r_n$ = The returns in each period, and

n = Total number of periods in a year

The volatility of an investment is measured by the standard deviation of its returns which is a measure of total risk and is calculated as follows:

$$\sigma_i = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (r_i - \bar{r})^2} \quad (3)$$

Where

σ_i = Total risk (standard deviation) of period i

r_i = Returns in each period

n = Total number of periods

To compare a fund's annualised returns with its standard deviation, the study annualised the standard deviation also by the following method:

$$\sigma_p = \sigma^* \sqrt{\text{number of trading days in a year}} \quad (4)$$

Where

σ_p = Annualised risk of fund p

Scaling factor 247 has been taken as the number of trading days in a year, which is the case with the Indian stock market.

An average investor is more concerned about the potential loss of his investment as depicted by downside deviation than the upside volatility. Downside deviation is defined as an estimation of volatility associated with negative fluctuations in case of a change in market conditions (Van *et al.*, 2001). It is measured as the square root of the sum of the squared deviation between actual and mean returns when the actual return is lower than the mean return. It is annualised as per the following method:

$$D_p = \sigma_d * \sqrt{\text{number of trading days in a year}} \quad (5)$$

Where

D_p = Annualised downside deviation of fund p

σ_d = Standard deviation of downside returns

Total risk can be classified as systematic risk (which cannot be diversified) and idiosyncratic risk (which can be diversified). Beta, which is a measure of systematic risk is defined as:

$$\beta_i = \frac{\text{cov}(R_i, R_m)}{\sigma_m^2} \quad (6)$$

Where

$\text{COV}(R_i, R_m)$ = Covariance of fund returns and market returns

σ_m^2 = Variance of market returns

Moreover, the study uses four risk-adjusted performance measures, viz., Sharpe Index, Treynor Ratio, Sortino Measure, and Jensen's Alpha. The methodology adopted for these measures is detailed under performance analysis. For their computation, the average annual yield of 91-day treasury bills has been used as an approximation of risk-free asset. The data for 91-day treasury bills was obtained from the official website of the Reserve Bank of India.

5. Results and Discussion

5.1. Growth of ESG Funds in India

Globally, sustainable investments are on the rise. According to a report by the United Nations Principles for Responsible Investment (PRI, 2022), the number of PRI signatories who commit to the philosophy of sustainable investment surpassed 3,500 across the world in 2021. Sustainable funds recorded a massive increase of 88% in 2021 alone with Europe accounting for almost 80%, followed by the US, Australia, and Canada (Sinha, 2021). It is expected that the AUM of ESG funds would grow to the US \$53 trillion by 2025 (Neroy, 2021).

As far as India is concerned, ESG investing presently is in a nascent stage. It has eight ESG-themed funds as of December 2021. The number is quite less compared to the number of funds in France (720), the US and the UK (more than 500 each), Japan (182), and China (119) (Figure 1).

However, in recent years, ESG funds in India are gaining momentum steadily. India had its first ESG fund in May 2018 when the erstwhile SBI Magnum Equity Fund dedicated itself to considering ESG issues in its portfolio construction and was rechristened as SBI Magnum Equity ESG Fund. Since then, seven new (refer table 1) ESG equity funds, one Exchange Traded Fund (Mirae Asset ESG

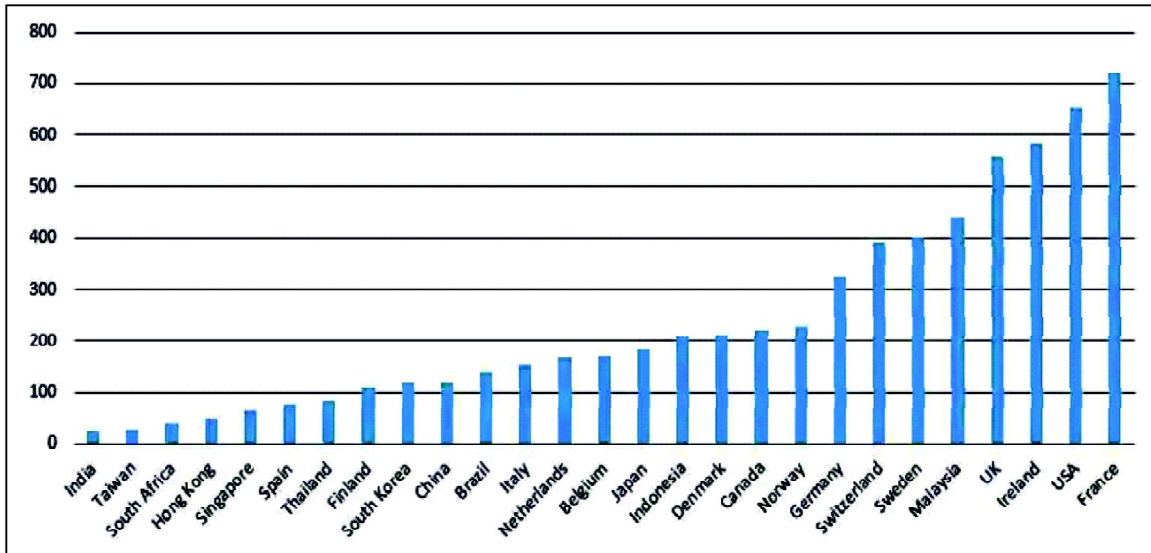


Figure 1: Number of ESG Funds in Major Countries

Source: Reuters cited in Murugaboopathy and Dogra (2021)

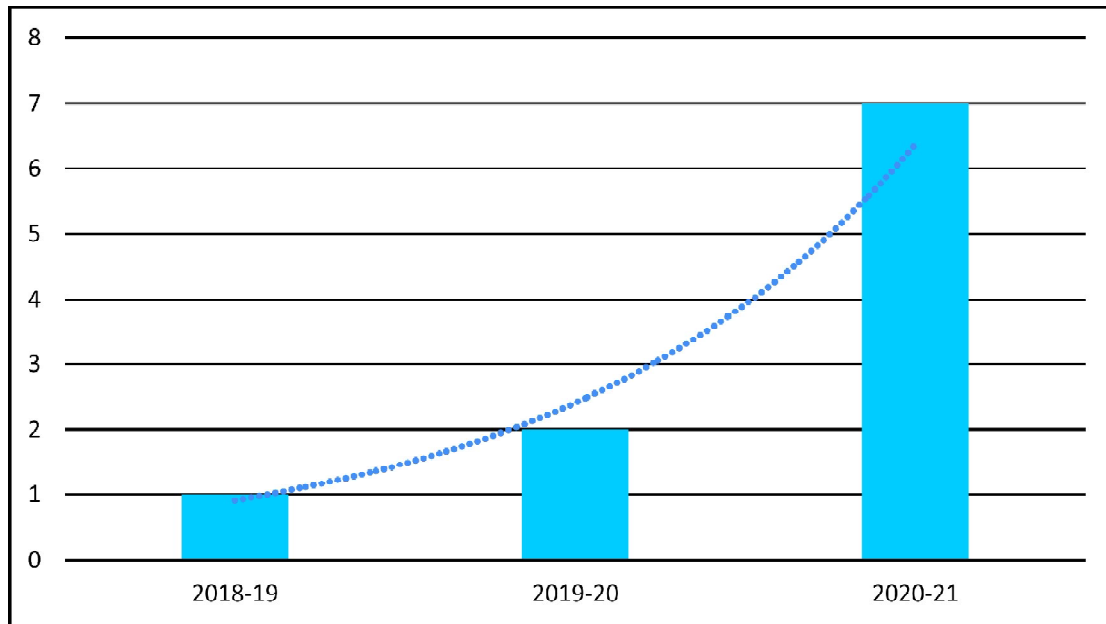


Figure 2: Number of ESG Funds Launched in India (Year-wise)

Source: Author's Own Compilation

Sector Leaders ETF) and one Fund of Funds (Mirae Asset ESG Sector Leaders FoF) have been launched (Sarkar, 2022). Figure 2 highlights the trend.

In terms of AUM, the sector recorded an astounding inflow of Rs. 3,686 crores in 2020-21 as compared to Rs. 2,094 crores in 2019-20, locking a growth of 76% approximately (Sarkar, 2022). The combined AUM of eight ESG-themed funds stood at Rs. 11,651 crores as of December 31, 2021 (value research). Thus, while from a global perspective the position of India is negligible, the pace at which new funds are launched in a short span of 3 years and the exponential rise in AUM highlights the increasing interest of Indian investors in the ESG funds space.

5.2. Performance Evaluation of ESG-themed Equity Funds

As of December 31, 2021, there were eight ESG-themed equity funds in India, the details of which are provided in table 1.

Table 1: Details of ESG Equity Funds (as on December 31, 2021)

<i>Fund Name</i>	<i>Launch Date</i>	<i>Expense Ratio (%)</i>	<i>Net Assets (Cr)</i>	<i>Top Three Holdings</i>	<i>Top Three Sectors</i>
Aditya Birla Sun Life ESG Fund	24.12.2020	1.87	1,061	Infosys, L&T Infotech, Bajaj Finance	Technology, Financial, Services
Axis ESG Equity Fund	12.02.2020	2.07	1,897	Bajaj Finance, Nestle India, Avenue Supermarts	Financial, Technology, Services
ICICI Prudential ESG Fund	09.10.2020	2.23	1,560	Infosys, Wipro, HDFC Bank	Technology, Financial, Consumer Staples
Invesco India ESG Equity Fund	18.03.2021	2.26	820	Infosys, Tata Consultancy Services, Kotak Mahindra Bank	Financial, Technology, Capital Goods
Kotak ESG Opportunities Fund	11.12.2020	2.04	1,619	Infosys, Tata Consultancy Services, Hindalco Inds.	Financial, Technology, Materials
Quant ESG Equity Fund	06.11.2020	2.71	53	The Indian Hotels Company, Adani Enterprises, Dr. Reddy's Lab	Services, Healthcare, Communication
Quantum India ESG Equity Fund	12.07.2019	1.68	58	Infosys, Tata Consultancy Services, Tata Consumer Products	Technology, Financial, Consumer Staples
SBI Magnum Equity ESG Fund (earlier SBI Magnum Equity Fund launched on 27.11.2006)	16.05.2018	2.07	4,583	Infosys, HDFC, ICICI Bank	Financial, Technology, Services

Source: Author's Own Compilation (based on data obtained from <https://valueresearchonline.com>)

Out of eight ESG equity funds, five were launched in 2020-21 itself. SBI Magnum Equity ESG fund has the largest AUM amounting to Rs. 4,583 crores followed by Axis ESG Equity Fund and Kotak ESG Opportunities Fund. All the funds invest 80% to 100% of their corpus in equity. Predictably, technology and financial services are the most preferred sectors. These sectors are traditionally considered to be ESG conscious and attain high ESG scores consistently. Infosys, Tata Consultancy Services, HDFC Bank, etc., are the most preferred constituents of their portfolio.

The performance has been evaluated for the earlier mentioned two periods based on : Annualised Return and Risk Measures, and Risk-adjusted Performance Measures.

Performance Based on Annualised Return and Risk of the Funds

In this section, annualised return (R_p), annualised risk (σ_p), downside deviation (D_p), and beta (β) of the funds are calculated on the basis of daily return data for 2021 as well as since inception. Annualised return of a fund is a better measure than the average return because it captures the effects of compounding. Here, portfolio risk means the total risk of the fund's portfolio and includes both systematic (β) as well as idiosyncratic risk. Systematic risk is a non-diversifiable risk caused by fluctuations in market conditions whereas idiosyncratic risk is a measure of volatility due to a fund's specific factors. A downside deviation is a statistical measure that aims to quantify the probability that an asset will lose its value (Van *et al.* 2001). It has been calculated using the semi-variance method. The results for 2021 are summarised in table 2.

**Table 2: Return and Risk Measures (Annualised)
(For the year 2021)**

<i>Fund Name</i>	<i>Annualised Portfolio Return (R_p)</i>	<i>Annualised Portfolio Risk (σ_p)</i>	<i>Downside Deviation (D_p)</i>	<i>Beta (β)</i>
Aditya Birla Sun Life ESG Fund	37.0775	15.5398	11.8406	0.91
Axis ESG Equity Fund	24.3304	12.4841	9.1291	0.6945
ICICI Prudential ESG Fund	22.0653	11.9309	8.4097	0.6716
Invesco India ESG Equity Fund	33.5671	10.7744	8.0534	0.7194
Kotak ESG Opportunities Fund	21.6553	13.3939	9.7773	0.7915
Quant ESG Equity Fund	62.8413	17.9854	13.4894	0.7986
Quantum India ESG Equity Fund	29.9623	13.4796	9.8371	0.7845
SBI Magnum Equity ESG Fund	29.8513	15.0278	10.8372	0.9251

Source: Author's Own Compilation

A perusal of table 2 reveals that all the sample funds earned healthy returns in 2021. The highest return was earned by Quant ESG Equity fund (62.8413%) followed by Aditya Birla Sun Life ESG Fund (37.0775%). This is quite interesting as Quant is the smallest fund with AUM of 53 crores as on

December 31, 2021 (table 1). However, it also has the highest portfolio risk (17.9854%) and downside deviation (13.4894%) which is an important factor that should be considered by risk-averse investors. Further, all the sample funds have a beta of less than 1 which is a positive signal. SBI Magnum Equity ESG Fund has the highest beta of 0.9251. The results since inception are summarised in table 3.

**Table 3: Return and Risk Measures (Annualised)
(Since Inception)**

<i>Fund Name</i>	<i>Annualised Portfolio Return (R_p)</i>	<i>Annualised Portfolio Risk (σ_p)</i>	<i>Downside Deviation (D_p)</i>	<i>Beta(β)</i>
Aditya Birla Sun Life ESG Fund	37.2336	15.4458	11.8389	0.9097
Axis ESG Equity Fund	30.8098	17.5513	14.3929	0.6309
ICICI Prudential ESG Fund	30.2553	11.6026	8.5463	0.6641
Invesco India ESG Equity Fund	33.5671	10.7744	8.0534	0.7194
Kotak ESG Opportunities Fund	22.0072	13.1634	9.7488	0.7534
Quant ESG Equity Fund	76.0489	17.5889	13.7503	0.7996
Quantum India ESG Equity Fund	24.4819	18.7862	16.8367	0.7696
SBI Magnum Equity ESG Fund	16.4164	19.7790	17.0304	0.9502

Source: Author's Own Compilation

Table 3 provides information about funds' returns and risk measures since their inception. Quant ESG Equity Fund has again outperformed other funds in terms of returns earned (76.0489%) on its portfolio. At the other end of the spectrum is SBI Magnum Equity ESG Fund which has provided the least returns (16.4164%) since its inception. Its risk profile is also not encouraging. It has the highest portfolio risk (19.7790%), downside deviation (17.0304%), and beta (0.9502). Out of eight funds, the SBI Magnum Equity ESG fund is the oldest fund with the highest AUM (table 1). The results cast a question mark on its state of affairs and call for a relook of its investment strategy.

It is sometimes argued (Bhuva and Bantwa, 2020) that the higher returns earned by a fund could be due to the higher risk exposure of that fund. Thus, ex-post return measures which consider returns after adjustment of risk, or alpha which calculates fund returns relative to market return are considered a better barometer of performance.

Performance Based on Risk-adjusted Measures

This section assesses the performance of ESG equity funds on the basis of four risk-adjusted measures for 2021 and since inception. The measures are discussed as follows:

- **Sharpe Index:** Developed by W.F. Sharpe in 1966, this index provides information about the excess returns that an investor has earned for the volatility of holding a riskier portfolio comprising both systematic as well as idiosyncratic risk. It is also known as a reward to variability ratio and is expressed as follows:

$$\text{Sharpe Index} = \frac{R_p - R_f}{\sigma_p} \quad (7)$$

Where

R_p = Portfolio return

R_f = Risk-free return

σ_p = Total portfolio risk

While comparing funds, a typical investor would prefer a fund with a positive and higher Sharpe Index as it is an indication of superior returns for the same risk.

The index assumes the returns from a financial asset to be normally distributed. However, in declining markets, the returns do not mostly follow a normal distribution, and abnormalities like skewness or kurtosis exist which render standard deviation ineffective. To counter these problems, Treynor, Sortino, and Jensen have propounded their own risk-adjusted measures.

- **Treynor Ratio:** Developed by Jack Treynor in 1966, this ratio indicates the excess return generated by a portfolio per unit of systematic risk. It is also known as reward to volatility ratio and is expressed as follows:

$$\text{Treynor Ratio} = \frac{R_p - R_f}{\beta_p} \quad (8)$$

Where

R_p = Portfolio return

R_f = Risk-free return

β_p = Systematic risk of the portfolio

The ratio assumes that systematic risk, which reflects the sensitivity of a portfolio's return in response to changes in the market return, is a better barometer of a portfolio's performance. Idiosyncratic risk is unique to a portfolio and can be reduced by effective portfolio construction strategies, hence should not be considered. When comparing funds, a fund with a higher ratio is desirable since it means excess returns earned by it for the same systematic risk.

When the returns follow a normal distribution and the portfolio is well-diversified (so that element of idiosyncratic risk is negligible), Sharpe and Treynor measures yield similar results. Also, when a portfolio is not fully diversified, the Sharpe Index is a better indicator of performance and vice versa.

- **Sortino Measure:** Developed by Van der and Sortino in 2001, it measures excess returns earned by a portfolio per unit of downside risk. It seeks to penalise only those returns that fall below the mean rate of return (downside deviations), unlike Shape Index which penalises both upside and downside deviations equally. It is calculated as follows:

$$\text{Sortino Measure} = \frac{R_p - R_f}{D_p} \quad (9)$$

Where

R_p = Portfolio return

R_f = Risk-free return

D_p = Downside deviation of the portfolio

An investor is more concerned about the potential loss of his investment than the upside volatility, hence this measure. A higher ratio is an indication of better ex-post returns per unit of downside risk.

- **Jensen's Alpha:** Developed by Michael Jensen in 1968, Jensen's Alpha is a regression of excess fund returns with excess market return and is expressed as follows:

$$R_p - R_f = \alpha + \beta(R_m - R_f) + e_i \quad (10)$$

Where

R_p = Portfolio return

R_f = Risk-free return

R_m = Return on market portfolio

β = Systematic risk of the portfolio

e_i = Error term

The intercept of the equation is a measure of performance, called alpha ($\hat{\alpha}$). This measure is derived from the CAPM and involves running a regression with excess returns on security and that on the market acting as dependent and independent variables, respectively. A positive alpha is an indication that the fund manager has 'beaten the market' with their superior stock-selection skills, while a negative alpha indicates otherwise. This measure, therefore, is also considered a 'Selectivity Performance Measurement Model'. The risk-adjusted results for 2021 are provided in table 4.

A positive alpha in Table 4 indicates that all the sample funds have earned returns higher than the market for 2021. Moreover, it was found that Quant ESG Equity Fund has outperformed all the other sample funds in 2021. It has the highest Sharpe Index (3.3008), Treynor Ratio (74.3372), Sortino Measure (4.4009), and Jensen's Alpha (43.1395). Launched in November 2020, this fund has the least AUM as of December 31, 2021 (53 crores) out of all the sample funds. The fund allocates 100% of its corpus in equity and its portfolio consists of 28 stocks. Services, healthcare, and communications are its preferred sectors (value research). At the same time, it has the highest portfolio risk (17.9854%) and downside deviation (13.4894%). A high downside deviation is a matter of concern for risk-averse investors as it signifies a higher probability of an investment losing its value in case of market fluctuations. Quant ESG Equity Fund is followed by Invesco India ESG Equity Fund and Aditya Birla Sun Life ESG Fund. Kotak ESG opportunities fund turned out to be the worst performer for 2021 having the lowest Sharpe Index (1.3573), Treynor Ratio (22.9687), Sortino Measure (1.8594), and Jensen's alpha (2.0978). Launched in December 2020 having an AUM of 1,619 crores, this fund invests majorly in the Financial and Technology sectors with Infosys, TCS, and Hindalco Industries as preferred companies. Its portfolio consists of 44 stocks (value research). Table 5 provides the ranking of risk-adjusted performance results to get a summarised picture.

Table 4: Risk-adjusted Measures (For the year 2021)

Fund Name	Annualised Portfolio Return (R_p)	Risk-free Rate (R_f)	Annualised Portfolio Risk (σ_p)	Beta (β)	Annualised Downside Deviation (D_p)	Market Return (R_m)	Sharpe Index	Treynor Ratio	Sortino Measure	Jensen's Alpha (α)
Aditya Birla Sun Life ESG Fund	37.0775	3.4756	15.5398	0.91	11.8406	23.7939	2.1623	36.9252	2.8378	15.1122
Axis ESG Equity Fund	24.3304	3.4756	12.4841	0.6945	9.1291	23.7939	1.6705	30.0285	2.2844	6.7437
ICICI Prudential ESG Fund	22.0653	3.4756	11.9309	0.6716	8.4097	23.7939	1.5581	27.6797	2.2105	4.9439
Invesco India ESG Equity Fund	33.5671	3.4756	10.7744	0.7194	8.0534	23.7939	2.7929	41.8286	3.7365	15.4745
Kotak ESG Opportunities Fund	21.6553	3.4756	13.3939	0.7915	9.7773	23.7939	1.3573	22.9687	1.8594	2.0978
Quant ESG Equity Fund	62.8413	3.4756	17.9854	0.7986	13.4894	23.7939	3.3008	74.3372	4.4009	43.1395
Quantum India ESG Equity Fund	29.9623	3.4756	13.4796	0.7845	9.8371	23.7939	1.9649	33.7625	2.6925	10.5467
SBI Magnum Equity ESG Fund	29.8513	3.4756	15.0278	0.9251	10.8372	23.7939	1.7551	28.5112	2.4338	7.5792

Source: Author's Own Compilation

**Table 5: Summarised Ranking
(For the Year 2021)**

<i>Fund Name</i>	<i>Sharpe Index</i>	<i>Treynor Ratio</i>	<i>Sortino Measure</i>	<i>Jensen's Alpha (α)</i>
Aditya Birla Sun Life ESG Fund	3	3	3	3
Axis ESG Equity Fund	6	5	6	6
ICICI Prudential ESG Fund	7	7	7	7
Invesco India ESG Equity Fund	2	2	2	2
Kotak ESG Opportunities Fund	8	8	8	8
Quant ESG Equity Fund	1	1	1	1
Quantum India ESG Equity Fund	4	4	4	4
SBI Magnum Equity ESG Fund	5	6	5	5

Source: Author's Own Compilation

As is evident from Table 5, all the risk-adjusted measures of performance evaluation are univocal in their verdict for 2021. Quant ESG Equity Fund has outperformed all the sample funds. It is followed by Invesco India ESG Equity Fund and Aditya Birla Sun Life ESG Fund in that order. Kotak ESG opportunities fund is the laggard and has been ranked at the bottom. It calls for a reassessment of its investment style. It is to be noted that when the return distributions are symmetrical or when funds' portfolios are well-diversified, the risk-adjusted performance measures tend to yield similar results (stock market concepts).

The risk-adjusted performance since the inception of each fund is given in Table 6.

Table 6 shows risk-adjusted measures of the sample funds since their inception. All the funds have earned returns higher than market returns as exhibited by positive alpha. Also, Quant ESG Equity Fund again emerged as the best performer with the highest Sharpe Index (4.1285), Treynor Ratio (90.8160), Sortino Measure (5.2811), and Jensen's Alpha (47.1744). It has been able to earn excess returns per unit of total risk, systematic risk, downside deviation as well as the benchmark index. At the other end of the spectrum is SBI Magnum Equity ESG Fund with the lowest Sharpe Index (0.4981), Treynor Ratio (10.3674), Sortino Measure (0.5784), and Jensen's Alpha (2.6379). Out of the sample funds, it has minimum annual returns (16.4164) with the highest portfolio risk (19.7790) and downside deviation (17.0304).

To have a better understanding of the risk-adjusted performance of each fund since inception, rank analysis has been performed and the results are presented in table 7.

Table 7 reiterates that Quant ESG Equity Fund has outperformed other funds based on all four risk-adjusted performance measures. Invesco India ESG Equity Fund has been accorded the second rank by all measures except Treynor Ratio. SBI Magnum Equity ESG Fund has been ranked at the bottom by all risk-adjusted measures except Jensen's Alpha. The position of other funds has been variable across the measures.

Table 6: Risk-adjusted Measures (Since Inception)

Fund Name	Annualised Portfolio Return (R_p)	Risk-free Rate (R_f)	Annualised Portfolio Risk (σ_p)	Beta (β)	Annualised Downside Deviation (D_p)	Market Return (R_m)	Sharpe Index	Treynor Ratio	Sortino Measure	Jensen's Alpha(α)
Aditya Birla Sun Life ESG Fund	37.2336	3.4692	15.4458	0.9097	11.8389	24.2294	2.1860	37.1160	2.8520	14.8788
Axis ESG Equity Fund	30.8098	3.5495	17.5513	0.6309	14.3929	21.7929	1.5532	43.2086	1.8940	15.7505
ICICI Prudential ESG Fund	30.2553	3.4234	11.6026	0.6641	8.5463	35.7222	2.3126	40.4034	3.1396	5.3823
Invesco India ESG Equity Fund	33.5671	3.4756	10.7744	0.7194	8.0534	17.7632	2.7929	41.8286	3.7365	19.8130
Kotak ESG Opportunities Fund	22.0072	3.4647	13.1634	0.7534	9.7488	25.0899	1.4086	24.6118	1.9020	2.2501
Quant ESG Equity Fund	76.0489	3.4324	17.5889	0.7996	13.7503	35.2509	4.1285	90.8160	5.2811	47.1744
Quantum India ESG Equity Fund	24.4819	3.9736	18.7862	0.7696	16.8367	17.9123	1.0917	26.6480	1.2181	9.7811
SBI Magnum Equity ESG Fund	16.4164	6.5653	19.7790	0.9502	17.0304	14.1565	0.4981	10.3674	0.5784	2.6379

Source: Author's Own Calculations

**Table 7: Summarised Ranking
(Since Inception)**

<i>Fund Name</i>	<i>Sharpe Index</i>	<i>Treynor Ratio</i>	<i>Sortino Measure</i>	<i>Jensen's Alpha (α)</i>
Aditya Birla Sun Life ESG Fund	4	5	4	4
Axis ESG Equity Fund	5	2	6	3
ICICI Prudential ESG Fund	3	4	3	6
Invesco India ESG Equity Fund	2	3	2	2
Kotak ESG Opportunities Fund	6	7	5	8
Quant ESG Equity Fund	1	1	1	1
Quantum India ESG Equity Fund	7	6	7	5
SBI Magnum Equity ESG Fund	8	8	8	7

Source: Author's Own Compilation

6. Conclusion

Numerous global challenges have necessitated the need for the adoption of ESG parameters in business and investment decisions. It is widely accepted that only those businesses that comply with these parameters will be able to deliver sustainable performance in the long run. This has led to an 'ESG movement' across the world and created a new breed of investors who see ESG investing as one of the ways to promote sustainable development. In this scenario, ESG mutual funds have emerged as a preferred route of investment and have witnessed a massive inflow of funds in recent years.

The main goal of this study was to analyse the growth of ESG mutual funds in India and also to evaluate their performance so far. With respect to growth, it was found that the ESG mutual fund industry is still in its infancy in India though a steady and positive momentum is seen since 2018, both in terms of the number as well as the AUM of these funds.

The performance analysis of ESG equity funds concentrated on the comparative performance of these funds among themselves and against the market index (Nifty 50) using standalone return and risk measures as well as widely recognised risk-adjusted measures. The results were ranked to summarise the analysis.

The study found Quant ESG Equity Fund to be the best performer both for 2021 as well as since its inception. This is even though the fund was launched in 2020 only and has the least AUM as on December 31, 2021 among others. A deeper analysis reveals that the fund is a high return-high risk fund with 100% investment in equity (ET Money). This calls for caution on the part of risk-averse investors. Kotak ESG Opportunities Fund and SBI Magnum Equity ESG Fund turned out to be the worst performers for 2021 and since inception, respectively. SBI Magnum Equity ESG Fund is the oldest fund with the highest AUM and the results call for a complete overhaul of its investment strategy. Further, interestingly all the sample funds were found to have positive Jensen's Alpha which indicates that all of them have 'beaten the market' and earned superior returns. It is an indication of superior stock selectivity skills of fund managers.

The study has strong implications for investors, industry and regulators. For investors, the findings substantiate that ESG investing not only leads to the accomplishment of their sustainability goals but also affords them returns higher than the traditional route to investing. This would encourage them to pursue ESG based investing as a long-term investment strategy. It has implications for the ESG fund industry to rise to the occasion and adopt innovative and comprehensive data analysis tools and technologies such as artificial learning, robotics etc to formulate investment methodologies tailor made to the needs of investors. The study can be a basis for regulators for policy formulation specifically with respect to ESG mutual fund industry.

A separate study that compares the ESG funds with traditional funds can be undertaken. In India ESG mutual funds started their journey from 2018. For this reason, the study covers a period of approximately 3.5 years. In future, studies to compare ESG funds with traditional funds with larger time horizon may be undertaken in Indian context. This can be a very interesting research area.

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Practices and Challenges of Household Plastic Waste Disposal: An Evaluation of Waste Management System in Kerala

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JEL Classification

H7, H12, Q52, Q53, Q57

Abstract: Plastic Waste Management (PWM) is a significant challenge in every region for local governments / legislatures in emerging nations. Local bodies are facing with the restricted financial policies and deterrents with the assortment of waste, absence of legitimate machinery, use of technology, and sporadic collection by agencies. These snags lead to additional issues, such as littering and illicit unloading in remote and rural regions especially in Kerala. This research attempts to identify the PWM practices by the government on household plastic disposal practices and challenges, by analyzing the study conducted in 203 sample units of households in Kerala. The structured equation modeling technique is used to measure the effectiveness of programme developed by the government to manage households' plastic disposal practices and challenges. The findings of this study are that the Government of Kerala should invest in effective waste management practices in each district and should try to reduce plastic waste by adapting innovative measures and encouraging sustainable plastic waste management technologies at regional level.

1. Introduction

Plastic Waste Management (PWM) in rustic and distant regions poses significant challenges for local administration of growing nations. The PWM financial plan of local government is restricted and, surprisingly, more so in rustic and remote regions. Panchayath and Municipalities in such regions ordinarily face deterrents with the assortment of waste. They also face lack of proper waste management equipment, technologies and effective plastic waste treatment centers and experience hardships getting to a treatment center somewhere else (Hidalgo *et al.*, 2017). The inconsistent dissemination of infrastructure in Kerala on PWM is also a worry and originates from the political-financial disparities of the governments in past period. These impediments contribute to different issues, such as littering and unlawful waste dumping.

Household plastic waste is produced through household movements like single-use of disposable plastic materials, choosing synthetic clothing fibers (cotton) and carrying plastic bags for shopping and plastic toys. It also consists of used plastic products or materials, including plastic chairs, plastic flower

vases, plastic glasses, and old plastic sandals (Reddy, 2011). Most of the plastic items used by the households are single-use plastic without recycled content, which includes plastic containers, buckets, bins and plastic furniture. Therefore, the main objective of the Government of Kerala in plastic waste management is to transition of open dumping-based waste practices to recycle-based waste management practices. This technique encourages the reduction in plastic waste and also ensures effective waste management practice in local regions in Kerala.

PWM is emphatically impacted by the legitimate treatment of waste at the household level. It is the obligation of the local government as well as that of families or households. Most of the previous researches in the field of plastic disposal practices of households and waste management of households are done mainly outside Kerala. As per the recent report published by the Central Pollution Control Board of India, Kerala holds the third position for the highest per capita plastic waste generation after Delhi and Goa (<https://cpcb.nic.in/>). In this scenario, it is highly important to conduct a study to obtain information related to the plastic waste management practices and challenges in Kerala. The present study tries to investigate the household disposal practices and challenges of the plastic waste system, and also evaluate the effectiveness of measures undertaken by the government to reduce plastic consumption in the state of Kerala.

2. Review of Literature and Conceptual Framework

2.1. Review of Literature

Adane and Muleta (2011) looked into the environmental effects of using plastic bags and disposing of them in Ethiopia's Jimma City. They have found that due to easy availability and low cost, plastic bags were used more than any other plastic product by households. Despite households' perception of the negative effects of plastic-house-related items, the use of plastic bags has increased from time to time. Costs (2013) found that plastic is the most widely used product on the planet. In his study on plastic effects on households, and he found out that plastic's lifecycle effects, taken together, paint a simple and disturbing image of how the substance endangers human health on a global scale. Therefore, stopping and reversing the growth of plastics production is required to reduce these threats. Along with the proper waste management systems are essential for controlling plastic waste. Dangi *et al.* (2011) studied plastic waste generation to address waste management issues in Kathmandu Metropolitan City (KMC), Nepal. They have concluded that composting has a greater potential for recovering organic waste and thereby addressing waste management problems.

The household's plastic disposal practice in an inexpensive way is essential for reducing plastic waste. Gwada *et al.* (2019) states that the proper disposal methods of plastic waste are required for both being eco-friendly and should be adaptable to the recycling process. Hage *et al.* (2018) surveyed to see how municipal waste management strategies, geographical conditions and socioeconomic factors affected plastic collection rates. They have found that plastic packaging and waste collection would operate in a spatially inexpensive manner.

Hidayat *et al.* (2019) found the best way to minimize the accumulation of plastic waste in Indonesia is by developing a sustainable framework for handling household plastic waste across the country by

recycling and reusing it in an eco-friendly manner. Jambeck *et al.* (2018) research on land-based and marine waste management would provide an opportunity for job creation, poverty reduction, clean-up efforts, local environmental stewardship and tourism growth. Reducing plastic waste helps to reduce the spread of diseases and avoid flooding, particularly in urban areas.

Li *et al.* (2009) found that biodegradable plastics have a bright future ahead of them and that plastic waste can be reduced by using less harmful substitutes such as paper. Maskey and Singh (2017) found that household's education and income have a significant effect on waste generation, and these variables are statistically significant at one per cent level of significance and thus can be useful measures for forecasting the trend in solid waste generation. Miezah *et al.* (2015) conducted a study in Ghana, and found that Ghana generates twelve thousand seven hundred and ten tons of plastic waste per day per its current population of twenty-seven lakh people and the organic fraction in plastic waste is the highest in the waste stream, ranging from forty-eight to sixty nine per cent.

Olusunmade (2019) analyzed how plastic waste is separated and disposed of, as well as public awareness of the harmful effects of plastic waste on the environment. The researcher stresses the importance of implementing a constructive and long-term management strategy involving people, companies, hospital administrations and waste management bodies to protect the environment, as well as proper plastic waste separation from other solid waste.

Proshad *et al.* (2017) concluded that irritation of the eyes, vision loss, breathing difficulties, respiratory disorders, liver dysfunction, and gastrointestinal problems are all related to the use of toxic plastics. Plastics pollute the atmosphere in a variety of ways, including soil, water and air pollution. Therefore, the local governments take necessary steps to reduce the usage of plastic and plastic waste. Quarthey *et al.* (2015) conducted a study to investigate the effects of plastic waste and the need for successful environmental management in Ghana. The researcher discovered that developed countries' lack of sustainable solid waste management was a major contributor to climate change and greenhouse gas emissions. Siddiqui and Pandey (2013) found that the current pace of environmental degradation is likely to continue degrading the ecosystem, so it is preferable to take long-term remedial steps to protect the environment. Ssemugabo *et al.* (2020) found that solid waste management in slum communities is generally weak and that a series of initiatives are needed to resolve the physical and behavioural aspects of solid waste management.

Visvanathan (2018) in his study found that plastic waste management has assumed great importance as a result of urbanization activities, according to data released by various state governments in India. To avoid health hazards, plastic waste produced by polymer manufacturers at the manufacturing, extrusion, quality control and lab testing stages, as well as by consumers, must be disposed of and recycled as soon as possible. Yintii *et al.* (2014), based on their report, plastic waste is usually thrown along with other household waste. The study discovered that waste was handled at the household level by mothers and children, with most fathers or grown-up men taking no active role in waste management. Yoda *et al.* (2014) found that sixty one per cent of households used neighborhood bins to dispose of their trash. The remaining 39 per cent dumped their trash in gutters, sidewalks, holes and bushes nearby. To regulate excessive waste disposal, the study recommended proper public education government measures, the provision of more shared trash cans and the collection of waste by private contractors are essential for the future.

Okunola *et al.* (2019) also found that plastic production and waste disposal activities cause numerous issues in almost every region, as evidenced by the detrimental consequences on human health and the environment when it's not properly handled. Similarly, Ssemugabo *et al.* (2020) point out that inadequate research is carried out among households, which plays an important role in the management of plastic waste. Nxumalo *et al.* (2020) mentioned that most households are following the conventional method of plastic waste disposal and face many challenges in the disposal of household plastic waste. Proshad *et al.* (2017) argued that inappropriate management of plastic waste poses a threat to public health, societal well-being and wildlife. Plastic waste is accumulating and being poorly treated all over the world. Even so, it's become a major global problem. Li *et al.* (2009) found out that roads, waterways and other open spaces are often littered with waste piles, posing serious health and environmental risks. It is important to take appropriate steps to monitor plastic waste use and its consequences.

Most of the studies based on household disposal practices and challenges were conducted outside Kerala. Due to this lack of comprehensive research in this field, the researcher decided to investigate households' plastic disposal practices and challenges in Kerala. As a result, by comprehending the importance and broad scope of research on household plastic waste disposal practices and challenges, we have studied this topic, and the study also aims to provide insight into the plastic waste management system in Kerala.

2.2. Conceptual Framework

Based on literatures, a conceptual framework is applied to measure the effectiveness of policies taken by the government based on plastic disposal practices and challenges of households. The conceptual framework is summarized as three segments, such as Households Plastic Waste Disposal Practices (HPWDP), Households Plastic Waste Challenges (HPWC) and Measures taken by the Government to reduce Plastic Waste (GM).

Miezah *et al.* (2015) specified that the household plastic waste disposal practices involve open dumping (HPWDP 1), burying (HPWDP 2), burning (HPWDP 3), land filling (HPWDP 4), and giving to collection agencies (HPWDP 5). Kofoworola (2007) mentioned that the difficulties (plastic waste challenges) faced in disposing of plastic waste include a lack of knowledge (HPWC 1), the lack of dumping sites (HPWC 2), irregular collection by agencies (HPWC 3), the lack of dustbins (HPWC 4), and the lack of plastic waste acceptance in the market (HPWC 5). Due to these plastic waste disposal practices and plastic waste challenges, the government has taken certain measures to reduce plastic waste. Aleluia and Ferrao (2016) mentioned that the plastic waste management approach of the government includes an awareness programme (GM 1), effective waste management practices (GM 2), promotion of 5'R's (GM 3), providing reusable bags and pouches (GM 4), and effective recycling of plastic materials to develop other products (GM 5). In the present scenario, the different types of plastic waste generated by households vary according to monetary conditions, seasons, as well as the demographic segment and location of the areas (Birhanu and Berisa, 2015). In order to develop an appropriate framework, to measure the effectiveness of a programme developed by the government, the researcher used the Ferrara (2008) model as an initial theoretical framework for this study. This model explains the detailed elements involving disposal practices and challenges faced by households

with plastic waste. Finally, the researcher has built an effective model with interconnected variables such as plastic disposal practices and challenges, along with measures taken by the government to reduce plastic waste. The conceptual model used for this study is described in figure 1.

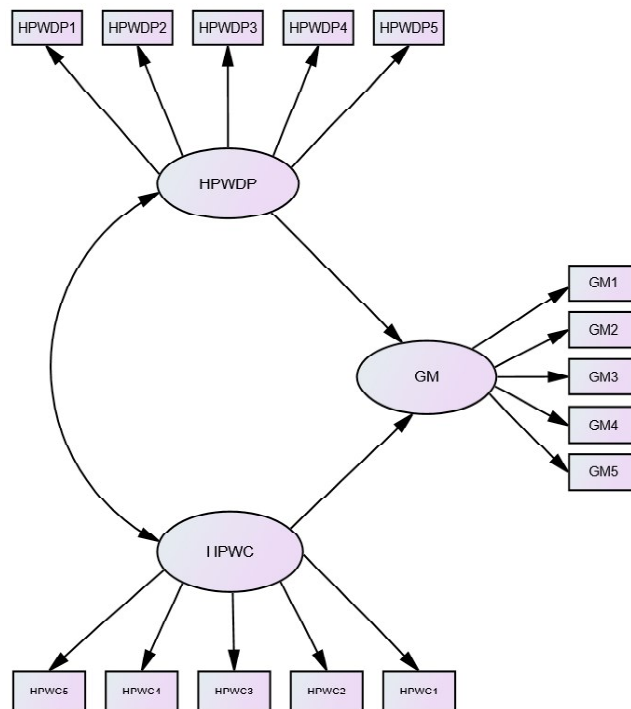


Figure 1: Conceptual Model

Source: Author's Own Conceptualization

3. Objectives of the Study

- To find out the household disposal practices and challenges of the plastic waste management system in Kerala.
- To evaluate the effectiveness of measures taken by the government to reduce plastic waste disposal practices and challenges for households.

4. Methodology

The area of the research is confined to Kerala. Therefore, the Pollution Index of each district in Kerala was used to frame the population for the study. Based on the range of the Pollution Index, the fourteen districts are divided into three categories i.e., least polluted, moderately polluted and heavily polluted. Table 1 depicts the district with Kerala's pollution index.

Table 1: District Wise-Pollution Index of Kerala

<i>Range of Pollution Index (in Percent)</i>	<i>Districts</i>	<i>Pollution Index</i>	<i>Inference</i>
20 -50	Pathanamthitta	47.99	Least Pollution
	Mallappuram	44.24	
	Idduki	37.02	
50 -75	Thrissur	72.89	Moderate Pollution
	Kollam	72.26	
	Wayanad	67.03	
	Ernakulum	66.87	
	Kottayam	63.04	
	Kozhikode	61.51	
	Kannur	54.08	
75 -100	Thiruvananthapuram	87.84	Heavily Pollution
	Allappuzha	81.64	
	Palakkad	78.34	
	Kasargode	76.09	

Source: Author's Own Compilation

The samples are collected using the Multi-Stage Sampling technique. In the first stage, the pollution index of each district in the strata varies according to their size. Therefore, one sample district is selected from each strata through the Lahiri method under probability proportionate size sampling techniques. As per the Lahiri method, Malappuram district is chosen from the least polluted area, Ernakulum district is chosen from the moderate polluted area and Alappuzha district is chosen from the heavily polluted area.

In the second stage, the researcher used proportional allocation of stratified sampling technique for the selection of households. The proportion has been decided with the help of the human population in each district. Table 2 shows the human population of these three districts of Kerala.

Table 2: District Wise Human Population of Kerala

<i>District</i>	<i>Population (In Lakhs)</i>
Alappuzha	21.28
Ernakulum	32.82
Malappuram	41.13

Source: Author's Own Compilation

In this study, the appropriate number of samples turned out to be 203, which were confirmed using the sample size determination technique, and the proportion for sample selection is 21:33:41

from each district (based on human population in Table 2). Therefore, the total sample units are divided on the basis of this proportion.

In the final stage, 45 households from Alappuzha district, 71 households from Ernakulum district and 87 households from Malappuram district were selected through purposive sampling techniques.

5. Data Analysis and Interpretation

5.1. Profile of Households

Table 3: Demographic Profile of Households

<i>Gender wise Classification of Households</i>		
<i>Gender</i>	<i>Number of Households</i>	<i>Percent</i>
Male	61	30.05
Female	142	69.95
Total	203	100
<i>Age wise Classification of Households</i>		
<i>Age</i>	<i>Number of Households</i>	<i>Percent</i>
Below 20	41	20.20
20 – 40	70	34.48
40 – 60	48	23.65
Above 60	44	21.67
Total	203	100
<i>Education wise Classification of Households</i>		
<i>Education</i>	<i>Number of Households</i>	<i>Percent</i>
High School	45	22.17
Higher Secondary	40	19.70
Graduation	72	35.46
Post-Graduation	46	22.67
Total	203	100

Source: Author's Own Compilation

Table 3 shows the demographic profile of households. Out of 203, they were represented by 61 males (30.05%) and by 142 females (69.95%). As per the age level, 41 respondents (20.20%) were below 20 years, followed by 20 – 40 years (34.48%), 40 – 60 years (23.65%) and there were 44 respondents at the age of above 60 (21.67%). In terms of education level, 45 respondents were high school level

(22.17%), 40 respondents were higher secondary level (19.70%), 72 respondents were graduation level (35.46%) and 46 respondents were post-graduation level (22.67%).

