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IPE Journal of Management

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ESG - The Future of Financing for Sustainable Infrastructure
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BOOK REVIEW

Creating, Building and Sustaining an Institution – A Momentous Journey of Institute of Public Enterprise
Reviewed by Samarendra Kumar Mohanty

INSTITUTE OF PUBLIC ENTERPRISE
(Under the aegis of ICSSR, MoE, GoI)

Aims and Scope

IPE Journal of Management is a bi-annual, peer-reviewed journal which publishes empirical, theoretical and review articles dealing with the theory and practice of management. The aim of the journal is to provide a platform for researchers, academicians, practitioners and policy-makers from diverse domains of management to share innovative research achievements and practical experience, to stimulate scholarly debate both in India and abroad on contemporary issues and emerging trends of management science and decision-making.

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BOOK REVIEW
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From the Editor's Desk...

The issue for January - June 2022 continues the practice of bringing selected of articles that highlight diverse management issues that would arouse the interest in academicians, researchers and management practitioners. The present issue contains eight articles from researchers exploring assorted themes including VAR framework, New Educational Policy, job embeddedness, perceptions of purchases and environmental, social and governance.

The first article in this issue of the journal is, macro stress testing of selected banks in India: an inter-modelling approach using the VAR framework. This article discusses the importance of banking system in India's financial system and the NPAs in the post-financial crisis period. The second article is, resonant leadership of managers in Indian organizations: an investigative study. The article explores the level of resonant leadership patterns across age, gender and public versus private sector of Indian managers. The next article, explores the benefits and challenges of the new education policy (NEP 2020). The vision of this policy is to reduce the skilled workers' demand and supply gap and help Indian youth to sustain in the changing global world environment and gain efficiency. Further, the authors discuss how NEP 2020 aims to inculcate vocational and analytical skills into young minds. The next article is antecedents of job embeddedness and its outcome on intention to stay among teachers in higher education sector. Using survey method, the authors explored seven antecedents relevant to job embeddedness: workplace socialization, workplace benefits, organizational perceived value, perception on peer work group,and trust in the organization, working environment, and workplace autonomy. The next article, autoregressive integrated moving average and gold price in India aims to guide investors to reduce their risk at the time of investing in gold. The next article is explores purchase intention of customers towards self-help group products. The authors seek to find the perception of the end consumers about the products of SHGs, in terms of product quality, consistency, packaging,hygiene, price and availability. In the article, ESG - the future of financing for sustainable infrastructure, the authors advocate the adoption of environmental, social and governance (ESG) norms for infrastructure finance. The last article is a book review which elucidates the timeline of the growth of the institute and various activities of the institute in management education, training, consulting and research undertaken at the institute.

IPE Journal of Management has focused on exploring newer challenges in the domain of management research. The research papers in this issue discuss various aspects related to new education policy, marketing perception, financing of infrastructure and investment in bullion instruments, etc. We trust our readers would appreciate the efforts of the authors and this would contribute to enhancement of management knowledge system.

Kiranmai J
Samarendra Mohanty

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Macro Stress Testing of Selected Banks in India: An Intermodelling Approach Using the VAR Framework

Nitin Ranganathan[1]
G Raghavender Raju[2]

Abstract

The COVID-19 pandemic has proved that credit risk for financial institutions need not be idiosyncratic and could have its roots in a system-wide health crisis. Times of economic downturns and the failure of few 'giants' in the industry has pushed the regulators, Central bankers and economists globally to model 'market risk' as a determinant of 'credit risk'. As a humble attempt in this direction, we ventured into estimating a risk model using the Vector Autoregressive (VAR) framework with variables representing the various facets of market risk like Economic, Currency, Interest rate, Commodity and Asset price risk during the period 2010 Q1 – 2020 Q3 to explain the Default rates of the Indian banking system at a disaggregated level. The results from the model and ac-companying Post-VAR estimations showed that Credit risk is explained by Market risk and had spillover effects into the Market risk variables. The stress tests indicate that the 'Moratorium period' imposed by the RBI has been effective in curtailing shocks to NPA during the pandemic and the banks have capital adequacy to deal with an economically stressed scenario like the present. However, as the Pandemic continues its onslaught, the creation of a 'Bad Bank' and 'Recapitalizations' are inevitable. Some of our inferences from this study are novel to the area of 'Risk Management' for banks in India.