5.2. Analysis on Measures taken by the Government to Reduce Plastic Waste based on HPWDP and HPWC

Table 4: Correlation between Household's Plastic Waste Disposal Practices with Demographical Factors

Variables		Households Plastic Waste Disposal Practices (HPWDP)				
		Open Dumping (HPWDP 1)	Burying (HPWDP 2)	Burning (HPWDP 3)	Landfilling (HPWDP 4)	Giving to Collection Agencies (HPWDP 5)
Gender	Pearson Correlation	.593**	.573*	.673*	.821*	.893**
	p – value	.001	.011	.013	.013	.001
Age	Pearson Correlation	.623**	.728*	.673*	.823*	.478**
	p – value	.001	.013	.014	.017	.001
Education	Pearson Correlation	.342**	.343*	.627**	.777**	.877**
	p – value	.001	.015	.007	.007	.006

** 1% level of significance (.01)

* 5% level of significance (.05)

Source: Author's Own Compilation

The relationships between plastic waste disposal practices of households with demographical factors are expressed in Table 4. The Pearson correlation coefficient is used to determine how strongly these two variables are related. Table 4 shows that all the variables are positively correlated to demographical variables and p-values are statistically significant. So it can be concluded that there is a significant relationship between household plastic waste disposal practices with respect to demographic variables.

The p-values of the variables related to household plastic waste disposal practices with respect to demographic variables are less than .05 (Table 5). The results indicate that the disposal practices are dependent on their gender, age and education. Cramer's statistics are used to measure the strength of the relationship between household disposal practices and demographic variables. Here, the entire values are greater than .35. It indicates that there is a strong relationship between household plastic waste disposal practices and demographic factors.

The relationships between plastic waste challenges of households with respect to demographical factors are shown in Table 6. The Karl Pearson correlation coefficient is used to determine how strongly these two variables are related. Table 6 shows that all the variables are positively related to demographical variables and p-values are statistically significant. So it can be concluded that there is a

Table 5: Chi-square Test on Household's Plastic Waste Disposal Practices with Respect to Demographical Factors

Variables		Households Plastic Waste Disposal Practices (HPWDP)				
		Open Dumping (HPWDP 1)	Burying (HPWDP 2)	Burning (HPWDP 3)	Land filling (HPWDP 4)	Giving to Collection Agencies (HPWDP 5)
Gender	Chi-Square Statistic	121.32	118.64	56.34	78.45	117.28
	p – value significance	.001	.011	.013	.013	.001
	Cramer's Statistic	.352	.363	.361	.351	.353
Age	Chi-Square Statistic	98.46	122.45	121.78	58.67	115.47
	p – value significance	.001	.013	.014	.017	.001
	Cramer's Statistic	.362	.374	.358	.360	.362
Education	Chi-Square Statistic	131.56	120.43	118.78	119.37	90.56
	p – value significance	.011	.015	.007	.007	.006
	Cramer's Statistic	.352	.363	.361	.351	.353

Notes: 1. *p*-value < .05, which indicate that variable are statistically significant at the .05 level.

2. Cramer's Statistic above .35 would be considered as “strong relationship”; value between .25 and .35 would be considered as “moderately strong relationship” and below .25 would be considered as “no relationship”.

Source: Author's Own Compilation

Table 6: Correlation between Households Plastic Waste Challenges with Demographical Factors

Variables		Households Plastic Waste Challenges (HPWC)				
		Lack of knowledge (HPWC 1)	Lack of dumping sites (HPWC 2)	Irregular collection by agencies (HPWC 3)	Lack of dustbins (HPWC 4)	Lack of plastic waste acceptance in the market (HPWC 5)
Gender	Pearson Correlation	.745**	.613*	.589**	.718*	.276**
	p – value	.000	.017	.003	.016	.000
Age	Pearson Correlation	.356*	.765**	.565**	.586**	.653**
	p – value	.011	.003	.004	.007	.000
Education	Pearson Correlation	.421**	.467*	.645**	.321**	.659**
	p – value	.000	.021	.003	.001	.001

** 1% level of significance (.01)

* 5% level of significance (.05)

Source: Author's Own Compilation

significant relationship between household plastic waste challenges with respect to their demographic variables.

Table 7: Chi-square test on Households' Plastic Waste Challenges with Respect to Demographical Factors

<i>Variables</i>		<i>Households Plastic Waste Challenges (HPWC)</i>				
		<i>Lack of knowledge (HPWC 1)</i>	<i>Lack of dumping sites (HPWC 2)</i>	<i>Irregular collection by agencies (HPWC 3)</i>	<i>Lack of dustbins (HPWC 4)</i>	<i>Lack of plastic waste acceptance in the market (HPWC 5)</i>
Gender	Chi-Square Statistic	96.72	119.45	72.34	62.45	132.45
	p – value significance	.001	.000	.004	.007	.011
	Cramer's Statistic	.357	.353	.358	.353	.360
Age	Chi-Square Statistic	130.78	78.45	124.75	129.45	94.49
	p – value significance	.000	.021	.000	.002	.003
	Cramer's Statistic	.371	.368	.373	.362	.351
Education	Chi-Square Statistic	79.15	67.68	89.82	132.45	130.01
	p – value significance	.011	.015	.009	.010	.003
	Cramer's Statistic	.354	.353	.371	.356	.356

Notes: 1. *p*-value < .05, which indicate that variable are statistically significant at the .05 level.

2. Cramer's Statistic above .35 would be considered as “strong relationship”; value between .25 and .35 would be considered as “moderately strong relationship” and below.25 would be considered as “no relationship”.

Source: Author's Own Compilation

The chi-square test is conducted to find out the association between categorized variables. The p-values of all the variables related to household challenges with respect to demographic variables are less than .05 (Table 7). So it can be concluded that the variables are statistically significant at a 5 per cent level of significance. As these results indicate, household challenges are dependent on their gender, age and education. Cramer's statistics are used to measure the strength of relationships between household challenges and demographic variables. Here, the entire values are greater than .35. It indicates that there is a strong relationship between plastic waste challenges and demographic factors.

The relationships between measures taken by the government to reduce plastic waste based on HPWDP and HPWC are shown in Table 8. The Pearson correlation coefficient is used to determine how strongly these two variables are related. Table 8 shows that all the variables are positively correlated to HPWDP and HPWC, and p-values are statistically significant. So it can be concluded that there is a significant relationship between government measures with respect to HPWDP and HPWC.

Table 8: Correlation between Measures taken by the Government to Reduce Plastic Waste based on HPWDP and HPWC

Variables		Measures taken by the Government (GM)				
		Raising Awareness on plastic pollution (GM 1)	Effective Waste Management (GM 2)	Promoting the 5'R's- (GM 3)	Providing reusable bags and pouches (GM 4)	Effective Recycling of plastic materials to develop other products (GM 5)
HPWDP	Pearson Correlation	.623**	.613**	.522*	.141*	.301**
	p – value	.005	.001	.014	.003	.000
HPWC	Pearson Correlation	.657**	.617*	.322*	.207**	.489**
	p – value	.000	.023	.016	.007	.003

** 1% level of significance (.01)

* 5% level of significance (.05)

Source: Author's Own Compilation

Table 9: Chi-square test on Measures taken by the Government to Reduce Plastic Waste based on HPWDP and HPWC

Variables		Measures taken by the Government (GM)				
		Raising awareness on plastic pollution (GM 1)	Effective Waste Management (GM 2)	Promoting the 5'R's- (GM 3)	Providing reusable bags and pouches (GM 4)	Effective Recycling of plastic materials to develop other products (GM 5)
HPWDP	Chi-Square Statistic	92.42	142.34	132.38	79.67	145.89
	p – value significance	.016	.009	.008	.014	.003
	Cramer's Statistic	.362	.373	.421	.420	.410
HPWC	Chi-Square Statistic	89.34	109.21	138.78	112.11	111.44
	p – value significance	.012	.002	.007	.013	.011
	Cramer's Statistic	.382	.411	.398	.374	.364

Notes: 1. $p\text{-value} < .05$, which indicate that variable are statistically significant at the .05 level.

2. Cramer's Statistic above .35 would be considered as "strong relationship"; value between .25 and .35 would be considered as "moderately strong relationship" and below .25 would be considered as "no relationship".

Source: Author's Own Compilation

The chi-square test is conducted to find out the association between categorized variables. The p-values of all the variables related to measures taken by the government to reduce plastic waste based on HPWDP and HPWC are less than .05 (Table 9). So it is concluded that there is an association between government measures based on HPWDP and HPWC. Therefore, the measures taken by the government to reduce plastic waste are dependent on HPWDP and HPWC. Cramer's statistics are used to measure the strength of the relationship between government measures and HPWDP & HPWC. Here, the entire values are greater than .35. It indicates that there is a strong relationship between government measures and HPWDP & HPWC.

6. Results and Discussion

6.1. Model Validity

Model validity is advocated and administered to affirm "construct validity" for dimensions related to Measures taken by the Government to reduce Plastic Waste (GM) based on Households Plastic Waste Disposal Practices (HPWDP) and Households Plastic Waste Challenges (HPWC), which will set the ground for examining the relationship between construct dimensions and their items (Figure 2). The values establish the model fitness for the data specified in Table 10.

Table 10: Model Fit Indices

<i>Model Fit Indices</i>	<i>Citations</i>	<i>Threshold Limit</i>	<i>Estimated Value</i>	<i>Interpretation</i>
Normed Chi-Square	Kline, R.B. (2005)	< 3	225.776/ 87 CMIN/DF – 2.595	Excellent
CFI	Kline, R.B (2005)	>.90	0.956	Good
GFI	Kline, R.B (2005)	>.90	0.941	Good
AGFI	Kline, R.B (2005)	>.90	0.932	Good
PGFI	Kline, R.B (2005)	>.90	0.911	Good
TLI	Kline, R.B (2005)	>.90	0.927	Good
IFI	Kline, R.B (2005)	>.90	0.932	Good
NFI	Kline, R.B (2005)	>.90	0.915	Good
RMSEA	Kline, R.B (2005)	< 0.08	0.05	Acceptable
SRMR	Kline, R.B (2005)	< 0.06	0.03	Excellent

Source: Author's Own Compilation

Table 10 reveals the indices of the relevant model. As per the model fit criteria, the ratio of goodness of fit to degrees of freedom should not exceed 3 and RMSEA < 0.08, along with GFI, AGFI, PGFI, TLI IFI, NFI and CFI values being > 0.9. The smaller SRMR indicates a better model fit. The value of RMSEA is < 0.08 and CMIN/DF is < 3, which indicates a good model.

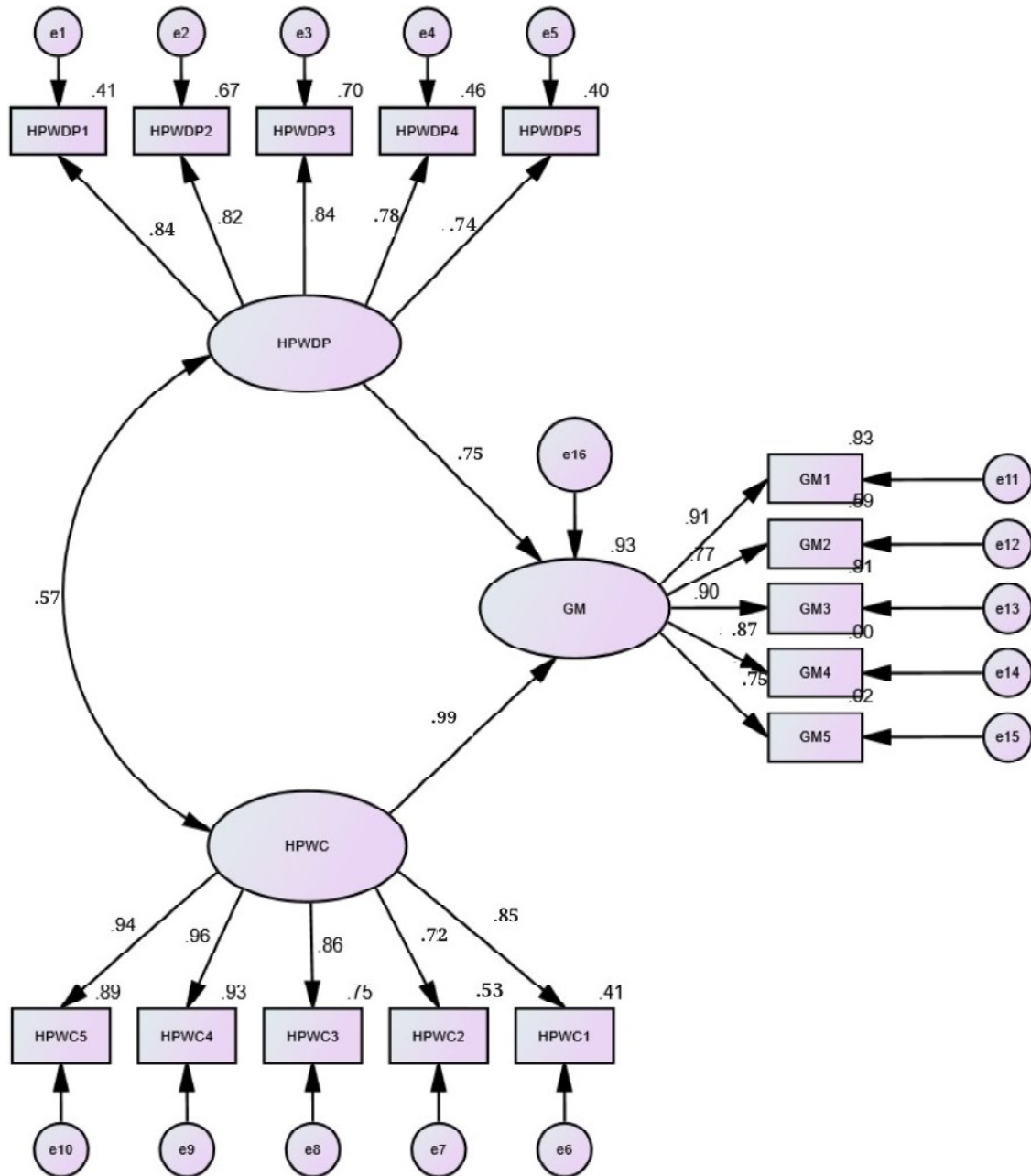


Figure 2: The Conceptual Model Validity

Source: Author's Own Compilation

Table 11: Standardized and Unstandardized Regression Weights of the Model

		<i>Unstandardized Regression Weights</i>					<i>Standardized Regression Weights</i>
<i>Indicator</i>	<i><— Latent</i>		<i>Estimate</i>	<i>S.E.</i>	<i>Critical Ratio</i>	<i>P-value</i>	
HPWDP1	<—	HPWDP	1				0.840
HPWDP2	<—	HPWDP	1.144	0.147	7.777	***	0.821
HPWDP3	<—	HPWDP	1.250	0.150	8.317	***	0.838
HPWDP4	<—	HPWDP	1.125	0.165	6.836	***	0.778
HPWDP5	<—	HPWDP	0.481	0.126	3.805	***	0.736
HPWC1	<—	HPWC	1				0.850
HPWC2	<—	HPWC	1.200	0.143	8.391	***	0.717
HPWC3	<—	HPWC	1.576	0.195	8.100	***	0.865
HPWC4	<—	HPWC	2.092	0.227	9.224	***	0.965
HPWC5	<—	HPWC	1.958	0.209	9.368	***	0.942
GM1	<—	GM	1				0.913
GM2	<—	GM	0.925	0.086	10.766	***	0.771
GM3	<—	GM	0.896	0.072	12.408	***	0.899
GM4	<—	GM	1.075	0.095	11.315	***	0.869
GM5	<—	GM	1.173	0.092	12.750	***	0.751

Source: Author's Own Compilation

Table 11 shows the standardized and unstandardized regression weights of the Model based on latent and indicator variables. The standardized regression weights of all the latent variables based on indicator variables are greater than 0.5 and p – values are less than .01. It indicates that all indicator variables used to predict latent variables are statistically significant.

Table 12: Composite Reliability of the Model

<i>Latent Variables</i>	<i>CR</i>	<i>AVE</i>	<i>MSV</i>	<i>MaxR (H)</i>
HPWC	0.940	0.761	0.326	0.966
HPWDP	0.901	0.646	0.327	0.905
GM	0.924	0.711	0.327	0.938

Source: Author's Own Compilation

The composite reliability of the model is expressed in Table 12. The composite reliability of HPWC is 0.940, HPWDP is 0.901 and GM is 0.924. If $CR > 0.70$, $AVE < CR$, and $AVE > MSV$, which indicates that the model achieved composite reliability.

Table 13: Convergent Validity of the Model

<i>Indicator Variable</i>	<i><—</i>	<i>Latent Variable</i>	<i>Standardized Loading</i>	<i>Square of Standardized Loading</i>	<i>Sum of Square of Standardized Loading</i>	<i>Number of Indicators</i>	<i>AVE</i>
HPWDP1	<—	HPWDP	0.840	0.706	3.229	5	0.646
HPWDP2	<—	HPWDP	0.821	0.674			
HPWDP3	<—	HPWDP	0.838	0.702			
HPWDP4	<—	HPWDP	0.778	0.605			
HPWDP5	<—	HPWDP	0.736	0.542			
HPWC1	<—	HPWC	0.850	0.723	3.803	5	0.761
HPWC2	<—	HPWC	0.717	0.514			
HPWC3	<—	HPWC	0.865	0.748			
HPWC4	<—	HPWC	0.965	0.931			
HPWC5	<—	HPWC	0.942	0.887			
GM1	<—	GM	0.913	0.834	3.555	5	0.711
GM2	<—	GM	0.771	0.594			
GM3	<—	GM	0.899	0.808			
GM4	<—	GM	0.869	0.755			
GM5	<—	GM	0.751	0.564			

Source: Author's Own Compilation

Table 13 reveals the convergent validity of the model. In order to achieve the convergent validity, the AVE (Average Variance Extracted) must be 0.5 or more than 0.5 and standard factor loadings are greater than 0.50. As per this model, the AVE of HPWDP is 0.646, HPWC is 0.761 and GM is 0.711. The factor loadings of all the latent variables based on indicator variables are greater than 0.5. It indicates that the model achieved convergent validity.

Table 14: Discriminant Validity of the Model

<i>Latent Variables</i>	<i>HPWC</i>	<i>HPWDP</i>	<i>GM</i>
HPWC	0.872		
HPWDP	0.571	0.804	
GM	0.531	0.572	0.843

Source: Author's Own Compilation

The discriminant validity of the model established in Table 14. In order to achieve the discriminant validity, the square root of AVE must be more than latent variables correlations i.e. inter – constructed

correlations. As per this model, the square root AVE of HPWC is 0.872, HPWDP is 0.804 and GM 0.843, which are greater than inter – constructed correlations. Therefore, this model satisfies the requirements for discriminant validity.

7. Conclusion

The local bodies like panchayats, municipalities and corporations are playing a vital role in the plastic waste management system of government. Therefore, the whole hearted support of the local bodies is essential to ensure an effective plastic waste management system in Kerala. The household's plastic disposal practices are highly related to their demographic factors such as gender, age and education. When it comes to plastic waste challenges, it is directly related to household's demographic profile. The Government of Kerala is taking various measures to reduce household plastic waste in society and they are actively participating in waste management practices. Unfortunately, the public perception reveals that the government should enhance the awareness of plastic waste management systems in different districts. It indicates that the government should be more responsible to enlarge the awareness and education programme related to plastic waste in society. This study reveals that it is crucial to take necessary measures to reduce plastic waste by adopting proper plastic waste disposal practices that reduce the harmful effects on humans and the environment. It emphasizes that by prioritizing policies, the local administration can reduce plastic waste by adapting innovative measures and modern technologies. To keep plastic waste under control, individual accountability, corporate action and government policies are all needed.

Recently, the Government of Kerala relaxed the limit for single-use of plastic products in response to the pandemic, which resulted in a rise in household use of plastic products, especially at houses. Therefore, the government must enforce fines and penalties for using hazardous plastic products and this fund can be used to finance various initiatives to reduce the use of plastics. As part of the plastic waste management initiatives of the government are the local bodies like panchayath, municipalities and corporations should try to increase public awareness classes and education programmes on proper segregation of plastic waste at home. The empirical findings of this study also suggest that the Government of Kerala should invest an effective waste management practices and should establish a plastic waste disposal system for collection and recycling of plastic waste in each district.

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Impact of Pandemic on the Financing of MSME Sector in Odisha with Reference to SBI

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JEL Classification

G2, H3, L5, L8

Abstract: The Covid-19 pandemic has been a tough challenge for the entire industrial sector. Many industries suffered a lot due to the lockdown and many lost their jobs. The business organisations could not afford to pay salaries to the staff members due to lack of revenue, and, hence, with the downfall of industries, the personal growth of individuals was also stuck. The State Bank of India provided has remarkably supported in this aspect. This paper mainly focuses on the steps taken by the State Bank of India for the growth of entrepreneurship in the country. This paper also aims at identifying the areas considered by the State Bank of India in this direction. Though it is a theoretical paper, it deals primarily with various schemes offered by the State Bank of India for entrepreneurship development and highlights the logical grounds on the basis of which provision for appropriate financial accommodation can be made. This is a policy cum review paper and hence, no tool and technique have been used.

1. Introduction

To speed up the industrialisation process and to increase the GDP we require a maximum number of manufacturing units to be established in the country. For this, we need to encourage the youths of the country to come up and start their own enterprises because it will not only help in the contribution towards GDP but also towards the Gross National Income of the country (Cornia and Kiiski, 2001). As it leads to employment generation to a lot of people, that's why it provides livelihood to a huge mass of the population. Hence the need for entrepreneurship has been felt greatly in the current era.

Entrepreneurship is the process through which a person starts a new enterprise by taking risks for earning profit and surviving in the market. The person who starts the enterprise can be called as an entrepreneur. The entrepreneur has to take a lot of courage and risk-bearing ability to start the enterprise. Lack of confidence may result in the downfall of the organisation. Again the entrepreneur must

possess the necessary managerial and entrepreneurial abilities because the entrepreneur is the ultimate manager of the organisation (Asoni, 2011).

But regardless of all these facts, attention must be paid to the most vital thing how to start the enterprise first. The most crucial part in the process of commencement of a business enterprise is the procurement of adequate finance from the most reliable and economical source and ensuring its proper utilisation. So, the necessary finances can be estimated and proper arrangements should be done for it. Until and unless there is an assured source of finance, the ideas which the entrepreneurs are having for the future of the organisation can never be translated into practice. Further, providing financial accommodations for the units in the MSME sector is a part of the Priority Sector Lending (PSL) obligations of all the scheduled commercial banks. It is on this backdrop, that this study presents a theoretical analysis of the role played by the State Bank of India in providing financial and other kinds of support for the growth and development of the industries in general and MSME units in particular in the state of Odisha. The study also attempts to look into the special financial assistance provided by the State Bank of India to the MSME sector to enable them to deal with the situation arising out of the Covid- 19 pandemic. The paper also contains an analysis of the impact of such financing on the overall state of affairs of these units.

Right now in India, where mechanisation is in demand, the scope of wage employment is going down, hence, there is a need to have self-employment in the country. MSME comes under the priority sector lending. The RBI's latest credit policy for financing under priority sector lending.

Since its formation, many steps have been taken and in the gradual course, developments have been taking place. We are aware of some of the developments and some concepts are very new for us which we need to know. Many entrepreneurs suffer because of their lack of knowledge about the banking sector. They don't have a basic idea about some of the areas where easy financing is being done. So, that awareness can be made among the young entrepreneurs.

The Central Bank has given certain guidelines related to priority sector lending with the aim to provide funds to the companies which are badly affected by Covid-19. The new guidelines provide much better credit facilities to the areas having credit deficiency, it has raised its funding towards small and marginal farmers as well as the weaker sections, and it has increased the credit lending towards renewable energy and health insurance also.

The revised guidelines have been framed to address regional disparities in the flow of priority sector credit. Higher weightage has been assigned to incremental priority sector credit in 'identified districts' where priority sector credit flow is comparatively low.

The sudden attack of Covid-19 affected almost all sectors, including micro, small and medium enterprises (MSMEs). The unexpected lockdown undersized the business activities of the MSMEs sector and mounted adverse shocks in the form of non-procurement of raw materials reduced production and supply of final products, and non-availability of employees to work in the process of production (Gupta *et al.*, 2020).

2. Review of Literature

Dey and Juan (2021) conducted the research during the tough period of pandemic to highlight its impact on Indian economy. Due to Covid-19 pandemic, Indian economy is going through a very tough

period, and during this period main supportive hand was raised by RBI by safeguarding the interest of the borrowers. The tool implemented by RBI was moratorium to support the borrowers by stake outing with known or unknown consequences. The paper focuses on the current status of the Indian banks and highlights the negative and positive impact of the moratorium on RBI. The paper highlights the measures taken by RBI to combat the stiff situation and also emphasizes the role of RBI in reducing the risk of commercial banks. Behera *et al.* (2020) have conducted the research to find out how MSMEs have contributed to the economy of the country and the challenges faced in pre-and during the Covid-19 period. Other statistical tools have also been used as Descriptive statistics, correlation, and co-integration have also been used to measure the impacts and to measure the relationship among the variables such as the number of MSMEs, investment amount, employment, and output. Ghosh (2021) has conducted research in the aftermath of the Covid-19 pandemic, initiative taken by Government of India, to acknowledge the role of MSMEs in building as an economic booster by generating employment in rural areas of our nation. It has been concluded that MSMEs formed a really prominent part of the announcements made under the Atmanirbhar Bharat Abhiyaan. The researches show how the MSME units have faced the challenges and what are the steps taken by RBI and the government in this regard but it doesn't give any idea about the results of such steps taken.

Lalropuii and Singh (2013) conducted the research with the objective to point out the opportunities that are available for the entrepreneurs in Mizoram; to find out the financial role of State Bank of India and to provide suggestions to the entrepreneurs, so that, they can avail the opportunities. The study is descriptive in nature and secondary data has been taken from official records. They found that the annual credit plan was good that of SBI and the performance of four banks have been compared, i.e., SBI, UBI, Vijaya Bank, and MZRB, where SBI stood first. Mathew (2010) conducted the research with the objective to elaborate and suggest a positive note on the basic agenda existing in Middle East resisting the women entrepreneur growth development and use of ICT. The researcher has found out the barriers for women-ICT context like socio-cultural reforms, time constraints and family female stereotyping, career guidance, information and communication technology. Other barriers restricting entrepreneurial development and ICT among women in Middle- East are accessibility to support service, conditions of work in economic activity, consistently high level of activity and responsibility of home dependency on family, gender-based demands in the ICT sector, increased female participation in household activity, inflow of skilled workers, slow demand of ICT undermining the quality of girls' education. Anitha (2003) examined the role of commercial banks in entrepreneurship development in Karnataka state. He stated that banks should come forward to help entrepreneurs and on the other, the entrepreneurs themselves have to realise their role and co-operate with banks in strengthening the system. Roy (2020) has found that a 150 crore of loss has been faced by the apparel manufacturing units (export sector) from March 2020 to May 2020 because of the hit by the pandemic. Chauhan (2020) has found that the government took immediate steps and precautionary measures to safeguard the MSMEs, like providing liquidity to mitigate the cash flow requirements, framing schemes to ensure jobs, and ensuring business continuity, as well as steps for the expansion of trade through capacity building. Tripathy (2021) found that this extreme situation has resulted in the closedown of businesses because of shortage of capital, labor, and non-availability of raw materials, and again the situation

generated another option to shift from non-essential to essential commodities such as masks, PPE kits, sanitisers, etc. Sarabu (2019) has suggested to explore the rural areas by developing MSMEs in these areas because these areas are unexplored and very rich in natural resources, so, it is better to develop rather than depend on imported resources. Singh (2017) in his research advocated the need for a transparent credit provision for the MSME sector, for that he has suggested a uniform credit rating system. Mohanty(2018) has conducted the research and established a relationship between three variables; no. of MSME units, employment generation, and the market value of fixed assets. Sheikh and Saxena have conducted the research to study the paradigm of Indian MSME, analyze the amended definition of MSME and its impact, analyze the reforms in MSME sectors in the backdrop of the Covid-19 Pandemic attack in India, Evaluate the special schemes for Indian MSME's amid Covid-19 situation, explore the possible impact of government schemes framed to address the condition of MSME's amid Covid -19 pandemic attack, evaluate the effectiveness and future prospects of Indian MSME sector. Paruchuru and Mavuri (2020) have conducted the research and concluded as the Covid-19 situation is an abnormal situation, so, in order to bring everything back to normal, we need abnormal actions to be undertaken. The Covid-19 situation has affected many sectors and it has affected mostly the MSMEs. So, the government has followed a qualitative approach where levels have been set and the first priority has been given to livelihood, then to save costs, and finally to balance the supply chain disruptions.

Balanagalakshmi and Kumari (2021) highlighted the impact of Covid-19 on affected sectors, such as aviation, tourism, retail, capital markets, MSMEs, and oil. Also, she highlighted the impact of the Covid-19 pandemic on GDP growth rate, the impact on Migratory labor. It is a period of inequality, poverty, and social exclusion of vulnerable people. She advocated the need of government intervention to overcome this crisis and revive the Indian economy. Dubey and Sahu (2020) have shown the declining stage of MSMEs due to the Covid-19 crisis and the economic relief packages, speciûcally for MSMEs, entitled as "Atmanirbhar Bharat (Self- dependent India)" to tackle the situation by reviving the units.

3. Objectives and Hypothesis of the Study

3.1. Objectives of the Study

- To highlight the significance of bank credit for the promotion of entrepreneurship.
- To throw light on the financial accommodation provided by SBI for the promotion of entrepreneurship, especially during the pandemic period.
- To assess the impact of bank credit extended by SBI on entrepreneurship development during and post-pandemic period.

3.2. Hypothesis of the Study

The current research has been done with the assumption that special relaxation during the pandemic period in repayment of loans and sanction of loan at the correct time period boosts the morale of the entrepreneurs and minimises its adverse effect of the pandemic on their operations and working results.

4. Research Methodology

This is a policy cum review paper where data has been taken regarding the sanction of loans to the MSME sector during and the post pandemic period, though the growth has not been analysed yet after this financial support, it has boosted up the morale of the entrepreneurs to a great extent.

5. Data Analysis

The following are some of the SBI SME Loan Schemes which are available for the entrepreneurs:

Undoubtedly, SBI is the leading public sector bank of the country. It is having the largest number of ATMs. It is having accessibility to rural areas also, that's why it can be a good option for small and rural entrepreneurs to get finance easily.

Again, the Bank charges a very minimal rate over the loans which is another advantage for the entrepreneurs. Along with that, it is having special schemes for different kinds of businesses which an entrepreneur must be aware of.

Rural Self-Employment Training Institutes (RSETIs) RSETIs are performing a social role in providing skills and training to the rural youths and encouraging them to start something of their own. At present, the institutes are spread over 26 states and 3 union territories. Every year, each institute provides approx. 30 development programs. So far 152 RSETIs are under working, till date 29,944 training programmes have been conducted. Out of a total number of trained youths, 70.40% have been settled.

5.1. Significance of Bank Credit for Promotion of Entrepreneurship

The lockdown resulted in a drastic fall in the Micro Small and Medium Enterprise (MSME) sector in Odisha. Almost 3,207 units were closed down. It can be imagined from the above fact that if these many units have been closed down, then, what will be the number of persons who have lost their jobs. So, it used to affect a massive group of people if it affects a single unit also.

To strengthen and rebuild the confidence of the MSME units during the pandemic, Chief Minister Naveen Patnaik announced special package under which male entrepreneurs were disbursed additional loan at 2% interest rate and female at 5%, said Mr. Mishra.

5.2. Financial Accommodation Provided by SBI towards the MSME Sector, Odisha during and Post-pandemic period

In order to satisfy the liquidity requirements of Micro, Small and Medium Enterprises (MSMEs) during the Covid-19 pandemic, the State Bank of India (SBI) has taken many steps and as a result of this 48,168 MSMEs in Odisha are being provided with collateral-free loans under the Guaranteed Emergency Credit Line (GECL). So far Rs 644.82 crore has been sanctioned to 20,182 enterprises.

The CGM is approaching and encouraging the entrepreneurs to avail of this benefit and on that note, she gave the statement, "The existing affected units will get 20 percent (pc) of their fund-based limits with 12 months moratorium and four years repayment period to reduce the stress level in working capital requirements."

Reportedly, as many as 15,632 pre-approved offer letters have been sent to the eligible borrowers and 15,615 units have been sanctioned Rs 419.39 crore under the Common Covid-19 Emergency Credit Line (CCECL) scheme till date in Odisha.

Again, the CGM added, "EMI has been deferred in all eligible term loans up to August 31 as Covid-19 relaxations. Under digital products, 14,603 accounts have been sanctioned under e-MUDRA and approximately Rs 70 crore have been disbursed,"

As per the reports, 15,632 pre-approved offer letters are approved and sent to the eligible borrowers as a result of which 15,615 units have been sanctioned Rs 419.39 crore under the Common Covid-19 Emergency Credit Line (CCECL) scheme so far in the State. The CGM again gave the statement, "EMI has been deferred in all eligible term loans up to August 31 as Covid-19 relaxations. Under digital products, 14,603 accounts have been sanctioned under e-MUDRA and approximately Rs 70 crores have been disbursed".

The GECL is a loan for which a 100% guarantee would be provided by the National Credit Guarantee Trustee Company (NCGTC) to Member Lending Institutions (MLIs), and which will be extended in the form of additional working capital term loan facility in case of Scheduled Commercial Banks. The interest rate of the loan ranges from 7.8 pc to 9.25 percent.

Special Bailout Package Announced by the Chief Minister

"During 2020-21 financial year, the State government had estimated to provide ¹ 108.29 crore towards interest subvention under the Emergency Credit Line Guarantee Scheme. Accordingly, the MSME department had approved a fund of ¹ 99.87 crore," he said. As many as 473 entrepreneurs have taken advantage of the scheme.

The Odisha government informed the year 2020 and 2021 were among fruitful years for the State as far as attracting investment was concerned. To another query, Mr. Mishra said Odisha has received total investment proposals worth ¹ 16,42,345.26 crore since 2002. Promoters came up with proposals of ₹ 2,50,463.96 crore during 2019 – the highest in a single year and those projects were approved. In 2020, 53 project proposals worth ¹ 1,36,800.65 crore were approved by the government. The year 2021 was even better. As many as 51 industrial projects worth ₹ 1,61,550.97 crore were approved by the government.

6. Results and Policy Implications

From the above analysis, it has been found that State Bank of India has given many relaxations in terms of moratorium period and collateral-free loans. The State Bank of India has helped lots of MSMEs to regain the confidence to continue their operations. These steps by the SBI are still under the process of implementation. Moreover, the focus should also be given to the areas which can be considered to prevent the units from becoming sick in addition to the special package announced by CM, Naveen Pattnaik. But it can be expected that this will definitely result in a positive outcome as far as the entrepreneurship development of the state is concerned.

7. Conclusion

It can be concluded from the above research that the State Bank of India has been a great financial support for the MSME sector. Being the largest public sector bank, it has always achieved milestones

by providing much support by framing and establishing new policies and increasing the range of financing. If such kind of support will be availed by the MSMEs, then, definitely the risk of becoming a sick unit will be reduced to a great extent. Though the country was hit by a shock but as per the reports of the state government, 2020 and 2021 have been two fruitful years for the state. 2021 was even better. So, this betterment wouldn't have been possible without the support of the banking sector especially the State Bank of India.

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Family Firm IPOs: A Bibliometric Analysis and Systematic Literature Review

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JEL Classification

G30, G32, E44, G34

Abstract: The principal method of raising public funds by a private firm is Initial Public Offerings (IPOs). This area has attracted researcher's attention (40,559 publications) because when private firms go public, they have different decision-making processes, goals, attitudes, performance and corporate governance. We examined the publication trend in the field of family firm IPOs with the help of bibliometric data extracted from Scopus because family-ownership is a prominent feature of firms worldwide. The search string used includes "Family Firm" and a wildcard "IPO", which yielded only 64 peer-reviewed articles written in English Language. Thus, family firm IPOs is an under-researched area but have been growing rapidly. The paper has done bibliometric analysis using VOS viewer software and systematic literature review to objectively identify influential authors, seminal works, emerging topics and directions for future research. The study has identified a significant scope for future research given the limited number of influential articles mainly by developed nations focusing on Agency, SEW (Socio-Emotional Wealth) and Signaling theory only.

1. Introduction

The most popular form of business around the world is family firm or family business. Family firms are owned and managed by generations of a family, related by blood, marriage, or adoption. Studies have investigated the method of raising public funds by a private firm through Initial Public Offering (IPO). Despite its importance for owners and investors, two anomalous behavior - IPO underpricing and post-IPO underperformance is displayed by IPOs. Literature is filled with evidence of IPO

underpricing (Narasimhan and Ramana, 1995; Welch, 1989; Murthy and Singh, 2014) and long-run underperformance of IPOs (Singh *et al.*, 2016; Ritter, 1991). However, studies on family firm IPOs revealed that the IPO underpricing and post-IPO performance of family firms are distinct from non-family firms (Leitterstorf and Rau, 2014; Jaskiewicz *et al.*, 2005; Hearn, 2011). Several studies have been conducted on various aspects of family firm IPOs over the last 31 years (1990-2021). But this topic is in the growing stage as after one publication in 1990, there was no publication till the year 2000 and an upward trend in the publication can be observed from the year 2005 (Figure 2). Thus, publications on “family firm IPOs” are rising in recent years and there is a great scope for further research in this area. Various researchers used different theories to explain the decision of going public by family firms, pricing and post-IPO performance of family firms. Agency theory, Socio-Emotional Wealth (SEW) and Signaling theory are the most widely used theories. Agency theorists claim that family-owned firms do not go for public-issue to get benefits of private control. Going public means dilution of private control and monitoring by external investors, regulators and the market (Helwege and Packer, 2009). Considering IPO pricing, family firms use IPO underpricing as a tool to concentrate ownership among family members because larger IPO underpricing will attract more subscriptions for shares, leading to dispersed ownership by outsiders. Using the same context for the long-run performance of IPOs, agency theorists found that the family firm IPOs underperforms in the long-run supporting private benefit theory because family firms are inclined towards under-investment at the cost of shareholders’ wealth for their own benefit (Kuklinski and Schiereck, 2007). Researchers using signaling theory explained that during the initial public offering, there is high information asymmetry among the participants i.e. issuers, underwriters, investment bankers and investors. The information is not equally shared among these participants, insiders (issuers) have more information than outsiders (potential investors). Family firms are concerned about the reduction of information asymmetry among investors for the success of their IPOs. As a result, family firms use post-IPO retention of their shareholdings as a signal to show their commitment and long-run value creation which reduces the uncertainty and IPO underpricing (Ding and Pukthuanthong, 2013). However, negative perceptions by investors about family ownership might lead to rise in IPO underpricing. They may perceive family ownership as a signal of less aggressive investment strategy and a low-risk taking behavior (Chandler *et al.*, 2019). The theoretical context of Socio-emotional Wealth (SEW) is also gaining attention among researchers. As per this theory, the family firms are willing to sacrifice economic gain to preserve their non-economic utility. Family firms are willing to accept higher IPO underpricing than non-family firms even if that means a reduction of IPO proceeds to protect their SEW (Leitterstorf and Rau, 2014). In the long-run, family firms maintain high leverage to finance their investments instead of going for equity in order to protect their control (Jain and Shao, 2015). Thus, researchers using different theories observed a positive relation (Jaskiewicz *et al.*, 2005), negative relation (Kuklinski and Schiereck, 2007) and cubic relation (Chahine, 2007) between the family firm and the long-term performance of the firm. Each study has provided an insight into this field, but very few studies have systematically reviewed the existing literature on family firm IPOs and there is a dearth of studies that further investigated this literature using bibliometric analysis.

Bibliometric analysis can provide additional understanding in the field of family firm IPOs, not been investigated by previous studies. Bibliometric analysis is gaining popularity among researchers in

the past few years due to the availability of bibliometric data. In this study, we have observed that there have been thousands of research articles published in the area of “IPOs” and “family firms” separately but very few articles explored the area of “family firms IPOs”. We have found only 64 peer-reviewed articles on family firm IPOs extracted from the Scopus database and performed a bibliometric analysis using VOS viewer to objectively identify influential authors, seminal works, trends in publications and emerging topics in this area. We have systematically reviewed the articles on family firm IPOs and organized them into three categories (IPO antecedent, IPO pricing and post-IPO performance) based on their context. This will help us to substantiate the results of bibliometric analysis and to find out the directions for future research.

2. Literature Review

Based on the systematic literature review all research papers can be divided into three categories: IPO antecedent, IPO pricing and post-IPO performance (Figure 1).

2.1. IPO Antecedents

All research papers focusing on the motivation behind a family firm’s decision to go public are summarized in Appendix I. Analysis of the same shows that scholars used mainly two theories - agency theory and Pecking order theory to explain the IPO antecedents. As per Masulis *et al.* (2020) the family firms’ decision to go public is based on financial factors such as opportunities for financial growth. The involvement of non-family members on board increases the chances of reaching the equity market by family firms (Sonfield and Lussier, 2009). The Corporate governance life cycle is claimed as an antecedent of family firms’ decision to go public by Mazzola and Marchisio (2002), who found that the presence of venture capitalists, competitive environment and management ambition are major factors behind going public.

The second line of research investigated the family-level factors behind the decision to go for IPO. Following agency theory, studies claim that the family firms’ intention to retain the private control benefit (Chung *et al.*, 2015; Helwege and Packer, 2009) is an important factor behind the family firms’ decision to remain private. However, young and fast-growing firms prefer to go public (Mahéroult, 2004). Thus, the firm’s age and size of the firm also determine the decision to go for IPO.

2.2. IPO Pricing

Appendix II summarizes all research articles related to IPO pricing, mostly articles compared family firms and non-family firms. Overall, our analysis reveals that most scholars explained IPO pricing using agency theory, signaling theory and socioemotional wealth (SEW) theory.

Articles concentrating on agency theory to explain the IPO pricing decision suggest that family firms exhibit lower underpricing as compared to non-family firms (Huang, 2019; Hearn, 2011; Daugherty *et al.*, 2012; Yang *et al.*, 2020). Scholars have examined the effect of family involvement and the presence of outsider board members on IPO pricing. These studies highlighted that the board independence (González, 2019; Ding and Pukthuanthong, 2013), prestigious underwriter (Ding and Pukthuanthong, 2013), business angel’s ownership (Hearn, 2011) and managerial ownership (Daugherty *et al.*, 2012)

lowers the IPO underpricing in family firms. Studies based on signaling theory claimed that family firms strategically use IPO underpricing to reduce investors' uncertainty around the issue of shares. Family firms reveal their retention of ownership during the time of issue to build investors' confidence in the performance of the firm (Ding and Pukthuanthong, 2013; Chandler *et al.*, 2019). A study based on both agency and signaling theory revealed that the presence of a sound legal environment negatively affects IPO underpricing in family firm IPOs (Huang, 2019).