Keywords: Credit Risk, Indian Banks, Market Risk, Pandemic, Stress Test, VAR

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Introduction

"Stress testing is a mythological tool that helps to quantify and qualify the soundness and vulnerabilities of the financial system."
- International Monetary Fund (IMF)

Banks are in the business of risk! Although their main function is to act as financial intermediaries in an economy, they assume various correlated risks in that process. Risks were conventionally identified, measured, modelled and managed as separate sources of risk. Such an approach misses out on the compounding effect that risks tend to have on the books of the bank as highlighted during the Sub-prime mortgage crisis in 2008-09.

Due to the Financial crisis, regulators around the world have changed their approach towards bank risk management and this heightened prudence, along with other reasons, has resulted in the NPAs being on a rise during the post-crisis period.[1] This has been accompanied by many bank fiascos that run into billions of rupees. Over the past decade, the bad-loan problem in India has interested bankers and economists to decompose the determinants of NPAs.

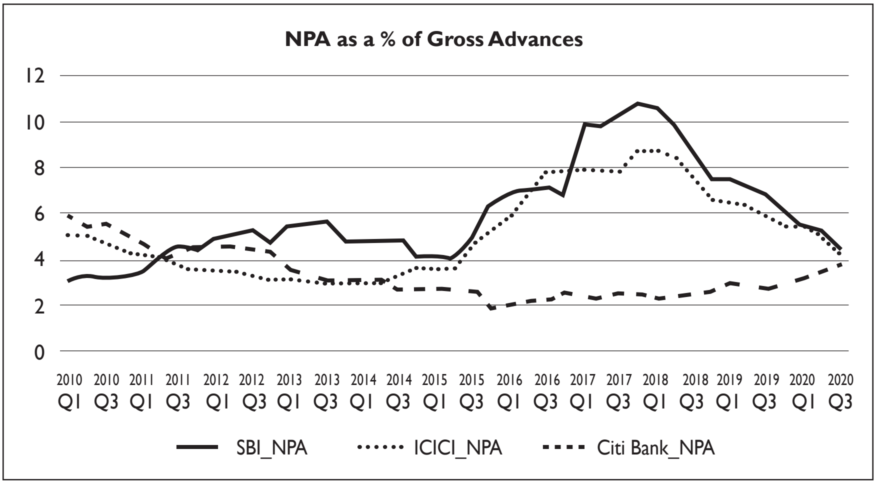
The Banking system is the lifeline of any economy. The Common-man places all his trust on a bank when he deposits with it, his hard-earned life savings. When such a bank fails to meet its obligations toward the Common-man, the entire economy loses trust in the banking system. Banks fail to meet their contractual obligations towards depositors due to the default of borrowers, which in turn is due to under-estimating risks. It is market risk that affects credit risk through concentration risk, resulting in liquidity risk and thus causing reputational risk!

"In order to address the different risks and vulnerabilities that threaten banks around the world, the Basel Committee for Banking Supervision (BCBS) laid down the Basel norms for banking regulation in the 1980s. These have evolved to incorporate new paradigms and complex transactions in banking that are a threat. As part of the Basel III regulations, Stress testing for all banks beyond a certain size, often referred to as 'Systematically Important', is mandatory for robust risk management. One of the largest expenses faced by banks is the 'Provision for Impairment' created against the loans and advances based on the perceived risk of the loans extended by the bank. With the implementation of the International Financial Reporting

1 According to a Forbes report in 2019, NPAs saw a steady rise from 3.8% in 2013-14 to 10.5% in 2017-18

Standards (IFRS-9), which is considered as the current 'Gold standard' in accounting treatment of financial assets, banks need to consider the market risks that could lead to a 'Significant Increase in Credit risk' (SICR) and the contagion risks through macroeconomic modelling of different scenarios which could cause Expected Credit Losses (ECL) in different loan segments of banks. This explains the importance of modelling market and credit risks for appropriate risk and financial reporting. With the motive of global financial stability, the World Bank and IMF launched the Global Financial Stability Assessment Program (FSAP, 1999), that enforces system-wide stress tests to be conducted by Central banks across all economies.