Studies using institutional theory claimed that the presence of family members who have political ties reduces the level of IPO underpricing in family firm IPOs (Yang *et al.*, 2020). Many studies explored the role of a CEO's characteristics on the pricing of IPOs. Kotlar *et al.* (2018) and Huang (2019) found that the family firm CEO has a negative effect on the IPO underpricing. CEO power (represented by prestige, experience and ownership) positively influences the IPO valuation (Cirillo *et al.*, 2015a). Another theoretical perspective used by scholars is socioemotional wealth (SEW), studies based on this theory suggest that family firms exhibit higher IPO underpricing as compared to non-family firms because they value emotional wealth over economic wealth (Kotlar, 2018; Leitterstorf and Rau, 2014).

2.3. Post-IPO Performance

Appendix III summarizes research articles that are based on family firms and the long-term performance of firm's post-IPO. Our analysis reveals that most articles examined the effect of family status on the long-term profitability, investment choices, survival and growth opportunities in the firm. The remaining articles examined the effect of corporate governance changes, and the presence of outsiders on the long-term profitability of the firm.

Studies examining the role of outsider owners in determining the long-term performance of IPOs claimed that the presence of venture capitalists (Giovannini, 2010) and domestic banks (Lien and Li, 2014) have a positive impact on the long-run performance of a firm. Research-based on the composition of the board demonstrated that independent directors on the board have a positive effect on directors' remuneration whereas the family CEO negatively affects disclosure of remuneration (Hearn, 2013), in line with agency theory. Giovannini (2010) claimed that the presence of a compensation & appointment committee has a positive influence on the performance of a family firm. Changing the CEO that was present during the IPO process negatively affects the performance of the firm (Vaz Ferreira, 2008).

Shifting the focus of research on the relationship between post-IPO performance and family firm status, studies used multiple theories (agency theory, socioemotional theory and signaling theory). Family firm status reduces the investment of the firm in post-IPO liquidity, increases the leverage and reduces R&D investment (Jain and Shao, 2014, 2015), in line with agency theory. However, family firms increase investment in advertisements, in line with a resource-based view (Nikolov and Wen, 2018). Family-controlled firms have a negative post-IPO performance based on a corporate governance life cycle perspective (Lien and Li, 2014). Huang *et al.* (2014) studied the family firm IPOs in China, they found that the family firms going public via IPO have worse earnings quality as compared to firms going public via takeovers. Scholars using different theories observed a positive relation (Jaskiewicz *et al.*, 2005), negative relation (Kuklinski and Schiereck, 2007) and cubic relation (Chahine, 2007) between the family firm and the long-term performance of the firm.

3. Objectives of the Study

The objectives of this study are:

- To analyze the trend and volume of publications on family firm IPOs.
- To identify the top journals and countries publishing in this domain.
- To recognize the top influential authors contributing to this field.
- To identify emergent topics/keywords and directions for future research.

4. Research Methodology

In this study, the research articles on family firm IPOs were extracted from the Scopus database. Scopus database is the largest database of peer-reviewed articles, books and conference papers. It provides all information about the journals, articles, authors, citations, affiliations, etc. Bibliometric data extracted from the Scopus database is analyzed using VOS viewer. A systematic literature review is used to find out the research gap in the existing literature and directions for future research.

5. Data Analysis

5.1. Defining the Appropriate Search String

For bibliometric analysis, the first step taken by a researcher is to formulate an exact query string (Tunger and Wilhelm, 2013). The query string used to collect bibliometric data from Scopus is “Family Firm” and 12 other variants of this construct AND a wildcard “IPO” and its 7 variants which yielded 64 peer-reviewed articles written in the English Language. Articles returned from this query string contain articles only on family firm IPOs as the Boolean operator “AND” is used. Additionally, we searched for “Family firm” and “Initial Public Offering” separately, yielded 7,119 and 40,559 articles respectively, to get the magnitude of papers when the boolean operator is dropped. This shows that “Family Firm IPO” is an under-researched area. Table 1 presents all constructs and associated query strings used in the study.

Table 1: Constructs and Search Strings

<i>S. No.</i>	<i>Constructs</i>	<i>Search String</i>	<i>Outcome</i>
1.	Family Firm	TITLE-ABS-KEY (“Family Firm” OR “Family Business” OR “Family enterprise” OR “Family company” OR “Family owned enterprise” OR “Family owned business” OR “Family owned company” OR “Family managed company” OR “Family managed enterprise” OR “Family managed business” OR “Family controlled business” OR “Family controlled enterprise” OR “Family controlled company”) AND (LIMIT-TO (LANGUAGE , “English”)) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “re”) OR LIMIT-TO (DOCTYPE , “cp”))	7,119

2.	Initial Public Offering	TITLE-ABS-KEY (“IPO” OR “Initial Public Offering” OR “Listing” OR “Going Public” OR “Public Issue” OR “New Issue” OR “Post-Issue” OR “Pre-issue” OR “New Listing”) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “cp”) OR LIMIT-TO (DOCTYPE , “re”)) AND (LIMIT-TO (LANGUAGE , “English”))	40,559
3.	Family Firm and Initial Public Offering	(TITLE-ABS-KEY (“IPO” OR “Initial Public Offering” OR “Listing” OR “Going Public” OR “Public Issue” OR “New Issue” OR “Post-Issue” OR “Pre-issue” OR “New Listing”) AND TITLE-ABS-KEY (“Family Firm” OR “Family enterprise” OR “Family business” OR “Family company” OR “Family owned business” OR “Family owned enterprise” OR “Family owned company” OR “Family managed business” OR “Family managed enterprise” OR “Family managed company” OR “Family controlled business” OR “Family controlled enterprise” OR “Family controlled company”) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “cp”) OR LIMIT-TO (DOCTYPE , “re”)) AND (LIMIT-TO (LANGUAGE , “English”))	64

Source: Authors’ Own Compilation from Scopus

The steps involved in the selection of relevant articles for this study are shown in Figure1. We used the two groups of search strings ‘Family firm’ and ‘IPO’ combined with AND to search for articles that include these two search strings together either in the title and/or abstract and/or keywords. This search string yielded 80 documents which are further filtered to include only peer-reviewed articles and conference papers published in the English language, providing only 64 articles on family firm IPOs. For the systematic literature review, these articles are further classified into three categories: IPO antecedents, IPO pricing and post-IPO performance.

5.2. Initial Data Statistic

The trend of publication in the area of family firm IPOs is shown in Figure 2. After one publication in 1990, there was no publication in this area till the year 2000 and an upward trend in the publication can be observed since 2005. Publications in the early 2000s can be linked to the dot-com bubble leading to more articles by researchers investigating the IPO decision. After 2002, policy changes and Sarbanes-Oxley Act regulated the financial market in order to protect the interest of shareholders which boosted the interest of scholars in this area. The publications in 2008 and 2014 can be attributed to the financial crisis. The greatest publication in 2018-2019 can be due to policy-making intervention. This graph shows that this field of study is still in the growing stage and expansion period as the number of publications is rising in recent years.

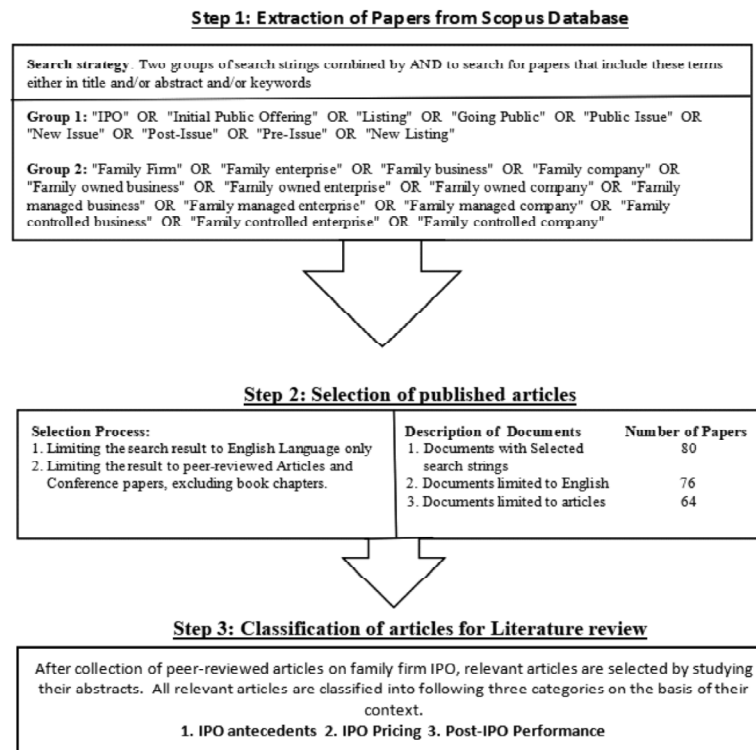


Figure 1: Research Steps

Source: Authors' Own Compilation

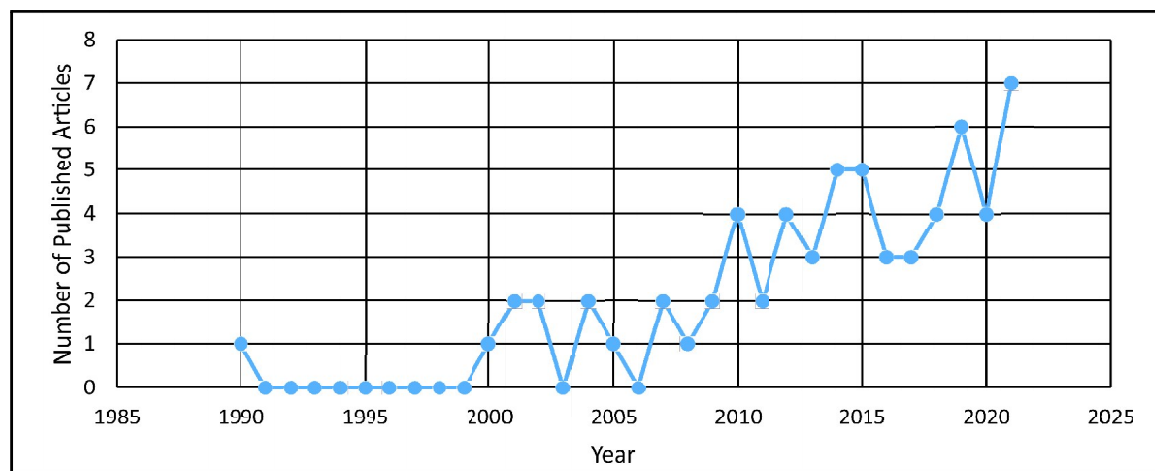


Figure 2: Trend in Publications on Family Firm IPOs

Source: Authors' Own Compilation

5.3. Bibliometric Analysis

Several software packages are available and used by researchers for bibliometric analysis to derive a meaningful conclusion from the bibliometric data of published articles. Some of the most popular software packages are Gephi, Biblioshiny, VOS viewer and BibExcel. In this study, VOS viewer was used due to its high degree of flexibility in using data from various sources such as Scopus, Web of Science. VOS viewer has functionality for zooming, searching and scrolling which facilitate the detailed examination of large maps.

The input data files used in VOS viewer should be in CSV format containing the bibliometric data about the peer-reviewed articles. We have analyzed the following information extracted from the Scopus database: authors, publication year, title, journal title, author keywords, country affiliation and citation. Journal's performance, Author's influence, Country affiliation and Author keywords statistics are drawn from bibliometric analysis using VOS viewer are presented in the following sections.

5.3.1. Journal's Performance and Quality of Publications

Data related to the performance of Journals and quality of published articles (linked with 64 peer-reviewed articles on family firm IPOs) was taken from the Scopus database. The initial statistics show that 34 journals have contributed 64 published articles on Family firm IPOs. The majority were on family business (16 articles), management (15 articles), governance (4 articles) and the remaining journals related to finance. Table 2 shows the performance of journals and the quality of articles published in these journals. Journal's performance is indicated by CiteScore (CS), SCImago Journal Rank (SJR) and the quality of published article is indicated by Source Normalized Impact per Paper (SNIP). The CS of a journal is a measure reflecting the average number of citations (over four years) to recently published articles in that journal. SJR measures the scientific influence of journals that accounts for both the number of citations received by the journal and the prestige of the journal from where the citations come. SNIP measures the citation impact of a journal which is calculated by weighting the citations of the journal based on the total citations in the journal's designated subject or subjects. From table 2 it can be observed that "Entrepreneurship: Theory and Practice" is the most valuable journal as its CS, SJR and SNIP value is the highest. The next best journals are "Academy of Management Journal" and "Strategic Management Journal". The high quality of journals gives assurance of greater visibility, greater quality and greater reputation to the articles published in these journals.

Table 2: CS, SJR and SNIP Values of Journals

S. No.	Journal Title	CS	SJR	SNIP
1.	Family Business Review	9.7	2.947	3.379
2.	Pacific Basin Finance Journal (PBFJ)	3.2	0.697	1.521
3.	International Entrepreneurship and Management Journal (IEMJ)	7.5	1.338	2.309
4.	Journal of Financial Intermediation	6.3	5.445	3.376
5.	Managerial Finance	1.5	0.271	0.656

contd. table 2

<i>S. No.</i>	<i>Journal Title</i>	<i>CS</i>	<i>SJR</i>	<i>SNIP</i>
6.	Management Decision	5.5	0.923	1.358
7.	Journal of Corporate Finance (JCF)	4.9	1.894	2.665
8.	Journal of Family Business Strategy (JFBS)	7.1	1.557	1.818
9.	International Review of Financial Analysis	4.9	1.270	1.907
10.	Journal of Asian Finance, Economics and Business	2.6	0.369	1.033
11.	Corporate Governance: An International Review	3.7	0.866	1.241
12.	British Journal of Management	6.8	2.407	2.317
13.	International Journal of Economics and Business Administration	1.9	0.289	0.821
14.	Cross Cultural and Strategic Management	3.8	0.545	0.918
15.	Journal of Family Business Management	2.9	0.518	0.970
16.	Academy of Management Journal	14.2	11.193	4.233
17.	Applied Economics	2.3	0.569	1.029
18.	Journal of International Studies	3.7	0.494	1.250
19.	Journal of Entrepreneurship in Emerging Economies	3.6	0.645	1.427
20.	European Management Journal	6.4	1.365	2.247
21.	China Journal of Accounting Studies	0.2	0.11	0.12
22.	Managerial Auditing Journal	3.1	0.422	1.009
23.	Strategic Management Journal	12.5	11.035	3.882
24.	Entrepreneurship: Theory and Practice	17.7	5.365	4.836
25.	Journal of Business Economics and Management	3.5	0.485	1.064
26.	Research in International Business and Finance	4.9	0.767	1.825
27.	Journal of Multinational Financial Management	4.5	0.743	1.358
28.	Journal of Asian Public Policy	2.5	0.377	0.941
29.	Journal of Business Finance and Accounting	3.3	1.282	1.738
30.	International Review of Law and Economics	1.2	0.442	0.927
31.	International Review of Financial Analysis (IRFA)	4.9	1.27	1.907
32.	Journal of Management Studies (JMS)	9.2	4.398	3.037
33.	International Journal of Entrepreneurship and Small Business (IJESB)	1.7	0.448	0.75
34.	Journal of Management and Governance	2.6	0.473	0.973

Key: CS = CiteScore, SNIP = Source Normalized Impact per Paper and SJR = SCImago Journal Rank.

Source: Authors' Own Compilation from Scopus

5.3.2. Author's Influence

VOS viewer is used to analyze the frequency of appearance of authors and articles that they have authored or co-authored. Table 3 presents the top 10 authors who have contributed research articles in the area of family firm IPOs along with the number of published articles and citations count. From the table, it can be seen that Cirillo and Romano topped the list as they contributed the maximum number of publications. Whereas Le Breton-Miller and Vismara are the highest cited authors.

Table 3: The Top 10 Authors' Contributing Publications and Number of Citations

<i>S. No.</i>	<i>Authors</i>	<i>Number of Publications</i>	<i>Citations</i>
1.	Cirillo, A.	5	52
2.	Romano, M.	4	52
3.	Vismara, S.	3	106
4.	De Massis, A.	2	95
5.	Hearn, B	2	30
6.	Jain, B.A.	2	32
7.	Kotlar, J.	2	95
8.	Le Breton-Miller, I.	2	122
9.	Lussier, R.N.	2	64
10.	Maherault, L.	2	57

Source: Authors' Own Compilation using Scopus and VOS viewer

Figure 3 shows the network visualization chart of co-authors using VOSviewer. It can be observed from the links shown in red that Cirillo, Vigano, Mussolino and Romano have co-authored with each

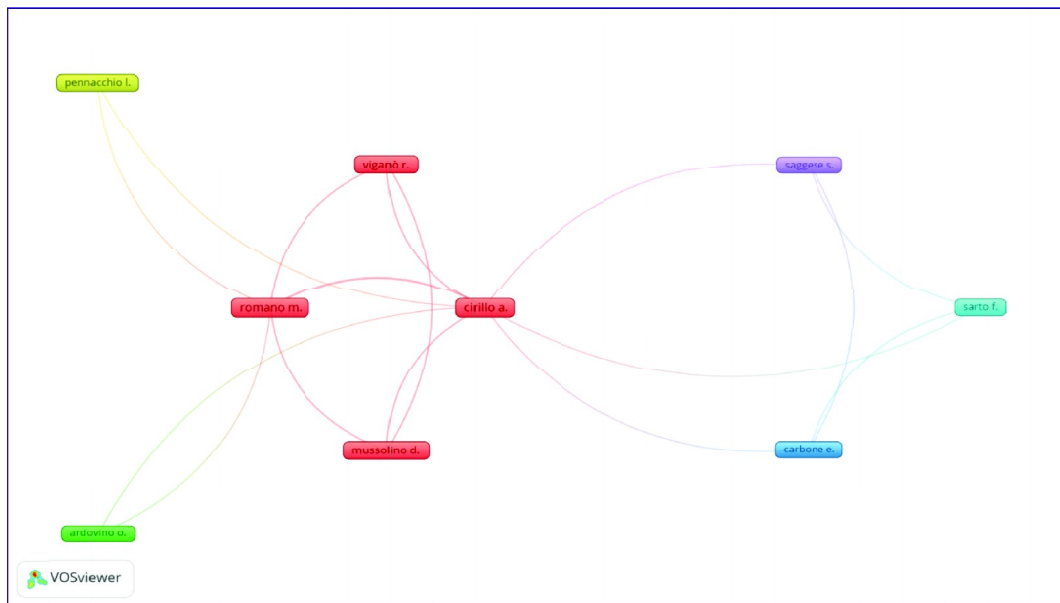


Figure 3: Network Visualization of Co-Authorship of Authors

Source: Authors' Own Compilation using VOS viewer

other more number of papers. Cirillo has the highest links with other authors like Pennacchio, Ardovino, Carbone, Saggase and Sarto. Vigano and Mussolino have co-authored with Cirillo and Romano only.

5.3.3. Country affiliation Statistics

Table 4 outlines the top 10 countries that contributed the maximum number of publications in the area of family firm IPOs. From the table, it can be observed that developed countries have a significant number of publications as compared to emerging countries. The United States contributed the maximum number of research articles followed by Italy, Germany, China, Hong Kong, United Kingdom, Canada, France, Lebanon and Spain. Articles from developed countries (US, UK, Italy, and Canada) are more cited as compared to articles from developing countries (China and Hong Kong).

Table 4: The Top 10 Countries Contributing Articles and Number of Citations

<i>S. No.</i>	<i>Country</i>	<i>Number of Articles</i>	<i>Citations</i>
1	United States	21	700
2	Italy	11	541
3	Germany	7	208
4	China	5	32
5	Hong Kong	5	20
6	United Kingdom	4	125
7	Canada	3	135
8	France	3	74
9	Lebanon	2	28
10	Spain	2	94

Source: Authors' Own Compilation using Scopus and VOS viewer

Network analysis of countries contributing articles on family firm IPOs is shown in Figure 4. This can be observed from Figure 4 that the US is the most co-occurred country. Germany, Spain, Netherlands and Denmark have contributed co-authored publications.

Studies have been done on Switzerland, Philippines, Taiwan, Lebanon and United States together.

5.3.4. Keyword Occurrence

A similar study is conducted using VOS viewer to identify the most frequently occurred author keywords in the selected articles. The top 10 frequently used author keywords are summarized in table 5. It can be seen that the most frequently used keywords are Family firms and Initial Public Offering because they were the search strings used in the study. Other keywords mostly used in the articles are corporate governance, Agency theory, Family firm governance, Survival analysis, Family leadership, Venture Capital and Firm Value.

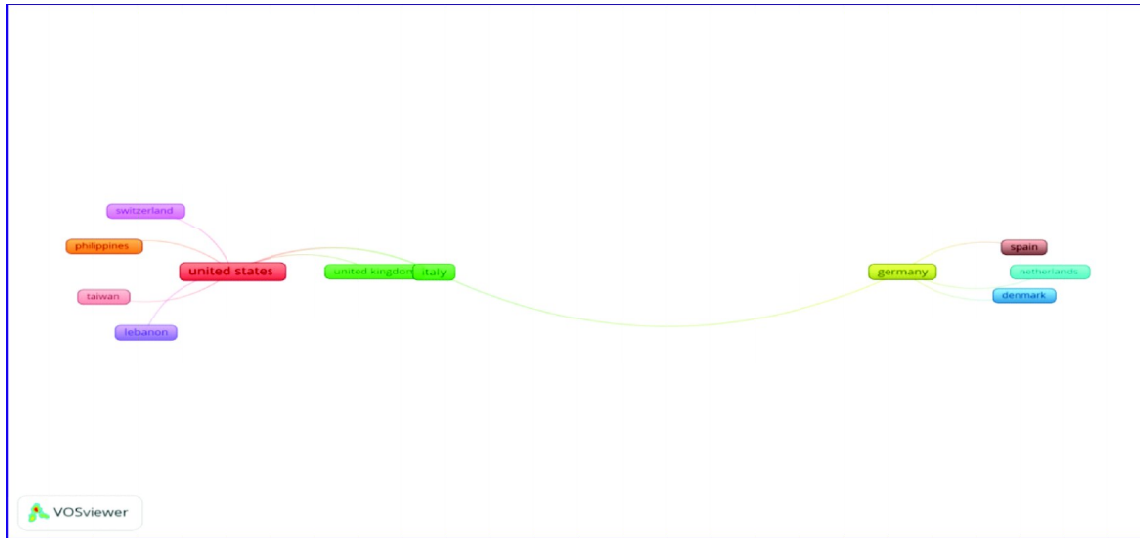


Figure 4: Network Visualization of Countries Contributing Articles on Family Firm IPOs

Source: Authors' Own Compilation using VOS viewer

Table 5: The Top 10 Frequently Occurred Authors' Keywords

<i>S. No.</i>	<i>Author Keywords</i>	<i>Occurrences</i>
1.	Family firms	20
2.	Corporate Governance	13
3.	Initial Public Offering	13
4.	Agency theory	7
5.	Family firm governance	3
6.	Survival analysis	2
7.	Board of directors	2
8.	Family leadership	2
9.	Venture Capital	2
10.	Firm Value	2

Source: Authors' Own Compilation using Scopus and VOS viewer

Network analysis of co-occurrence of keywords is shown in Figure 5 created using VOS viewer. It can be observed from the figure that the family firm word is connected with Five groups of co-occurred keywords with 15 links and total link strength of 27. Corporate Governance is the second most frequently used and co-occurred word with 8 links and 13 total link strength with words like family firm, agency theory, venture capital and IPO performance. Co-occurred authors' keywords are further analyzed based on the association between the words. The output provided by VOS viewer

shown in Figure 5 shows five such groups of words. One group shown in red consists of keywords like Family firm governance, family leadership, Survival analysis and IPO, the other group consists of keywords like ownership structure, agency problem, business group and delisting shown in green.

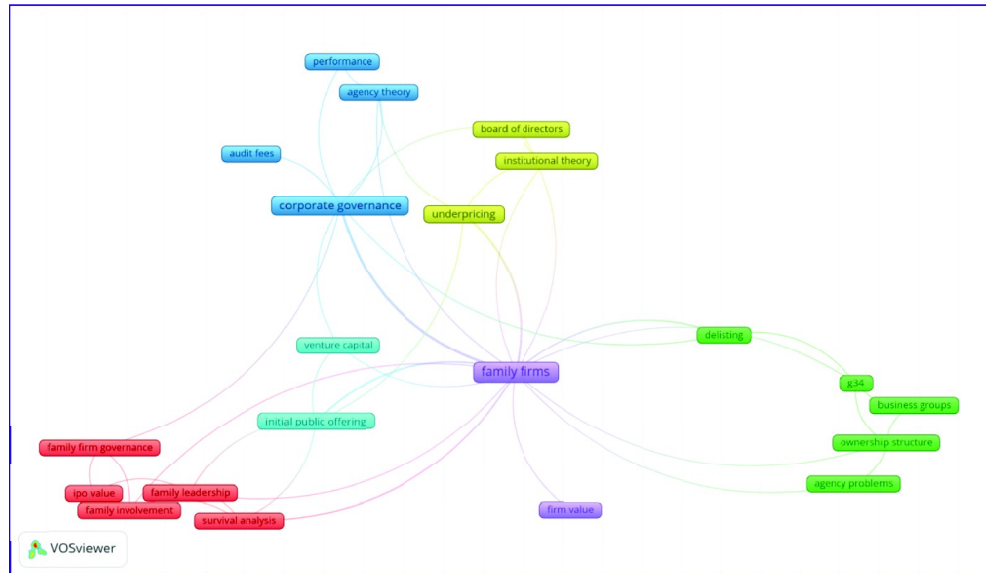


Figure 5: Network Visualization of Co-Occurrence of Authors' Keywords

Source: Authors' Own Compilation using VOS viewer

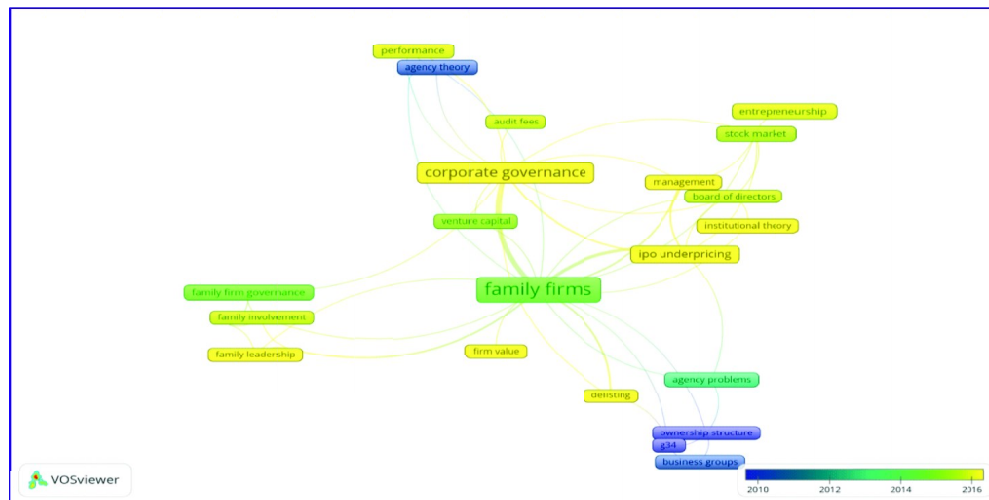


Figure 6: Thematic Map of Authors' Keywords

Source: Authors' Own Compilation using VOS viewer

The thematic map shown in Figure 6 reveals that the agency theory and ownership structure was the most popular author's keyword before 2014. Post-2016 focus of scholars shifted to corporate governance, entrepreneurship, IPO underpricing and performance. Thus, we can conclude that role of corporate governance in family firm IPOs is an emerging topic among researchers.

6. Result and Discussion

Bibliometric analysis reveals that despite a large number of publications has been done on family firm and IPOs separately, family firm IPOs is an under-researched area that is gaining momentum in recent years. The top journals publishing higher-quality articles on family firm IPOs are "Entrepreneurship: Theory and Practice", "Academy of Management Journal" and "Strategic Management Journal". The most influential authors are Cirillo and Romano, contributed the maximum number of publications whereas Le Bretton-Miller is the highest cited author because of one article in a top journal ("Entrepreneurship: Theory and Practice"). Thus, publication in top journals leads to higher visibility and citation as compared to other journals. Country affiliation statistics reveal that the United States is the major contributor of publications in this area followed by Italy and Germany. This shows that developed countries are major contributors to family firm IPO literature as compared to developing countries due to financial crisis, policy changes and governance measures taken in these developed nations which aroused scholarly attention. The most frequently occurred authors' keywords are Corporate Governance and Agency Theory revealed by keyword analysis whereas thematic analysis reveals that corporate governance, entrepreneurship, underpricing and long-run performance of family firm IPOs are emerging topics among researchers which are supported by literature review.

The systematic literature review reveals that family firms face a dilemma between private control benefits and the need to go public for the growth of the firm. Family firms tend to remain private (Helwege and Packer, 2009). However, in the long-run excessive family control lead to a reduction in survivability and profitability. Thus, financial factors are the motivation behind family firms' decision to go public (Mazzola and Marchisio, 2002). A literature review of articles comparing the IPO underpricing in family and non-family firms reveals that most articles examined the effect of family status, family involvement and family heterogeneity on IPO underpricing. Existing studies based on agency theory found a negative relationship between IPO underpricing and family firm (Yang *et al.*, 2020; Huang, 2019; Daugherty *et al.*, 2012; Hearn, 2011) Whereas studies focusing on SEW, stewardship and signaling theory observed a positive relation (higher underpricing) to safeguard emotional endowment by family firms (Leitterstorf and Rau, 2014; Cirillo *et al.*, 2015a; Cirillo *et al.*, 2015b; Kotlar *et al.*, 2018; Chandler *et al.*, 2019). Good corporate governance i.e. presence of independent directors, non-family CEO, and venture capitalist reduces IPO underpricing in family firms. The third classification comprises articles studying the long-term performance of family firms post-IPO. Previous studies claimed that family firms are reluctant to diversify, depend more on leverage, underinvest in R&D, and retain control to achieve their family goals. Thus, family firm IPOs significantly underperform as compared to non-family firms. Agency theory, signaling theory and socioemotional wealth are mostly used as theoretical perspectives among scholars.

7. Conclusion

Bibliometric analysis and systematic literature review revealed that very limited work has been done on the IPO antecedents i.e. the motivation behind family firms' decision to go public. Most studies have used agency, signaling and socioemotional wealth theory for explaining the short-term and long-term performance of IPOs. Resource dependence theory can be a new perspective for future studies. As per resource dependence theory, directors are an important source of networks and information which can significantly influence the performance of firms. Thus, the effect of interlocks provided by family directors and/or non-family directors, on the pricing and performance of family firm IPOs can be explored by scholars in the future. Our analysis also reveals that all these studies are based on financial factors. Thus, future studies can explore non-financial factors behind family firms' decision to go for an initial public offering and can examine the effect of non-financial factors on the post-IPO performance of family firms. Developed countries like US, Germany and Italy are the major contributors of published articles on family firm IPOs. Thus, there is a scope to empirically test these results in developing countries like India. Overall, the family firm IPOs is an under-researched area. There is a significant scope for future research in this area given the limited number of influential articles.

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Appendix 1: Highlights of Article on Family Firm IPOs: 'IPOs Antecedents'

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Antecedents/Predictor variables	Criterion Variable	Country	Findings
1	Masulis et al (2020)	Family business group expansion through IPOs: The role of internal capital markets in financing growth while preserving control	Pecking Order theory	12,793 IPOs of Business Groups (1997–2007)	Firm growth motivations	NA	multiple	Family firms raise new equity through IPO to avoid a loss of control in particular when they present a greater rate of internal capital accumulation.
2	Chung et al (2015)	Is Cross-Listing a Commitment Mechanism?: The Choice of Destinations and Family Ownership	NA	1201 cross-listings (1994–2008)	Private benefits of control	NA	multiple	Family firms choose to cross-list in the locations with weaker investor protection in order to retain private control benefits.
3	Sonfield & Lussier (2009)	Non-family-members in the family business management team: A multinational investigation	NA	593 IPOs	Non-Family manager in family firm	Going public	multiple	Presence of non-family manager in family business increases the chances of going public..
4	Helwege & Packer (2009)	Private matters	Agency Theory	181 private firms (1996)	Private benefits of control	NA	US	Family-owned firms tend to remain private to maintain private benefits of control.
5	Mahérault (2004)	Is there Any Specific Equity Route for Small and Medium-Sized Family Businesses? The French Experience	Agency Theory	131 IPOs (1997–1999)	Firm age and Family heterogeneity	NA	France	Small and medium sized family firm follow equity route for dilution whereas young and growing firms prefer to go public
6	Mazzola & Marchisio (2002)	The Role of Going Public in Family Businesses' Long-Lasting Growth: A Study of Italian IPOs	Corporate Governance Life Cycle	37 IPOs (1995–1998)	Private equity involvement	ROI, Going Public	Italy	IPO leads to growth and profitability in the long-run. Competitive environment and management ambitions are major factor behind going public.

Source: Authors' Own Compilation

Appendix II: Highlights of Articles on Family Firm IPOs: 'IPO Pricing'

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Predictor variables	Criterion Variable	Country	Findings
1	Yang et al. (2020)	Family Involvement, Governmental Connections, and IPO Underpricing of SMEs in China	Institutional Theory	577 IPOs (2004-2014)	Family involvement	underpricing	China	Chinese family firms exhibit less IPO underpricing as compared to non-family firms. Family member's political ties enhance the negative relation between family involvement and IPO underpricing.
2	Huang (2019)	Information asymmetry, legal environment, and family firm governance: Evidence from IPO underpricing in China	Agency Theory and Signaling Theory	506 IPOs (2007-2014)	Family status, family CEO and Legal environment	underpricing	China	Chinese family firms exhibit less underpricing as compared to non-family firms. Underpricing is negatively related to the good legal environment in the region. Family CEO negatively affects Underpricing in FB. The positive effect of a non-family CEO on Underpricing is mitigated by the increase in the percentage of family directors.
3	González (2019)	Governance, sentiment analysis, and initial public offering underpricing	Agency Theory	193 IPOs (2000-2014)	Board Size, Board Independence and Tone of Corporate communications (Firm level)	underpricing	Latin America	Large board positively affects underpricing whereas independent board mitigates it. Tone in corporate communications is a signaling mechanism in IPOs. Reputation effect (family ownership) is priced by the market valuation of the IPO.
4	Chandler et al. (2019)	Family involvement signals in initial public offerings	Signaling Theory	153 IPOs (2009-2012)	Family involvement	Underpricing	US	Disclosing family presence in the IPO prospectus positively affects IPO underpricing.
5	Kotlar et al. (2018)	Financial wealth, socioemotional wealth, and IPO underpricing in family firms: A two-stage gamble model	Financial wealth and Socioemotional wealth	1,807 IPOs (1995-2011)	family status and family firms heterogeneity and CEO characteristics	Underpricing	Europe	Disclosing family presence in the IPO prospectus positively affects IPO underpricing.
6	Cirillo et al. (2015a)	All the power in two hands: The role of CEOs in family IPOs	stewardship theory	77 IPOs (2000-2014)	CEO power indicated by: structural, ownership, expert and prestige	Underpricing	Italy	CEO power positively influence the IPO valuation. If the CEO is a family member, the relationship is more strengthened.

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Predictor variables	Criterion Variable	Country	Findings
7	Carillo et al. (2015b)	Does family involvement foster IPO value? Empirical analysis on Italian stock market	stewardship theory	113 IPOs (2000–2011)	demographic variables including family firm status, family involvement in managerial positions and family generations.	Underpricing	Italy	Family firm status positively influences the IPO valuation. The beneficial effect of family control is mainly attributable to the first generation
8	Letterstorf & Rau (2014)	Socioemotional wealth and IPO underpricing of family firms	Socioemotional wealth	153 IPOs (2004–2011)	family status	Underpricing	Germany	Family firms exhibit higher IPO underpricing as compared to non-family firms
9	Ding & Pukthuanthong (2013)	Legitimacy signals and family IPO performances	Signalling Theory	258 IPOs (1962–2005)	corporate governance and family firm status	underpricing	Taiwan	Board independence, family ownership and prestigious underwriter negatively affects IPO underpricing in family firms whereas the effect is positive for non-family firms.
10	Yu & Zheng (2012)	IPO Underpricing to Retain Family Control under Concentrated Ownership: Evidence from Hong Kong	Agency Theory	151 IPOs (2002–2006)	Family involvement	underpricing	Hong Kong	IPO underpricing is positively associated with family involvement
11	Daugherty et al. (2012)	Underpricing of IPOs of U.S. family controlled businesses	Agency Theory	236 IPOs (1996–2004)	Family status	underpricing	US	Family controlled firms exhibit lower underpricing than Non-family controlled firms. The Family controlled firms paid higher underwriting fees for a less prestigious Investment Banker but experienced less underpricing.
12	Hearn (2011)	The performance and the effects of family control in North African IPOs	Agency Theory	63 IPOs (2000–2009)	Family involvement	underpricing	North Africa	Family firms exhibit lower underpricing as compared to non family firms.

Source: Authors' Own Compilation

Appendix III: Highlights of Articles on Family Firm IPO: 'IPO Performance'

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Predictor variables	Criterion Variable	Country	Findings
1	Hulsbeck (2019)	The Board Value Protection Function in Young, Mature and Family Firms	Signalling Theory, Resource Based View	446 IPOs (1995-2015)	Family status	Tobin's Q	Germany	Effect of Board value protection is more in family firms. The positive effect of board value protection on Tobin's Q is more in mature family firms.
2	Shen (2018)	Family business, transgenerational succession and diversification strategy: Implication from a dynamic socioemotional wealth model	Socioemotional wealth	Theoretical	Family firm heterogeneity	underpricing and diversification	Hong Kong	family firms are less likely to diversify than the non-family firms. Presence of second generation increases the likelihood of diversification in family firms.
3	Nikolov & Wen (2018)	Does family involvement matter post IPO? Adding value through advertising in family firms	Resource-based view (RBV)	2000 companies (2000-2010)	family status, advertising and RBV	ROA and Tobin's Q	US	family firms can higher return on their advertising investment as compared to non-family firms.
4	Crillo et al. (2017)	A complicated relationship: Family involvement in the top management team and post-IPO survival	Socioemotional wealth	113 IPOs (2000-2011)	Family firm heterogeneity and family CEO	survival	Italy	Presence of family members on top management reduces the likelihood of post-IPO survival whereas family CEO weakens this relationship. Involvement of family generation negatively affects survival of firm.
5	Jain & Shao (2015)	Family Firm Governance and Financial Policy Choices in Newly Public Firms	Agency theory and Socioemotional wealth	1245 IPOs (1997-2008)	family status, family firms heterogeneity and CEO characteristics	profitability	US	Family firms maintain higher post-IPO leverage, longer debt maturity structure and are reluctant to raise post-IPO capital relative to non-family firms.
6	Lien and Li (2014)	Professionalization of Family Business and Performance Effect	Corporate Governance Life Cycle	203 IPOs (2000-2009)	Family involvement	Tobin's Q	Taiwan	Family control have a negative effect on the post-IPO performance.
7	Jain & Shao (2014)	Family Involvement and Post-IPO Investment Policy	Agency theory and Socioemotional wealth	1475 IPOs (1997-2004)	family status, family firms heterogeneity and CEO characteristics	market return	US	family firms underinvest in post-IPO liquidity, acquisition spending and R&D expenditures, more likely to overinvest in capital spending in comparison to similar non-family firms.

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Predictor variables	Criterion Variable	Country	Findings
8	Huang et al. (2014)	Listing approach, political favours and earnings quality: Evidence from Chinese family firms	Alignment Theory and Entrenchment Theory	486 IPOs (2003-2008)	Going Public through IPO and takeover	Corporate financial reporting	China	Family firms going public via IPO have worse earnings quality as compared to firms going public via takeovers. Political favour to family firms negatively affects the financial reporting.
9	Hearn (2013)	The determinants of director remuneration, executive tenure and individual executive disclosure in North African IPO firms	Agency Theory	69 IPOs (2000-2010)	corporate governance and family firm	director remuneration, executive tenure and likelihood of individual executive salary disclosure	North Africa	Presence of independent directors on board positively affects the director's remuneration and job tenure in family firms. Family CEO negatively affects the disclosure of remuneration.
10	Giovannini (2010)	Corporate governance, family ownership and performance	Agency, stewardship and contingency theory	56 IPOs (1999-2005)	corporate governance and family firm	BHAR	Italy	Presence of venture capitalists, large board size and appointment of compensation & appointment committee positively affects board independence. Board independence positively affects performance, while involvement of family on board negatively affects performance.
11	Vaz Ferreira (2008)	Determinants of performance of closely-held (family) firms after going public: The role of the ownership structure, economy, changes in top management, partial sale, equity concentration after the IPO and shareholders in management	Agency Theory	25 IPOs (1989-2004)	Family firm heterogeneity and CEO characteristics	Operational, social and financial performance using Sales efficacy, ROS, Capital structure, BHAR	Portugal	Family involvement in firms after going public positively affects the performance and operating efficiency. Changing the CEO that was present during the IPO process negatively affects the performance of firm.

S.No.	Authors/Year	Article Title	Underpinning Theory	Data	Predictor variables	Criterion Variable	Country	Findings
12	Chahine (2007)	Block-holder ownership, family control and post-listing performance of French IPOs	NA	163 IPOs (1996-2000)	family firm and block-holder ownership	BHAR (1 Year)	France	Negative but weak relationship was observed between block-holder ownership and post one year IPO performance. Family ownership and one year BHAR have cubic relationship.
13	Kuklinski & Schiereck (2007)	Long-run performance of initial public offerings in the German stock market: The family business experience 1977 to 1998	Agency Theory and Rent protection Theory	174 IPOs (1977-1998)	Family firm	BHAR (3 years)	Germany	Family firms IPOs underperform in the market supporting the rent protection theory.
14	Jaskiewicz et al (2005)	Long-run IPO performance analysis of German and Spanish family-owned businesses	Alignment Theory and Entrenchment Theory	196 IPOs (1990-2001)	Family firm heterogeneity	BHAR	Germany and Spain	Non-family firm IPOs perform insignificantly better. In family-owned businesses, strong family involvement has a positive impact on BHAR, whereas the age of the firm has a negative influence.
15	Mazzola & Marchisio (2002)	The Role of Going Public in Family Businesses' Long-Lasting Growth: A Study of Italian IPOs	Corporate Governance Life Cycle	37 IPOs (1995-1998)	Going Public	ROI	Italy	IPO leads to growth and profitability in the long-run. Competitive environment and management ambitions are major factor behind going public.

Source: Authors' Own Compilation

Effectiveness of Debt Recovery Tribunals in Resolving NPAs of Banks in India: A Critical Analysis

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Banks, RDB act, Non-performing assets, Debt recovery tribunals, NPAs recovery, SARFAESI act

JEL Classification

F65, G21, G33, K41, P35

Abstract: Debt Recovery Tribunals (DRTs) were established in the country in a phased under the recovery of debts due to Banks and Financial Institutions Act, 1993. DRTs were established to expedite recovery from non-performing assets (NPAs) in case of Banks and Financial Institutions (FIs). Even though initially DRTs were quite effective but over the years their effectiveness has reduced. The present study has been conducted to evaluate the effectiveness of DRTs in terms of recovery percentage and disposal time. An attempt has also been made to find the deficiencies in DRTs which are affecting their effectiveness and give recommendation for addressing the same. The study has relied on primary data as well secondary data from 2011-2019. The secondary data has been collected from DRT website and RBI publications. The study has concluded that DRTs have not remained an effective mechanism for recovery of NPAs. It has identified the deficiencies in DRTs affecting their effectiveness and given suggestions for improving the same.

1. Introduction

The civil courts were overburdened with large number of regular cases due to which they could not give priority to recovery matters of the banks and financial institutions (FIs) in the 1990s. Banks and FIs were, therefore, facing the huge challenge of recovering debts from the borrowers in the civil courts. The locking up of a huge amount of public money in litigation prevents proper utilisation and recycling of funds for the development of the economy. It was, therefore, decided to pass The recovery of debts due to Banks and Financial Institutions Act, 1993 (Substituted by Act 31 of 2016 known as The Recovery of Debts and Bankruptcy Act, 1993) (RDB Act). Debt Recovery Tribunals (DRTs) under RDB Act were established in the country in a phased manner depending on the number of cases transferred to them from civil courts and the applications for recovery filed with them by banks and FIs. There are currently

39 DRTs in 25 cities and five Debt Recovery Appellate Tribunals (DRATs) in India. As RDB Act is operationalised through DRTs, this mechanism of recovery is commonly known as DRTs.

In the case of stressed assets i.e. non-performing assets (NPAs) and restructured accounts, banks try to do restructuring if the viability of the borrower's entity is established. If the account becomes NPA, they try to recover their dues through One Time Settlement (OTS)/ Negotiated Settlement (NS) or by taking action under Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI Act), 2002 if they have easily marketable security. If the NPA cannot be resolved through the above means, banks have an option to file an Original Application (OA) in DRT under the RDB Act for recovery of their debt valued not less than Rs 20 lakh. The civil courts do not directly intervene on the main issue of recovery of debts due to banks on which DRTs rule. The desired time for disposal by Presiding Officer (PO) is 180 days from the date of receipt of OA from Banks. The PO of the DRT issues a certificate of recovery along with the final order to the Recovery Officer (RO) for recovery of the amount of debt specified in the certificate. The RO can recover dues by attaching part/ whole property of the defendant, appointing a receiver for the management of the same and selling the same. The DRTs can also order a person to be detained if he disobeys DRT's orders. A person aggrieved by the order of DRT can file an appeal to the DRAT having jurisdiction in the matter. The appeal has to be made within 45 days from the order of the DRT, which can be relaxed by the DRAT. The DRAT is expected to dispose of the appeal within six months. The aggrieved party, if it wants to appeal against DRT's order, has to deposit 75% of the amount determined by the order of the DRT. This amount can be reduced to 25% of such amount for the reasons which should be recorded in writing by DRAT. An appeal against the judgment of DRAT can be filed in the High Court and the Supreme Court. SARFAESI Act was enacted so that banks can recover their dues without the intervention of the courts. However, the borrower aggrieved by the action of the lender bank can file a Securitisation Application (SA) in DRT. RDB Act and SARFAESI Act were enacted to help banks to recover their money in case of NPAs, whereas the Insolvency and Bankruptcy Code (IBC) is to be triggered for resolving insolvency for borrowers in default. In case of insolvency of individuals, DRTs have been given the power of Adjudicating Authority (AA) even though the notification for this is yet to be issued by the Government.

Even though initially DRTs were quite fast in the disposal of cases filed by banks and FIs and were helping banks in the recovery of NPAs but over the years their effectiveness has reduced. This research paper aims to study the effectiveness of DRTs in terms of recovery percentage and disposal time. The study has relied on primary as well as secondary data and analysed the same to find the effectiveness of DRTs. The study has concluded that most bankers do not find DRTs as an effective means of recovery of their dues from NPAs which is also supported by analysis of secondary data. Besides, the paper highlights the deficiencies in the DRTs and gives suggestions for addressing the same for improving their effectiveness.

2. Review of Literature

The literature reviewed has been grouped into four parts: comparing the effectiveness of DRTs with other channels of recovery of NPAs, the effectiveness of DRTs, the use of information technology for improving the effectiveness of DRTs and data availability in courts.

2.1. Comparing the Effectiveness of DRTs with Other Channels of Recovery of NPAs

Sahoo and Majhi (2020), Thomas (2018), Dey (2018), Kumar *et al.* (2017), Rao (2012), Rajeev and Mahesh (2010) examined the secondary data of NPAs based on RBI's publications and their recovery through various mechanisms viz. Debt Recovery Tribunals (DRTs), SARFAESI Act and Lok Adalats for various years and compared their performance for the periods of their study based on their recovery percentage.

2.2. Effectiveness of DRTs

Thakkar *et al.* (2020) examined the efficacy of the status of cases disposed of and pending in DRTs. It was found in the study that the number of cases disposed of was not satisfactory in comparison to new cases filed and unresolved. India's Ease of doing business rank was 130 in 190 economies as compared to 78 and 40 for China and Russia respectively (The World Bank, 2016). This was one of the worst among similar economies. It was indicated there that it took 4.3 years on an average in India to resolve insolvency, more than twice as long as in China and Russia. The average recoveries were just 26 % in India as compared to over 35% in China and Russia. Even though the rank of India has improved as per subsequent Doing Business reports but that is attributed mainly to the implementation of the Insolvency and Bankruptcy Code (IBC) in December 2016 and other economic reforms.

Regi and Roy (2017) studied 22 cases of DRT-III, Delhi covering 474 orders among them. The research studied the orders to find the reasons for the failures of hearings. Gandhi (2017) observed in his address that though RDB Act and SARFAESI Act, 2002 had been in vogue for several years and had facilitated faster recovery for banks and FIs; yet much more was desired to be done. He said certain procedural improvements had been made in the functioning of DRTs by amendments to RDB Act and SARFAESI Act in 2016. Ravi (2015) studied 15 judgements of DRTs and DRATs and found that different interpretations of the RDB Act and SARFAESI Act by POs of DRTs and High Courts, were leading to delays in the disposal of cases in DRTs. The government of India (2013) gave recommendations to address infrastructure issues in DRTs for increasing their efficiency and effectiveness. Dwivedi and Raza (2016) gave suggestions for improving the effectiveness of DRTs

2.3. Use of Information Technology for Improving the Efficiency of the Courts

Standing Committee on Finance (2020) reiterated its recommendations, inter-alia, of establishing e-courts for faster disposal of cases and speedy resolution. Earlier Sengupta (2017) recommended simplifying procedures, appropriate capacity building, and the use of technology for reducing delays in courts in India. It cited the example of Singapore, where the implementation of similar reforms in the 1990s increased the efficiency of the courts tremendously. Even Phadnis and Prabhala (2015) had recommended automation of the court process as DRTs are fact-finding courts and their orders are restricted to find if a debt is legally owed. The requirement of electronic records of both identity and property title was necessary for the automation of the court process. Central Registry of securitisation, Asset Reconstruction and Security Interest of India (CERSAI), set up in 2011, maintains records of immovable, movable, intangible properties and assignment of receivables. It provides access to all creditors and also provides the facility of filing attachment orders and court orders, to provide complete

details of any encumbered/ attached property. However, a separate study may have to be carried out if CERSAI has been able to help in the early disposal of OAs in DRTs.

2.4. Data Availability in Courts

Phadnis and Prabhala (2015) observed that research on DRT requires correct data on filings of OAs and their disposal. However, many DRTs' orders may not be reportable and these are not collected by Westlaw and other commercial databases. It is observed that due to this reason, commercial databases cannot be considered the right sources for aggregate research on DRTs and researchers have to rely on a random sampling of cases in DRTs

2.5. Research Gap

Many studies have compared the effectiveness of recovery of three recovery channels viz. Lok adalats, SARFAESI Act and DRTs are based on secondary data of the number of cases and recovery percentage collected from RBI's publication of different years. Regi and Roy (2017) & Ravi (2015) studied the orders to find the reasons for delays in the disposal of cases in DRTs and gave some suggestions for addressing the same. Dwivedi and Raza (2016); and Unny (2011) gave suggestions for increasing the effectiveness of DRTs. However, the authors could not find any paper where the effectiveness of different DRTs was evaluated based on secondary data on the disposal time of OAs. Besides, the authors could not find any paper where the effectiveness of different DRTs based on disposal time of OAs, has been compared. The authors could also not find any paper where the primary data was collected from various bankers regarding the effectiveness of DRTs, deficiencies in their working and their suggestions for mitigating the same.

3. Objectives and Hypotheses of the Study

3.1. Objectives of the Study

- To study the effectiveness of the DRTs in resolving NPAs of banks in India (The effectiveness of the RDB Act has been measured by the recovery percentage of debts from OAs filed by banks with DRTs for recovery of their debt and their disposal time.)
- To find out the deficiencies in DRTs which are affecting their effectiveness.
- To offer suggestions for improving the effectiveness of DRTs.

3.2. Research Questions and Hypotheses

- a. To achieve the objective "To study the effectiveness of the DRTs in resolving NPAs of banks in India", the following research questions have been asked:
 - o Is DRTs an effective mechanism for resolving NPAs of banks in India?
 - o What has been the average disposal time in the sample DRTs during the study period?
 - o Is the disposal time of OAs in sample DRTs the same?

The following hypotheses have been formulated to answer this question:

H_0 : There is no significant difference in the average disposal time of the three sample DRTs.

H_1 : There is a significant difference in the average disposal time of the three sample DRTs.

- o Is the average period of pendency of OAs the same in-sample DRTs?

The following hypotheses have been formulated to answer this question:

H_0 : There is no significant difference in the average time of pendency of OAs of three sample DRTs.

H_1 : There is a significant difference in the average time of pendency of OAs of three sample DRTs.

- o What has been the average recovery percentage in DRTs for the study period?
- o Has the effectiveness of DRTs increased after the amendments to RDB Act in 2016?
 - b. To achieve the objective “To find the deficiencies in DRTs which are affecting their effectiveness”, the following research question is asked:
- o What are deficiencies in DRTs which are reducing their effectiveness in resolving NPAs of banks in India?
 - c. To achieve the objective “To offer suggestions for improving the effectiveness of DRTs” the following research question is asked:
- o How can the effectiveness of DRTs in resolving the NPAs of banks in India be increased?

4. Research Methodology

4.1. Period of Study

The data for disposal time in DRTs were collected for the years 2011 to 2019 and it was collected in December 2019 and January 2020. The data for the recovery percentage of DRTs were studied for the period 2010-11 to 2018-19. The data for recovery percentage was collected from 2010-11 as the NPAs of banks had started increasing from that year. For the same purpose, the data up to 2018-19 only was studied so that data for the study of disposal time and recovery percentage is synchronous. The Covid-19 pandemic which started in March 2020 was an exceptional event so the data is not updated as it may not give the correct picture of the effectiveness of DRTs in a normal situation.

4.2. Sources of Data and Data Collection

4.2.1. Primary Data

An exploratory survey was conducted using a structured questionnaire through interviews of twelve senior officers dealing with the resolution of stressed assets in the five biggest public sector banks (PSBs), four big private sector banks and three asset reconstruction companies (ARCs). For choosing the banks and ARCs, judgement sampling was done as the banks and ARCs chosen had a significant share of NPAs

in the industry. The Banks sell their NPAs to ARCs and ARCs step into the shoes of the Banks. The interviews were conducted to get answers to the above research questions in February 2020.

4.2.2. Secondary Data

The first set of secondary data was collected from the website of DRT. This data was collected to find out the disposal time of OAs during the study period in the sample DRTs. Sample Data of 168 OAs for nine years from 2011 to 2019 was taken from three DRTs located in Mumbai, Hyderabad, and Bengaluru to find out the time taken for the issue of decree certificate from the time of registration of OAs in DRTs. As of date, there are 39 DRTs but judgemental sampling was resorted to. It was decided to take sample data from three DRTs as the purpose was limited to analysing the disposal time of OAs by POs of sample DRTs and to see if there was consistency in the disposal time of the sample DRTs. DRT-1, Mumbai was chosen as it is located in Metro and was set up in 1999 (in the initial years of the RDB Act regime). DRT-1, Hyderabad was chosen as it is located in a non-metro and was set up in 1999 (same time as DRT-1, Mumbai). DRT-2, Bangalore was chosen as it is one of the six DRTs established in the country in 2017 in the last phase. For each year, the first eight available OAs were included in the data for each chosen DRT. Two outliers were removed from the data as they would have distorted the data. Two more data entries were removed as they appeared to be prima-facie incorrect. This sample data was collected between December 2019 and January 2020.

The second set of secondary data regarding recovery in respect of OAs filed by banks was collected from RBI's publication: "Report on Trend and progress of banking in India" of respective years to find out recovery percentage in respect of OAs filed with DRTs.

4.3. Tools and Techniques

The primary data is presented by using pie charts and bar chart. The secondary data of disposal time and recovery percentage is analysed using descriptive statistics such as average. Single-factor analysis of variance (ANOVA) was used to test two hypotheses regarding variance in average disposal time and average time of pendency of OAs in three DRTs.

5. Data Analysis and Interpretation

5.1. Effectiveness of DRTs in Resolving NPAs of Banks in India

5.1.1. Perception of Respondents Regarding the Effectiveness of DRTs for Resolving NPAs of Banks in India

58% of the respondents of the primary survey did not consider DRTs as an effective mechanism for resolving NPAs of banks in India. Their opinion was based on the fact that it takes unduly long in the disposal of cases in DRTs and the recovery percentage is also very low. Besides, they stated that after the issue of the recovery certificate, it took at least one-two years for recovery. However, if a borrower went into liquidation, it took even eight to ten years also. Their view is also substantiated by analysis of secondary data of OAs of three DRTs collected by the authors and secondary data of recovery of OAs collected from RBI publications.

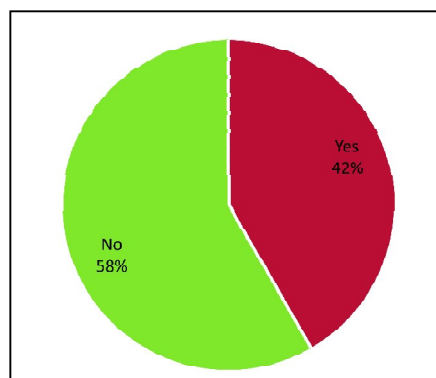


Figure 1: Perception of respondents regarding the effectiveness of DRTs for resolving NPAs of banks in India

Source: Primary data collected by the authors

5.1.2. What has been the Average Disposal Time in the Sample DRTs during the Study Period?

Table 1: Disposal of OAs in Three DRTs in Sample Data during 2011-2019

	<i>Total OAs examined</i>	<i>Disposed of</i>	<i>2 as % of 1</i>	<i>Average disposal time (In years)</i>	<i>Disposal of OAs in up to 180 days</i>	<i>5 as % of 1</i>	<i>Pending as on 31.12.2019</i>
	1	2	3	4	5	6	7
DRT 1, Mumbai	70	8	11.4	3.5	0	NA	62
DRT 1, Hyderabad	72	65	90.3	2.3	11	15.3	7
DRT 2, Bangalore	22	14	63.6	0.9	4	18.2	8
Total	164	87	53.0	2.2	15	9.1	77

Source: Authors' Compilation from data of OAs for 2011-2019

As seen in Table 1 above, only 53 % of the total OAs received were disposed of during the study period. Only 9.1% of OAs received were disposed of in the desired time of 180 days as per the RDB Act. The average disposal time was 2.2 years for the three DRTs taken together.

5.1.3. Is the Disposal Time of OAs in Sample DRTs the Same?

There was no consistency in the average disposal time in different DRTs. A single factor ANOVA was applied to the data of disposal time of disposed of OAs of three DRTs to check the hypotheses stated as follows:

H_0 : There is no significant difference in the average disposal time of the three sample DRTs.

H_1 : There is a significant difference in the average disposal time of the three sample DRTs.

Table 2: ANOVA Results of Disposal Time in Three DRTs

SUMMARY

Groups	Count	Sum	Average	Variance
DRT-1, Mumbai	8	338	42.25	176.7857
DRT-1, Hyderabad	65	1797	27.64615	480.576
DRT-2, Bangalore	14	154	11	68.76923

ANOVA

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	5430.259	2	2715.13	6.934699	0.001631	3.105156608
Within Groups	32888.36	84	391.5281			
Total	38318.62	86				

Source: Authors' Compilation from data of OAs for 2011-2019

The results in Table 2 revealed that the value of the F statistic is 6.934699 which is more than the value of F critical at 3.105157 (at a 5 per cent level of significance and for 86 degrees of freedom). The p-value is 0.001631 which is lower than 0.05, so the null hypothesis is rejected. This indicates that there is a significant difference in the average disposal time of the three sample DRTs and so an alternate hypothesis is accepted.

5.1.4. Is the Average Period of Pendency of OAs the Same in-sample DRTs?

The data of pending OAs of three DRTs is given below in Table 3:

Table 3: Pending OAs in Three DRTs (in years) in Sample Data during 2011-2019

DRT/Years	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	Total
DRT1, Mumbai	8	1	2	14	8	9	7	2	11	62
DRT 1, Hyderabad	-	-	1	2	-	3	0	-	1	7
DRT 2, Bangalore	2	5	-	1	-	-	-	-	-	8
Total	10	6	3	17	8	12	7	2	12	77

Mean pending period of "OAs" for three DRTs=4.5 years

Source: Authors' Compilation from data of OAs for 2011-2019

To answer the above question, the following hypotheses were formulated: H_0 : There is no significant difference in the average time of pendency of OAs of the three sample DRTs. H_1 : There is a significant difference in the average time of pendency of OAs of the three sample DRTs. A single factor ANOVA was applied to the data of the time of pendency of pending OAs of three DRTs to check the hypothesis. The analysis of the data is given below:

Table 4: ANOVA Results of Period of Pendency in Three DRTs

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
DRT-1, Mumbai	62	3564	57.48387	866.6473
DRT-1, Hyderabad	7	417	59.57143	611.2857
DRT-2, Bangalore	8	126	15.75	73.92857

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	12640.52	2	6320.261	8.19796	0.000608	3.120349
Within Groups	57050.7	74	770.9554			
Total	69691.22	76				

The results in Table 4 revealed that the value of the F statistic is 8.19796 which is more than the value of F critical at 3.120349 (at a 5 per cent level of significance and for 76 degrees of freedom). The p-value is 0.000608 which is lower than 0.05, so the null hypothesis is rejected. This indicates that there is a significant difference in the average time of pendency of OAs in the three DRTs, so the alternate hypothesis is accepted.

60% and 57% of the cases admitted during the period of Study in DRT-1, Mumbai, and DRT-1, Hyderabad respectively have been pending for more than four years. This is not applicable in the case of DRT-2, Bangalore as it was established only in 2017. The mean time for which OAs were pending during the period of study in three DRTs taken together was 4.5 years. DRT-1, Mumbai was not having a PO for over two years and the PO of DRT-3, Mumbai had been given additional charge of DRT-1, Mumbai and DRT-2, Mumbai. Besides, DRT-1, Mumbai and DRT-2, Mumbai are located on the same premises where DRAT, Mumbai is located which indicate that it may be easier for borrowers to file an appeal after the issue of a recovery certificate by PO. However, this will need another detailed research study if this is an important reason for the pendency of cases in DRT-1, Mumbai apart from the fact that it did not have PO for over two years.

5.1.5. What has been the Average Recovery Percentage in DRTs for the Study Period?

Table 5: Disposal of OAs in DRTs from 2010-11 to 2018-19 and their Average Recovery Percentage

(Amount in Rs Crore)

S.No.	Year (July-June)	No of the cases referred	Amount involved	Amount recovered#	% recovery	Average recovery (%) @
1	2010-11*	12872	14100	3900	27.7	10.9
2	2011-12*	13365	24100	4100	17.0	
3	2012-13*	13408	31000	4400	14.2	
4	2013-14*	28258	55300	5300	9.6	
5	2014-15	18397	53203	3484	6.6	
6	2015-16*	24537	69300	6400	9.2	
7	2016-17*	32408	100800	10300	10.2	
8	2017-18	29345	133095	7235	5.4	4.4
9	2018-19	51679	268413	10552	3.9	
	Total	224269	749311	55671	7.4	

N.B. # Refers to the amount recovered during the given year, which could be regarding cases referred during the given year as well as during the earlier years

* For these years, the amount in Rs Billion converted into Rs Crore

@ before amendment of RDB Act (Up to 2016-17) and after amendment of RDB Act from 2017-18 (%)

Source: Authors' Compilation from RBI's Report

As seen in Table 5, the average recovery was only 7.4 % in respect of DRT cases for the study period which is very low. It was 27.7 % in 2010-11 which reduced to 3.9% in 2018-19. Besides, while indicating recovery percentage, the time value of money is ignored. If we consider the time value of money as indicated in the Doing Business Report 2017 above, since it takes on an average of 4.3 years for recovery, the recovery will be just meagre.

Only 9.1% of cases were disposed of in the desired timeframe of 180 days (Table 1) and the average recovery percentage of 7.4% (Table 5) was also very low. Even 58% of the respondents of the primary survey (Figure 1) opined that DRTs are not an effective mechanism for the recovery of NPAs of banks. Given the above, it is inferred that DRTs are not an effective mechanism for resolving the NPAs of banks in India. This finding is also supported by previous studies (Thakkar *et al.*, 2020; Regi and Roy, 2017; Ravi, 2015)

5.1.6. Has the Effectiveness of DRTs Increased after the Amendments to RDB Act in 2016?

The following main amendments were made to RDB Act in 2016. The core legislative concern was the need for “expeditious disposal of recovery applications, such matters being pending for many years due to various adjournments and prolonged hearings” (*The Deputy Director, Directorate of Enforcement, Delhi v Axis Bank & Ors*, 2019)

- The Chairperson of DRAT can direct the DRTs to furnish information under RDB Act
- The Chairperson of DRAT can convene a meeting of POs of DRTs periodically to review their performance.
- The Chairperson can send the report to Central Government for misbehaviour or incapacity of PO of DRT and recommend action against him.
- The timelines have been incorporated for different steps to be followed by the parties to the case and the Tribunal.
- The application/ written statement/ any other pleadings/ documents are to be filed in electronic form.
- Any summons/ notice/ other communication may be delivered in electronic form.
- Uniform procedure for the conduct of proceedings (To be laid down by Central Government).
- PO can grant time for payment of the amount as per the Recovery certificate only if the defendant pays at least 25% of the amount specified in the Recovery Certificate. Earlier this amount could be completely waived off.
- The appeal against any order of the RO can be entertained only if the defendant deposits 50% of the debt due as determined by DRT.

The above amendments were made to increase the accountability of POs, increase the efficiency of DRTs by technological improvement and reduce the number of appeals by borrowers.

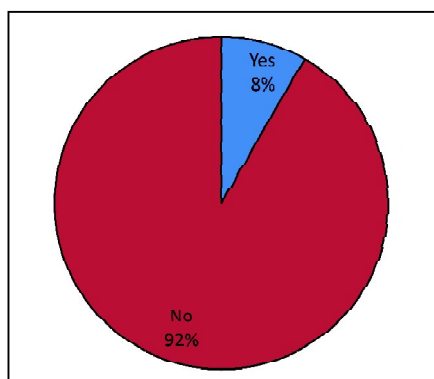


Figure 2: Perception of Respondents Regarding Improvement in Effectiveness of DRTs after Amendments to RDB Act in 2016

Source: Authors' Own Compilation

When the respondents were asked during the primary survey, if the effectiveness of the RDB Act had improved after amendments to RDB Act in 2016, as shown in Figure 2, 92% of the respondents opined that the effectiveness of the RDB Act had not increased after its amendments in 2016. The

analysis of secondary data collected by the author regarding disposal time in DRTs revealed that after the RDB Act was amended, the average disposal time improved to approximately nine months in the case of DRT-1, Hyderabad from two years before the amendment. However, none of the OAs in the sample data of DRT-1, Mumbai was disposed of since 2017. In the case of DRT, Bangalore, it is not applicable as it was established in 2017 after the amendment of the RDB Act. So, the secondary data collected by the author for three DRTs is not conclusive regarding improvement in disposal time after the amendment of the RDB Act in 2016. The secondary data regarding the recovery percentage of NPAs in DRTs revealed that the recovery percentage reduced from an average of 10.9% (Table 5: from 2010-11 to 2016-17) to an average of 4.4 % (Table 5: from 2017-18 to 2018-19) after the amendment to RDB Act in 2016. However, it will need another research study to find reasons for the same. It appears that the amendment in the RDB Act in 2016 has not resulted in improving the effectiveness of DRTs in resolving NPAs of banks in India.

5.2. What are the Deficiencies in DRTs and thus in the RDB Act which are Reducing its Effectiveness in Resolving NPAs of Banks in India?

During the primary survey, the respondents were asked to give a score from 1-10 for nine different reasons for the ineffectiveness of DRTs. The average score for each reason has been plotted in Figure 3 given below:

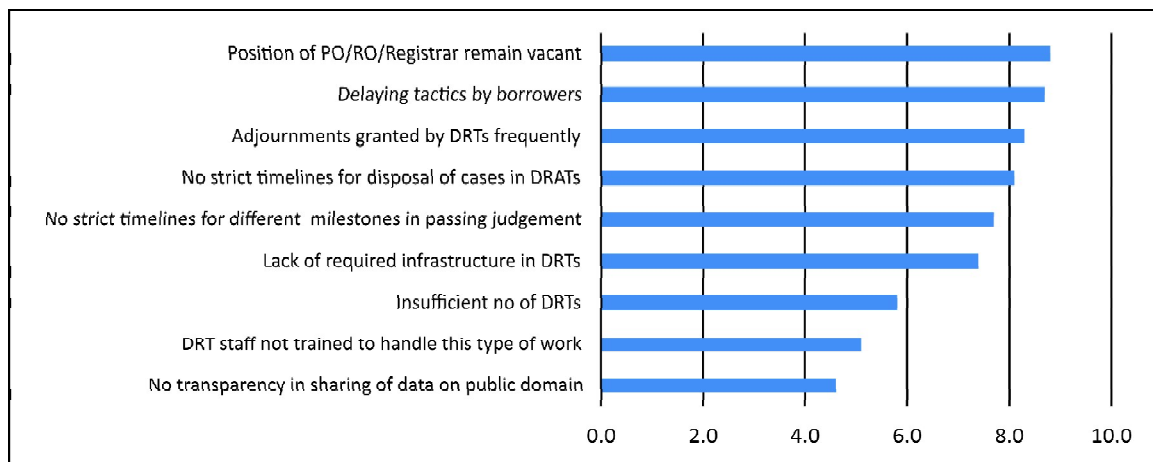


Figure 3: Reasons for Ineffectiveness of DRTs in Descending Order of Importance

Source: Primary data collected by the authors

The position of key officers i.e. PO, RO and Registrar remain pending in DRTs for a very long. This is supported by the example of DRT, Aurangabad (Registrar, 2020) which is not an isolated case. There the post of PO, DRT, Aurangabad was vacant since May 2016 (for about four years) and PO, DRT, Pune was holding charge since February 2017 and PO, DRT, Hyderabad since January 2020. The post of Registrar and RO were vacant since January 2010 (vacant for ten years) and October 2016 (for

over three years) respectively. Ten posts were vacant as against sanctioned strength of 30 in DRT, Aurangabad.

Similar issues were also illustrated in the Bombay High court order on Writ Petitions (International Asset Reconstruction Co Pvt. Ltd v. DRT, Mumbai & Others and Kotak Mahindra Bank v. DRT, Mumbai & Others, 2020). These Writ petitions were filed by the former due to an OA filed in 1999 and the latter due to two OAs filed in 2012 and 2016 respectively which were not disposed of. The Honourable Judges observed that the reasons for pendency of these cases in DRTs were non-appointment of POs of three DRTs in Mumbai, and non-appointment of POs in DRTs in other cities of Maharashtra requiring the DRT, Mumbai to handle the work of the said DRTs. The other reasons were that adequate staff was not appointed in DRTs, space was not provided to DRTs and not increasing the number of DRTs to handle the increased workload. The Honorable judges had directed the Respondents to place the orders before the Honourable Union Minister of Finance who should issue necessary directions.

There are quite a few delaying tactics by borrowers in DRTs. Large borrowers (defendants in OAs) keep on filing petitions for various reasons in DRT and other courts against banks. Besides, they file an appeal in the form of Securitisation Applications (SAs) in DRT against the action of the bank against the borrower under sections 13(2) or section 13 (4) of the SARFAESI Act. The action under SARFAESI Act or IBC stalls DRT proceedings against the borrower. If a borrower is admitted to National Company Law Tribunal (NCLT) under IBC, a moratorium is imposed till the insolvency is resolved under IBC. Earlier, under the Sick Industrial Companies (Special Provisions) Act, 1985 (SICA), a reference filed with the Board for Industrial and Financial Reconstruction (BIFR) could stall proceedings against the borrower in DRT till the reference was pending in BIFR. An OA was permitted to be continued in DRT only if BIFR granted permission for the same. Raghuram Rajan stated in his reply to the parliament that “DRT and SARFAESI Act were initially successful before they became overburdened as large borrowers understood how to game them” (The New Indian Express, 2018). Regy and Roy (2017) observed in the dataset of DRT cases examined by them that 43 % of the hearings failed due to adjournments sought by parties to get more time for filing documents or seek client’s instructions. 15% of the hearings failed due to the absence of PO/RO and 12 % of hearings failed due to the absence of lawyers. However, it was observed by them that private sector banks sought adjournments less frequently on account of time for filing documents and the absence of lawyers than PSBs.

National Judicial Academy (n.d.) and PTI (2016) highlighted infrastructural inadequacy and institutional inadequacy being reasons for the inefficiency of DRTs and DRATs. Ravi (2015) observed that the POs of DRTs and High Court judges were interpreting RDB Act and SARFAESI Act differently in different DRTs and High Courts. The question of jurisdiction in DRTs and different courts was also leading to delays in the disposal of cases. It was also observed that the approval of stay petitions in a majority of the cases, ex-parte stays and granting more time to borrowers for making payments could also be the reasons for the delay in disposal of OAs in DRTs. Gandhi (2014) also highlighted the deficiencies in working of DRTs and DRATs e.g. it sometimes took more than six months between dates of two hearings and even frivolous applications from borrowers, were entertained.

Given the above, we can say that there are deficiencies in DRTs which are reducing the effectiveness of DRTs in resolving NPAs of banks.

5.3. Can the Effectiveness of DRTs in Resolving the NPAs of Banks in India be Increased? If So, How?

The following suggestions were given by respondents during the primary survey for increasing the effectiveness of DRTs and thus the RDB Act:

- Not to keep the position of POs/ ROs/ Registrar vacant in DRTs
- Establish more DRTs to absorb the growing workload
- Issue directions to DRTs for avoiding repeated adjournments
- Fortnightly Review of pending cases of DRTs by DRATs
- Improvement in the infrastructure of DRTs
- Training of POs and staff of DRTs
- E-proceedings
- Rejecting frivolous SAs

Some out-of-the-box suggestions for revamping DRTs were:

- Keeping a dedicated cadre of judges conversant with recovery laws for appointment as POs
- Financial incentives to DRTs' staff for quality and time-bound disposal of recovery cases

The vacancies in the position of POs, RO and other staff of DRTs had emerged as the main reason for the ineffectiveness of DRTs in the primary survey. If the vacancies in all DRTs are filled up, the PO of each DRT will be able to focus on cases in his own DRT and he will not have to shoulder the responsibilities of other DRTs who do not have a PO. The establishment of more DRTs was also recommended because the respondents felt that this might help in reducing the workload of existing DRTs and absorb the growing workload. The respondents felt that clear directions should be given to POs of DRTs and that adjournment should be granted only on a selective basis on the merits of the case and not for routine matters.

The respondents felt that there should be an improvement in the infrastructure of DRTs. *International Assets Reconstruction Co Pvt Ltd v. The Registrar, Hon'ble Debt Recovery Tribunal, Mumbai* (2020) highlighted that adequate space was not provided to DRTs. It is, therefore, suggested that the infrastructure of DRTs should be improved for the smooth functioning of DRTs.

Training of POs and staff of DRTs was an important recommendation of the working group of the Banking and Financial Sector Legislative Reforms Commission (GOI, 2013).

E-proceedings in DRTs and Courts had started during Covid-19 for attending to urgent matters. This can be adopted for routine cases also to increase the efficiency of the system. The study group constituted by The Indian Institute of Insolvency Professionals of ICAI has recommended more adoption of digital modes such as holding virtual meetings of courts and deploying Artificial Intelligence even after the restoration of normalcy as digital technology has time-saving benefits.

As DRTs have jurisdiction for filing SAs, attending to these also increases the workload of POs and the staff. There should be a procedure for rejecting frivolous SAs with a penalty which should act as a deterrent for other borrowers who use SAs as a delaying tactic.

E-DRT software is being implemented in DRTs which includes e-filing, e-payment of fees, uploading of orders and viewing case status. However, banks are still facing teething problems in the e-filing of documents as the size of the documents allowed for uploading is very less i.e. only 20 MB in 4 pockets of 5 MB each. Besides, they have to file the application and documents in physical form as well within seven days of e-filing. Sengupta (2017) had given an example of how the use of technology had helped in expediting the disposal of cases in Singapore. The Government may try to use technology for expediting the disposal of cases.

As Banks file OAs, they should not be allowed generally to ask for more time for the submission of documents. One more reason for the delay was adjournments sought by lawyers of lenders. It emerged from the discussion with some respondents that PSBs had not revised the fee for lawyers hired by them for many years; therefore, attending hearings in their cases may not be their priority. Besides, lawyers are paid in many cases hearing-wise and not for timely disposal of the case, so getting the disposal of the case delayed can be the motive of some lawyers.

6. Summary and Conclusion

DRTs are a mechanism available with the banks for recovery in loan accounts that have become NPAs. The study concluded that DRTs have not remained effective mechanisms for the recovery of NPAs. They are beset with so many problems which are reducing their effectiveness. DRTs have not been able to hear cases due to massive vacancies across them. The Supreme Court, therefore, requested the high courts concerned entertain the cases which otherwise are to be heard exclusively by DRTs and DRATs (Anand, 2021). If the Government takes steps as suggested in para 5.3 above, the time for disposal of OAs in DRTs may reduce and their recovery percentage may increase. The realisable value of the assets on which banks have a security interest diminishes with time. The reduction in disposal time in DRTs is likely to enhance the recovery percentage for banks. The government should make appropriate use of technology for the modernisation of DRTs for increasing their efficiency. Now with the introduction of IBC, the insolvency applications of individuals will be handled by DRTs. If the deficiencies in the DRTs are not addressed as an emergency, the already choked system of DRTs may crumble. The findings of this study may be useful for banks, ARCs, The Government of India and the Judiciary for improving the effectiveness of DRTs.

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An Empirical Study on Forecasting Stock Returns of Tata Consultancy Services

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Abstract: Forecasting of stock returns is always a vitally important financial notion confronted by investors. Due to existing fluctuations in the stock returns, investors are always keen to show their interest as they want to take the advantage of potential returns from the organization by way of investing in stocks. Hence, it becomes a matter of concern for investors to predict future stock returns so that they can attain their objective of wealth maximization. This reason creates an urge to explore the forecasting of stock returns empirically. This paper employed the ARIMA model, developed by Box and Jenkins in 1970, which relies on the previous values of the variable itself. In the paper, this methodology is applied to the stock returns of one of the top IT companies listed on NSE i.e. Tata Consultancy Services Ltd. Data of daily returns were collected from 1 April 2008 to 31st March 2021. Results concluded that the ARIMA model had a strong capability of forecasting in the short run.

1. Introduction

Forecasting stock returns is always been a topic for discussion in contemporary financial literature. Investors try hard to contemplate possible future returns of a company's given common stock. The question arises of how to identify a probable closest return of a given stock. Traditionally, researchers have made an effort to forecast stock returns by studying the factors which affect a given firm's value or profitability. In the present research paper, an effort has been made to envisage our variable by way of the lagged values of the variable itself. Based on the popular notion of letting the data speak for itself (Gould, 1981). Therefore, ARIMA (Auto-Regressive Integrated Moving Average) technique has been applied to forecast the stock returns based on its previous values and error term. Both statistical and artificial intelligence models have been developed for forecasting the series. Stock price prediction is beneficial for both retail as well institutional investors. The non-stationarity nature of stock prices becomes a hindrance in forecasting the series accurately. In this respect, Autoregressive Integrated Moving Average (ARIMA) model best known as Box-Jenkins Methodology is the most appropriate

model. This model was propounded by Box and Jenkins in 1970 after considering the concept of stationarity (Box and Jenkins, 1970). ARIMA is a type of statistical model like other models such as the exponential smoothing model, regression, and Generalized Autoregressive Conditional Heteroscedasticity (Wang et al. 2012). It has become a potent and efficient model, being extensively used in the economics and finance field. ARIMA model transforms the data from non-stationary to stationary before working on it. It is used for capturing linear time series characteristics in the series. It is based on the assumption that time series values contain a linear correlation structure. This model provides a flexible approach to selecting models and estimation of parameters and forecasting.

There have been many studies conducted on different sectors that have applied the ARIMA model for the prediction of various time series variables which might include stock prices as well. However, fewer studies have been conducted on the IT sector to envisage stock returns of IT companies using the ARIMA model. More specifically, no study, as per a review of literature, has been done using the daily stock returns of IT companies. The present work initiates to fill this gap by taking daily stock returns of top IT sector companies in India i.e. TCS.

2. Review of Literature

A study on forecasting the stock price and other series has created interest among academicians and investors. Investors want to invest their hard-earned money which can be a good return. For the same, one of the methods is to forecast the stock return and one can easily evaluate whether it is good or not. The majority of the studies have been found for forecasting the stock return and other series. Smeral (2004) took an initiative to originate long-term prediction of tourism exports and imports for 25 countries by using a new WTTOUR-2001 model for the duration till 2020. Through this research work, the researcher wanted to trace the influence of changes in prices and incomes generated by and in each respective country considered in this model. Papatheodorou and Song (2005) focused on receipts and arrivals of international tourism at nominal, real, and per capita levels. In this research paper, prediction results have been produced from 2001 to 2010 by taking a base period from 1960 to 2000. Moreover, the forecasting has been done in the six major World Tourism Organization regions and the world by applying modern time series techniques. The results concluded that there exist sharp variations among regions' performance and in terms of real and per capita negative tourism growth is not unusual. Therefore, policymakers should measure to raise revenue generation but not at the cost of sustainable tourism development.

Al-Shiab (2006) used the general daily index of the Amman Stock Exchange from 4 January 2004 to 10 August 2004 to examine the univariate ARIMA model. To conduct the test following seven days were considered. Further, to get the best model for describing data, several diagnostic tests were performed, and finally, the best-selected model predicted that the daily index of ASE would increase by 0.195% for seven days beginning on 11 August 2004. However, this prediction was not per the actual performance of ASE. In China, major energy consumption is done by the transport sector. In this study, Zhang (2009) tried to predict the demand for transport energy by applying the partial least square regression (PLSR) method. Further, based on GDP, passenger turnover, urbanization rate, and freight turnover, the demand for transport energy is assessed from 1990 to 2006. The method revealed

that the demand for transport energy for 2020 will reach around 433.13 Mtce and 468.26 Mtce, respectively. Consequently, this research provides an effective tool as the resulted figures are very close to the estimations generated by the Energy Research Institute of China.

Devi *et al.* (2013) selected the top four companies out of which Nifty Midcap 50 was selected based on having maximum midcap value for analysis. The historical data of selected companies for the past five years was collected and trained by applying the ARIMA model with different parameters. Further, the accuracy of predicted results was checked using criteria like AIC and BIC. Lastly, an analysis of the trained model was conducted to find the market behavior and trend for future forecasts. Ivanovic *et al.* (2013) attempted to forecast the Crobex on the Zagreb Stock Exchange. The basic motive of this present study was to examine the best ARIMA model for forecasting. Firstly, the researcher conducted a stationarity test on weekly closed prices of Crobex from 1 January 2011 till 1 January 2013. By using the ADF test, ACF & PACF plots data became stationary at first differencing. Further, a suitable ARIMA (16,1,16) model was identified after the evaluation of around 200 models based on R², SIC, AIC, and HQC. Also, the residuals of the series were tested by using Jarque-Bera. Consequently, results confirmed that the ARIMA model outperformed the naïve model.

Mondal *et al.* (2014) studied 56 stocks from seven different sectors listed on NSE. Researchers collected data for 23 months for the empirical study. Further, AIC was used to select the best ARIMA model. Results indicated that ARIMA provides the best accurate results as above 85% of predictions using the ARIMA model for all sectors were accurate. Moving to specific sectors, forecasting of the FMCG sector was more accurate as compared to the predictions for the Banking and Automobile sectors. The primary objective of this paper was to predict gold prices by using the ARIMA model and two different versions of the wavelet scheme. Khalid *et al.* (2014) collected monthly data on gold prices from Dec 2005 to April 2013 consisting of 221 observations. Researchers evaluated the accuracy of different models based on MAE and MSE and the result favored wavelet neural transformation. In addition, this research utilized the forecast of returns from the above-mentioned various models and compared payoffs to familiar as to which framework will be the best prediction model. Isenah and Olubusoye (2014) used two models in the study namely artificial neural network and ARIMA to forecast Nigeria Stock Market returns. The comparison between ARIMA (3, 0, 1) and two artificial neural networks was done and the results depicted that models based on the artificial neural network were more capable of mimicking log returns closely than the ARIMA-based model. Along with this, results also revealed that simple technical indicators can also be used as predictors for predicting values of future stock market returns instead of extensive market data. Gay (2016) made an effort to investigate the relationship of macroeconomic variables on stock returns of BRIC countries that include Brazil, Russia, India, and China. He made use of the Box-Jenkins method to serve the purpose. The factors are taken into account where the exchange rates and the oil prices. No statistically significant association was found to be there between the given macroeconomic factors and stock returns for any of the BRIC economies. Moreover, no significant link was identified between stock return with its lagged values for any of the four countries. Malik *et al.* (2017) studied the big five banks of Pakistan for their stock price prediction. The stock price data for selected banks were collected from the official website of KSE (Karachi Stock Exchange). Researchers applied the ARIMA model for forecasting and after

identification, estimation, and application of multiple diagnostic checks, the best model opted for the prediction of ABL, HBL, and MCB were found to be ARIMA (1, 1, 0). On the contrary, for the prediction of BOP and UBL stocks, ARIMA (1, 1, 1) was coming out to be appropriate. Lastly, its outcome revealed that BOP and MCB had the maximum number of observations whereas HBL ranked lowest in the group.

An attempt was made by Dong and Gong (2017) to build a predictive model of the stock price using the ARIMA model. In the present research, researchers collected stock price data of Apple Inc. from Yahoo! Finance to forecast. Results disclosed that Autoregressive Moving Average (ARIMA) model has a robust capability for short-run prediction as well as is equally competent to other prediction models in guiding investment decisions. Afeef *et al.* (2018) employed the ARIMA methodology to forecast stock prices of a Pakistan-based company namely Oil & Gas Development Company Limited (OGDCL). The researcher considered daily adjusted closing stock prices of OGDCL for almost 15 years starting from 2004 to 2018 with 3632 observations. Results depicted that for prediction in the short-run, ARIMA modeling has great potential. Consequently, it was suggested for investors consider the findings of the study to supplement their aptitude for forecasting. E-commerce is becoming an integral part of society as it serves as a medium for selling and purchasing goods to the mass market. This reason led Carta *et al.* (2019) to forecast the future prices of products. In this research paper, researchers used a combination of sentiment analysis, time series, and reputation. Moreover, researchers exploited a suite of software tools i.e. Price Probe along with the ARIMA model to forecast prices of different products available on E-Commerce sites mainly Amazon. Data related to the prices of products was collected through social media, Google Trends, APIs, and dedicated crawlers. After detailed analysis researchers concluded that the quality of prediction was improved due to the presence of Google Trends information.

As per a detailed review of the literature, it has been observed that the majority of the studies have been conducted at developed countries' stock prices. Hence, there is scope in studying the stock return on Indian Stock price. In the context of the Indian stock market, TCS stock price has been considered to carry in the present study. The present work initiates to fill this gap by taking daily stock returns of top IT sector companies in India i.e. TCS. Tata Consultancy Services Ltd is a global leading IT service, consulting, digital and business solutions organization.

3. Objective of the Study

The main objective of the present study is to forecast the stock return of Tata Consulting Services.

4. Research Methodology

4.1. Data Collection

For the present research work, the daily adjusted closing price of Tata Consultancy Services Ltd. has been taken from 1 April 2008 to 31st March 2021. The data has been collected from CMIE PROWESS. After collecting the daily stock price, it is converted into a log return. Data of daily return was collected which are the logarithmic differences of prices of two successive times, that is, $R_{it} = \log(P_{it} / P_{it-1})$.