In India, the same market risk drivers have historically impacted Pubic Sector Banks more severely and hence the Government of India has taken various policy measures[2] recently to correct the rising bad-loan problem where the Banks are periodically recapitalized to meet the regulatory capital requirements. The difference in magnitude of NPAs is explained below:



Source: Author's calculations

This has a lot to do how these banks are run. The low-efficiency levels of processing loan documents, red-tapism and significant political influence are the highlights of the Public banks in our country. The Union budget of 2020-21 infused about 350 Billion rupees into the Public sector banks. Each bank that we have analyzed has credit stress tests incorporated as part of their enterprise risk strategy to set sectoral positional limits.

In this study, we have taken a cue from the global best practices in risk

2 Asset Quality Review (AQR - 2015), Prompt Corrective Action Plan (PCA - 2015), Strategic Debt Restructuring (SDR - 2015), Insolvency and Bankruptcy Code (IBC - 2016) and Bank Mergers among others.

management laid down by the regulators and performed a Macro stress test for the Indian banking system by taking an Inter-modelling approach of credit and market risks using the Vector Autoregressive (VAR) framework. By considering quarterly data from 2010 Q1 to 2020 Q3 for variables like commodity and sectoral asset price indices among others, of some of the largest banks in India, few of our inferences and contributions are novel to Indian 'Risk Management' literature.

We have incorporated the current COVID-19 pandemic as a scenario for Stress testing the banking system through the actual adverse movements in the macro-economic and financial variables of our study in the recent past. The VAR model also captured the spillover effect of deterioration in the asset quality of the banking system into the economy and has been able to empirically highlight the 'fault lines' within the banking system and its role in the economy.

The variables that we considered for our analysis proved that the problem of NPAs in the Indian banking system is not just idiosyncratic and customer-specific but has a lot to do with the market conditions and thus, modelling credit and market risks together is the way forward!

Objectives of this Study

- To analyse the evolution and role of the Indian banking system within the broad framework of the Indian economy.
- To estimate a multivariate econometric risk model which explains credit risk as a function of market risk variables for banks in India.
- To perform a stress testing exercise in order to evaluate capital adequacy of the banks.

While all of us are very well aware of the role played by the banking system in the Indian economy, in this study, we will bring out its importance through the negative feedback effects. The Banking sector has evolved from the hegemony of pubic banks to private and foreign banks gaining prominence. The Banking system accounts for about 70% of the Indian Financial system and its technological advancement has increased the penetration of a wide range of services within the Indian diaspora. There has been a steady growth of banking facilities in terms of credit and deposits since the Banking sector reforms in 1991. The costs of banking have substantially reduced since 1992 with the lowering of reserve ratio requirements by the RBI. However, the Public sector banks continue to have the largest share of banking assets in India. We will now move onto studying some of the notable literature in Bank Risk Management from around the world in order to put our subsequent analysis into some perspective.

Review of Literature

The role of the financial system in the economic growth of India was examined by Joshi, S. (2016)who studied the GDP per capita growth, Ratio of M2 to GDP and Ratio of market capitalization of the stock markets to GDP between the years 1991-2013 using time-series data and the OLS regression technique. The results from the analysis clearly show that an increase in Financial deepening through banking channels, NBFCs and stock market capitalization lead to the virtuous cycle of borrowings for productive investments and economic growth. While the equity and bond markets in India saw a steady growth over the years, it is still considered underdeveloped as compared to other South-east economies. This study was reinforced by Kaushal, S. and Ghosh, A(2016) where the importance of banking and financial institutions in the Indian economy was highlighted using the VAR - error correction model and Granger causality test. They studied variables like Insurance volumes, bank credit and economic growth. The authors found that there exists bi-directional causality between insurance and banking services and economic growth. There was a long-term relationship between development of these financial service institutions and economic growth in the country as these form a fundamental part of the financial system and act as important intermediaries for savings and investment. On the other hand, an increase in economic growth also stimulated the increase in banking and insurance services to distribute the benefits of economic prosperity. This was in line with the study done by Ekmekçioğlu, E(2012).