1). An Autoregressive Integrated Moving Average (ARIMA) is employed in the present study to forecast the stock return of TCS using RStudio.

4.2. Tools

ARIMA model is explained in the Box-Jenkins methodology. This methodology is used to identify a potential model out of a general class of models. In addition, it uses both the techniques of autoregressive (AR) and moving average (MR) for forecasting as well as tries to search for the best combination of the two techniques. ARIMA stands for Auto-Regressive Integrated Moving Average. It is a method of modeling the data of time series for predicting or forecasting the future data points in the series. It is done based on its past value as well as past values of the error term. ARIMA model believes that information is hidden in the past of the series; Y_{t-1} , Y_{t-2} , and so on, or in the residuals of the series; $et-1$, $et-2$, and so on. Here, Y_t represents the response variable at time t and e represents the error term.

This model was initially introduced by two statisticians namely George P Box and Gwilym Jenkins in their book “Time Series Analysis: Forecasting and Control” (Box and Jenkins, 1970). That’s why it is also known as the Box-Jenkins methodology. To get better results from the model, it is suggested by researchers to work on at least 100 observations or more. The prime problem in the ARIMA model is the identification of lag values of a variable along with the lag value of the error term which can effectively forecast the future value of the variable.

ARIMA models are generally expressed like “ARIMA (p, d, q)”, here the three terms are defined as follows:

- “AR” in ARIMA is called an Autoregressive term in the model. “AR” in the model assumes that a time series is a function of its past values; that’s $Y_t = f(Y_{t-1}, Y_{t-2}, \dots)$.
- “I” in ARIMA is called the integrated feature of a time series which means how many times a series is to be differenced to make it stationary. If a time series becomes stationary after a second differencing it is called integrated of order two.” I” also takes care of the difference to make a time series stationary.
- “MA” in ARIMA represents the Moving Average term in the model. It assumes that a time series is a function of its errors that’s – $Y_t = f(et-1, et-2, \dots)$

The creators of the model, Box, and Jenkins, have focused on the principle of parsimony which emphasizes keeping the model as simple and concise as possible. Of course, a model with a huge number of regressors would forecast better results in time series (as R^2 will be high) but at the cost of a lessening degree of freedom. For the prediction of time series, both the model developers proposed a four-tier model. Hence, the model is widely known as the Box-Jenkins methodology whereas the economic terminology for such kind of model prediction is known as ARIMA modeling.

The four steps of the ARIMA model are:

- **Model Identification:** In this preliminary stage, the researcher firstly transforms the series to stabilize variance by taking log or differencing to obtain stationary series. After following this process, the best suitable ARIMA model, including the autoregressive processes (p) affecting a

time series variable, the number of times the series to be differenced to make it stationary(d), and the number of moving average processes (q), for the time series has been ascertained.

- **Parameter estimation:** In the next stage of ARIMA modeling, the estimations of parameters of the potential model are made.
- **Diagnostic Checking:** In the third step of the process, the assumptions of autocorrelation and normality of residuals are checked.
- **Forecasting:** Finally, in the last step of the methodology, the future or the next value of the time series is forecasted or computed mathematically to check how near the forecasted value is in comparison to the actual value as well as the accuracy of the forecasted results were identified by considering the error variance. While using the time series econometric framework, it is advisable to extricate information related to a variable that can be gathered from the variable itself (Asteriou and Hall, 2007). Hence the autoregressive integrated moving average model (ARIMA) which is also known as the Box-Jenkins methodology has been implemented in the study. The general equation of an ARMA model (Asteriou and Hall, 2007) is as follows:

$$Y_t = \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \dots + \phi_p Y_{t-p} + \varepsilon_t + \theta_1 \varepsilon_{t-1} + \theta_2 \varepsilon_{t-2} + \dots + \theta_q \varepsilon_{t-q}$$

Here, Y_t is the predicted value of the variable, $Y_{t-1}, Y_{t-2}, \dots, Y_{t-p}$ is the lagged value of the autoregressive term (AR), ε_t is the error term, $\varepsilon_{t-1}, \varepsilon_{t-2}, \dots, \varepsilon_{t-q}$ are the lagged values of the moving average (MA) or error terms, ϕ and θ are the coefficients of the regressors. But under this process, variables of time series are assumed to be weakly stationary. The meaning of stationarity implies that the mean and variance of the time series are constant and its covariance is time-invariant (Gujrati and Porter, 2004). Applying the ARMA process to non-stationary data will provide no results. Therefore, the most appropriate and efficient ARIMA model was applied to daily stock returns of TCS collected from 1 April 2008 till 31st March 2021 to forecast more accurate results of stock returns.

5. Data Analysis and Findings

5.1. Descriptive Statistics

Table 1: Descriptive Statistics

TCS	
Mean	0.0777
Maximum	14.4065
Minimum	-11.3063
Std. Dev.	1.9793

Source: Author's Own Compilation

It has been observed from table 1: Descriptive Statistics, the minimum and maximum values of TCS stock returns stand at -11.3063 and 14.4065 respectively. The minimum value of stock returns

depicts that shareholders lost 11.31% in stock returns on the contrary some of them have gained up to 14.40% as stock returns. The mean value of TCS returns comes out to be 0.0777 which is an indication that approximately TCS is generating 0.07% stock returns during the period of study. The variation in the stock returns can be seen in the value of the standard deviation which stood at 1.9793. This implies very little volatility and deviation in stock returns from the mean.

5.2. Trend Analysis of TCS Stock Prices

The TCS stock prices depict that it did not follow any specific trend. The TCS prices stood around 212 on 1st Apr'08 and it declined for 1 year straight. It was due to the global slowdown. From April'2009 till September'14, stock price shot from 200 to 1400 levels. It shows the strong performance of the company during the period. However, from September, 14 till December, 17 stocks were in the consolidation phase where they traded in a particular range only. There is a breakout in share after January'18. It achieves its lime time of Rs 1587 on 24th Jan'18.

5.3. Unit Root Test

As the series seems to be non-stationary, to make it stationary first of all stock prices of TCS have been converted into stock returns by using the following formula:

$$SR = \ln(p2/p1)*100$$

Where,

Ln = Lognormal

P2 = Price as of 31st March

P1 = Price as of 1st April

Further, to check the stationarity of the TCS stock returns series, the researcher applied ADF test statistics on the level at a 5% significance level. The hypothesis for the same is mentioned under:

H0: The series is non-stationary or the series has the presence of unit root. H1: The series is stationary or the series does not have the presence of a unit root.

The results of the ADF test which has been employed on the log-normal stock return series of TCS depict the ADF value as -31.65182 and probability value as 0.00 which is less than .05, this blatant the stationarity of series at first difference as well as the Durbin-Watson value 2.00 confirms the absence of autocorrelation in the series.

5.4. Model Identification

After achieving the results of stationarity in the series through log normal stock returns values, the researcher stepped further and introduced the Box-Jenkins methodology. The initial step in the process is to identify an appropriate model. To locate the best-fitting ARIMA model for the stock returns of TCS, the function “auto.arima” has been applied in R Studio. After applying the function best model has been estimated which identified the number of AR and MA terms on which returns of TCS depend. Finally, the ARIMA model (2, 0, 2) came out to be the best fit model for the prediction of TCS stock returns. In the estimated model, the value of AR comes out to be 2 which explains that

stock returns of TCS can be forecasted by considering stock returns of the previous two days whereas I stand as 0 which shows the stationarity of natural log returns series at first differencing. Moreover, the value of MA comes out to be 2 which represents that stock returns of TCS are affected by the error term of the previous two days.

5.5. Model Estimation

Using R studio, the following are the estimated parameters based on the model identified:

Table 2: ARIMA Model

Parameters	ar1	ar2	ma1	ma2	Intercept
Constant	0.9679	-0.5148	-0.9523	0.4376	0.0775
s.e.	0.1339	0.1878	0.1393	0.1935	0.0351
t-value	7.2285	-2.7412	-6.8363	2.2615	2.208
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
sigma ² estimated as 3.875, log likelihood = -5183.86, aic = 10379.73					
	ME	RMSEMAE	MASE		
Training set	0.000215725	1.968436	1.364479	0.7032506	

Source: Author's Own Compilation

ARIMA Model depicted in table 2, the coefficients depict the AR and MR terms of the ARIMA model whereas S.E shows the standard error. The mathematical equation of the ARIMA model is

$$Y_t = 0.0775 + 0.9679 Y_{t-1} - 0.5148 Y_{t-2} + 0.0351 - 0.9523 \varepsilon_{t-1} + 0.4376 \varepsilon_{t-2}$$

Here the p-value of each coefficient has been examined to determine whether or not the parameters are significantly significant. As a result, it has been discovered that p-values of coefficients ar1, ar2, ma1, and ma2 are found to be significant as their value comes out to be less than .05. Moreover, the above table 2 also shows the Akaike Information Criterion (aic) 10379.73 which helps to identify the best number of parameters and lags to be estimated in the ARIMA(p,d,q) models. The Akaike Information Criterion (aic) was developed by Hirotugu Akaike (Akaike, 1974). In addition, results of ME, RMSE, MAE, MASE, and ACF1 have been shown in table 2 to facilitate the process of best model selection.

5.6. Residual Diagnostic

For the best forecasting model or to ensure the appropriateness of the model, it is mandatory to diagnose the leftover residuals generated from the model. If these are left unchecked then, it may lead to the problem of autocorrelation. Consequently, autocorrelation will decrease the accuracy and lead to misinterpretation of data (Pillai, 2017). Therefore, the assumption of the presence of autocorrelation among the residuals has been diagnosed by preparing correlograms of both autocorrelations as well as

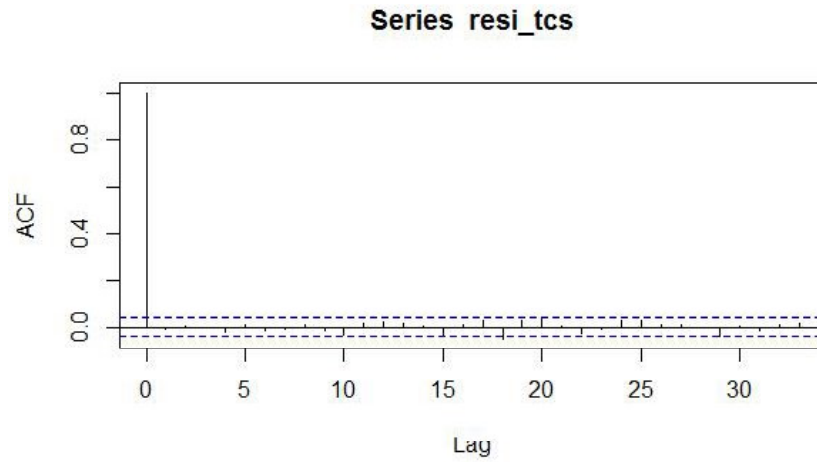


Figure 1: Plot of ACF

Source: Author's Own Compilation

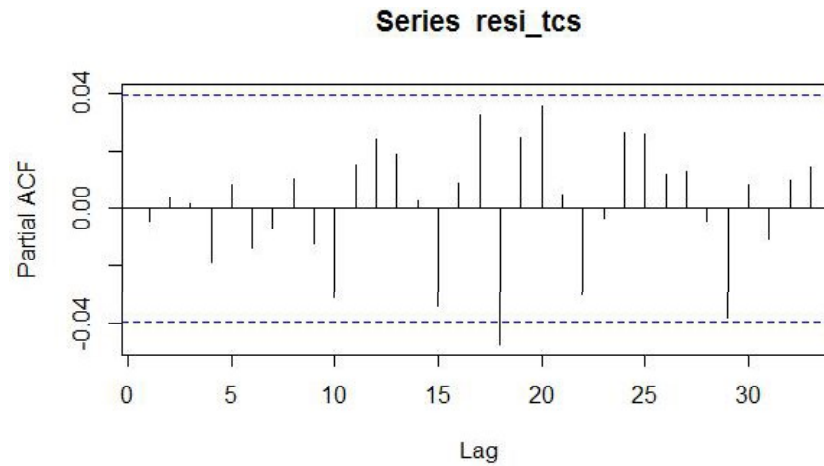


Figure 2: Plot of PACF

Source: Author's Own Compilation

partial autocorrelation. Moreover, the residuals should be white noise as well as uncorrelated and purely random to consider the generated model as a fit model.

As per figure 1 of ACF, it can be observed that the first lag in the series is significant while the rests of the errors are white noise. The autocorrelation check of the residuals indicates that the model is good as well as residuals have constant variance, and zero means and are also uncorrelated.

Further, it is identified from figure 2 of Partial ACF that lag 18 just crosses the significant limit but all other lags of PACF lie within the significance limit and move around zero. Hence, it can be concluded that our selected model is a perfect fit for forecasting.

5.6.1. Autocorrelation

Further, the assumption of autocorrelation has been also diagnosed through the Ljung-Box test. This test is used in ARIMA modeling to test that the residuals obtained from the ARIMA model do not contain any autocorrelation (Davidson, James (2000)).

H0: There exists no autocorrelation

H1: There exists autocorrelation

Table 3: Results of the Ljung Box Test

<i>X-Squared</i>	<i>Df</i>	<i>p-value</i>
0.084143	2	0.9588

Source: Author's Own Compilation

The results of the Ljung-Box test shown in table 3 reveals that the p-value is greater than .05 which leads to acceptance of the null hypothesis and concludes that there exists no autocorrelation or that the residuals obtained from the selected model are independent of each other.

5.6.2. Normality Test

The second assumption of normality of residuals was satisfied by using the Jarque-Bera test. This test is named after Carlos Jarque and Anil K. Bera. If it is far from zero then it signals that the data do not have a normal distribution. The following is the assumption to check the normality of residuals.

H0: Series is normally distributed

H₁: Series is not normally distributed

Table 4: Results of Jarque-Bera Test

<i>X-Squared</i>	<i>Df</i>	<i>p-value</i>
3429.8	2	<2.2e-16

Source: Author's Own Compilation

The p-value of the Jarque-Bera test came out to be <2.2e-16 which is less than .05 which leads to no acceptance of the null hypothesis and thus concludes that data is not normally distributed. The normality plot of residuals is presented in above figure 3also evident the same.

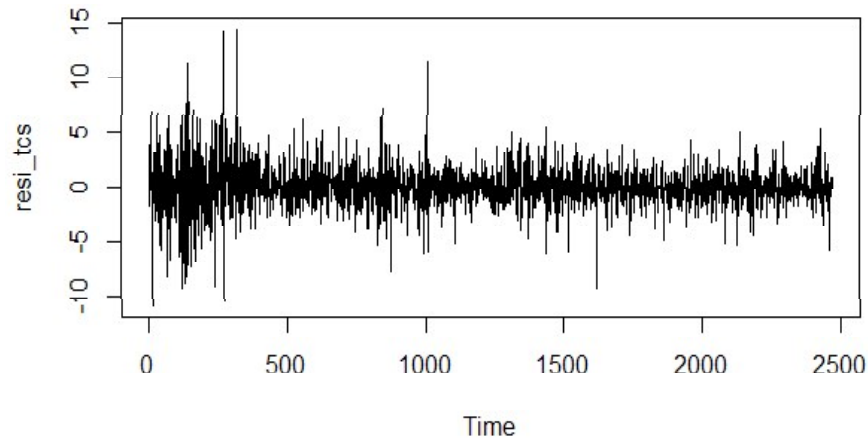


Figure 3: Residuals Normality Plot

Source: Author's Own Compilation

5.7. Forecasting

Lastly, by using ARIMA (2, 0, 2) model, the researcher forecasted the next seven days' log normal returns of TCS. The daily stock returns are compared with the returns generated by the best fit ARIMA (2, 0, 2) model which are shown in table5 along with the calculated value of S.E.

Table 5: Forecasted Returns of TCS

Date	Actual Returns %	Forecast Returns %	SE%
1 April 2021	2.101202187	1.574224631	0.526978
5 April 2021	0.054974129	1.200475726	-1.1455
6 April 2021	-0.012366544	1.007152253	-1.01952
7 April 2021	1.603752983	0.883844137	0.719909
8 April 2021	-0.259298145	0.796254172	-1.05555
9 April 2021	-0.898851852	0.729985132	-1.62884
12 April 2021	0.467457987	0.677663266	-0.21021

Source: Author's Own Compilation

After 1st April 2021, no trading was carried out on 2nd, 3rd, and 4th April 2021. Hence, the actual return of the next working day i.e. 5th April 2021 has been taken into consideration. Similarly, due to non-working days on 10th and 11th April 2021, following the next 12th April has been considered. Table 5 represents actual stock returns and forecasted stock returns of TCS along with its standard error. The results depict that only on 1st April & 7th April 2021, the value was under forecasted by 0.53% and 0.71% respectively, except this day remaining all the returns from 5th April 2021 till 12th April 2021 have been

over forecasted. The range of over-forecasted values lies between 0.21% to 1.62% which confirms that the model is precise or the best fit for prediction. To confirm the accuracy of the model, the researcher applied a one-sample t-test. The result of the test signifies that the standard deviation of the accuracy of forecasting of TCS is not too high and we are getting an above 95% accuracy in prediction for TCS stock returns. Moreover, the p-value is coming out to be more than .05 i.e. the null hypothesis will be accepted which is, that the changes in the accuracy of prediction of stock returns of TCS are insignificant.

Table 6: One-Sample Statistics

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>
TCS	7	-.544676	.9020675	.3409495

Source: Author's Own Compilation

Table 7: Results of One-Sample t-Test

	<i>T</i>	<i>Df</i>	<i>Sig. (2-tailed)</i>	<i>Mean Difference</i>	<i>95% Confidence Interval of the Difference</i>	
					<i>Lower</i>	<i>Upper</i>
TCS	-1.598	6	.161	-.5446761	-1.378949	.289597

Source: Author's Own Compilation

6. Conclusion

6.1. Research Outcomes

The basic objective of the present study is to forecast a stock return of the Tata Consultancy Service (TCS). It is found that ARIMA (2,0,2) model is the best-fitted model to forecast the log-normal stock returns of TCS. The results depict that only on 1st April & 7th April 2021, the value was under forecasted by 0.53% and 0.71% respectively, except this day remaining all the returns from 5th April 2021 till 12th April 2021 have been over forecasted. The range of over-forecasted values lies between 0.21% to 1.62% which confirms that the model is precise or the best fit for prediction. Moreover, the results of one sample t-test signify that the standard deviation of the accuracy of forecasting of TCS is not too high and we are getting an above 95% accuracy in prediction for TCS stock returns and the changes in the accuracy of prediction of stock returns of TCS is insignificant. From the above findings, it can be concluded that the ARIMA model has sufficient potential to predict future values in the short run.

6.2. Implication and Limitation of the Study

The study implies that it is expected to be worthful for prospective investors by guiding them to invest or disinvest in a particular stock at the correct time. Present research work is restricted to the ARIMA model for forecasting but numerous other models are also available.

6.3. Future Scope of Research

The research work was conducted only to study the forecast of one company. The future study can be done by extending to other companies or sectors along with comparisons among them. Present research work forecasted only stock returns whereas forecasting of different variables can also be done in the future. Future studies can also be conducted on other models to forecast stock returns except for ARIMA.

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Debt Financing and Capital Structure Influencing the Firm's Financial Performance: A Bibliometric Analysis

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Debt financing, Capital structure, Financial leverage, Profitability, Financial performance, Bibliometric analysis

JEL Classification

G30, G32, L25

Abstract: Debt financing plays a prominent role in deciding future growth and the earning capacity of any company. Debt financing is a part of capital structure; hence both terms are interlinked with each other. The main aim of this study is to provide widespread view of previous studies associated with debt financing and capital structure. For this purpose, a Bibliometric analysis is performed with the aid of Bibliometrix Library along with BiblioShiny tools in R Studio software. Web of Science is elected as main database consisting data of 21 years from 2002-2022, gathered by using keywords “debt financing”, “capital structure”, “financial leverage”, “financial performance” and “profitability”. USA and China has been found as top contributing countries. Most of the authors belong to the USA, China, Canada, UK etc. Texas Christian University from United States discovered as most active institute in writing documents/articles related to this field.

1. Introduction

Capital structure is a combination of owned and borrowed funds. This Borrowed segment of capital structure represents the debt financing portion of an organization. Thus, debt financing is an integral part of capital structure. Debt financing decisions are of prime importance both for the long term growth and survival of the firms. Debt can be defined as borrowed money which needs to be repaid in future along with interest charged on them. Usually a fixed rate of interest is charged upon the amount borrowed and if the money is not repaid as per the terms agreed, the lender (from whom the money is borrowed) can start the legal proceedings to collect the funds. Debt financing is basically connected with the capital structure of a company. While deciding about the sources and proportion of sources in a capital structure, it is essential to take decision regarding the proportion of debt and equity financing as well. Debt financing is considered as the foremost component of outer funding for any corporation

which is in need of raising additional capital for its business (Baltic and Ayaydin, 2014). As sources of debt carry a fixed charge as interest on them, thus it is imperative to take such decisions with utmost care. Because High leverage may jeopardize the survival and low leverage may prevent a firm from having tax benefit. The decision regarding, whether to opt debt or not, falls under the category of financing decisions. The topic of capital structure (combination of debt and equity) was initially highlighted by Modigliani and Miller and later on various researches conduct their study on it. According to Modigliani and Miller (1958), the choice about the combination of capital structure is irrelevant and does not have any effect on corporation's value or its performance. The outcomes of Phillips and Sipahioglu (2004) support the theoretical views of Modigliani and Miller and found that capital structure decisions are not relevant in context of firm performance. But many researchers found to have opposite results as compared with it. Das and Swain (2018) disclosed a significant association of capital structure with the fiscal performance of the concern. Similarly Opoku-Asante *et al.* (2022) stated a negative relationship of capital structure with firm's financial performance.

Debt financing is interlinked with capital structure. While measuring the impact of capital structure on financial performance of any organization, it becomes inevitable to measure the efficacy of debt portion as well. For measuring the impact of capital structure, different leverage ratios have been employed as its indicators. If the focus has been set on borrowed portion of capital structure then it can be seen that there are number of studies analyzing the impact of debt financing on financial performance of an organization. Mohammad and Jaafer (2012) stated that profitability of any corporation has an unassertive but significant relationship with total debt (short and long term debt). Anandasayanan and Subramaniam (2013) investigated that corporation's debt was significantly and negatively related with its profitability. Debt financing has a two way effect, positive as well as negative, on the growth level of the company. Although different researchers used discrete parameters for measuring the financial performance of an organization and they gauged the level of debt with the help of leverage ratios of that organization. Dakua (2019) used debt ratio to portray the presence of leverage in Indian steel industry and found its positive association with profitability of the firm. Kurfi *et al.* (2021) described ROA and ROE as basic parameters to measure the monetary performance of banks while used long term debt as independent variable for computing debt level. Hung *et al.* (2002) employed debt to equity ratio for gauging the composition of capital structure in construction sector Hong Kong. Similarly, Mumtaz *et al.* (2003), Birru (2016) and Al-Taani (2013) also used debt to equity ratio as major independent variable to compute the impact of debt financing and borrowed fund on the fiscal health of the company. Omollo *et al.* (2010) used three different configurations (short-term debt, long-term debt & total debt) to improvise the concept of leverage in capital structure while projecting their linkage with monetary performance (ROA) of quoted firms in Kenya. Zhou *et al.* (2021) portrayed financial leverage of firms with the help of leverage ratio. Thus different authors used different variables to measure the level of debt in a firm as per the relevance of the study concern.

The focus of this study is to conduct a bibliometric analysis of the studies portraying the impact of debt financing and capital structure on firm's financial performance and gather the information about the data published during the year 2002 to 2022. For this purpose Web of Science is used as

main database and an attempt is made to enhance the knowledge about the keywords used in previous studies, top authors, citations, contributing countries etc.

The aim of this study is to find out the answers of following questions on the basis of the articles cited and published during last 21 years on the topic of debt financing and capital structure influencing the financial performance of a concern:

RQ1. What is the growth pattern of articles published during the study period?

RQ2. What are the common and most relevant keywords used so far and what is the thematic evolution of words during the study period?

RQ3. Which journal is most relevant in publishing articles relating with debt financing?

RQ4. Who are the main contributing authors during the period of the study?

RQ5. Which is the highest contributing country & institute and what is the status of country collaboration network?

2. Research Methodology

For the accomplishment of the study, a dataset was required having information regarding publications, numbers of articles published, details of authors, data regarding article citations etc. With the assistance of Bibliometric analysis, the data have been gathered and evaluation has been performed to fulfill the intentions of this study. Before operating Bibliometric analysis, it's imperative to have a glance regarding this analysis technique. Bibliometric analysis is a statistical way of analysing and evaluating the published articles, book chapters, proceedings paper, books etc. to gauge the major impact of publications on scientific league. In this study, the Bibliometric analysis was performed with the support of R programming software. Bibliometric analysis was executed with the aid of Bibliometrix library along with BiblioShiny online platform. Biblioshiny is an online platform, working by developing a web interface for performing bibliometrix.

2.1. Data Collection

The data is assembled on 22nd January 2022 from the database of 'Web of Science' for a period consisting 21 years from 2002 to 2022. Entire time period of the database is included in this study so that it will provide more authenticity to the output. All the published articles, related with the study topic, falling under this time period has been included in the study. This search is made with the keywords "Debt Financing" or "Financial Leverage" or "Capital Structure" and ("Financial Performance" or "Profitability") which provides a result of 1,035 documents from the hub of Web of Science. After that, certain filters are employed on these results. Firstly these documents are purified on the root of language criteria and found that 32 documents are not presented in English Language. Such documents have been excluded and a set of remaining 1003 documents are used for applying further criteria. Another refinement was done on the grounds of document type like articles, proceedings paper, book chapters etc. We include only articles type documents for the convenience of the study and 37 documents belongs to other categories have been excluded. 966 articles were used for applying another filtering criterion of area category like economics, business finance, management etc. Articles falling under the

category of business finance are taken as final output for the study and remaining 272 articles were excluded. After applying certain filters of language, document type and article category, 694 documents were obtained. From all these 694 documents or articles, a further refinement is done on the basis of study title and keywords used in them. After performing this task, 432 documents found to be relevant as per the study purpose. Bibliometric tools have been applied on these compiled results and with the aid of RStudio and BiblioShiny, an attempt is made to expose all pertinent areas relating to this study.

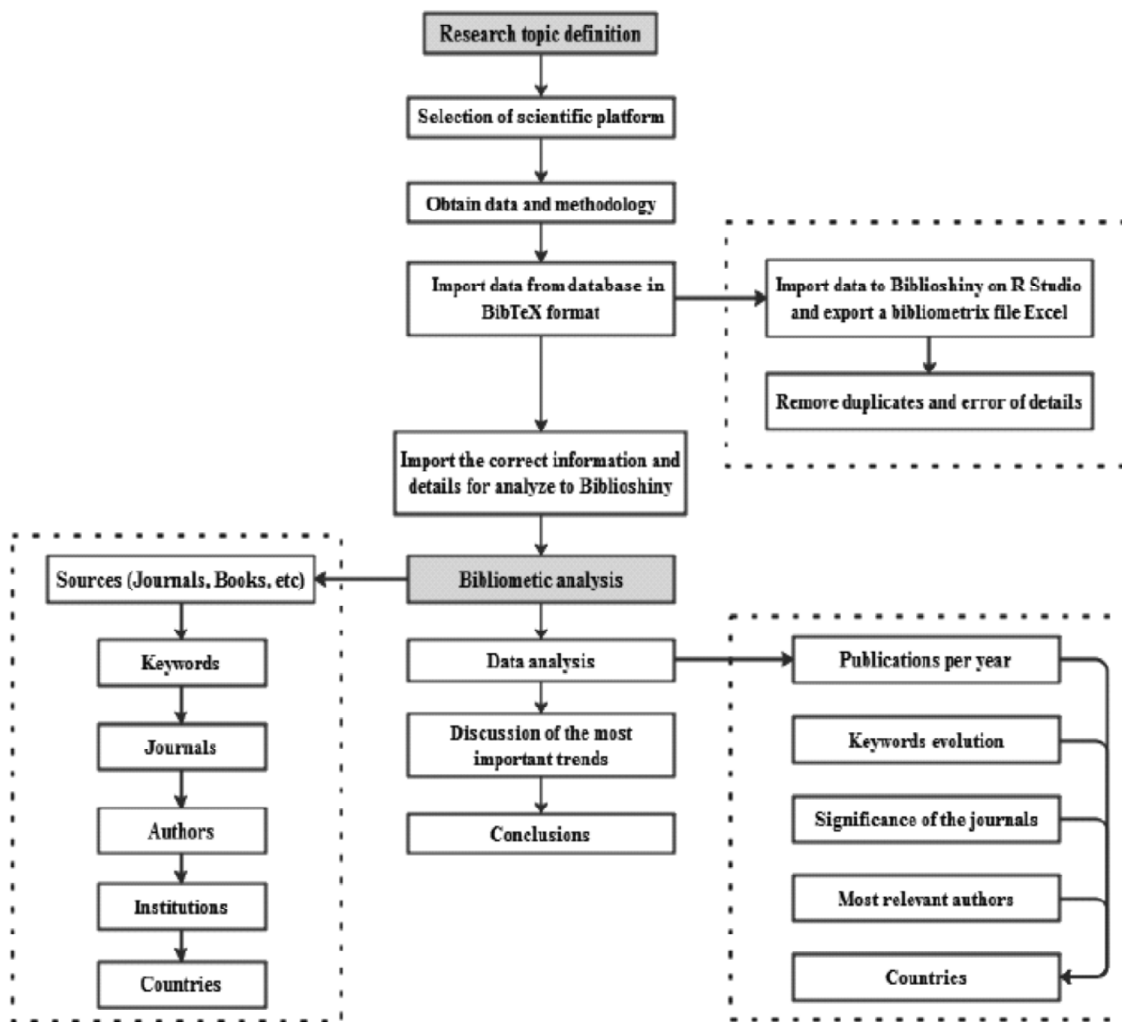


Figure 1: Workflow Chart Describing How to Perform Bibliometric Analysis

Source: Described by Garcia-Leon *et al.*

3. Findings and Discussions

3.1. Descriptive and Statistical Analysis

Table 1: Main Information Regarding Data Compiled

<i>Description</i>	<i>Results</i>
Main Information About Data	
Time duration	2002 to 2022
Sources (Journals, Books, etc)	71
Documents	432
Average years from publication	7.16
Average citations per documents	26.8
Average citations per year per doc	2.603
References	11920
Document Types	
No. of articles	408
article; book chapter	1
article; early access	13
article; proceedings paper	10
Document Contents	
Number of Keywords Plus (ID)	838
Number of Author's Keywords (DE)	1048
Authors	
Authors	910
Author Appearances	1033
Authors of single-authored documents	83
Authors of multi-authored documents	827
Authors Collaboration	
Single-authored documents	85
Documents per Author	0.475
Authors per Document	2.11
Co-Authors per Documents	2.39
Collaboration Index	2.38

Source: Authors' Own Compilation

Table 1 depicts general information about the dataset which is collected from Web of Science and analyzed with the help of R studio & R tools. The table portrays basic details like the time duration of

the study (21 years from 2002-2022), the types of documents involved, author details etc. A sum of 432 documents, consisting published articles, articles from book chapters, proceeding papers and early access was investigated. The average number of document citations is 26.8. In compiled data, it is found that there are 910 foremost authors contributing in this field. Apart from this, figure 2 clearly portrays the immense growth of published articles over the years. The article produced in 2002 is just one tenth portion of the year 2021. The annual growth rate of published articles, if including the year 2022, is 1.12% as computed from the data. The maximum publications are from 2021 till now. Although there are fluctuations, but from the year 2008, there is a steady growth in publishing process till 2011. After little downfall in 2012, an increasing trend can be seen with some variations.

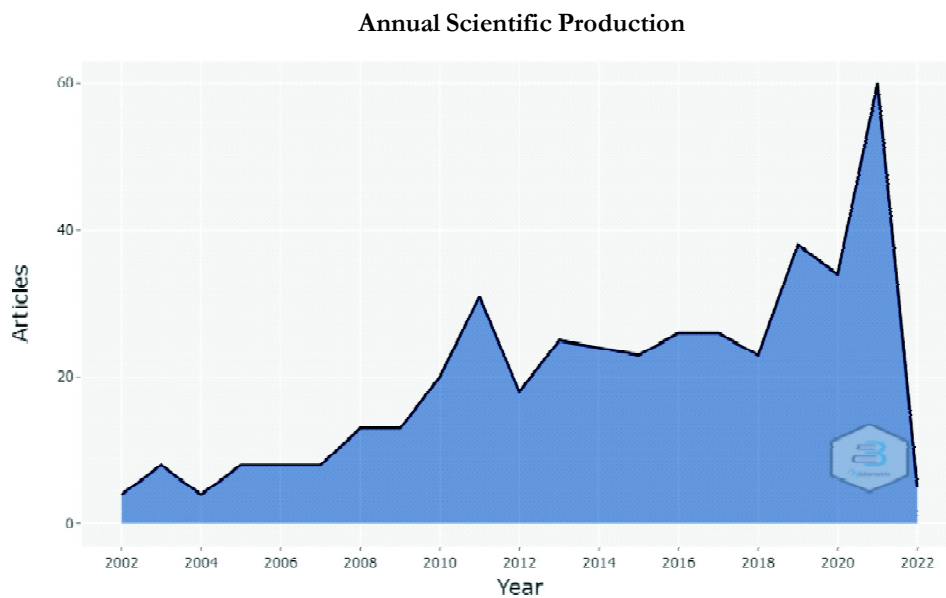


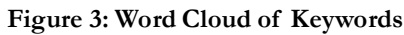
Figure 2: Annual Growth of Published Articles during 2002-2022

Source: Authors' Own Compilation

3.2. Keyword Evolution

Keyword plays a very prominent role in every study. The summary of entire study generally centralized around the keywords used in that study. Keyword represents the main idea or the topic which works as an essence in any study. It makes the study searchable and provides convenience to the researchers in finding appropriate study as per their requirements.

Figure 3 of this paper depicts the word cloud of keywords used so far in previous studies. Word cloud represents a bunch of core words in pictorial format. Impact, equity, finance, debt, performance, ownership structure, leverage are some basic keywords used in studies. Different authors used different combinations of keywords as per the requirement of their studies.



“Capital Structure” was highly frequented keyword used in studies then it is followed by “determinants” and “debt” as stated by the analysis performed in BiblioShiny.

Most Relevant Words

Keywords Plus	Occurrences
capital structure	122
determinants	103
debt	99
investment	90
agency costs	76
information	64
firms	63
risk	60
firm	52
performance	49
choice	48
decisions	47
ownership	46
corporate governance	39
market	33

Source: Authors' Own Compilation

most relevant terminology was “capital structure”, having a frequency of occurring 122 times as shown in figure 4. The next most frequent word was “determinant” appearing 103 times whereas the word “debt” occurred only 99 times. Dakua (2019) used both keywords “capital structure” and “determinants” in his study.

Figure 5 represents the thematic evolution of the keywords over the years. In this process, the study period is diverged in to two parts and an attempt is made to identify the relationship pattern between two sections. To ascertain the evolution of keywords, during the study period, the year 2016 was abandoned and the period was divided into two sections, one from 2002-2016 and another one from 2017-2022.

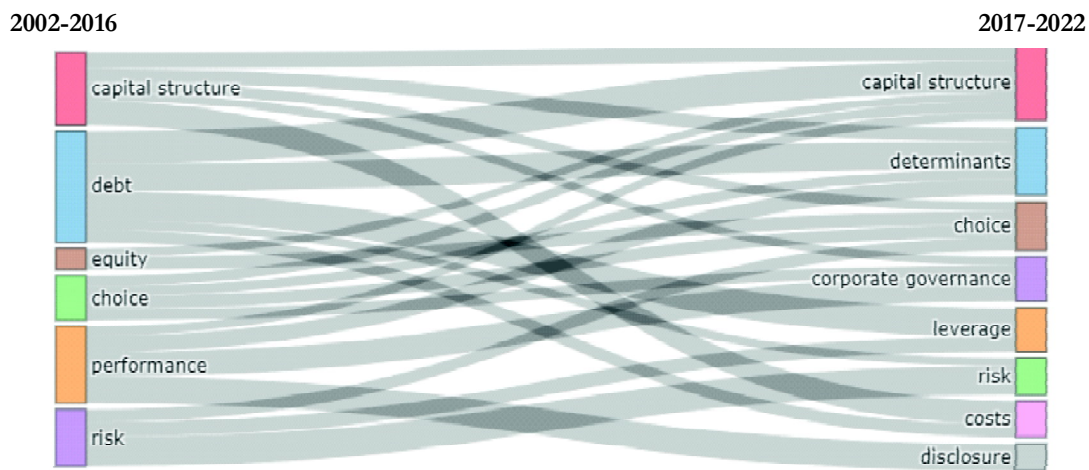


Figure 5: Thematic Evolution of Keywords

Source: Authors’ Own Compilation

It is clearly visible from the figure 5 that period prior to 2016 does not involve that much variety of keywords as compared to the years after 2016. The word “capital structure” is the essence of the studies reviewed so far.

Figure 6 defines the co-occurrence between the keywords. Co-occurrence means arrival of keywords together. Different colors in clusters represent different combinations of keywords. The most highlighted keyword “capital structure” in red cluster represented as the most prominent keyword which was assisted with the related words like information, choice, equity, costs, maturity etc. Similarly, blue cluster represents agency costs and determinants as prominent keywords while ownership, performance, firm has been considered as related core words.

Figure 7 depicts a dendrogram of keywords in which these core words were interconnected with each other. The cluster of blue color represents terms closely associated with capital structure decisions of the firm while the red cluster portrays only corporate related terms like corporate governance and agency theory of adjustment.

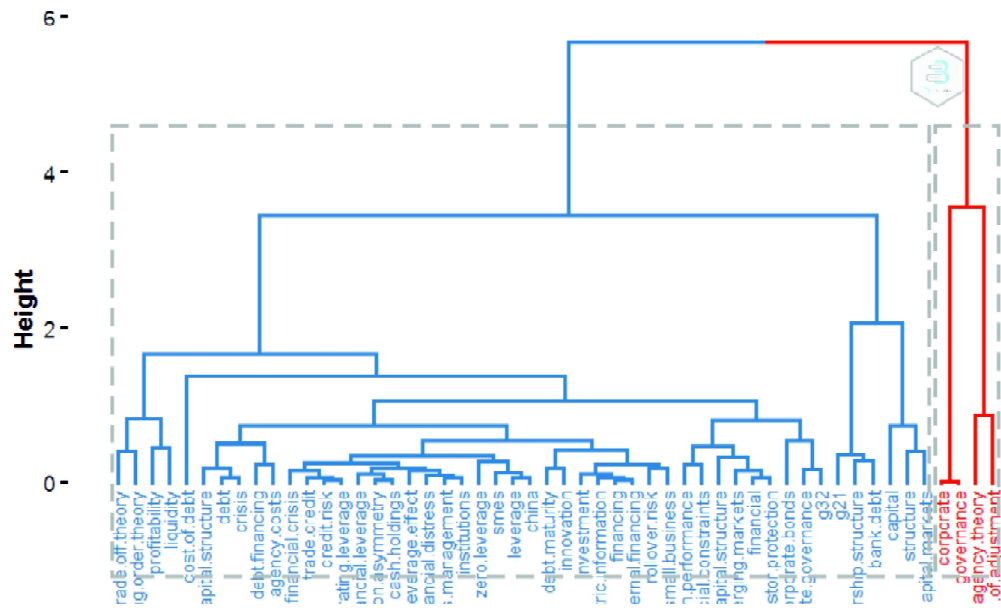


Figure 7: Dendrogram for Keywords

Source: Authors' Own Compilation

Word Growth

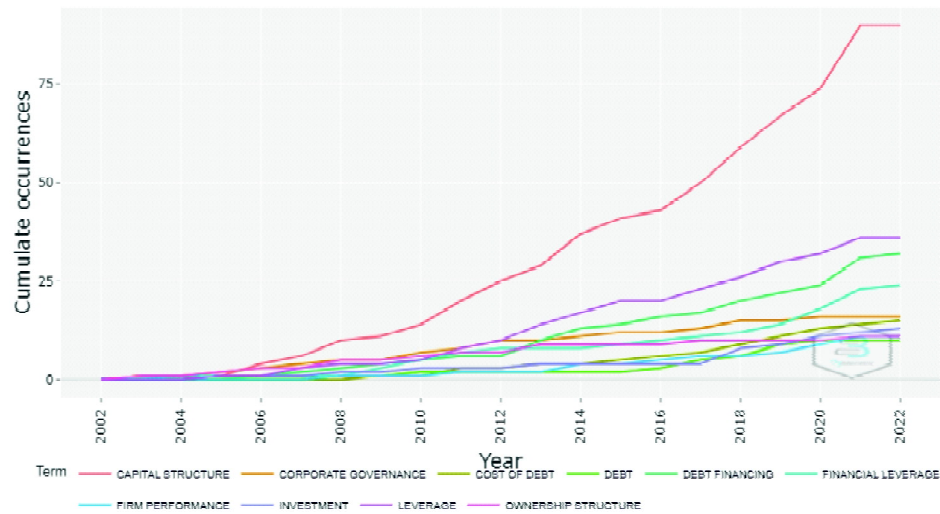


Figure 8: Word Growth of Keywords

Source: Authors' Own Compilation

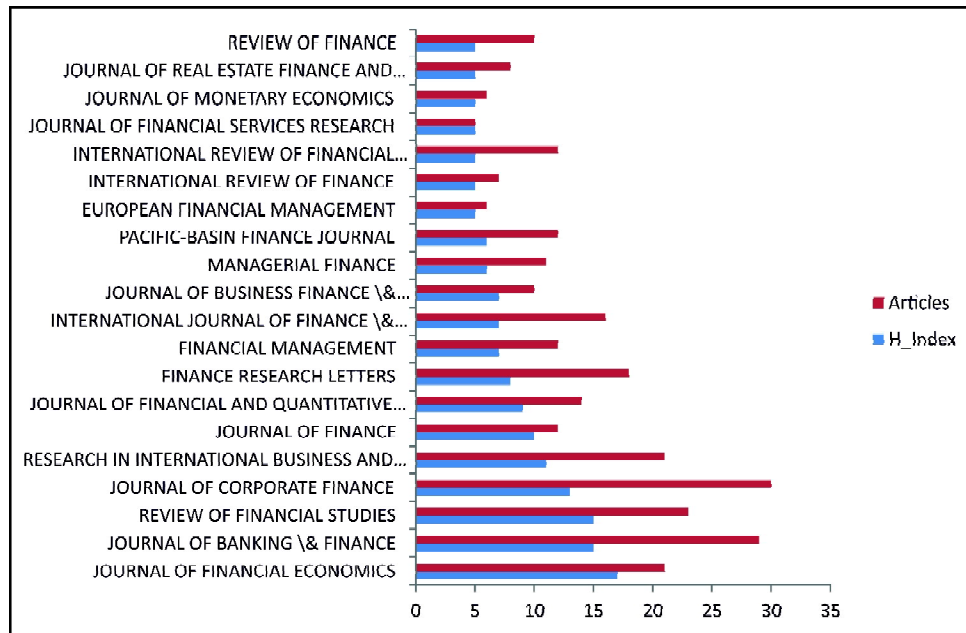


Figure 9: Top 20 Main Journals/Sources

Source: Authors' Own Compilation

“Journal of Financial Economics”, as seen in previous figure, has the highest value in H_index. It can be deduced that “Journal of Financial Economics” is the best one among all Journals of business finance group. All these journals belong to the group of business finance as we refine the data on the basis of journal category for study purpose.

In figure 11, growths of different journals have been disclosed. This trend or the growth pattern of the journals has been gauged on the roots of articles published in them over the study period of past 20 years. “Research in International Business and Finance” starts publishing articles in 2016 in that year only 3 articles had been published by them. Figure 9 has an inter-relation with figure 11. As stated in figure 9 “Journal of Corporate Finance” has the highest published articles 30. And similarly in growth figure the mustard yellow line represents the “Journal of Corporate Finance” which is on the topmost of all colored lines. Figure 11 depicts the production of articles in journals in growth pattern.

3.4. Top Authors

This dataset involve 910 authors who write around 432 articles & book chapters. Figure 12, portrays top most 20 authors as per the basis of citations of their papers. To find out the relevance of any author, number of citations of their paper plays a very prominent role.

Anderson *et al.* (2003) from University of Alabama, U.S.A., found to have largest number of citations 680 on their paper titled “Founding Family Ownership and Agency Cost of Debt”. The second highest

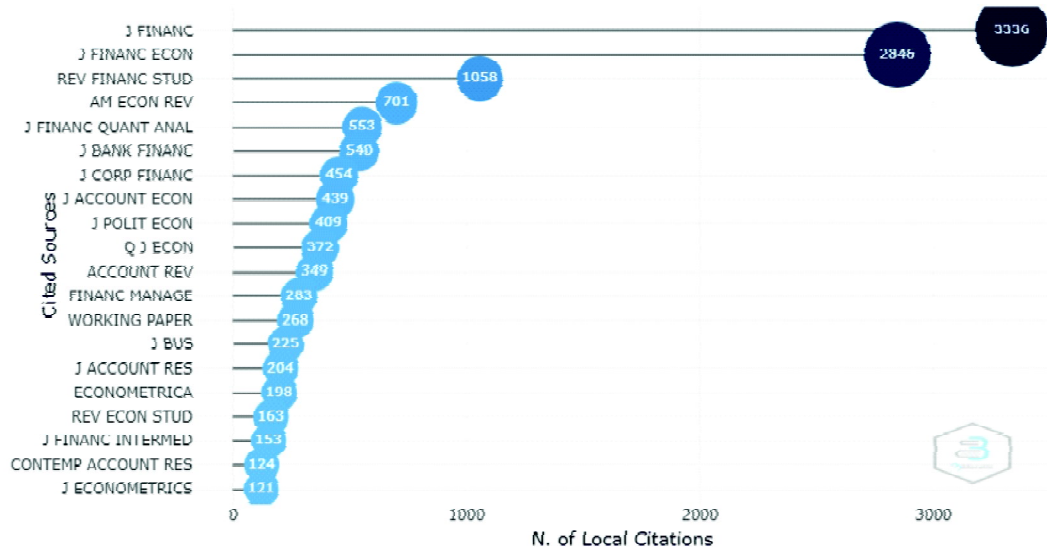


Figure 10: Top 20 Most Local Cited Sources

Source: Authors' Own Compilation

citation of 285 belongs to Mackay and Phillips (2005) from HongKong University of Science and Technology, Hong Kong, on paper entitled “How does industry affect firm’s financial structure”.

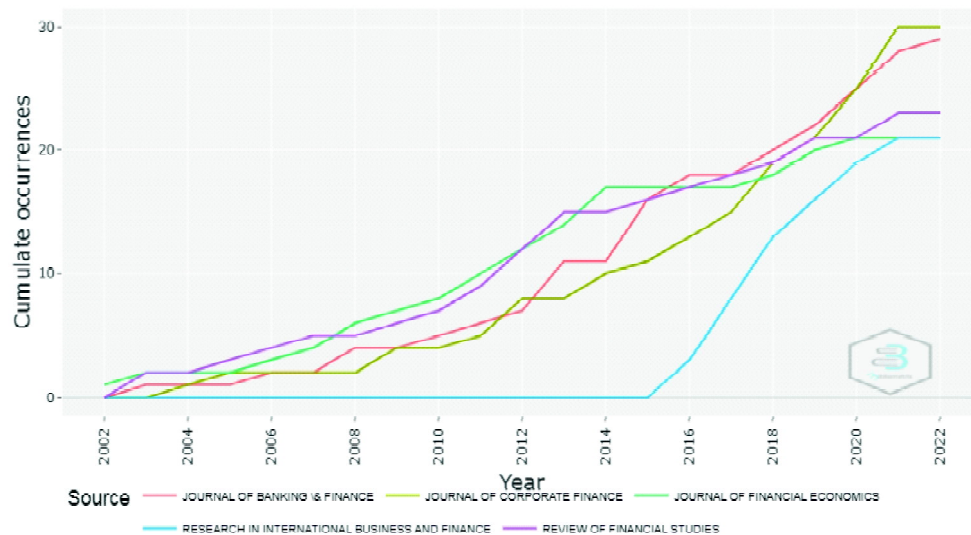


Figure 11: Growth of the Sources over the Past 20 Years

Source: Authors' Own Compilation

In context of contribution of authors in this field, it can be observed from figure 13 that Zhang, H. has longer contribution period. He worked in this field around 16 years from 2006 to 2022. In 2006, he wrote an article on “Capital structure and political patronage: A case of Malaysia” which has been cited in other papers for 103 times. From the figure 13, it is visible that Lin of National Chiao Tung University, Hsinchu, Taiwan and Guedhami from University of South Carolina, Columbia, U.S.A. were the main active authors during the study period. Guedhami (2018) investigated in his article about the ‘Zero Leverage Puzzle: An International Comparison’ which was cited 24 times in other articles and 108 times cited in references.

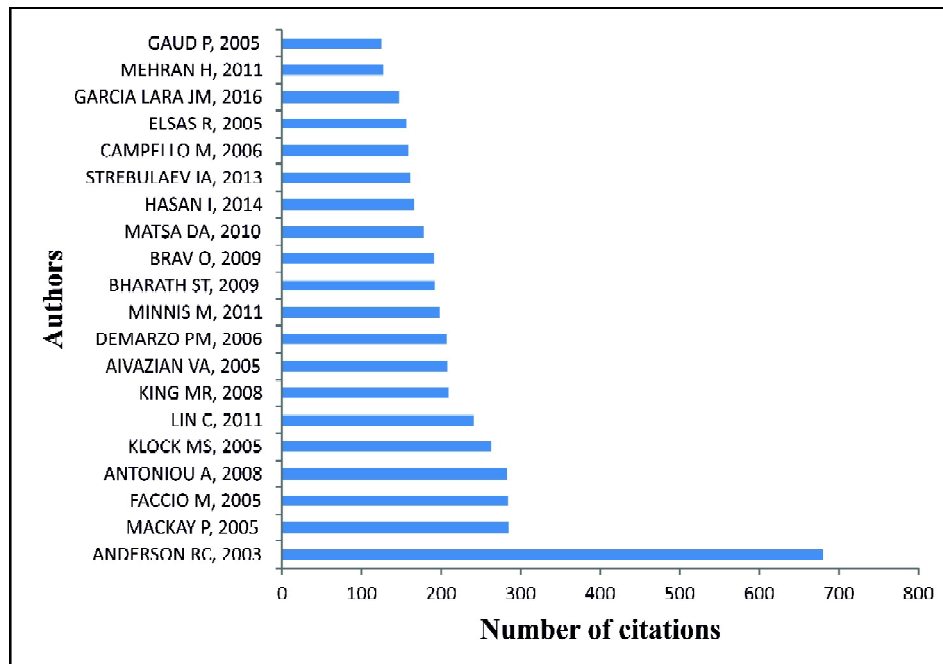


Figure 12: Relevance of Authors Measured by Number of Citations

Source: Authors' Own Compilation

From the observed data, it is found that authors collaborate with the author of other countries to make the work more authentic and free from biasness. This also helps in filling the research gap more effectively. As the researchers belong from different geographical areas, it will automatically broaden up their perspective and the entire work blossom with innovative and different ideas. Figure 14 depicts different colored clusters which portrays the collaboration network between authors. Red color cluster represents collaboration or association between Guedhami, from University of South Carolina, Columbia, U.S.A. and ElGhoul from University of Alberta, Edmonton, Canada. They jointly wrote an article on “Zero Leverage Puzzle: An International Comparison” as discussed earlier.

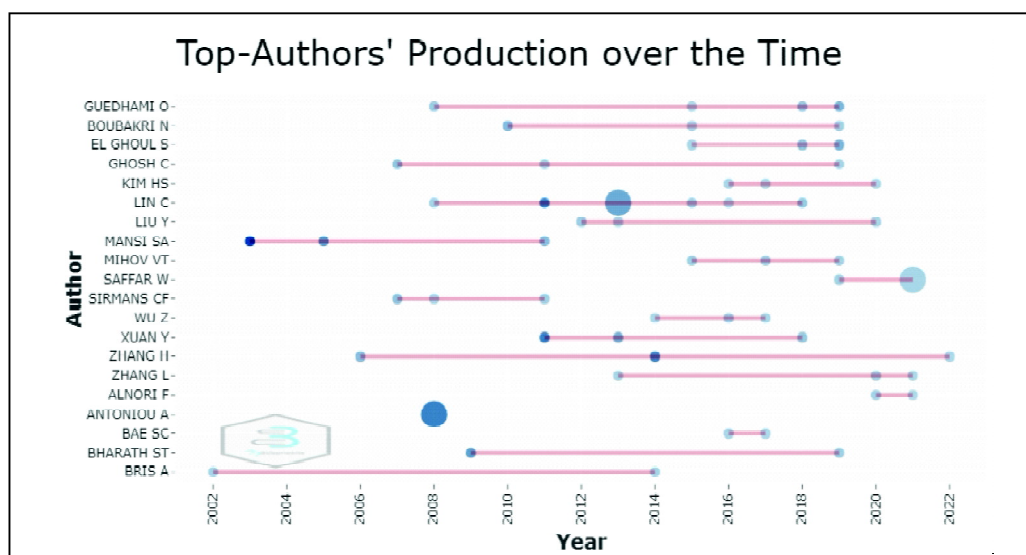


Figure 13: Time Evolution of Top 20 Author's production

Source: Authors' Own Compilation

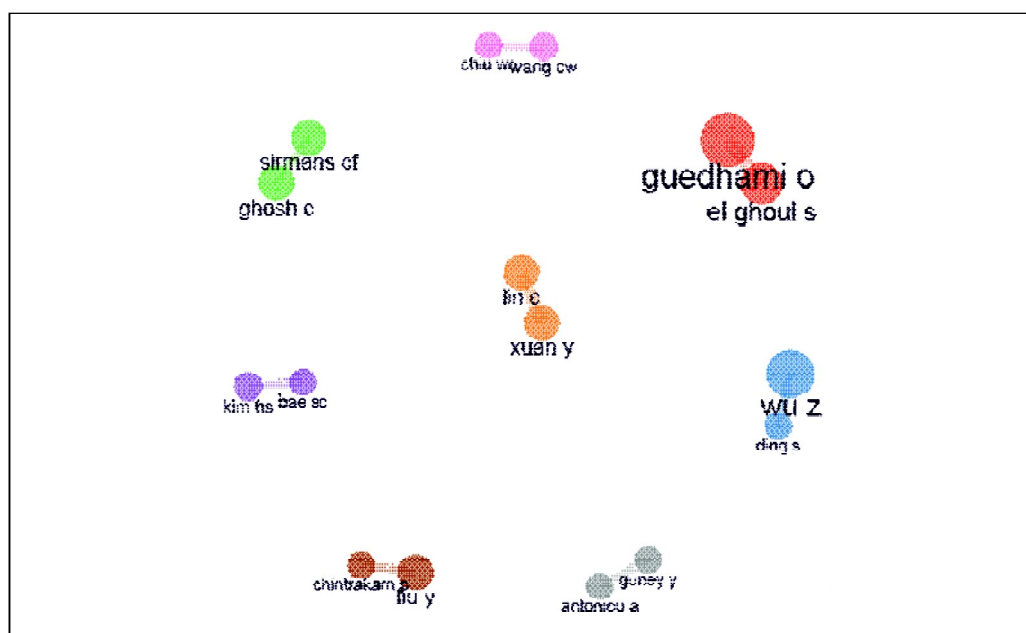


Figure 14: Collaboration Network between Authors

Source: Authors' Own Compilation

Figure 15 clearly represents the inter-relationship of references, authors and keywords used by them. A three field plot has been developed to visibly understand the association between these three main components of the research. The left side of the plot represents the references used in studies during the period of 20 years. The middle portion portrays the most influential authors in this field whereas the right side of this plot is used to show the keywords used in the studies. The gray lines display the relationship between aforesaid three terms. It is evident from the figure 15 that the core words capital structure and debt financing were used by most of the authors in their study and references. Ownership structure, firm performance and cost of debt are some of valuable core words used by the authors in connection with debt financing and capital structure.

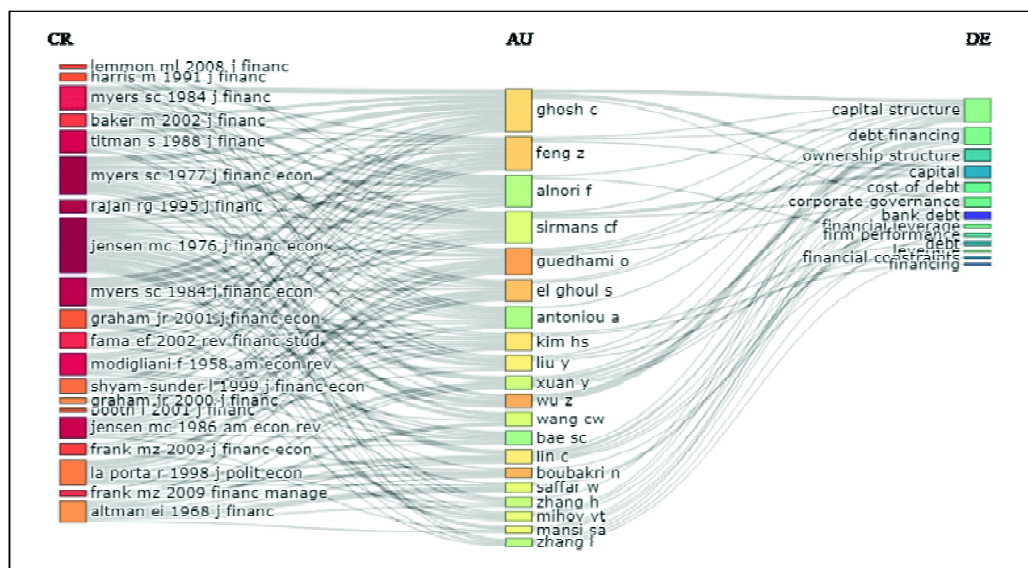


Figure 15: Three Field Plot for Reference-Authors-Keywords

Source: Authors' Own Compilation

3.5. Top Institutions and Countries

In order to ascertain the top most imperative 20 institutes or universities across the world in the field of debt financing and capital structure, a list was prepared on the basis of affiliations of concerned authors. And this list represented in the form of bar graph in figure 16. As per the data of this figure, Texas Christian University from Fort Worth, Texas, United Status had published highest number of articles, 11, as compared to other institutes. After that, there were three universities namely; City University of HongKong from Kowloon Tong, HongKong, University of Florida, Gainesville, United Status and University of Illinois at Urbana-Champaign from Illinois, United Status, falling on second rank with 10 published articles. However, as per the figure 2, the rate of growth in this field is emerging rapidly. Thus it will significantly boost the research work in this study area.

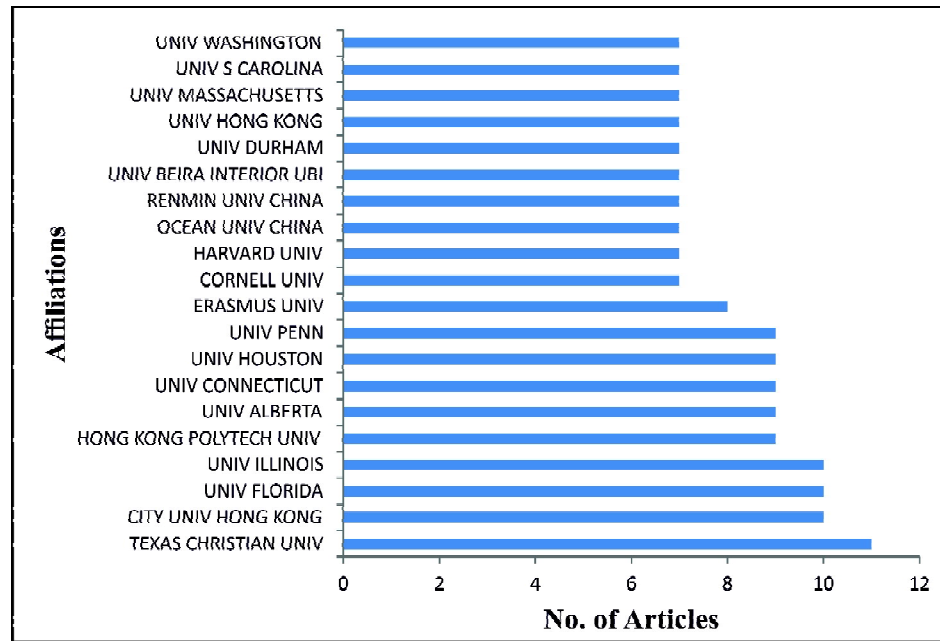


Figure 16: Top Affiliated Institutes

Source: Authors' Own Compilation

As per the information derived from figure 17, it can be depicted that USA has a huge collaboration network with other countries. Also the research work contributed by the USA was largest among all contributing countries. Whether it was Single Country Publication (SCP) or Multiple Country Publication (MCP), USA had published highest number of articles on the topic of debt financing and capital structure. China and United Kingdom were the second and third highest contributing country in this field of research and their work is quite appreciable.

Figure 18 shows the amount of documents produced or published by the countries over the past 20 years. USA topped in the list of scientific production of documents. USA had published around 489 documents and then it was followed by China with 199 published articles. Pakistan and Saudi Arabia fallen at the bottom of top 20 list of producing documents.

Different countries work together to make the research more authentic and free from biasness. And also to cover all the relevant research gaps positively. From the observed data in figure 19, it is visible that USA is the country having largest collaboration networks. It works jointly with Australia, Canada, China, India etc. almost with 26 countries (as per the details observed from the data) on the topic of debt financing and capital structure. USA collaborates 23 times with China, to work upon the topic related with the study area. Different colors in clusters depict the network of association among the countries. The red colored cluster represents the collaboration of USA with other countries while the blue one represents the association of United Kingdom with Germany, Luxemburg etc.

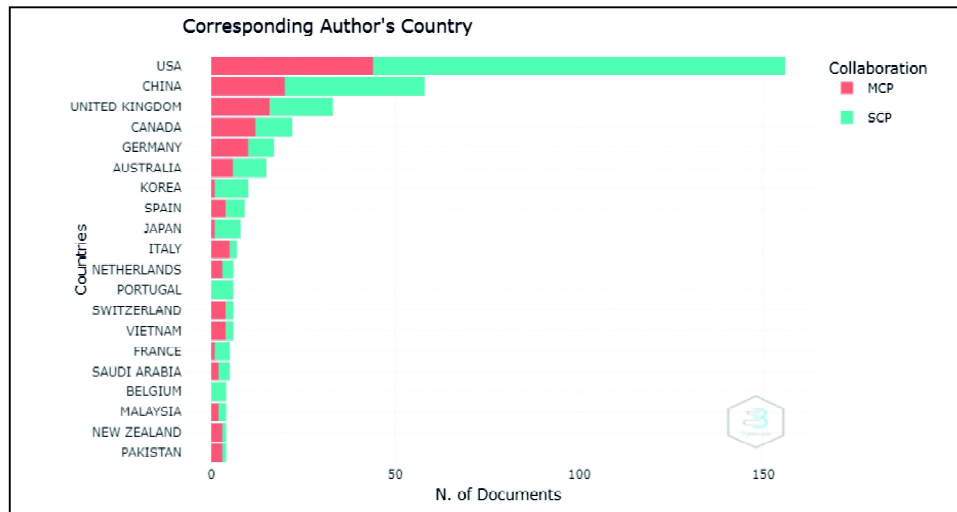


Figure 17: Corresponding Authors' Country

Source: Authors' Own Compilation

3.6. Co-citation

Co-citation is a terminology used when two different articles or documents are cited by another document. To represent the relationship among these co-citations, figure 20 has been drawn.

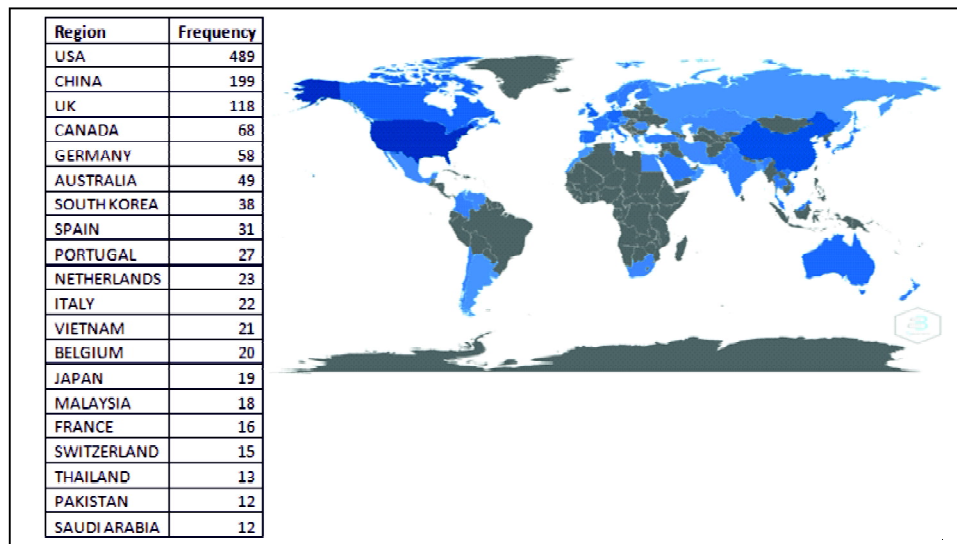


Figure 18: Country's Scientific Production

Source: Authors' Own Compilation

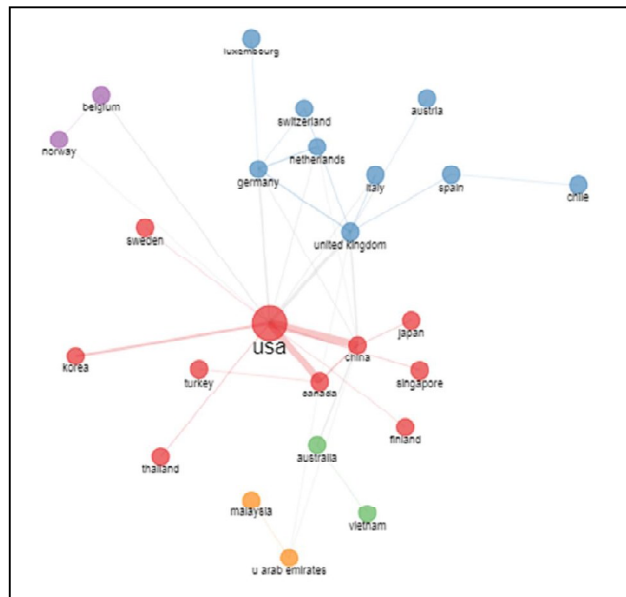


Figure 19: Collaboration Networks of Countries

Source: Authors' Own Compilation

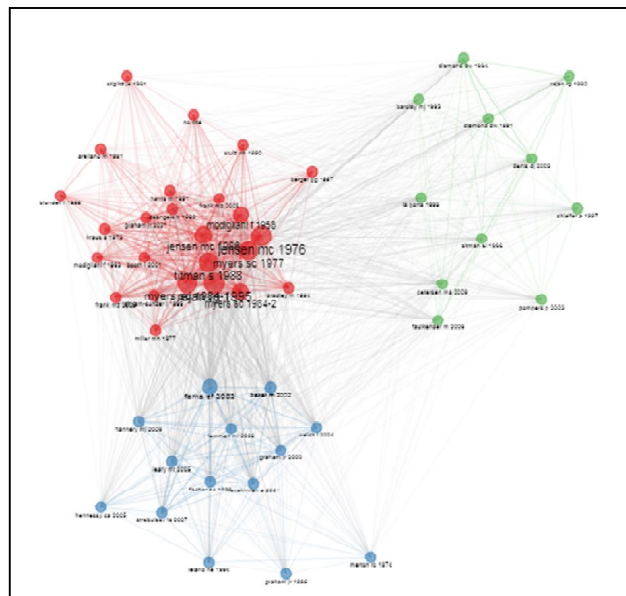


Figure 20: Co-citation Network of Papers

Source: Authors' Own Compilation

In this figure, it can be seen that there are three different colored clusters and these clusters represents the different combinations of papers and their references which were used particularly to write related articles. As it can be seen in red colored cluster that study conducted by Jensen MC in 1976 and Myers SC in 1977 found to be more frequently cited in related documents. The size of the dots depicts how frequently a study was cited by other related literatures. The lines between the dots define the association or network between studies. Same goes for green and blue colored clusters.

4. Conclusion

To deciding the proportion of debt and equity in a capital structure is most crucial task. These decisions are of irreversible in nature and have a significant impact on performance of a firm. The present study involved all previous studies and researches related with the topic of debt financing and capital structure and the collected data was analysed by using bibliometric analysis. This task was performed with the help of R Studio and BiblioShiny web interface. From the observed data it can be seen that there is an uninterrupted growth in this area of study. From 2002 to 2022, the studies were growing with a rate of 1.12%. The word “capital structure” was most relevant and frequently used keyword in previous studies. Apart from this, determinants, debt, choice and agency cost were used as basic core words for the citations of further references. The study showed that Journal of Corporate Finance had published 30 articles and becomes one of the most prominent source related with the study. Another source, Journal of Financial Economics also considered as relevant source because of their huge impact in h index.

Highest contributing authors in this field was Lin and Anderson had published highest articles while Anderson had highest number of citations during study period. Guedhami from University of South Carolina, Columbia, U.S.A. also referred as one of the major contributing author in research period. Texas Christian University from Fort Worth, Texas, United States had published highest number of articles, 11, and ranked on top among all institutes. City University of Hong Kong from Kowloon Tong, Hong Kong, University of Florida, Gainesville, United States and University of Illinois at Urbana-Champaign from Illinois, United States, ranked on second place with 10 published articles and categorized as one of most relevant universities.

Whether it was Single Country Publication (SCP) or Multiple Country Publication (MCP), USA had published highest number of articles on the topic of debt financing and capital structure. China and United Kingdom were the second and third highest contributing country in this field of research and their work is quite appreciable. Thus, it can be said that USA topped in the category of articles production. USA had collaborations with many countries but with China, it had the highest frequency of collaboration or association. Both these countries jointly and separately put a remarkable contribution in this field.

This study has certain limitations. It is based on a time period of 21 years from 2002-2022 due to availability of data. But for further research in this field, time span can be expanding up to the maximum point so that one can generate more accurate and authentic results from the study. This study involves only single database which is Web of Science. But for future purpose, different database can be accessed to make the research more relevant.

Future study can be conducted by employing different sets of database to find more accurate results. In this study, many relevant and worth contributing studies were not included during analysis

because they belong from database like Scopus, Google Scholar etc. Different combination of databases will definitely provide more accurate results in finding out the most valuable or cited document and author in this field of debt financing. Apart from this, different combinations of keywords, which belongs from the same field of debt financing, can be used to gather the data for future studies in this field like external financing, borrowed funds, financial liabilities, firm performance etc. It will help the researcher in finding out the more authentic and relevant results.

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Impact of Financial Leverage on Shareholders Return and Financial Performance: Evidence from Top 100 Listed Companies in National Stock Exchange

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Financial leverage, National stock exchange, Financial performance, Shareholders return, SEM

JEL Classification

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Abstract: Financial management's key objective is to enrich capital structure and financial decisions. The vital issue during capital structure decision-making is determining a firm's proper balance of owed and owned capital. One globally accepted issue is financial leverage, popularly known as the "Double-edged Sword". It can maximize the shareholders' benefit and boost the company's financial performance and vice versa. So an effort made "to find out the impact of financial leverage on shareholders return and financial performance of Top 100 National Stock Exchange companies in India". National Stock Exchange registered companies as per market capitalization were obtained. The Descriptive Statistics, Panel-Data Regression Analysis (Breusch-Pagan LM Test, Hausman Test) and Structural Equation Model (SEM) were analyzed from 2017 to 2021. The Outcome illustrates that DER has a positive influence on ROE, CR and NPR which relating to the "Trade-off Theory". DER has negative impact on EPS, ICR and TATR supporting "Pecking order Theory". The framed empirical SEM act as a theoretical contribution to the future researchers.

1. Introduction

The corporate world is pressured to adapt their systems as Covid-19 expanded and have caused an abrupt and immediate drop in the economy's production. Besides the coronavirus infection pandemic of 2019 (Covid-19) resulted in numerous disruptions in every facet of modern life. Revival of the concerns are boosting in the 21st century where organizations were going in a path that ensures the success of its shareholders. As a consequence, a set of criteria for assessing the performance of the firm in regard to natural or environmental preservation are referenced by the strength of the key shareholders (Patel and Patel, 2020). Shareholders and Investors view their interests as being intimately

correlated with the company's financial status. They can save losses if they can foresee a company's financial risk in advance. In this context, financial issues are the key concern of every listed company (Wei and Li, 2022). Therefore, the present topic is essential in the current time.

Financial management that is efficient and under control is unquestionably a sign of a successful company. A key component of financial management is financial decision-making. Finding the optimal financing mix or capital structure to increase the wealth is the chief role of financial decision-making in corporate finance (Zelalem, 2020). Investors, lenders and the business must benefit from a successful blending of various forms of financing (DeMarzo and Fishman, 2007). Pandey (2015) defines "the use of the fixed-charges sources of funds, such as debt and preference capital along with the owners' equity in the capital structure, is described as financial leverage or gearing or trading on equity". The most important tool to enhance company's achievement is Financial Leverage (Kenn-Ndubuisi and Nweke, 2019). Additionally the major determination of involving owed capital is during optimistic economic conditions, increases the shareholders' return (Taqi *et al.*, 2020). On one hand, owed capital tends to raise the shareholders' worth; on the other hand, it has the ability to provide tax advantage to the company (Barakat, 2014). The situation of increasing interest of debt becomes detrimental when the usage of leverage increases, it is also considered as indicator of risk (Bhayani and Ajmera, 2018). Leverage is a key aspect in influencing the financial structure, thus it is vital to look at its impact (Banafa *et al.*, 2015).

Financial leverage is a double-edged sword. Owner's return from their capital employed may increase or shrink for many reasons. Myers (1977) utters that in a risky debt firm, shareholders invest only if they could earn as high as the rate of return the company had already committed to provide, because greater risk investors anticipate bigger returns. If the firm guaranteed a lower return, shareholders neglect to invest or only make investments up to the point where firms without the risk yield a profit. Low or underinvestment will influence company's worth adversely. Once the shareholders return enlarges by the employment of debt, it spontaneously attracts more shareholders in number to invest. As a result, manipulation of advanced technology to augment the production and profitability paves way for a good financial performance. This assumption turns in contradictory way when the debt tends to reduce the shareholders return. The aforementioned factors served as the impetus for the current investigation.

National Stock Exchange (NSE) is counted as one of the foremost stock exchanges located in Mumbai, Maharashtra, India. It ranked 4th by the World Federation of Exchanges (WFE) in 2021 for engaging in many trades. Top companies listed in this stock exchange are usually having a vision of highly preferred for shareholders investment. In this regard, it may force to use equity excessively then the tax benefit would not be gained. Furthermore, a larger amount of the earnings should be dispersed to meet the demands of a large number of stockholders. So a proportion of borrowed capital needs to be included but also attain "optimal capital structure". Thus examining the "Impact of financial leverage on shareholders return and financial performance: Evidence from TOP 100 listed Companies in National Stock Exchange" would helpful for academicians, policy makers and also our country's economic improvement.

2. Literature Review

2.1. Theoretical Background

The capital structure argument, which constituted a turning point in the empirical literature on corporate finance, has a number of theories acting as a foundation. Several theories formed are,

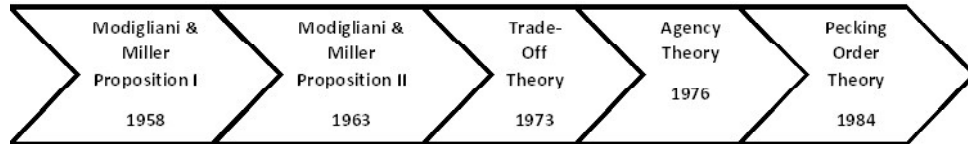


Figure 1: Theories Categorization based on Time Periods

Source: Sakhi (2011)

2.1.1. Modigliani and Miller (MM) theory

Theory of Irrelevance (1958): Proposition I – Owed funds will not affect the firm value and its performance in the absence of tax. An ideal leverage level was argued by traditionalists that equalize the deadweight bankruptcy cost with the utilization of leverage (Lintner, 1956).

Theory of Relevance (1963): Proposition II- Due to the tax deduction for interest paid on debt, employing borrowed money will raise the company's worth and lower the cost of capitalization. Abor (2005) emits that shareholders may demand a higher return since borrowed fund upturns the risk premium. As a result, the required return depends on how much debt is accumulated over time.

2.1.2. Trade-off Theory

This theory is based on the reality that the “optimum capital structure” will ultimately results in maximising firm value, increased tax benefits and reduced bankruptcy costs. Kraus and Litzenberger (1973) assumed that debt possibly balance the tax benefit. Static Trade-off Theory (Myers and Majluf, 1984) should be attained where high leverage offers tax benefits while also raising capital costs due to low cost of loan.

Strebulaev's dynamic trade-off theory from 2007 assumes that the existence of shocks may shift the firm away from its target debt level. Firms incur adjustment cost to return back to the intended debt level (Ahmad and Etudaiye-Muhtar, 2017), which ironically might hinder from achieving its desired leverage ratio due to the significant adjustment costs. Both theories provide favourable correlation between the owed funds and equity-holders' return.

2.1.3. Agency Theory

The premise of conflict between the directors and shareholders about the amount of debt they absorb, reduce or use is a key component (Jensen and Mecklings, 1976). Insofar as the approach promotes problem-solving and fosters improved relationships between them. Muchiri *et al.* (2016) observe how this idea promotes the use of debt by businesses to improve their financial success.

2.1.4. Pecking-Order Theory

Myers and Majluf (1984) introduced the “Pecking-Order Theory” that illustrates the preferred sequence of sources of finance for corporations in real life. It supposes that the company will initially choose to utilise its earnings as an internal source of funding to fund its investments. If those profits are insufficient, the company can next regard debt as a second alternative before finally turning to the ownership rights. It predicts that businesses with limited investment prospects and high free cash flow produce low debt ratios since the money consumed to reduce debt. According to the idea, debt ratios and shareholder returns are inversely related.

Apart from the theories explains the association related to the topic, following studies helps to develop the hypothesis. “Relationship between financial leverage and shareholders’ return” in the studies of Kannadhasan *et al.* (2016); Al-Hassan and Gupta (2013); Ayodele (2013) proves positive relation but negatively by Abor (2005); Nirujah *et al.* (2014); Mehta (2014). “Relationship between financial leverage and financial performance” either shows positive impact (Ali, 2014; Maroko, 2014; Fosu, 2013), or little effect (Rajamani, 2021) or negative (Jose, 2017; Mwangi *et al.*, 2014) in the context of India and also from other nations.

2.2. Financial Leverage and Shareholders Return

Table 1: Findings by Different Authors

<i>Authors and Year</i>	<i>Findings</i>
• Nianty (2022)	DER has a negative impression on stock returns of Indonesia Stock Exchange listed companies of food and beverage.
• Alwan and Radi (2022)	Negative relationship among the debt financing and the rate of return on investment of commercial banks in Iraq.
• Ayoush <i>et al.</i> (2021)	Negative relation between DR, DER, ROA and ROE of industrial enterprises listed on the Amman Stock Exchange.
• Abdulkareem and Meghanathi (2020)	Found no impact of leverage on EPS of Indian Petroleum Companies.
• Ansari (2020)	The ROE was significant positively by Profitability, Leverage and Efficiency but negatively by Liquidity in Indian IT companies.
• Kenn-Ndubuisi and Nweke (2019)	EPS is negatively associated to DER and total debt to total asset indicators of FL in Nigeria.
• Dey <i>et al.</i> (2018)	Positive bond between DER, ROE and EPS of Publicly Traded Bangladesh Manufacturing Companies.
• Deb and Banerjee (2018)	There was a significant increase in the business risk of the low leverage firms after analysing 289 Indian companies.
• Kannadhasan <i>et al.</i> (2016)	The Shareholder’s return had an insignificant relationship with Financial Performance and significantly related with Financial Leverage.
• Bandopadhyay and Roy (2016)	There present statistical connection between DER and Shareholders’ return of BSE 500 Companies.

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- Nirujah *et al.* (2014) A negative relationship between Return on Shareholders' Fund (ROSF), Earning per Shares (EPS), Dividend Yield (DY) and Debt to Equity (DE), Debt to Total Asset (DTA) of Listed Manufacturing Companies in Sri Lanka.
 - Mehta (2014) ROE negatively influenced by DER of 35 listed sugar companies in Pakistan.
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Source: Authors' Own Compilation

2.3. Financial Leverage and Financial Performance

Table 2: Findings by Different Authors

<i>Authors and Year</i>	<i>Findings</i>
• Ehiedu (2022)	STDR has a substantial effect on ROA, whereas LTDR, TDR and DTER have no significant effect on ROA of Nigerian Oil & Gas listed enterprises.
• Randika (2022)	There's no relationship within financial leverage, profitability and liquidity. But debt ratio and asset management performance has a positive bond of investment trust companies listed in Sri Lanka.
• Rajesh <i>et al.</i> (2021)	DE and DER has a beneficial impact on ROA and ROE of small finance Indian Banks.
• Rajamani (2021)	There present a little impact between ROA, ROE, Gross Profit Margin and short term, long term Debt of Indian SMEs Listed in BSE-SME Platform.
• Abubakar (2020)	STDR and LTDR have no effect on ROE but TDER affects ROE negatively of Nigerian oil and gas companies.
• Sinha (2019)	Found leverage influence ROE favourably but undesirable effect on ROA of Indian Power Sector.
• Sahni and Kulkarni (2018)	Strong relationship among OPM, CR and DER exists. NPM, QR and FL had a weak relationship in "DLF Ltd, Construction & Contracting- Real Estate Company" in India.
• Reddy and Narayan (2018)	Profitability (ROA, ROI) has no impact by leverage (DER, DR, ICR), an evidence from India.
• Jose (2017)	Negative correlation presents within Leverage and FP of Indian cement companies.
• Ali (2014)	It revealed that financial leverage (DE) and financial performance (ROA, ROCE, ROE, NPM) had a positive relationship in Pakistan listed Chemical Companies.
• Innocent <i>et al.</i> (2014)	DR and DER unfavourable with ROA but ICR was favourable with ROA of Nigerian pharmaceutical industry.
• Rehman (2013)	DER negative with EPS, NPM and ROE and positive with ROA and sales growth of Pakistan listed sugar companies.

Source: Authors' Own Compilation

2.4. Research Gap

Copious studies look for the connection within owed capital with shareholders return and financial performance separately. The research study with combined association is attempted and tries to develop the model for the framed objective, considering empirically validated model. It acts as a source of knowledge and also a theoretical contribution for readers and future researchers. Most of the reviewed studies included ROE, ROA for the assessment of financial performance. “Ratio is used as a benchmark in financial analysis to evaluate a firm’s financial performance” (Pandey, 2015). The research is primarily concentrated on the four category variables for financial performance “Liquidity (CR), Solvency (ICR), Efficiency (TATR), and Profitability (NPM)” in order to close this gap.

3. Objectives and Hypotheses of the Study

3.1. Objectives of the Study

- To identify the impact of financial leverage on shareholders return.
- To find out the impact of financial leverage on financial performance.

3.2. Hypotheses of the Study

H₀₁: There is a positive (negative) impact of financial leverage on shareholders return.

H₀₂: There is positive (negative) impact of financial leverage on financial performance.

4. Research Methodology

4.1. Data Source

The study initially includes Top 100 Indian Companies listed in National Stock Exchange based on Market Capitalization. Then four companies were denied due to insufficient data and seven banks are excluded where the data founds not suitable and compatible with other companies. Still the company count was not reduced as eleven companies listed beyond 100 were also considered to make the sample as a finite one. The time series database from 2016-17 to 2020-21 were studied. The study period was preferred based on the most recent five years. The required data was gathered from the website of Capitaline and NSE. The statistical package used was E-views 12 and Amos 22.

4.2. Variables

4.2.1. Dependent Variables

Shareholders return is measured by;

- Return on Equity= Net Profit/ Total Equity (Pandikumr *et al.*, 2020; Oyinloye *et al.*, 2020; Deb and Banerjee, 2018)
- Earnings per share= Profit after tax/ Number of shares outstanding (Gaffar and Akal, 2021; Abdulkareem and Meghanathi, 2020; Pandikumr *et al.*, 2020).

Financial performance measures are:

- Liquidity (Current Ratio) = Current Asset/ Current Liability (Randika, 2022; Ayoush *et al.*, 2021; Sahni and Kulkarni, 2018).
- Solvency (Interest Coverage Ratio) = Earnings before Interest & Tax/ Interest (Rajesh *et al.*, 2021; Ayoush *et al.*, 2021).
- Efficiency (Total Asset Turnover Ratio) = Sales/ Total Asset (Randika, 2022) and
- Profitability (Net Profit Ratio) = Net Profit/ Sales (Sahni and Kulkarni, 2018; Mochi and Dani, 2018; Jose, 2017).

4.2.2. Independent Variable

Financial leverage is stated as Debt Equity Ratio = Debt/ Equity (Randika, 2022; Ehiedu *et al.*, 2022; Rajesh *et al.*, 2021; Abdulkareem and Meghanathi, 2020; Oyinloye *et al.*, 2020; Sinha, 2019; Bhayani and Ajmera, 2018; Jose, 2017; Kannadhasan *et al.*, 2016).

4.3. Framed Model

The developed Panel Data Regression model to find the impact is as follows:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$

Where, Y represents Dependent Variable, the indices i and t refers to individuals and time, α and β are coefficients, X means to Independent Variable and finally ε is error term.

Table 3: Panel Data Regression Models

S. No	Model	S. No	Model
1	$ROE_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$	4	$ICR_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$
2	$EPS_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$	5	$TATR_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$
3	$CR_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$	6	$NPR_{it} = \alpha + \beta DER_{it} + \varepsilon_{it}$

Source: Authors' Own Compilation

As the sample includes information from different businesses throughout time, the research uses a static panel data approach (balanced) to assess the aforesaid econometric model. According to the argument, this method increases the degree of freedom and data variability, alleviates the multicollinearity problem, enables individual heterogeneity management and produces more accurate and reliable estimates (Khaki and Akin, 2020).

The framework includes three traditional models namely, “pooled OLS model, random-effect model and fixed-effect model”. The Breusch-Pagan test was analysed to choose the appropriate between “pooled OLS model and random-effect model”. Then to pick the most effective model among the “fixed-effect and random-effect models”, Hausman test has been used.

Scientific studies are working on “Structural Equation Modelling (SEM)”, a potent multivariate technique frequently explore and evaluate multivariate causal relationships (Fan *et al.*, 2016). SEM in first generation was logic of causal modelling using path analysis (Wright, 1921; 1920; 1918). Its capacity was expanded in the second generation. Then “structural causal model” was in third generation (Pearl, 2000). One of the two methods of SEM is “Confirmatory factor analysis”, which aims to estimate contentment and attitude that are considered as root qualities of psychology (Spearman, 1904). Other is “Path analysis”, had its origins in biometrics and sought to found a causal association of variables through path diagram. There is an assumption that Path analysis measures the variables without error but SEM use latent variables to measure error (Hoyle, 1995; 2011). SEM considered as an alternative approach used to evaluate our comprehension of intricate ecological systems (Lam and Maguire, 2012). So an attempt made to find the relationship between the framed objectives through SEM.