International evidence of the role and importance of the banking system can be observed from the study of Calderón, C., & Liu, L.(2003), who performed a Causality analysis for more than 100 countries between 1900-1994 using the Geweke decomposition causality test. The study confirmed that there existed a uni-directional causality that ran from financial to economic development in all these countries due to greater availability of resources and investment in productive projects in the economies that created a higher amount of jobs and proved the Investment multiplier theory. This was especially true for low-income countries. An empirical analysis for the Palestine economy was conducted by Abusharbeh, M. T.(2017) where he studied GDP growth rates and bank credit for quarterly data from 2000 to 2015 using the OLS regression technique. The author concluded that an increase in bank credits leads to the virtuous cycle of borrowings for the purpose of investment which leads to the creation of jobs, an increase in output and hence economic growth. An increase in deposits by customers and ROI also lead to higher economic growth in the country. Thus, banks are critical for any economy.

Risk modelling for banks has evolved from understanding the Determinants of credit risk to analyzing the inter-dynamics between credit and other risks faced by the banks. In an Indian context Roy, S. G.(2014) used a Panel Regression model by considering the data from 1995-2012 of variables like Bank Net Interest Margins, GDP growth rates, Real effective exchange rates (REER), Wholesale price index (WPI) and the CBOE Volatility index (VIX) based on S&P 500 index. The model estimated that the most significant results were from GDP growth rates, REER and VIX which impacted Bad loans in Indian banks negatively. In another study, the market risk faced by banks was studied on a standalone basis by Danish, M., & Bhat, A. A.(2018). They analyzed the equity risk exposure of Indian banks for the period 2005-14 by employing the Value at Risk (VaR) model and analyzed NIFTY Bank Index, ICICI and SBI Bank daily closing prices for the period. The analysis showed that the share prices of both SBI and ICICI showed excess volatility during the crisis period just like the Bank index. The financial crisis period was also one with greater market exposure. ICICI bank shares indicated the highest risk and NIFTY lowest.

More sophisticated International studies on the standalone modelling of individual risks were contributed by Nikolaidou, E., & Vogiazas,(2014) where the Macroeconomic drivers of Default rates for banks in the Bulgarian economy were studied using the ARDL model that considered different market risk variables like unemployment rate, construction indices, Greek loan loss provisions and long-term bond yield spreads. The data was taken from the period 2001-10 to analyze if the sovereign debt crisis that turned out in Greece had any spillover effects into the Bulgarian markets. However, the results found by the authors state that the Greek debt crisis did not have a very significant impact on the Bulgarian NPA's. The most significant contributors to bad loans in Bulgaria were construction activity, unemployment and credit growth. Thus the drivers were market and not contagion risk. Chakroun, F., & Abid, F. (2014) provided a solution for capital adequacy and risk management through a Dynamic programming algorithm. They employed the Kalman filter approach - dynamic stochastic modelling and analyzed Securities, loans and regulatory capital with stochastic interest rates for Tunisian banks for the period 2004-12. The solution arrived at by the authors helps to arrive at an optimal control solution through a dynamic programming algorithm. The results found that the Banks that are maintaining good amounts of CAR are able to absorb unexpected losses. The model helps in estimating the optimal amount of capital banks must hold along with assets.