5. Data Analysis

5.1. Descriptive Statistics

Table 4: Descriptive Statistics

<i>Measures</i>	<i>N</i>	<i>DER</i>	<i>ROE</i>	<i>EPS</i>	<i>CR</i>	<i>ICR</i>	<i>TATR</i>	<i>NPR</i>
Mean	500	0.51	17.64	-235.32	1.47	122.65	1.14	40.48
S.D	500	0.95	14.20	4064.10	1.21	418.14	0.99	176.52
Variance	500	0.90	201.83	165.74	1.47	174.05	0.98	311.58
Minimum	500	0.00	-39.68	-8170.90	0.19	-231.38	0.02	-225.46
Maximum	500	8.86	96.78	753.09	12.99	4827.40	5.32	3426.48
Skewness	500	3.58	1.44	-17.51	4.16	7.45	1.56	15.42
Kurtosis	500	17.89	5.72	333.53	27.25	68.32	2.69	278.35

Source: Computed Data (2017-2021), (variables are rounded to 2 decimal points)

From table 4, it is understood that the selected Companies in their capital structure use 51% of owed funds. The mean value of ROE (17.64), CR (1.47), and TATR (1.14) are beyond their SD, so they are narrowly linked. The variances of all the selected variables are higher than their respective average value except CR and TATR. So there is inconsistency in interest covering ratio, acquiring debt, distribution of earnings to shareholders and returns to equity. Scatter, dispersal, and heterogeneous of the variables are suggested by standard deviation, variance, skewness, and kurtosis. EPS alone negatively skewed. The remaining variables are exceeding one and positively skewed. All the kurtosis values are termed as leptokurtic. There is no (Platykurtic) negative kurtosis.

5.2. Stationarity Test

Table 5: Unit Root Test

<i>Augmented Dickey-Fuller Test</i>					
<i>Variable</i>	<i>Level</i>		<i>First Difference</i>		<i>Order of Integration</i>
	<i>T-stat</i>	<i>P Value</i>	<i>T-stat</i>	<i>P Value</i>	
DER	213.279	0.007*			I(0)
ROE	216.537	0.127	290.553	0.000*	I(1)
LEPS	222.690	0.009*			I(0)
CR	198.053	0.525	246.549	0.004*	I(1)
LICR	187.251	0.003*			I(0)
TATR	238.923	0.024**			I(0)
LNPR	294.710	0.000*			I(0)

Source: Computed Data (2017-2021) (“* indicates 1% level of significance, ** indicates 5% level of significance”).

To make the data fit for regression analysis, Unit root test is significant. In table 5, Augmented Dickey-Fuller Test (Dickey and Fuller, 1979) was applied to know the unit root of the selected proxies. It understood that ROE and CR p values are significant and stationary at first difference I(1). So they transferred to first difference values for further analysis. Remaining variables are stationary at level I(0). Initially the models were not fit to the acceptable level for EPS, ICR and NPR. So an attempt was made to convert these variables into lagged variables (LEPS, LICR and LNPR). Then regression was carried out, the results were favourable.

5.3. Panel Data Regression

Table 6: Financial Leverage and Shareholders Return

Sample: 2017 to 2021						
Total Observation (Cross section (100) * Period (5)): 500						
<i>Dependent Variable</i>	<i>Independent Variable</i>	<i>Beta value</i>	<i>P Value</i>		<i>Values</i>	<i>Models</i>
D(ROE)	C	-2.461	0.000	R square	0.254	Fixed
	DER	3.882	0.000	F Prob.	0.005	Effect
				H test	16.449	Model
				Chi.sq		
	BP test prob.	C-3.902 (0.048)	T-6.057 (0.014)	H test prob.	0.000	

contd. table 6

Impact of Financial Leverage on Shareholders Return and Financial Performance

<i>Dependent Variable</i>	<i>Independent Variable</i>	<i>Beta value</i>	<i>P Value</i>		<i>Values</i>	<i>Models</i>
LEPS	C	3.086	0.000	R square	0.013	Random
	DER	-0.233	0.011	F Prob.	0.013	Effect
				H test	0.275	Model
				Chi.sq		
	BP test Prob.	C-548.569 (0.000)	T-2.413 (0.120)	H test prob.	0.599	

Source: Computed Data (2017-2021)

Table 6 depicts the result of Panel Data Regression. DER has significantly positive impact on D(ROE) (3.882) at a 1% significance level. From the Breusch-Pagan test (C-3.902 (0.048), T-6.057 (0.014)), it is identified that the “Two-way random-effect model” was chosen over Pooled OLS model. The Hausman test supports “Fixed-effect model” (P value= 0.000). Hence it fits with the F-statistic probability value of 0.005.

Again there is a significant association between LEPS and DER but negatively (-0.233). The probability value of the Breusch-Pagan test (C-548.569 (0.000)) allows to run the “One-way random-effect model”. Hausman test (P value= 0.599) also supports “Random-effect model”. Hence it fits well as the F-statistic probability value is 0.013. Hence the hypothesis, “H₀₁: There is a positive (negative) impact of financial leverage on shareholders return” is accepted.

$$D(ROE) = -2.461 + 3.882DER$$

$$LEPS = 3.086 - 0.233 DER$$

Table 7: Financial leverage and Financial Performance

Sample: 2017 to 2021						
Total observation (cross section (100) * Period (5)): 500						
<i>Dependent Variable</i>	<i>Independent Variable</i>	<i>Beta value</i>	<i>P Value</i>		<i>Values</i>	<i>Models</i>
D(CR)	C	-0.012	0.737	R square	0.015	Pooled
	DER	0.083	0.014	F Prob.	0.014	Ordinary
				H test chi.sq	-	Least
	BP test prob.	C-0.252 (0.616)	T-0.832 (0.362)	H test prob.	-	Square
LICR	C	3.368	0.000	R square	0.901	Fixed
	DER	-0.635	0.000	F Prob.	0.000	Effect
				H test chi.sq	9.963	Model
	BP test Prob.	C-544.412 (0.000)	T-0.011 (0.916)	H test prob.	0.001	

contd. table 7

<i>Dependent Variable</i>	<i>Independent Variable</i>	<i>Beta value</i>	<i>P Value</i>		<i>Values</i>	<i>Models</i>
TATR	C	1.246	0.000	R square	0.070	Random Effect Model
	DER	-0.191	0.000	F Prob.	0.000	
				H test chi.sq	0.126	
	BP test Prob.	C-832.241 (0.000)	T-0.007 (0.930)	H test prob.	0.721	
LNPR	C	1.096	0.000	R square	0.007	Pooled Ordinary Least Square Model
	DER	0.026	0.062	F Prob.	0.042	
				H test chi.sq	-	
	BP test Prob.	C-1.511 (0.934)	T-2.284 (0.130)	H test prob.	-	

Source: Computed Data (2017-2021)

From table 7, it is understood that financial leverage has a positive relation to D(CR) (0.083) and LNPR (0.026) at 5% and 10% significant level. BP test of both variables favours “Pooled OLS Model”. And the model was fit as p values are 0.014 and 0.042 respectively.

DER has a negative association with LICR (-0.635) and TATR (-0.191) at 1% level. In LICR, BP test resulted in “One-way random-effect model”. But Hausman test supports “Fixed-effect model”. In TATR, again BP test prefers “One-way random-effect model”. Hausman also proves “Random-effect model” was fit. The models are fit with p value of 0.000. Hence “H₀₂: There is positive (negative) impact of financial leverage on financial performance” is agreed.

$$D(CR) = -0.012 + 0.083DER$$

$$LICR = 3.368 - 0.635DER$$

$$TATR = 1.246 - 0.191DER$$

$$LNPR = 1.096 + 0.026$$

5.4. Structural Equation Model

SEM consists of five sequential phases, “model specification, identification, parameter estimation, model evaluation and model modification” (Byrne, 2013; Hoyle, 2011). In the study, model identified through hypothesis, specified with the suitable parameters and evaluated as follows. In this stage, modifications were made up to three indices to fit the model. For Panel regression to fit the model, data was modified, but for SEM the data applied without any changes.

Table 8 reveals that the Chi-square value of the model is 29.090 which is highly significant at 1% significance level (Degree of freedom= 9; P value= 0.001). The relative chi-square value is 3.232 which is the division of Chi-square Mean and Degree of freedom (CMIN/ DF). It shows how much the data fit the model.

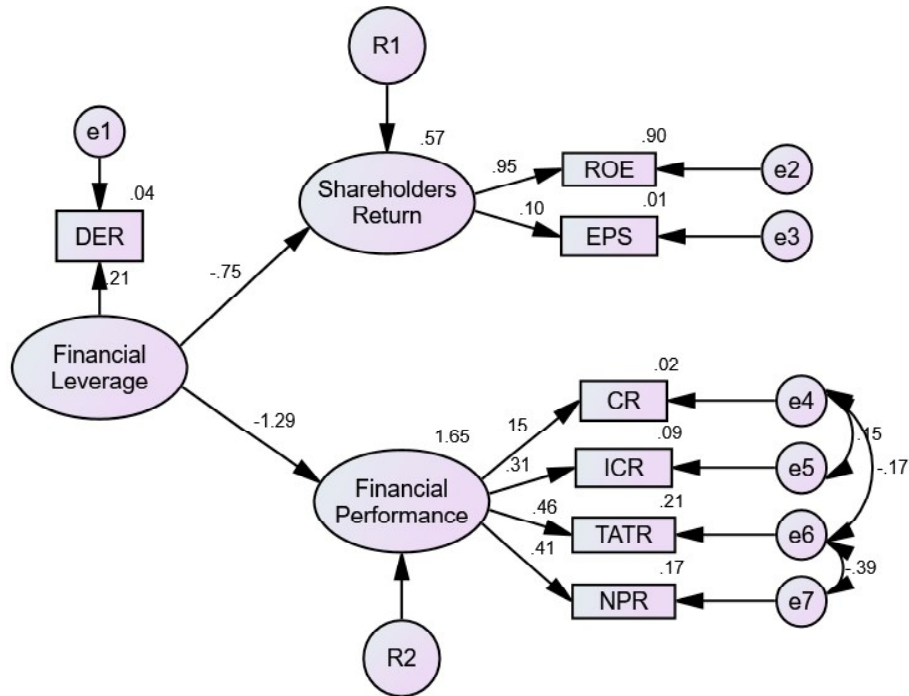


Figure 2: Overall SEM Model

Source: Authors' Own Compilation

“DER=Debt Equity Ratio; ROE= Return on Equity; EPS= Earnings per Share; CR= Current Ratio; ICR= Interest Coverage Ratio; TATR= Total Asset Turnover Ratio; NPR= Net Profit Ratio”.

Table 8: Goodness of Fit-Index Measurement Model

	<i>Fit-Indices</i>	<i>Model Value</i>	<i>Recommended Value</i>
Chi-square	(χ^2)	29.090	-
	DF	9	-
	P value	0.001	$P \leq 0.05$
	χ^2 / Df	3.232	-
	RMSEA	0.067	0.05 and 0.08
	CFI	0.943	> 0.90
	GFI	0.984	0.90 or 0.95
	NFI	0.922	> 0.90
	AGFI	0.949	0.90
	TLI	0.866	0.90 or 0.95

Source: Authors' Own Compilation

Table-8 reveals that the Chi-square value of the model is 29.090 which is highly significant at 1% significance level (Degree of freedom= 9; P value= 0.001). The relative chi-square value is 3.232 which is the division of Chi-square Mean and Degree of freedom (CMIN/ DF). It shows how much the data fit the model.

The “Root Mean Square of Approximation” is 0.067, which is the best fit as it is within 0.05 and 0.08. The “Comparative Fit Indices” is 0.943, “Goodness of Fit Index” is 0.984, “Normed Fit Index” is 0.922, “Adjusted Goodness of Fit Index” is 0.949 and “Tucker-Lewis Index” is 0.866 are meets the criteria listed in the aforementioned table’s suggested values. Consequently, the model fits the data well.

Table 9: Regression Weights of Overall Model

<i>Measured Variables</i>		<i>Latent Variables</i>	<i>Estimate</i>	<i>S.E.</i>	<i>C.R.</i>	<i>P</i>	<i>Result</i>
Debt Equity Ratio	<—	Financial Leverage	1.000			0.000	Significant
Return on Equity	<—	Shareholders Return	1.000			0.000	Significant
Earnings per Share	<—		0.097	0.066	1.462	0.144	Not Significant
Current Ratio	<—	Financial Performance	1.000			0.000	Significant
Interest Coverage Ratio	<—		0.307	0.103	2.972	0.003	Significant
Total Asset Turnover Ratio	<—		0.464	0.163	2.843	0.004	Significant
Net Profit Ratio	<—		0.409	0.139	2.926	0.003	Significant
Shareholders Return	<—	Financial Leverage	1.000			0.000	Significant
Financial Performance	<—		-1.154	0.503	-2.293	0.022	Significant

Source: Authors’ Own Compilation (“S.E. = Standard Error, C.R. = Critical Ratio”)

Table 9 demonstrates the regression weight and significant value of overall model. At 1% significant level, DER (1.000) is significant to financial leverage. ROE (1.000) is significant to Shareholders Return but EPS is not significant. CR (1.000), ICR (0.307), TATR (0.464) and NPR (0.409) are significant to Financial Performance at 1% significant level. Shareholders Return and Financial Performance has negative significant relation with Financial Leverage. Hence “there is a relationship between financial leverage, shareholders’ return and financial performance of top 100 NSE listed companies”.

6. Results and Discussion

In selected companies, DER confirms favourable connection with ROE but unfavourable association with EPS. This indicates that increase in the financial leverage will rise the ROE and falls EPS (“Profit provided based on per share basis”). The related studies were Ansari (2020); Dey *et al.* (2018); Kenn-Ndubuisi and Nweke (2019) and Nirujah *et al.* (2014). The company’s priority is to pay interest and only from the remaining profits dividend is paid. So it is suggested to acquire low interest bearing debt. Since financial leverage has negative relation with EPS, earning growth gets affected with respective of debt. Debt acquired has positive impact on CR and NPR, increase in the quantum of outsider fund

increases the current obligations and overall profitability. DER has negative relation with ICR and TATR and at the same time affects the coverage of interest payable and turnover from assets. Relevance result found in Sahni and Kulkarni (2018); Ali (2014) and Jose (2017). Some cases, high leverage when it cross certain proper mixture will definitely affect the company's performance. In Selected Companies ROE, Liquidity and Profitability is increased so the mixture of debt & equity is optimal and to be appreciated. It suggested to all the other companies which are similar in nature. EPS, ICR and TATR found to be having inverse relationship by the employment of debt and this happens due to the acquiring of high interest fixed-charge funds. So it is advised to opt only low. Other factors like reducing labour cost, idle cash distribution and increasing product price can also increase ROE.

7. Conclusion

A study is prior in the present growing concern over the need to safeguard the shareholder's interest. The relevance has been discussed very few in developing nations like India and to the context of issues faced recently by giant contributing sectors. The study throws light that the appreciable management of debt can provide better benefit to the Shareholder and growth of the performance in the Indian Selected Companies. The study limited to only top 100 NSE listed companies and only past five year data was taken and analysed. The research proposal for the general public is to think wisely before investing. The implication of this research is also helpful for the more sustainable way of development in the financial system.

8. Managerial Implications

One of the globally considered issues in financing decision is the application of financial leverage. The particular percentage of debt along with equity may sometime produce positive effect for one concern. But it may be turned to a negative one for another concern. The study "financial leverage on shareholders return and financial performance of top 100 NSE listed Companies" which has highest market capitalization is reflected as rousing for all the other Indian concerns. Moreover it helpful for the selected companies in financial decision making. In this background, the study is vital for the policymakers and investors before considering investment decision.

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Occupational Stress of University Teachers of Assam: Does Ownership Status of Universities Matter?

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Abstract: This paper aims to measure and compare the occupational stress level of teachers in central, state, and private universities of Assam, a large state located in Northeast India. It also intends to investigate the relative intensity of various stressors among the teachers. Administering a structured questionnaire-based survey, we collected data from 536 university teachers and analyzed it by deploying Kruskal-Wallis H- test. Our findings indicate that teachers in central universities experience a higher level of occupational stress than their counterparts in state and private universities. While teachers' lack of control and student related issues are the critical stress sources in state and private universities, workload, excessive formalities, and lack of recognition are the major stressors in central universities. While unfolding the relative intensity of various stressors in different types of universities, the paper's empirical findings contribute to stress research by offering insights into the stress issues encountered by university teachers.

1. Introduction

Stress has become a buzzword in day to day lives of every individual. According to a survey performed as part of ADP's Global Workforce View 2020, over 70% of Indian employees are stressed at least once a week on a regular basis, which is much higher than the Asia-Pacific average of 60%. However, occupational stress to a certain level activates individuals for increased efforts, commitment, satisfaction, positive effect, and productivity; beyond that level, it adversely affects these outcomes (McGowan *et al.*, 2006). The growing relevance of this field of study has prompted researchers to investigate employees' stress in various occupational settings worldwide. Teaching is one of the professions that have undergone a massive transformation during the previous few decades. Traditionally, professors were revered as Gods, but, in recent years, teachers and students have been placed on the same footing. Eventually, the roles have been inverted, with students being worshipped as Gods, much like consumers are treated like

Gods in the market system. Moreover, the growing importance of the knowledge economy in the post-neoliberal era has led to the rapid expansion of the higher education sector. There has been a transition in the traditional universities that supported academic freedom until the nineteenth century to research-oriented institutions in the twentieth century and presently market-controlled universities in the twenty-first century (Chattopadhyay, 2020). Although the transformation of the higher education sector has contributed to the socio-economic upliftment of the country, the system suffers from numerous deficiencies that hinder it from building world-class universities. Sclerotic bureaucracy, high levels of corruption, and political influence ingrained in the system hamper innovation and undermine academic meritocracy and research culture (Altbach, 2013), resulting in depletion of energy and motivation level of the teachers. As teachers are cognitively engaged in their work, their performance is influenced by organizational climate and morale. Occupational stress dampens the positive association between cognitive job engagement and a teacher's performance (Adil and Khan, 2020). In order to prevent the teachers from excessive stress, it is imperative for the authorities of the educational institutions, including universities, to identify their occupational stressors and their intensity that are likely to differ depending on the macro and micro-organizational climate.

In the Indian context, empirical studies on occupational stress of university teachers are mostly concentrated in the northern region of India (Kang and Sidhu, 2015; Singh and Jain, 2015; Garg and Garg, 2020) however, no systematic study exists in the north-eastern region, a developing region with unique cultural, geographical, economic, and political diversity. This region is characterized explicitly by tribal domination, hilly terrain, and the prevalence of insurgency and terrorism, often creating obstacles to the region's overall progress. The difference in the socio-economic and cultural settings could cause not only a difference in almost all the parameters determining the work environments in various universities but also a difference in the perception of the teachers. Furthermore, Assam is the largest state in the north-eastern region, with the highest number of universities, including affiliating, unitary, and state-owned (central and state governments). The differences in these universities' ownership structure or governance determine their policies, funding pattern, resource allocation, infrastructure, pay structure, transparency, empowerment, the delegation of authority, etc. These aspects of the academic environment develop a work culture, which varies from university to university, depending upon the type of ownership, i.e., central, state, or privately owned. For instance, a study in Indian universities (Arora and Singh, 2017) outlined that hierarchical culture prevails in public universities characterized by formal rules and regulations, whereas a clan culture is practiced in private universities, which gives rise to a cohesive working environment. Accordingly, the levels and sources of occupational stress and their severity could vary in each type of university due to their systemic background. Moreover, when it comes to a particular stress source, its severity on an individual teacher depends on the interaction of many inter-dependent factors. For instance, the stress caused by the factor 'workload' might rely on 'salary', 'degree of autonomy', and 'availability of supporting resources,' etc., which in turn are influenced by the ownership status of the university. Considering this complexity involved in the effect of a particular stress source in a specific work environment, it becomes imperative to discover whether it remains independent or fluctuates depending on the ownership status of the university. Given these gaps in the literature, the following research questions have been addressed in this study: what is the

level of occupational stress in university teachers in Assam, India? Secondly, how intensive are the occupational stressors in central, state, and private university teachers?

The current paper determines the occupational stress level of the teachers in three types of universities and reveals that the teachers in central universities experience a higher level of occupational stress, followed by their counterparts in state and private universities. Further, the study unfolds the relative intensity of various stressors and points out the most influencing stressors in different types of universities. While the extant literature reveals the stress level of teachers in one type of university or compares their stress levels between public versus private universities, the present study is unique. The present paper, considering a sample drawn from three types of universities, i.e., central, state, and private, offers for the first time a comparative picture of university teachers' stress levels in the context of Assam. The study's findings, on the one hand, add to the existing literature on the subject by revealing the pattern and severity of university teachers' stress in Assam and, on the other hand, provide valuable information about various stressors that the concerned stakeholders in higher education in the state can take into account while designing intervention programs at their respective levels.

2. Review of Literature

2.1. Conceptual Development of the Phenomenon 'Occupational Stress'

The concept of stress paves its way back to ancient times when the primitive man used to experience exhaustion and loss of strength after extended exposure to cold or heat, blood loss, excruciating dread, or any sort of sickness, making him realize that he had gone beyond the bounds of what he could reasonably handle (Selye, 1973). Dr. Hans Selye, also known as the father of stress research, first introduced the term in life science in 1936 by defining it as "the non-specific response of the body to any demand placed upon it" (Selye, 1956). However, researchers noticed that this physiological approach to stress does not consider the differences in individual perceptions of the situation. Therefore, later organizational psychologists such as Lazarus and his colleagues introduced psychological aspects such as individual appraisal and coping mechanisms in the stress process. In this paradigm, stress is defined as a process of transaction or interaction between an individual and his/her perception of the environment (Lazarus and Folkman, 1984). Various other stress models have been developed based on this perspective, including Person-Environment Fit Model (French *et al.*, 1974), Demand-Control Model (Karasek *et al.*, 1979), Effort-Reward Imbalance Model (Siegrist *et al.*, 1990), etc. The first large-scale research program concentrating on workplace stress and psychosocial variables affecting employee well-being was conducted at the University of Michigan in the early 1960s, ushering off a significant new wave of stress research. Researchers in various studies have used terms such as occupational stress, job stress, or workplace stress to examine employees' stress in different occupations. Caplan *et al.* (1975) defined job stress as "any aspects of the work environment that represent a hazard to the individual." According to National Institutes for Occupational Safety and Health (NIOSH, 1999), job stress is characterized as the unpleasant physical and emotional reactions that occur when a worker's abilities, resources, or needs do not match the job's demands. This indicates that the stress phenomenon has undergone a tremendous transformation because of its subjective nature, making it difficult to arrive at a definitive definition.

2.2. University Work Environment and Teachers' Occupational Stress

Research on teacher-related stress began to appear in the occupational stress literature in the mid-1970s. Teacher stress is a negative and unpleasant emotional experience, including anxiety, depression, tension, anger, or frustration, that arises when teachers perceive their work situation as a threat to their self-esteem and welfare (Kyriacou and Sutcliffe, 1977). The amount of occupational stress and the stress sources teachers experience are determined by the institutional setting in which they work. The higher education sector in India is divided into three levels: university, college, and course. Based on the nature of management, universities that grant their degrees are categorized into five types: central university, state university, private university, institutions-deemed-to-be-a-university, and institute of national importance. These universities differ based on numerous facets such as their funding, infrastructure, governance, teachers' recruitment procedure, size and complexity, workload, social status, recognition, etc. (Agarwal, 2006). All these aspects have capitulated under the four following broad headings:

2.2.1. Funding and Infrastructure

The central and state universities are public educational institutions governed and financed by central and state governments, respectively (Agarwal, 2006). Although a differential fee structure is observed in favour of the state universities, their overall financial strength is relatively lower than their central counterparts because of the sole reason that the level of government funding of central universities is somewhat higher than that of the state universities (Panigrahi, 2017). According to the University Grants Commission (UGC) Annual Report for 2017-18, the total revenue and capital grants released for central universities were 58.76%, in contrast to only 4.90% for the state universities. On the contrary, private universities are controlled by members of the sponsoring societies or trusts. The funding source of these types of institutions is mostly university generated through donations or capitation fees (University Grants Commission [UGC], 2003). Following other service and industrial sectors, the private universities in India follow the fee-charging approach of high-fee – high-quality, low-fee – low-cost, or low-fee – high-quality strategy (Aithal and Revathi, 2017). These universities primarily maintain an excellent 21st-century infrastructure (Powar, 2015) to attract more students and sustain themselves without financial support from the central or state government (Aithal *et al.*, 2018). On the other hand, many state universities have failed to maintain adequate buildings, ICT laboratories, library resources, security systems, access to research data and journals, transportation facilities, and other stationary facilities, such as restrooms (Reddy *et al.*, 2016).

2.2.2. Size and Complexity

The private universities being relatively smaller in size are engaged in offering fewer academic programs than state and central universities. These universities mainly offer diploma and vocational programs rather than degree programs in liberal disciplines (Government of India [GOI], 2013). Public universities are more focused on conventional subjects such as arts and science, whereas; private universities are mainly concentrated on market-driven disciplines such as engineering, management, and medicine (UGC, 2011). According to the All-India Survey on Higher Education [AISHE], 2017-2018, postgraduate

students are relatively higher in central universities, whereas undergraduate students are higher in private universities. There is not much difference in enrolment of undergraduates and postgraduates in state universities. Furthermore, the class sizes of state universities are larger compared to central and private universities. As per the Twelfth Five Year Plan, only 6% of students studying in public institutions are enrolled in central universities, whereas 94% of pupils are enrolled in state-controlled public universities (GOI, 2013).

2.2.3. Governance and Structure

Due to the systematic predetermined procedures, often codified as Ordinances and Regulations, structural ambiguity is lower in central universities than in state universities. Owing to relatively a lesser degree of pluralism in various decision-making bodies and sponsor-centric decision approaches, private universities are perceived with a higher degree of structural ambiguity. In contrast, the lengthy bureaucratic procedures involved in recruitment, administration, admissions, examinations, and assessment reduce central and state universities' flexibility compared to private ones. The flexibility is relatively more affected in state universities due to the interference of political parties in the various decision-making processes (Altbach, 1993; Urvashi, 2021). In terms of the recruitment process, private institutions function more like a business, with the opinion of sponsoring organizations having a significant effect on the selection of a teacher. The quality of the teacher is compromised as more importance is given to teaching experience instead of their research publications (Reddy *et al.*, 2016). Likewise, the recruitment in state universities is mostly shaped by local influential or politically powerful persons. Various political parties exert pressure on the administration during the recruitment process to promote their candidate. While a rigorous and competitive selection process is applied in the recruitment of a teacher in most central universities, enabling them to attract the most competent brains from the various Indian universities and even from abroad (Srikanth, 2001).

2.2.4. Workload, Social Status, and Recognition of the Teachers

Teachers in universities are mainly engaged in three activities: teaching, research, and extra-academic or institutional duties (Ravi *et al.*, 2019). The teachers in private universities are engaged more in extra-academic activities or institutional duties than their core job of teaching and research. As a result, teachers' workload is observed to be higher than state and central universities. It is evident from two Indian studies that teachers in the private sector reported more dissatisfaction with workload than their public counterparts (Ahmad *et al.*, 2015; Kaur and Sharma, 2016). Teachers in the public sector, on the other hand, devote more time to research, as reported by Ahmad *et al.* (2015), whereas the private sector teachers are found to be more burdened with teaching due to a higher number of classes per week and are less involved in research than public sector teachers.

The predictors of stress mentioned above also impact the quality of education and research contribution of an individual teacher, which in turn determine their social status and recognition. The centrally controlled universities are of higher quality and are referred to as 'islands of excellence' (Ravi *et al.*, 2019). The opportunity to improve the quality and focus on research and academics is more elevated in central universities as these universities receive plan grants rather than non-plan grants, as

in the case of state universities. Plan grants are intended to attract specific projects or objects, whereas non-plan funds are used to manage the institutions on a day-to-day basis (Ravi *et al.*, 2019). As a result, the central university teachers usually enjoy a higher social status and recognition than their state and private counterparts. In the case of private universities, except for a few ones, others are functioning at low standards and are alleged for taking bribes and providing easy degrees (Ravi *et al.*, 2019). A teacher affiliated with such universities is likely to suffer from low self-esteem and self-efficacy.

Considering the public and private sector organizations' distinct governance systems, structures, and procedures, their employees are likely to have different job expectations, attitudes, feelings, and overall working behavior. Previous researchers have explored the differences in these work environment facets in various types of universities and colleges and their influence on the well-being of teachers (Singh, 2014; Mkumbo, 2014; Singh and Jain, 2015; Kang and Sidhu, 2015; Ahmad *et al.*, 2015; Kaur and Sharma, 2016; Ansah-Hughes *et al.*, 2017; Záborská *et al.*, 2018; Khan *et al.*, 2018; Dinc, 2018; Faisal *et al.*, 2019; Dinibutun *et al.*, 2020; Garg and Garg, 2020). Studies have found significant differences in the occupational stress level of teachers in public and private sector universities (Mkumbo, 2014; Faisal *et al.*, 2019; Garg and Garg, 2020). Few other studies have reported that private university teachers are more stressed than teachers in public universities (Faisal *et al.*, 2019; Garg and Garg, 2020), whereas another study has found that public university teachers are more stressed than their counterparts in private universities (Mkumbo, 2014). Public universities are well-known for their highly qualified academic and administrative staff. However, they confront bureaucratic and budgetary obstacles while investing in academic infrastructure and amenities to enhance educational standards, such as modernizing laboratories and lecture rooms, teaching aids, and other learning resources. On the other hand, private universities have modern facilities and sophisticated educational standards, but they usually lack skilled academic and administrative personnel (Dinc, 2018). When comparing the management practices of the two sectors, private universities are found to be weak in areas such as recruiting procedures, assessment systems (ambiguous), remuneration packages (relatively poor on average), and managerial freedom (restricted). In contrast, public universities face merit-based recruiting processes tainted by political meddling, a lack of cohesion among personnel, and an ineffective monitoring system (Khan *et al.*, 2018). While teachers in public universities enjoy the advantage of job security, less work pressure, access to more training programs, and research funding, teachers in private institutions are likely to be more stressed due to fewer career advancement possibilities and a lack of research facilities (Faisal *et al.*, 2019). This implies that both types of universities have their virtues and flaws, which in turn influence the well-being of the teachers. Based on the above-discussed observations in the extant literature, we are inspired to formulate the following two objectives and hypotheses for empirical examination.

3. Objectives and Hypotheses of the Study

3.1. Objectives of the Study

The primary objectives of the present study are:

- To measure and compare the occupational stress level of teachers in central, state, and private universities of Assam.

- To investigate the intensity of occupational stressors in central, state, and private university teachers.

3.2. Hypotheses of the Study

The specific hypotheses of this study are:

- H_{01} : The level of occupational stress of university teachers remains independent of the ownership status of their university.
- H_{02} : The effect of a particular stressor on university teachers is independent of the ownership status of their university.

4. Research Methodology

4.1. Research Design

The current study employed a cross-sectional survey-based research design using quantitative research methods.

4.2. Population and Sample

The study population comprises teachers working in three types of institutions in Assam, i.e., central, state, and private universities. Universities that offer Humanities and Social Science (HSS) and Core Science and Technology are included. A two-stage sampling technique was adopted. In the first stage, the two oldest universities were selected from each category based on their year of establishment. In the second stage, targeting a minimum coverage of one-third of the total teachers from each university, the teachers satisfying two conditions (permanent nature of appointment and a minimum of two years of experience in the current institution) available in the university (all the departments) on a random visit were approached to be the respondents of the survey on a voluntary basis. In the process, 550 teachers were approached and administered the questionnaire. A total valid response of 536 teachers was received from the six universities, with an overall response rate of 97.5%. On university category-wise classification, our sample comprises 222 teachers from two central universities: Assam University (127) and Tezpur University (95), 210 from two state universities: Gauhati University (115) and Dibrugarh University (95), and 104 from two private universities: Assam Don Bosco (54) and Kaziranga University (50). On the further classification of the respondents based on their academic position, our sample includes 38%, 52%, and 43%, respectively of the total strength of the professors, associate professors, and assistant professors permanently employed in those six universities. Thus, our sample is considered a genuine representation of the population when viewed from the respondents' university affiliation and academic position.

4.3. Variables

As per the purpose of the study, occupational stress is considered the dependent variable, while the ownership status of the university (central, state, and private) is the independent variable. For operationalization of the study, occupational stress is defined as the subjective response of teachers towards the various aspects of their university environment that are perceived to influence them

negatively. While the dependent variable is measured on a 5-point Likert scale, the independent variable is measured on a nominal scale.

4.4. Tools

Data are collected by administering a sixty-nine-item structured questionnaire on teachers' occupational stress marked on a 5-point Likert scale; anchors range from strongly disagree to strongly agree. The items are designed based on the tools widely used and advocated by earlier researchers, such as Faculty Stress Index (FSI) developed by Gmelch *et al.* (1984), the Stress tool for university teachers by Kinman and Jones (2003), Occupational Stress Index (OSI) by Srivastava and Singh (1981), etc. The selected items are related to twenty work-related aspects, including salary, promotion, reward and recognition, low status at the job, funding and support services, poor management, lack of control, formalities, role conflict, role erosion, workplace politics, relationships at work, time constraints, workload, nature of the job, career development, poor competence of the teacher, student-related issues, change in the workplace, and home-work interface. Examples of items included in the questionnaire are "high level of competition within the workplace has reduced my chances for promotion" under the factor "promotion," "I am receiving insufficient recognition for teaching, research performance, and institutional duties" under "reward and recognition," "I have to take my institutional work home" under "home-work interface" etc. To ensure the reliability of the questionnaire, Cronbach alpha (α) is computed, which is 0.96 for the comprehensive questionnaire. On computing factor-wise, α is found to be greater than 0.63 for all of the occupational stress factors. It is important to note that the questionnaire was initially pilot-tested with 100 teachers, and the final questionnaire was developed with the necessary changes based on their feedback.

4.5. Statistical Techniques

The normality of the data is tested by employing Kolmogorov-Smirnov and Shapiro-Wilk tests, which showed significant ($p < 0.05$) results for both the tests, indicating that the data did not fit the normal distribution. Kruskal Wallis H-test and Mean Ranks (MR) are computed to examine the significant differences in teachers' occupational stress according to the ownership status of their university, i.e., central, state, and private, at a 5% level of significance. Furthermore, the occupational stress levels are classified into three categories of low, moderate, and high (considering moderate range as mean $\pm$ 1 standard deviation), and teachers' frequency was determined against each category of stress level. Descriptive statistics such as means, standard deviations, frequencies, and percentages are used to describe the data. Statistical analysis of the data was carried out using the IBM SPSS software package version 22.0.

5. Data Analysis

5.1. Description of Demographic Characteristics

The sample ($N = 536$) characteristics comprise 134 (25%) professors, 74 (14%) associate professors, and 328 (61%) assistant professors. Out of the total 536 teachers, 350 (65%) are males, and 186 (35%)

are females. When classifying according to age, 45 (8%) teachers are under 30 years of age, 226 (42%) are between 31 and 40 years, 166 (31%) are between 41 and 50 years, and 99 (19%) are beyond the age of 50 years.

5.2. Occupational Stress Level

On a 5-point Likert scale, the occupational stress mean score of 536 teachers from all the six universities taken together is computed at 2.47 with a standard deviation of 0.59, as shown in Table 1. By classifying the teachers based on the magnitude of their overall occupational stress levels into three categories-high, moderate, and low stress (based on Mean $\pm$ 1SD) and analyzing based on frequency and percentage, it is observed that about 15.67% of the teachers included in our study fall in the high-stress category whereas 66.04% in moderate stress and 18.28% in the low-stress category. Interestingly, a vast difference in percentage is found in respect of the teachers working in central universities compared to their counterparts in state and private universities in the high-stress category. Further, while a higher percentage is observed in respect of teachers working in a private university in a low-stress category, the teachers in the state university register a relatively higher percentage in the moderate stress category. This preliminary observation warrants further analysis to ascertain the statistical significance of the difference in the occupational stress level of the teachers engaged in various types of universities through H_{01} formulated in the previous section.

Table 1: Frequency of Teachers in Various Occupational Stress Categories

Ownership Status of Universities	N	Mean (SD)	Occupational Stress Categories		
			Low	Moderate	High
Private	104	2.25 (0.60)	32 (30.77)	59 (56.73)	13 (12.50)
State	210	2.48 (0.52)	31 (14.76)	152 (72.38)	27 (12.86)
Central	222	2.56 (0.62)	35 (15.77)	143 (64.41)	44 (19.82)
Total	536	2.47 (0.59)	98 (18.28)	354 (66.04)	84 (15.67)

Source: Authors' Compilation from Primary Data

Note: Figures in parenthesis indicate the percentage of the total; N = number of teachers.

While testing H_{01} , with the help of the Kruskal Wallis H-test, the results indicate a statistically significant difference in the occupational stress level of teachers in all the three types of universities, as the p-value ($p < 0.05$) is below the threshold level of significance, i.e., at 5% level of significance, as depicted in Table 2. Further, the mean rank obtained for the central universities is computed at 295.77, followed by 268.72 for the state universities and 209.84 for private universities, implying that central university teachers experience relatively a higher level of occupational stress as compared to teachers in state and private universities. The statistically significant difference found in the study shows that the level of occupational stress of university teachers varies according to the ownership status of their university. Therefore, based on the evidence observed from the analysis, we reject the study's first hypothesis.

Table 2: Results of Kruskal Wallis H-Test

<i>Ownership Status of Universities</i>	<i>N</i>	<i>Mean ranks</i>	<i>p-value</i>
Central university	222	295.77	0.000*
State university	210	268.72	
Private university	104	209.84	

Source: Authors' Compilation from Primary Data

Note: * indicates significant at 5% level ($p < 0.05$); N = number of teachers

5.3. Occupational Stress Factors

The finding of the above analysis calls for further analysis to unearth the factors causing such occupational stress differences among the teachers working in the three different types of universities. Accordingly, we have examined the influence of twenty different stressors to identify their relative impact. Based on their mean value ($\bar{x}$), we have identified the top five stressors for the three types of universities. For private university teachers, the top five stressors identified are student-related issues (2.79), change in the workplace (2.75), salary (2.69), poor competence of the teacher (2.61), funding, and support services (2.45). Stressors of state university teachers are formalities (3.03), change in the workplace (2.86), funding and support services (2.80), home-work interface (2.79), and workload (2.78). Top-rated stressors for central university teachers are formalities (3.05), funding and support services (2.95), change in the workplace (2.82), workload (2.78), and reward and recognition (2.73). Out of the top five stressors in central and state universities, four are common, but when it comes to private universities, three stressors out of the top five are different, namely student-related issues, salary, and poor competence of the teachers. While the factor reward and recognition is included in the top five stressors for central university teachers, the home-work interface is included in the top five stressors for the teachers in state universities. In order to establish the statistically significant difference in the impact of various stressors across the types of universities, we have examined our hypothesis H_{02} .

On testing H_{02} with the help of the Kruskal Wallis H-test, we find that out of twenty occupational stressors; sixteen stressors have shown a statistically significant difference at a 5% level of significance ($p < 0.05$) between the central, state, and private universities, as shown in Table 3. On the other hand, as the p-value is over the threshold of 0.05 (5%), no statistically significant difference in occupational stress level is detected for the other four stressors. Therefore, a statistically significant ($p < 0.05$) difference in the mean rank values in respect of the majority of the stressors is observed, providing empirical evidence to reject the study's second hypothesis. Alternatively, the study finds that the level of occupational stress caused by a particular stressor differs according to the ownership status of the university. Furthermore, a comparison of occupational stressors across the private, state, and central universities indicates the highest mean ranks for student-related issues (MR=300.17) and lack of control (MR=285.41) among private and state universities teachers, respectively. Mean ranks for stressors such as home-work interface (MR=303.76), relationships at work (MR=303.29), funding and support services (MR=297.43), time constraints (MR=291.17), role conflict (MR=291.01), workload (MR=290.28),

career development (MR=289.87), formalities (MR=289.31), role erosion (MR=288.94), low status at the job (MR=287.77), nature of the job (MR=283.58), reward and recognition (MR=283.19), poor management (MR=283.07), and workplace politics (MR=281.23) are relatively higher in central universities as compared to state and private ones.

Table 3: Occupational Stressors in the Teachers Across the Ownership Status of Universities

Occupational Stressors	Mean Rank (MR)			p-value
	Central	State	Private	
Salary	265.98	257.32	296.45	.098
Promotion	281.45	254.49	269.13	.192
Reward and recognition	283.19	272.87	228.32	.009
Low status at the job	287.77	281.43	201.25	.000*
Funding and support services	297.43	266.98	209.82	.000*
Poor management	283.07	276.89	220.47	.002*
Lack of control	283.99	285.41	201.28	.000*
Formalities	289.31	288.80	183.10	.000*
Role conflict	291.01	264.40	228.73	.003*
Role erosion	288.94	268.61	224.64	.002*
Workplace politics	281.23	273.19	231.87	.021*
Relationship at work	303.29	262.21	206.93	.000*
Time constraint	291.17	263.84	229.51	.003*
Workload	290.28	283.03	192.66	.000*
Nature of the job	283.58	277.25	218.64	.001*
Career development	289.87	261.76	236.50	.010*
Poor competence of the teacher	264.36	263.56	287.30	.381
Student related issues	268.80	252.49	300.17	.036*
Change at the workplace	268.20	274.99	256.03	.587
Homework interface	303.76	300.19	129.24	.000*

Source: Authors' Compilation from Primary Data

Note.* indicates significant at 5% level ($p < 0.05$).

6. Results and Discussion

The analysis in the previous section yields the following two results. With regard to the association between teachers' occupational stress level and the ownership status of the university, the study finds that the level of occupational stress of university teachers is associated with the ownership status of their university. The central university teachers are more stressed than their counterparts in the state

and private universities. Further, while examining the intensity of individual stressors, our results reveal that the effect of a particular stressor on university teachers varies across the ownership status of their university. A brief discussion on these results and their consistency with the outcomes of previous research is presented in the subsequent sub-sections.

6.1. Occupational Stress Levels

The result found in this study indicates that the overall occupational stress level of the teachers in all the six universities is very close to the middle point between ‘disagree’ and ‘neither agree nor disagree’, i.e., relatively a lower level of occupational stress as compared to the studies conducted in other regional settings (Kinman and Wray, 2013; De Paula and Boas, 2017). A survey conducted in UK universities found that about 73% of the teachers strongly agreed (33%) or agreed (40%) with the statement “I find my job stressful” (Kinman and Wray, 2013). While evaluating the magnitude of the stress problem (categorized into low, moderate, and high) in the regional context of our study setting, we have found that most teachers fall under the moderate stress category, followed by low stress and then the high-stress category. In line with this finding, another study conducted by Reddy and Poornima (2012) found that the majority of teachers in South Indian universities experience moderate (61%) levels of occupational stress, followed by low (26%) and high (13%) levels. In contrast, another study conducted in UK universities reported that more than half of the teachers experience high (39%) or very high (15%) levels of stress (Kinman and Wray, 2013). Similarly, in the Brazilian context, about 44% of the teachers working in two public universities reported experiencing high levels of occupational stress (De Paula and Boas, 2017). It indicates that occupational stress level is comparatively lower among Indian university teachers compared to the stress levels in the universities of other global countries.