The Global Financial crisis has been a game-changer for the Global banking system. There occurred a paradigm shift in the way risk is perceived. Banks all over the world started to adopt an Intermodelling approach to risk spearheaded by the Bank for International Settlements (BIS) which came out with a working paper contributed by Agénor, P. R., & Pereira da Silva, L. A. (2018) to evaluate the macro-prudential framework that exists in a cross-country environment and bring about coordination of policies. The purpose of this paper was to analyze the possibility of International coordination of macro prudential policies. An important takeaway from the analysis was that Global financial stability is being threatened by Spillovers and spillbacks between Advanced and Middle-income economies which call for higher coordination in Macro-prudential policies. The Financial trilemma also proves the point that the internal stability of an economy is not possible unless the International arbitrage is controlled and coordinated with regulation. This paper called for an Intermodelling approach to be adopted by central bankers globally to evaluate vulnerabilities in the banking system. A unique model was presented on behalf of the European Central Bank by the authors Alessandri, P., & Drehmann, M(2009) that could integrate the two largest sources of risk for any bank - Credit and Interest rate risk in the loan book to determine the optimal capital allocation level in UK banks by employing the Global Vector Autoregressive model (GVAR). The model considered variables like Real GDP, CPI Inflation, Real Equity prices, Overnight nominal interest rates, real exchange rates, 20-year bond interest rates and Oil prices. The research stated that the capital requirements in the integrated capital model by combining the two largest sources of risk, would be more than the simple economic capital. An attempt to understand if the regulatory capital provided against foreign currency loans is adequate using the interaction between credit and market risk of a bank using the Global VAR time series model and Monte Carlo simulations were undertaken by Breuer, T., Jandacka, M., Rheinberger, K., & Summer, M.(2008).They studied Real GDP, 3- month LIBOR and exchange rate to the USD for 1980-2005. This study showed that the foreign currency loans were affected by both market and credit risk factors and there is a need to show the Integrated risk, which affects the bank in a compounded way.

This Intermodelling approach has been adopted for notable Stress Testing exercises conducted for banks across the globe. The International Monetary Fund (IMF)brought out a Macro-Prudential Stress Test of Non-Performing Loans (NPLs) for the Middle East countries by employing the Dynamic Panel VAR model for 1998-2010. This was conducted by Espinoza, R. A., & Prasad, A. (2010). The variables studied were NPL, Non-oil real GDP growth, VIX Index, world trade growth, interest rates, stock market returns, size of capital, credit growth, equity/size of assets, expenses/ average assets (efficiency). The study found that both macroeconomic factors as well as bank-specific factors, explain rising NPLs in GCC banks. There was strong evidence to show an inverse relationship between GDP growth and NPLs. Among the bank specific factors, expansion and efficiency were significant. The Bank of England brought out a working paper to perform a macroeconomic stress testing exercise to confirm the strength and stability of all the banks in the UK, contributed by bankers Hoggarth, G., Sorensen, S., & Zicchino, L.(2005) where they studied the relationship between the default rates of banks and macro-variables like output gap, interest rates, and inflation using the Vector Autoregressive (VAR) model to understand how banks responded to severe economic contractions. They had employed quarterly data from 1993 onwards. They had aided their research with post-VAR estimations like the Variance decomposition and IRF, where they found evidence of negative relationship between output contraction and default rates. This was the most significant of all effects in their macroeconomic model. Bank of Canada conducted a study to investigate the loan losses in portfolios for Canadian banks as a function of the different sectors in which these loans reside. This was brought out by Misina, M., Tessier, D., & Dey, S. (2006) who performed a Stress test using the Vector Autoregressive (VAR) model considering the manufacturing, construction, retail, accommodation and food services portfolio losses to be a function of Macroeconomic variables like GDP growth, CPI growth, US interest rates (real) and US real GDP growth rates between the period 1987-2005. The authors performed different combinations of stress tests which were appropriate for the Canadian banking system and found that credit risk at a sectoral level was largely explained by systematic financial and macroeconomic factors. This was a novel contribution by considering sectoral PDs. The 'Hong Kong Monetary authority' developed a framework for stress testing bank's liquidity risk in a paper presented by authors Wong, T. C., & Hui, C. H.(2009) where they found that the shocks in asset price led to market risk and further caused credit and liquidity risk. They employed the Monte Carlo Simulation technique to understand the interactions between market and default risk. They studied the impact of Interest rates, LIBOR and movement in indices like Hang Seng, World Equity, ABX and MSCI on the market value of assets like cash, short-term loans disbursed to customers and inter-bank loans and equity positions held by banks. The results mainly highlighted the importance of liquidity buffers for all commercial banks in an Intermodelling framework that showed the compounding effects of market and default risks in banking books. National Bank of Slovakia proposed a Macro Stress Test to assess the impact of a slowdown in the Slovak economy on the Slovak banking sector through the interactions of credit and market risk drivers. This was presented by Zeman, J., & Jurca, P.(2008) using the Vector error correction model (VECM) by analysing variables like NPL ratios, Interest rates, GDP and exchange rates for the period 1997-2006. The analysis showed that a standalone growth in Interest rates would negatively impact banks through a direct channel due to a fall in the price of government bonds and long-term interest rate assets or through an indirect channel on the short-term loans with floating rate of interest that could worsen the position of debtors.

In the Indian context, a Macro stress test has been conducted only by a few authors. The macroeconomic and domestic factors that lead to NPAs in India were analyzed by Banerjee, S., & Murali, D.(2015) then performed a Stress test to confirm the ability of banks to deal with these adverse shocks. They employed the Vector Autoregressive (VAR) model in addition to tests like Granger causality, FEVD and IRF on variables like GDP output gap, exchange rate, interest rate, inflation rate, Cash reserve ratios (CRR) and Net FII flows between the periods 1997-2003 and 2003-12. The results from the analysis showed that the NPAs were negatively affected by exchange rates, Net FII's output gap and Interest rates. Portfolio funds from FIIs played a major role in bad loans. The currency, interest rates provided on deposits and the GDP were all instrumental in adversely impacting the portfolio. Another stress testing exercise in an Indian context was conducted by Niyogi Sinha Roy, T., & Bhattacharya, B. (2011)to study the impact of exogenous shocks in Public Sector Banks and the feedback effects such a deterioration in asset quality had on the economy at large. They employed the Vector Autoregressive (VAR) methodology on macroeconomic variables like REPO, Reverse REPO, Bank rate, REER, Output gap and inflation rate (CPI) from 1995 to 2007. They found that a higher interest rate regime increased the Probability of defaults as was seen in the case of REPO and Reverse REPO. These results were reinforced by a similar study undertaken by Dua, P., & Kapur, H. (2017). using the Panel Cointegration approach with data from 1997 to 2014. They had tried to understand the impact of Macroeconomic variables like GDP growth rates, inflation, exchange rate and Idiosyncratic risk variables like profitability and size indicators of individual banks on the Default ratios of different banking groups in India. The main findings from their research were that Credit quality of banks was largely pro-cyclical in nature and increased significantly during recessionary periods as compared to normal times. Credit quality was significantly and negatively affected to economic risk, price risk, currency risk and bank profitability. On the other hand, it was positively and significantly related to interest rate risk. The results from Stress tests indicated that in an Indian context, there has to be a greater emphasis on the stability of economic and price risk especially during economic contractions. Our unique contribution to the 'Bank risk management' literature lies in using the VAR model in an Indian context for the recent 'extraordinary' period by decomposing credit risk into concentration risk and analyzing its inter-relationship with market risk at a disaggregated level.

Data and Econometric Model

Among the various approaches towards performing a Macro Stress Test, we are going to adopt an Econometric one, which can quantify the impact of Macroeconomic and Market risk variables on Credit risk and then capture the negative spillover effects as mandated by the BIS. The main variable of our study is the 'Default ratio' – measured as the ratio of Gross NPA to Gross lending of banks. This is a Financial Stability Indicator (FSI) given by World Bank. We have considered this at a Disaggregated level by taking a few 'Systematically Important Financial Institutions' (SIFIs) in India – State Bank of India (SBI), ICICI Bank and Citibank. These are the largest Public, Private and Foreign Banks, respectively and represent the entire Indian banking system since any systematic risk driver that affects them affects all other banks.