6.2. Occupational Stress Levels according to the University Ownership Status

The finding that stress level variation exists across universities of different types has been mirrored in a few earlier studies, which show that teachers at public institutions are more stressed than their counterparts in private ones (Khurshid *et al.*, 2011; Mkumbo, 2014; Ansah-Hughes *et al.*, 2017). Both physiological and psychological stress are found to be higher in public university teachers than in private universities (Mkumbo, 2014). One possible reason for higher occupational stress levels in public universities could be the shifting political landscape and the government’s tighter grip on academic institutions to deliver the best performance. The degree of publicness involved in the institution could be another factor that might have enhanced the expectation level of the teachers in central and state universities. On the other hand, the rise in the number of temporary appointments has affected the motivation and energy level of the teachers working in these universities. About 50% of the permanent positions are vacant in the central universities of India, as reported in Draft National Education Policy in the year 2019. Moreover, a lack of elementary physical infrastructure and working conditions in most central and state universities in India compared to private universities is creating a challenge in motivating the teachers for better performance (Chattopadhyay, 2020). In contrast, Singh and Jain (2015) reported that private university teachers are more satisfied with the factors relating to their

working environment, assessment system, and lower workload than their counterparts in public universities.

6.3. Occupational Stress Sources according to the University Ownership Status

Out of twenty occupational stressors, significant differences are observed for sixteen stressors across three types of universities: central, state, and private. These significant stressors are reward and recognition, low status at the job, funding and support services, poor management, lack of control, formalities, role conflict, role erosion, workplace politics, relationships at work, time constraints, workload, nature of the job, career development, student-related issues, and home-work interface. The level of occupational stress on account of four stressors, namely salary, promotion, poor competence of the teacher, and change in the workplace, is not significantly different, indicating that the teachers experience similar occupational stress levels on account of these stressors in the three types of universities.

Mean rank comparison shows that student-related issue is the major factor of occupational stress for private university teachers compared to central and state universities. In line with this finding, a comparative study of university teachers in Pakistan found that student-related difficulties were a prominent occupational stress factor among private university teachers (Khurshid *et al.*, 2011). One possible reason could be the low quality of students at private universities, combined with management pressure to improve student performance, requiring teachers to devote more effort to their students' progress. Furthermore, students may demand more services from teachers due to the increased cost structure in the case of private universities. In the case of state universities, teachers experience more occupational stress from lack of control than their counterparts in central and private universities. This finding aligns with Karasek's Demand-Control theory, which refers to control as the persons' ability to control their job activities and posits that psychological distress occurs when there is high demand and low control in a job (Karasek *et al.*, 1979). In the case of state universities, the state government's interference in the university's administration is relatively greater than in central universities, resulting in receiving more directions from government authorities. The political influence in the appointment of institutional heads has further eroded the institutional autonomy and authority of the state universities (Varghese, 2016).

Most occupational stressors are a major concern for teachers in central universities. Factors like central government funding, higher quality, broader international exposure, and a higher tendency for inter-university mobility could be some of the reasons to push the expectation level of the teachers in central universities, and their perceived level of work realities might be falling short of meeting the expectation level. According to the Person-Environment Fit theory, a good match between a person and their environment leads to positive outcomes, whereas a poor fit leads to strains. Therefore, a mismatch between expectations and the perceived level of work realities of the central university teachers may cause dissatisfaction and increase their psychological stress (French *et al.*, 1974). Our findings are in congruence with the findings of another study conducted among the teachers of four public universities (central and state) in Punjab, India (Kang and Sidhu, 2015). The study has found that formalities, unpleasant work conditions and lack of resources, tough and dull jobs, lack of control, poor quality of students, and demanding jobs are marked as the top-rated stressors.

7. Conclusion

The present study has been undertaken to measure and compare the occupational stress level of teachers in central, state, and private universities of Assam and investigate the intensity of stressors among the teachers of these three types of universities. It is found that compared to the teachers in other global countries experiencing higher occupational stress levels, teachers of the universities in the study region experience relatively lower levels of occupational stress. From a comparative perspective, central university teachers perceive the highest occupational stress level, followed by the teachers in the state and private universities. Out of twenty occupational stressors considered in the study, sixteen stressors showed significant differences across the three types of universities. The most important factor of teachers' occupational stress in private universities is student-related issues, whereas lack of control is the major stressor for teachers in state universities. The central university teachers reported higher occupational stress concerning the stressors such as relationships at work, funding and support services, time constraints, role conflict, workload, career development, formalities, role erosion, low status at the job, nature of the job, reward and recognition, poor management, home-work interface, and workplace politics compared to their counterparts in state and private universities. Interestingly, the finding that central university teachers are more prone to occupational stress from their surrounding work environment is striking, as central universities mostly enjoy higher privileges regarding certain work aspects than state or private universities.

The study is regarded as an addition to the extant literature on teachers' stress in the university setting of Assam as it develops an understanding of the phenomenon by clearly pointing out the sources of university teachers' stress in central, state, and private universities of Assam. While indicating how their relative severity fluctuates under the ownership structure of the universities, it provides a theoretical explanation for such variation in the intensity of a stressor when a teacher's environment changes in terms of funding size, infrastructure, size and structure of the institution, governance mechanism and workload and social prestige and recognition.

Based on the reported factors of occupational stress in different universities, the statutory authorities and university administrations may implement necessary interventions and policies to promote a better work environment for the teachers. For instance, the private university authorities should adopt measures at the policy level and implement effective interventions to deal with student-related issues. Instead of focusing on the number of students, university managers should concentrate on enhancing the quality of students at their institutions. As for the state universities, the policies should be implemented to boost the teachers' participation in various levels of decision-making of the institution and provide them more autonomy and freedom in their academic pursuits. Similarly, in the case of the central universities, the authorities should develop a more comprehensive stress management program to address multiple stressors like workload, role conflict, funding, research support, and home-work interface to create a desirable working environment where the teachers can work with optimum stress.

8. Limitations and Future Scope of the Study

The study is not left apart from a few drawbacks that open up the scope for future research in the field of occupational stress of university teachers. Due to the limited sample size and geographical space

confined to only one state, the current results cannot be generalized to India's entire population of university teachers. Further research in this area may include diverse samples from various regions to enhance the generalizability of the results. Secondly, the accuracy of the data may be impacted by the respondent's biasness in marking the answers due to the adoption of a self-reported questionnaire. A mixed-method, including a questionnaire and structured interview, could be adopted to collect more appropriate responses to avoid this error. Moreover, the present study is limited to a few selected variables related to university teachers. Therefore, further analysis may include more variables related to socio-demographic characteristics, personality traits, other organization-related variables, etc., of the teachers and examine their structural association with occupational stress and other outcome variables in the university context. The occupational well-being of an employee depends primarily on the nature of the work environment and the factors associated with it. Therefore, a systematic assessment of teachers' work environment is of utmost importance to provide a stress-free culture that would create a bright future for the upcoming generation of the country.

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Work-Life Balance of Nurses and Its Antecedents: A Systematic Literature Review

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Keywords

Work-life balance, Health care, Work-life interference, Antecedent-consequences framework

JEL Classification

D23, M12, O15, I10

Abstract: The present work intends to collate the existing research on work-life balance (WLB), particularly in the healthcare industry. This paper provides an antecedents-outcome theoretical framework of WLB. The current review extracts the studies from Scopus and Web of Science databases. The period of this review paper is from 2011 to 2021. This study synthesizes various antecedents affecting WLB, such as demographic, socio-economic, organizational, and individual factors. Additionally, the prominent outcomes of WLB namely emotional exhaustion, turnover intention, job stress, burnout, organizational cynicism, organizational effectiveness, and psychological health were identified. This study is an attempt to present an antecedent-outcome framework of WLB in the healthcare industry. By synthesizing the literature, this study aims to suggest future research for academicians.

1. Introduction

The healthcare sector is facing major manpower challenge, with a high attrition rate and high levels of burnout among nurses. According to the report, “the majority of frontline workers (seventy-seven percent of the nurses and eighty percent of the doctors) wanted a better work environment, with more effective communication”. WLB is the established reason for attritions, it becomes important to understand the factors impacting work-life balance.

Today's environment is highly driven by competition and strives for excellence and quality, which often puts undue pressure on employees working in organizations to perform beyond their capacities ultimately leading to burnout, anxiety, and failure to achieve work-life balance. To worsen the situation further, the ongoing situation of Covid-19 has caused undue work pressure on frontline workers with

a less supportive work culture, ultimately shacking the concept of WLB in the present times. Falter in achieving work-life balance due to these strenuous demands and high risks to health in this profession are the major reasons which influence nurses well-being and turnover intention. The benefits of WLB are astounding. It has been proved time and again that employees with better WLB are known to exhibit positive work behavior, feeling of well-being, higher productivity, reduced absenteeism, and reduced attrition (Khateeb, 2021).

The phenomenon of Quality of WLB is known to influence the performance and productivity of hospital employees. Work-life balance implies fostering a positive work environment, thereby allowing nurses to strike a fine balance between their work and family commitment. In other words, WLB strives to achieve a balance among three dimensions, namely organizational, social, and personal life (Poulose *et al.*, 2017). In general, activities under workplace social support include sports, psychological and physical health, community service, health promotion, confidential help, and financial advice, among others. In the healthcare setting, training initiatives and programs improve the nurses' perception of social support from co-workers and their supervisors (Romero *et al.*, 2020).

The authors of this paper acknowledge the relevance of WLB in ongoing strenuous healthcare settings. Moreover, without appropriate HRM policies and organizational support, nurses tend to give in to the psychological and physical pressures of work and even consider abandoning the nursing profession. Many factors namely, stress, exhaustion, fatigue, absence of training, and social support dig a hole in the concept of WLB, adversely affecting the nurse's work satisfaction and commitment levels in the long run. In our paper, we have followed the ADO framework. The proposed review is guided by four research questions:

- RQ1. What are the antecedents of work-life balance(WLB)?
- RQ2. What are the consequences of work-life balance(WLB)?
- RQ3. What are the theories of work-life balance(WLB) in the extant literature?
- RQ4. What are the research gaps in the existing literature and the scope for future research?

To address the above research questions, we present an integrated framework to highlight the synthesized findings/results from 24 studies about antecedents and consequences of WLB published from the year 2011 to 20 June 2021. Further, this framework is beneficial for a hospital administrator and management, Government, nurses, and other sectors/industries/organizations, we present an SLR of the existing literature on WLB. We have also identified the predominant journals, country and hospital contexts, and the theoretical perspective and methodology section. Finally, it identified the research gaps and insightful future directions are presented which will help to expand the boundaries of this domain/sector.

2. Review of Literature

The crucial concept of WLB has been covered by existing literature enriched with a wide variety of definitions, diverse core concepts, and different perspectives and factors. Akter *et al.*, (2018) analyzed various factors which predicted the nurse's WLB but the monthly income was the prominent factor. It

is followed by job stress, work environment, and organizational commitment. Further, Labrague and Ballad (2020) identified that the age of the nurse, hospital location, and education affect WFC. However, Factors like intention to quit, job stress, perceived quality of care, and job satisfaction (JS) is the outcome of work-family conflict. Yeh *et al.*, (2021) revealed the effects of WFC and supervisor support on emotional exhaustion. Moreover, six areas of work-life showed a negative effect on burnout, and it depicts a positive effect on the intention to leave. The study by Boamah and Laschinger(2016) showed the effect of Work life interference on the intention to withdraw, indirectly through burnout. After that, work-family interference and short staffing are prominent factors that influence new graduate nurse burnout. In addition, it was observed that sleep disturbances played a mediating role in translating work-family conflict into depressive symptoms (Zhang *et al.*, 2017). Another factor that had a considerable positive effect on employee job satisfaction was trait mindfulness. The component of trait mindfulness also reduced turnover intentions through mediating effect of work-family conflict (Raza *et al.*, 2018).

The ongoing scenario of the pandemic has a significant impact on the research topic at hand and thus deserves a special mention. According to recent studies, the pandemic has impacted significantly the productivity of nurses, job stress, and job satisfaction (Basak, 2021). These findings have been seconded by Rashmi and Kataria (2021). The pandemic situation has led to drastic changes in organizations affecting their working patterns and operational activities which in turn has impacted the nurses 'WLB significantly. This section is followed by research methodology, results and discussion, conclusion, and future research direction.

3. Research Methodology

This section explains our approach to conducting an SLR in the scholarly field. The article for this paper was selected from Scopus and Web of Science by Clarivate Analytics and the article was published from 2011 to 2021. This study has followed an SLR method to review the three-stage process suggested by (Tranfield *et al.*, 2003). Figure 1 depicts three stages of work.

3.1. Planning Stage

In this stage, we listed the keywords for framing the search strategy. At the same time, the exclusion and inclusion criteria were also decided to select the studies for the current work.

Keywords Selection and Data Extraction Strategies

For this study, a list was developed after screening the first 70 search results returned by Google Scholar to make the keyword list more exhaustive and to make sure that no important keywords were left. Hence after collecting the various keywords, the authors made various combinations of primary keywords such as (work life balance or hospital sector) and (work life balance (WLB) or nurses) to run the search query both on Scopus and Web of Science databases. The current study followed the following inclusion criteria (IC):

IC1: Studies in English only;

IC2: Peer-reviewed articles;

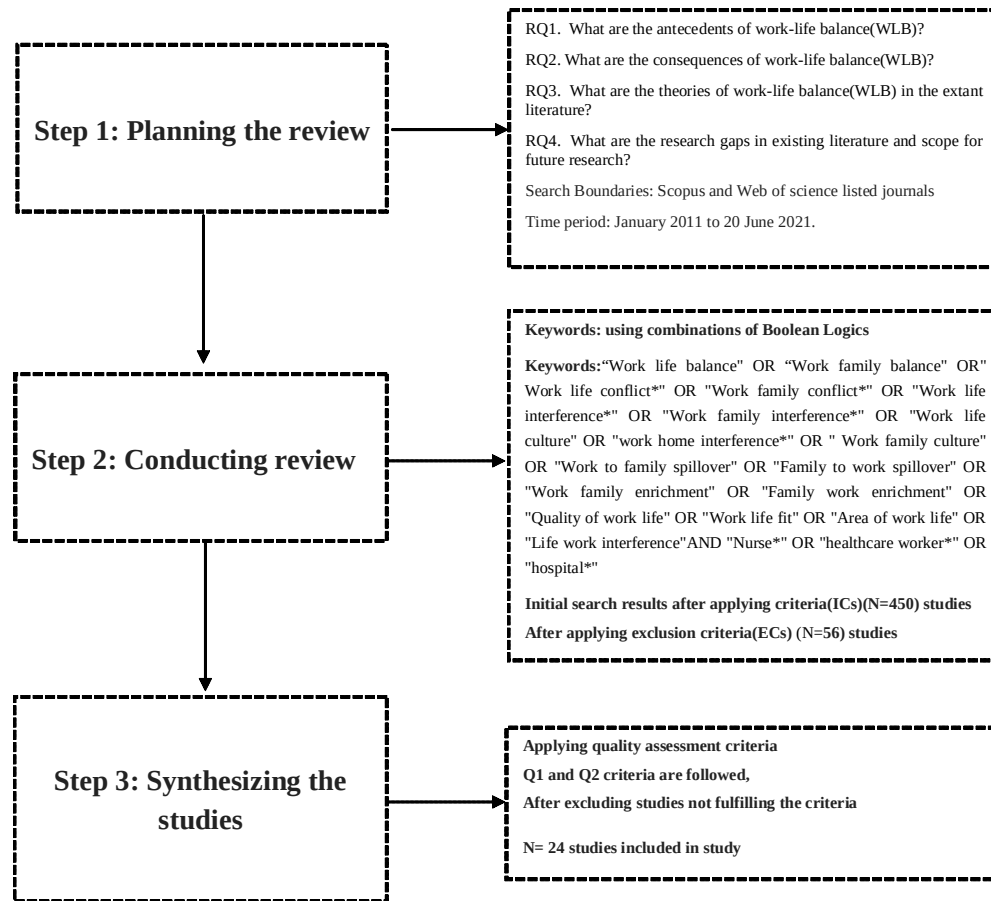


Figure 1: Data Extraction Process

Source: Authors' Own Compilation

IC3: The source type is journal;

IC4: Studies published from 2011 to June 2021;

IC5: Studies addressing the issue of work life balance of nurses;

IC6: Papers published under "Business, Management, and Accounting" subject area; and "Nursing", "Psychology Multidisciplinary".

The authors decided on the exclusion criteria (EC) as well. This is as follows:

EC1: The Studies other than the English language;

EC2: The Studies other than the hospital sector;

EC3: Non- peer-reviewed article, including, book chapters, books, conference proceedings;

EC4: The Studies are not available in full text.

3.2. Conducting Stage

For the present work, relevant papers were identified using the Scopus and Web of Science databases because of their widest coverage of journals. Before the final execution of search strings, “keywords” from a panel of two academic and two industry experts were validated which were associated with WLB in the hospital domain. After incorporating, their suggestions, the authors ran a search query on 20 June 2021. The final list of keywords is as follows:

Keywords: “Work life balance” OR “Work family balance” OR “Work life conflict*” OR “Work family conflict*” OR “Work life interference*” OR “Work family interference*” OR “Work life culture” OR “work home interference*” OR “Work family culture” OR “Work to family spillover” OR “Family to work spillover” OR “Work family enrichment” OR “Family work enrichment” OR “Quality of work life” OR “Work life fit” OR “Area of work life” OR “Life work interference” AND “Nurse*” OR “healthcare worker*” OR “hospital*”

After running the search query initially, we received 450 documents.

3.3. Synthesis Stage

After reading the title and abstract of these 450 studies (Scopus- 250, WOS-200) relevant to the domain in question we examined the studies based on the quality criteria (Q) that have been used for content analysis. Afterward, we ended up with 337 studies after eliminating the duplicates from two databases. Lastly, we read the full text of each article. We eliminated all the articles which have not focused on antecedents of WLB hence, left with 24 studies that explored antecedents and consequences of WLB. Thus, the authors review 24 studies in total.

Further, following the content analysis approach relevant information from the article was extracted, coded, and organized. For that purpose, two expert coders read the full text of selected papers to familiarize themselves with the content. The coders extracted the basic information of the paper related to source and publication year, different countries, methodology, antecedents, and outcomes to WLB, theories, relevant mediators/ moderators, limitations, future scope, and gaps mentioned in the article were also extracted.

4. Results

The sections showed that the review was analysed in such a way that work-life balance literature addressed in the form of various journals, sample country trends, theories, framework, antecedents, and consequences of WLB are explained.

4.1. Journal Profile

In this section, we depict the profiling information regarding the source of the Journal, International nursing review (5) had the highest number of studies that explored work-life balance. Journal of nursing management (JONM) (4), International Journal of advanced nursing (IJAN)(2), The International Journal of Human Resource Management (IJHRM) (2), and Journal of Transcultural Nursing (1), are some of the leading sources publishing in this domain. However, most of the journals are from nursing.

4.2. Sample Country

The analysis reveals the country of study. We observed that two studies were from Canada (Boamah and Laschinger, 2016; Boamah *et al.*, 2017). The geographical spread of the studies indicates that the concentration of scholarly attention on this area is more towards the western part of the globe. Table 1 shows the country in which the literature is based on WLB.

Table 1: Distribution of Papers by Country of Study

<i>Country</i>	<i>Author and Year of Publication</i>
Germany	Nitzsche <i>et al.</i> , (2017)
France	Brunault <i>et al.</i> , (2014)
Korea	An <i>et al.</i> (2011)
Canada	Boamah and Laschinger (2016), Boamah <i>et al.</i> , (2017)
Taiwan	Chen <i>et al.</i> , (2017), Yeh <i>et al.</i> , (2021)
Bangladesh	Akter <i>et al.</i> , (2018)
USA	Klein <i>et al.</i> , (2020)
Brunnei	Rahman <i>et al.</i> , (2017)
Lahore, Pakistan	Raza <i>et al.</i> , (2018)
Singapore	Kowitlawkul <i>et al.</i> , (2019)
Italy	Battistelli <i>et al.</i> , (2013)
Taipei	Simha <i>et al.</i> , (2014)
Uttarakhand	Sharma <i>et al.</i> , (2016)
Brazil	Nelson (2012)
Philippines	Labrague and Ballad (2020)

Source: Authors' Own Compilation

4.3. Extant Theories Employed

The concept of WLB is mainly based on these theories, out of which theory of conservation of resource theory (COR) is the most prominent one (Hobfoll, 1989). It understands that “work-family conflict ties up vital cognitive, emotional, and/or physical resources, leaving insufficient resources for work-related performance”. This loss of resources eventually leads to an increase in worry (Modaresnezhad *et al.*, 2020; Yeh *et al.*, 2020; Nitzsche *et al.*, 2017; Simha *et al.*, 2014).

According to role balance theory, “trait mindfulness has a positive effect on work-family balance. Role balance is connected with one's overall role while performing the individual role” (Raza *et al.*, 2018). Another theory, which is the role theory proposes that employees' ability to dedicate time to family duties is influenced by the limited time in a day mixed with high job demands and expectations. According to research, the important factors in determining WFC are high job demands and expectations (Yeh *et al.*, 2021; Chen *et al.*, 2017).

Further, the Theory of WLB explained six areas of work-life are critical to an employee's level of burnout at work. Manageable workloads, job control, contribution rewards, a feeling of community, equal rights, and personal and organizational values (Boamah and Laschinger, 2016). Theory of structural empowerment highlights "how leaders can influence employees' power to accomplish their work by providing access to four key organizational structures: information, support, resources, and opportunities" (Boamah *et al.*, 2017)

Spillover theory highlights the line between a worker's experiences and emotions from the job or from his or her family will spill over into the other area. Workers, for example, may have positive or negative psychological moods at work, which they carry home and affect their interactions with family members. The pleasant psychological state that people achieve at work spills over to their families, reinforcing the resources that they can employ in their personal lives. Poor Spillover, on the other hand, refers to a worker's negative psychological condition spilling over into his or her family (Chen *et al.*, 2017).

Table 2: Explained the Theories that have been Applied in the Literature on Work-Life Balance

Sr. No	Theory	Origin	Source
1.	Conservation of resource theory	(Hobfoll, 1988)	Nitzsche <i>et al.</i> , (2017), Modaresnezhad <i>et al.</i> , (2020), Yeh <i>et al.</i> , (2021), Simha <i>et al.</i> , (2014), Chen <i>et al.</i> , (2017)
2.	Role theory	(Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964), (allen, 2000)	Chen <i>et al.</i> , (2017), Yeh <i>et al.</i> , (2021),
3.	Job demand resources model	(Demerouti <i>et al.</i> 2001)	Chen <i>et al.</i> (2017)
4.	Spillover theory	(Evans & Bartolone, 1984)	Chen <i>et al.</i> (2017)
5.	Theory of authentic leadership	(Avolio and Gardner, 2005)	Boamah <i>et al.</i> (2017)
6.	Theory of burnout	(Leiter's, 1997)	Boamah <i>et al.</i> (2017)
7.	Theory of work-life balance	(Greenhouse <i>et al.</i> 's, 2003)	Boamah and Laschinger (2016)
8.	Areas of the work life Model	(Maslach and Leiter's, 1997)	Boamah and Laschinger (2016)
9.	Spiral gain theory	(Hobfoll, 1989)	Yeh <i>et al.</i> , (2021)
10.	Theory of structural empowerment	(Kanter's, 1993)	Boamah <i>et al.</i> , (2017)
11.	Role conflict theory	(Kahn <i>et al.</i> , 1964)	Simha <i>et al.</i> , (2014)
12.	Role balance theory	(Marks and Macdermid, 1996)	Raza <i>et al.</i> , (2018)

Source: Authors' Own Compilation

5. Discussion

This review proposed an integrated framework following a thorough review of literature, it was discovered that a wide range of factors influences the WLB. Further, these factors were bifurcated into

antecedents and consequences of WLB. Figure 2 depicts the antecedents and consequences of work life balance.

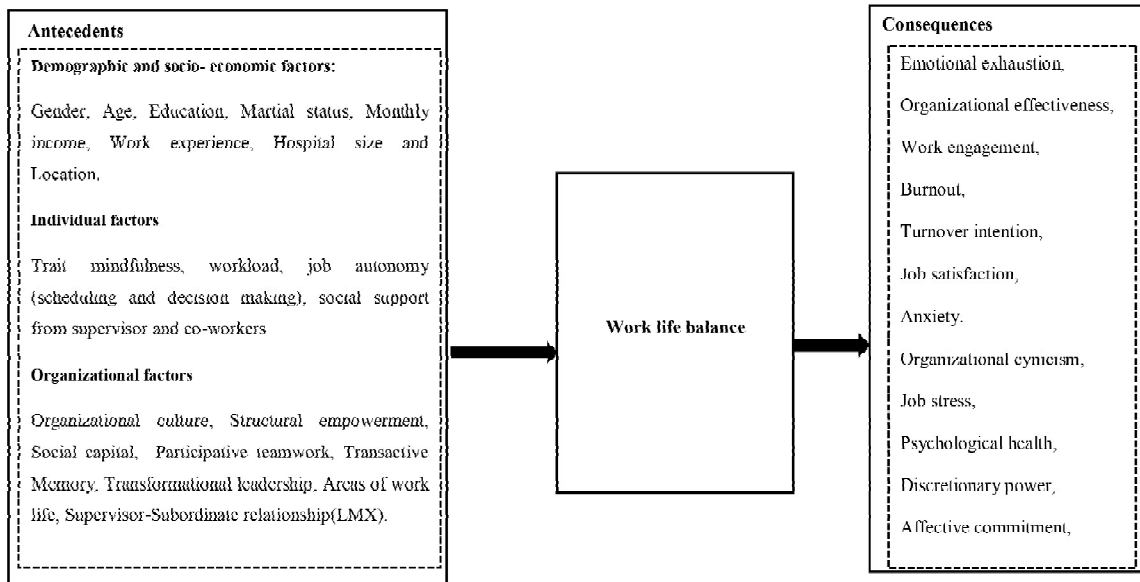


Figure 2: Depicts the Antecedents-outcome Framework.

Source: Authors' Own Compilation

5.1. Antecedents of Work Life Balance (WLB)

During the extensive review of the literature, myriads of factors were discovered that impact WLB. Both individual factors (Trait mindfulness, workload, autonomy, social support from co-workers and organizational factors (Social capital, organizational culture, transformational leadership, participative teamwork, transitive memory) have a significant relationship with WLB. Moreover, there are some demographic factors namely, age, marital status, employment type, gender, monthly income, level of education, etc.

5.1.1. Demographic Factors

Demographic factors included seven interrelated subthemes which were identified as gender, age, level of education, marital status, employment type, monthly income, experience, hospital size, and location. However, certain demographic variables had a significant impact on work-home conflict. According to the findings by Nitzsche *et al.*, (2017), As compared to Physicians, younger nurses experienced more work-home conflict. Whereas, hospital size depicts a negative relationship with WFC, implying that workers in smaller hospitals encountered greater work-home conflict. Work-life interference did not share any significant relationship with hospital ownership. Further, investigated

by Akter *et al.*, (2018), implied that with the help of monthly income nurses can manage their families and are more energetic towards organizational goals. However, monthly income was shown to be the best predictor of quality of work life (QWL). On the other hand, years of experience and education are not the well-explained variance of nurses' Quality of Work Life (QWL). As per the existing investigations, most of the nurses were female (Kowitlawkul *et al.*, 2019; Boamah and Laschinger, 2016). Whereas, Brunault *et al.*, (2014) indicated that increasing age and length of service was significantly and negatively associated with nurses' quality of work life (QWL). Despite the established fact that no study has analyzed the relationship between the length of service or age and quality of work life (QWL) so far. Nurses with other demographic factors such as being single (Kowitlawkul *et al.*, 2019) were a predictor of nurses' turnover intention in healthcare organizations (Lee *et al.*, 2013). Another research conducted by An *et al.* (2011) concluded that demographic factors were highly related to Quality of Work Life. Extensive investigations by Labrague and Ballad (2020) revealed that demographic factors such as nurses' age, education, and hospital significantly predicted work-life interference.

5.1.2. Individual Factors

Within the individual factors, four interrelated subthemes were identified: trait mindfulness, workload, job autonomy (scheduling and decision making), social support from supervisor and co-workers, and sense of coherence.

Trait Mindfulness

Mindfulness is explained as a "State of consciousness characterized by receptive attention to and knowledge of current events and experiences without judgment". Role balance theory elaborated trait mindfulness has a positive impact on WFB. Role balancing concerns an individual role as well as one's overall role. Attentiveness is a vital trait for the partner's regular role. Mindfulness improves self-determined behavior and inhibits automatic responses. In other words, it means that someone with mindful capacity may focus fully on the current function without thinking about another. Furthermore, mindfulness will be better if the person with high characteristics focused on the current role which will eventually improve his capacity to achieve work-family balance (Raza *et al.*, 2018).

Social Support

Defined by Yeh *et al.*, (2021), social support implies "support mechanisms that can increase personal self-esteem" (emotional, informational, and assessment support). Social support acts as a helpful resource and an effective coping technique for minimizing the harmful impacts of high levels of stress. The existing literature on the topic confirms that greater workload and less social support (as subjectively perceived) by managers and colleagues resulted in greater work-home conflict (Nitzsche *et al.*, 2017). Research by Kowitlawkul *et al.*, (2019) found that a sense of coherence (SoC) was an important predictor of quality of life. Social support at the workplace involves support from co-workers, the organization itself, and the supervisor may lessen the frequency of work problems.

Job Autonomy and Workload

The past and existing literature is full of evidence that confirms that workload and autonomy are significant factors of WLB (Nitzsche *et al.*, 2017). The results of the study explained that social support from supervisor and co-workers' have a positive influence on WLB (Yeh *et al.*, 2021; Kowitlawkul *et al.*, 2019; Nitzsche *et al.*, 2017).

5.1.3. Organizational Factors

Within the organizational factors, eight interrelated subthemes were identified: the organizational culture, organizational commitment, structural empowerment, social capital, participative teamwork, transactive memory, work environment, job stressors, control, reward, community, fairness, value, emotional demands, transformational leadership, depersonalization, role conflict, perceived fairness, supervisor-subordinate relationship (LMX).

Organizational Culture

It is imperative to study the concept of organizational culture in order to deploy strategies to deal with a highly volatile health care environment. Organizational culture is the main antecedent of WLB. Moreover, the desired outcome for nurses in the workplace can be achieved with this variable. OC is defined as "a set of beliefs, values, behavioral patterns, and assumptions shared by the members of the organization" (An *et al.*, 2011). Organizational culture is further sub-categorized into four types: Affiliation culture, progressive culture, maintenance culture, and rationality culture. Affiliation culture is characterized by organizations emphasizing cohesion and interpersonal relationships. Whereas progressive culture engulfs organizations in which growth and resource acquisition are valued. Further, maintenance culture is recognized by stable and standardized organizations. Lastly, Rationality culture is one in which productivity and efficiency are valued.

Areas of Work-life

The research study developed a framework by integrating Maslach and Leiter's (1997) areas of the work-life model and Greenhaus *et al.*, (2003) theory of work-life balance. Maslach and Leiter (1997) listed six crucial areas of work-life wherein a person-job fit is a core to the employees' degree of engagement in work or burnout. These six areas include manageable workloads, control over work, rewards for contribution, fair and unbiased treatment, a sense of community, and correspondence between personal and organizational values. 'A manageable workload' refers to the job-related physical and emotional demands faced by an employee under time and resource constraints. 'Control' is the professional capability of employees to make important decisions about their work accompanied by the ability to gain access to resources necessary to do their job effectively. 'Reward' is the extent to which an employee's expectations are fulfilled by the social reward system, Rewards can be both intrinsic and extrinsic. 'Community' is the quality of social interaction at work, including relationships with colleagues, managers, and subordinates. 'Fairness' is the extent to which the decision-making process at work is perceived by employees as being impartial and presence of managerial support in the organization" (Boamah and Laschinger, 2016).

Structural Empowerment

It is possible that workplace structural empowerment might be a key factor in reducing new graduate nurses' views of WFC (Boamah *et al.*, 2017). In addition, working circumstances and support from supervisors and co-workers, according to research, are vital in striking harmony between work and personal duties.

The structural empowerment theory of Kanter (1993) reveals "how leaders can impact employees' ability to complete tasks by offering access to four essential organizational structures: knowledge, support, resources, and opportunities". 'Access to information' includes awareness of the organization's aims, values, and policies, as well as the experience and knowledge required to be productive at work. A few more examples of 'support' include peer, subordinate, and supervisory guidance and feedback from colleagues.

Transformational Leadership

Transformational leaders have been defined and recognized as the ones who "broaden and elevate the interests of their employees when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group" (Gillet *et al.*, 2013).

Social Capital

Through the lens of network theorists, social capital is explained as "resources embedded in social networks accessed and utilized by actors for actions" (Nitzsche *et al.*, 2017). Social capital is conceived as a 'private good', in which individuals can invest in both and benefit from their 'own capital'. Furthermore, it is regarded as the main resource in the workplace, wherever individuals spend a lot of time together. The Work-Home Resources Model and COR theory (Hobfoll, 1989) are also explained by social capital.

Supervisor-Subordinate Relationship (LMX theory)

LMX theory explained "a set of ideas and insights for exploring the supervisor-subordinate relationship. At the heart of LMX is the insight that supervisors treat subordinates differently and that some subordinates are provided with varying levels of support and encouragement, information, trust and participation in decision making" (Nelson, 2012).

Transactive Memory and Participative Teamwork

According to Brunault *et al.*, (2014), the QOL showed a positive correlation with transactive memory and participative teamwork through mediating variable perceived organizational support (POS) and perceived organizational justice (POJ).

5.2. Outcome of Work Life Balance

It is clear from figure 2 that the integrated frame work has targeted antecedents and research on its outcome variables of WLB discussed in the extant literature, namely, emotional exhaustion, turnover

intention, job stress, musculoskeletal disorder, affective commitment, work engagement, organizational effectiveness, burnout, psychological health. Further exploration is encouraged on the variable intention to leave. Work-family interference predicted job stress and turnover intention. (Labrague and Ballad, 2020; Boamah and Laschinger, 2016; Battistelli *et al.*, 2013). Such studies will help the organization to understand the motives which help to predict the WLB of nurses. In addition to this, work-life interface can be enhanced through affective commitment (Nelson, 2012). The result of this study elaborated that QOL was the strongest consequence of organizational effectiveness. Future research should explore how work-life balance directly impacts organizational effectiveness (An *et al.*, 2011).

6. Research gaps

6.1. Antecedents Related Direction

- RQ1. How psychosocial factors are related to work life balance (WLB)?
- RQ2. How do variables like the quality of leadership, role clarity, rewards, and emotional demand impact work-life balance (WLB)?
- RQ3. What is the impact of trait mindfulness on work life balance?
- RQ4. How does organizational culture impact work life balance (WLB)?
- RQ5. What are the outcomes of participative teamwork on work life balance (WLB)?
- RQ6. What are the outcomes of transactive memory on work life balance (WLB)?

6.2. Consequences Related Direction

- RQ1. How does Work-life balance (WLB) directly lead to organizational effectiveness?
- RQ2. How does work-life balance (WLB) directly impact turnover intention?
- RQ3. How work-life balance(WLB) leads to emotional exhaustion?
- RQ4. How work-life balance (WLB) leads to affective commitment?

6.3. Theory-Related Direction

- RQ1. How new theoretical framework (such as social identity theory) can be designed/ applied to measure the impact of psychosocial factors on the work-life balance of nurses?
- RQ2. How a new theoretical framework can develop the relationship among quality of work life(QWL), intention to leave the organization, and nurse turnover.

6.4. Moderators Related Direction

- RQ1. How organizational support can moderate the associations among antecedent and outcome variables?
- RQ2. How do experience, age, and level of education of employee moderates the relationships among antecedent and outcome variables?

6.5. Methodological Related Direction

- RQ1. What new antecedents and outcomes of work-life balance (WLB) can be explored using qualitative research methods?
- RQ2. Does cross-cultural studies will help in comprehending the phenomenon of WLB?
- RQ3. Does there is a difference in the work-life balance(WLB) of the employees working in public or private hospitals?

7. Implications of the Study

The findings of the study provide some practical implications. After analyzing the results, we created new knowledge about antecedents that address the work-life balance in nurses. There are many factors that affect the work-life balance but the Trait mindfulness is the prominent one. The organization should introduce some programs in the workplace, like mindfulness at an individual level. This study will help individuals/nurses to balance “work” and “life”. Trait mindfulness is a concept that will help to reduce stress in the workplace. These factors can be beneficial for hospital administrators, government, nurses, and other organizations and industries. This research will help to promote Quality of Work Life (QWL), physical and mental health, and a good working environment (Kowitlawful *et al.*, 2019). This study's results offer new insight into the more important consequences/outcomes like turnover intention, Burnout, and emotional exhaustion of nurses it can be controlled through organizational policies and environmentally friendly programs, support from supervisors and subordinates. Further, an empirical study can be undertaken to increase the nurse's ability to balance WLB. For more insight, situational/ contextual factors must be included to decrease the work-family conflict among nurses/ others. Furthermore, the participants of this study are nurses; the same research questions should be addressed quantitatively.

8. Limitations

Though this study has several merits still we cannot ignore its limitations of this study. This study mainly has five limitations. First, the current study was mainly focused on analyzing the extant literature related to the WLB of nurses in the hospital industry/ healthcare sector. Future research must on work-life balance be conducted in different sectors/industries, cultures/regions of the country(national/ international level). Second, no gray literature(reviews, books, book chapters, conference proceedings) has been considered in this study. Thirdly, this report only included papers published in the English language. Further, research can be included in other languages. Fourth, only two databases Scopus and Web of Science(WOS) for this study have been considered. Further, research can be done through other databases. Lastly, in this research, the ADO framework has been suggested, and further study can be done through TCCM or PICO framework.

9. Conclusion

WLB among nurses is of paramount importance during this pandemic. In the current study, the authors have discussed various antecedents and outcomes of WLB of nurses in the healthcare sector. Work-

life balance is very important for all professionals to prevent stress, burnout, intention to leave, depression, and anxiety. However, individual, organizational and demographic antecedents have affected the work-life balance of nurses. We attempted to integrate all the available evidence into the systematic conceptual antecedents-outcome framework of WLB. From a theoretical perspective, the antecedents-outcome framework was designed in order to serve as a guiding framework for the researcher interested in capturing work-life balance from a multi-dimensional perspective. Hence, future work can be conducted to cover this gap.

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Year	Venue of the Conferences	Awardees
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2018	Ravenshaw University, Cuttack	Prof. Ramakanta Jena Prof. Gunanidhi Sahoo
2019	Utkal University, Bhubaneswar	Prof. Umesh Charan Pattnaik Mr. Tahalu Sahu
2020	KIIT University, Bhubaneswar	Prof. Pradipta Chandra Tripathy (in absentia) Prof. Malay Kumar Mohanty
2021	L. N. College, Jharsuguda	Prof. Sambhu Prasad Mishra Prof. Damodar Biswal

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3.	Prof. Ranjan Kumar Bal	2019-F03
4.	Mr. Tahalu Sahoo	2019-F04
5.	Mr. Baldev Kar	2019-F05
6.	Prof. Sanjay Kumar Satapathy	2019-F06
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4. Prof. Durga Prasad Nayak

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7.	1978	S.C.S. College, Puri	Prof. Batakrushna Mohanty, Principal, G.M. College, Sambalpur	*	*	*
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9.	1981	K.S.U.B. College, Bhanjanagar	Prof. Ganga Prasad Panda, Principal Lingaraj Law College, Berhampur	*	*	*
10.	1982	Dhenkanal College, Dhenkanal	Shri Durga Prasad Nayak, Principal, Sonepur College, Sonepur.	Dr. Girija Prasad Acharya	Dr. Pramod Ku. Sahu, Berhampur University	One Issue
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12.	1985	F.M. College, Balasore	Prof. (Dr.) J.J. Rao, Ravenshaw College, Cuttack	Dr. Girija Prasad Acharya	*	*
13.	1986	Ganjam College, Ganjam	Prof. (Dr) Ramakanta Jena, Dean, Faculty of Commerce, Utkal University, Bhubaneswar	Dr. Girija Prasad Acharya	Dr. Ghanashyam Panda, Berhampur University	One Issue

Sl. No	Year	Venue	President	Secretary	Managing Editor of Orissa Journal of Commerce	Number of Issues Published
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21.	1999	Khalikote (Auto) College, Berhampur	Prof. (Dr) R.P. Choudhury, Principal, Khalikote College (Auto), Berhampur	Malay Kumar Mohanty, Ravenshaw College (Auto)	Prof. Pramod Ku. Sahu, Berhampur University	One Issue
22.	2000	Ispat College, Rourkela	Prof. Minaketan Mohapatra, Principal, Dehenkanal College	Malay Kumar Mohanty, Ravenshaw College (Auto)	Prof. Pramod Ku. Sahu, Berhampur University	One Issue
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24.	2004	Kendrapara College, Kendrapara	Prof. (Dr) Jagannath Panda, Professor Berhampur University, Berhampur	Prof. Ranjan Kumar Bal, Utkal University	Prof. Pramod Ku. Sahu, Berhampur University	One Issue
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26.	2006	Raygada College, Raygada	Prof. Tahalu Sahu, Principal Belpahar College, Belpahar	Prof. Ranjan Kumar Bal, Utkal University	Prof. Jagannath Panda, Berhampur University	One Issue
27.	2007	P.G. Department of Commerce Utkal University, Bhubaneswar	Prof (Dr) Samson Moharana, Professor Utkal University, Bhubaneswar	Prof. Kishore Ch. Rout, Berhampur University	Prof. Jagannath Panda, Berhampur University	One Issue
28.	2008	Fakir Mohan Autonomous College, Balasore	Dr. Arun Kumar Barik, Head, Department of Commerce, Vyasagar College, Jaipur Road	Prof. Kishore Ch. Rout, Berhampur University	Prof. Ranjan Kumar Bal, Utkal University	One Issue
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Sl. No	Year	Venue	President	Secretary	Managing Editor of Orissa Journal of Commerce	Number of Issues Published
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1. ESG and Changing Landscape of Business
2. ESG and the MSME: Redefining Business Strategy
3. ESG and Investment Management
4. ESG and Inclusive Development

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- (i) All the paper presenters will be issued Certificates of appreciation.
- (ii) Author(s) of the best papers, one each from the four themes, will get **Mr Baladev Kar best paper award**.
- (iii) Author(s) of the best paper chosen from among the papers presented in the Conference in physical mode from all the four themes taken together will get **Prof Malay Mohanty best paper award**.
- (iv) Promising faculty, as would be adjudicated by the jury, will get **Prof U.C Pattnaik promising faculty award**. Faculty from Odisha (placed or domicile) not exceeding 45 years of age as on 31.10.2022, upon submission of a formal application along with detailed bio data and documents in support of their achievements will be considered for this award.
- (v) Selected papers will be published in UGC CARE listed journal, namely, the Orissa Journal of Commerce with DOI number.

For more details, please visit: <https://odishacommerceassociation.org/>

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We invite academicians, researchers and executives / industry practitioners to submit original and unpublished research papers/articles in the area of Commerce, Economics, and Management for publication in **Orissa Journal of Commerce**. Following guidelines should be followed:

- a) The manuscripts should be typed in MS Word and 1.5 spaces with margin of 1 inch on all side. An **Abstract of 150-160 words, 5-6 Keywords and 4-5 JEL Classification codes** should be provided in the first page of the paper. **The length of the paper should not exceed 6,000 words.**
- b) The title of the paper should be followed by name, designation, affiliation, email and mobile number of the author(s). The surname of the author(s) should be marked in blue colour.
- c) The main body of the paper should contain: **1. Introduction, 2. Review of Literature, 3. Objective and Hypothesis of the Study, 4. Research Methodology, 5. Data Analysis, 6. Results and Discussion, and 7. Conclusion.** The conclusion should include research outcomes, implications of research on industry, academia and policy making, Limitation of study if any, and future scope of research if any. The subheadings under each of the main headings should also be numbered accordingly.
- d) The tables and figures with their sources should appear in the manuscript near/after where they are referred in the text. All figures and tables should be numbered (**Table 1, 2, 3... & Figure 1, 2, 3...**) and cited in the text with proper headings.
- e) It is the author's obligation to provide complete references with the necessary information. **References should be according to APA latest edition arranged in alphabetical order.** The list of all references must be placed at the end of the manuscript.
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