The Macroeconomic variables taken in this study were the Nominal GDP growth rates, REPO rates and Nominal exchange rates for all the three banking groups. These represent the facets of Economic, Interest-rate and Currency risk as part of the Market risk. In order to select the constituents of concentration risk, we had to carefully study the financial statements of these banks and understand where the major chunk of loans and NPAs were residing. For SBI, we have considered the BSE Sectoral stock market indices of Real estate and Public enterprises. For ICICI, we have taken the 'Metals and Mining' and Energy indices and only for Citibank we have taken a broad indicator called 'Business Confidence Index' indicating Corporate PD. We have also taken the 'Agricultural Price Index' for all the banks representing the PD of Farm loans being a Priority sector lending enforced by the RBI on the Indian banking system. We have used quarterly data from '2010 Q1 to 2020 Q3' taken in Natural log form given as follows.

Table-1: Variables Used in this Study with Notations

Variables	Notation Used	Source of Data
Default ratio of SBI	NPA_SBI	Moneycontrol
Default ratio of ICICI Bank	NPA_ICICI	Moneycontrol
Default ratio of Citibank	NPA_CITI	Quarterly filings of Citigroup N.A
Nominal GDP	GDP	RBI database
REPO rate	REPO	RBI database
Nominal exchange rate	EXR	RBI database
Real estate stock market Index	BSE_REA	BSE database
Public sector stock market Index	BSE_PSU	BSE database
Metals and miningstock market Index	BSE_MET	BSE database
Energy sector stock market Index	BSE_ENE	BSE database
Business Confidence Index	BUS_CON	OECD database
Agricultural Wholesale Price Index	AGRI	Ministry of Agriculture, Govt. of India

Source: Author's formulations

The Vector Autoregressive (VAR) methodology has been the model of choice for studies done by the Bank of England, Bank of Canada, Bank of Japan, European Central Bank and IMF in their Financial stability analysis of the respective economies. Its utility as a multivariate model and the Post-VAR estimations involved makes it a popular choice in the post-GFC period.

All the variables can be expressed as a function of each other and thus all variables are endogenous in the system. The Unrestricted Standard VAR equations are given by:

$$X_t = \alpha_{10} + \beta i\, X_{t-p} + \delta i\, Y_{t-p} + \text{ƙ}i\, Z_{t-p} + \epsilon_{1t} \longrightarrow \quad ...1$$

$$Y_t = \alpha_{20} + \beta i\, X_{t-p} + \delta i\, Y_{t-p} + \text{ƙ}i\, Z_{t-p} + \epsilon_{2t} \longrightarrow \quad ...2$$

$$Z_t = \alpha_{30} + \beta i\, X_{t-p} + \delta i\, Y_{t-p} + \text{ƙ}i\, Z_{t-p} + \epsilon_{3t} \longrightarrow \quad ...3$$

In the above VAR(p) equations, X_t, Y_t and Z_t are the endogenous variables taken at the time period 't' and are expressed as a function of each other using vectors, considering the lags up to the time period 't-p'. 'βi', 'ϒi' and 'ƙi' are the slope coefficients or parameters being estimated.'α' are the constant vectors and 'εt' vectors are error terms / innovations following the White Noise process. This technique of VAR is appropriate given our objectives since there exists a contemporaneous and lagged intricate relationship between the macroeconomic, financial and banking sector variables, which have not been theoretically proven yet, but has been empirically investigated by researchers repeatedly for various economies globally.

Empirical Analysis and Findings

We first checked for the stationarity of all our variables. For the purpose of testing unit root, we have employed the Augmented Dickey Fuller (ADF) test. When the variables were not stationary at levels, they were checked at the first difference I(1). The results are as follows:

Table-2: Results from Unit Root Testing

Variables	Levels		First Difference		Inference
	Statistic	P-value	Statistic	P-value	
NPA_SBI	-0.162	0.992	-5.352	0.000	I(1)
NPA_ICICI	-1.216	0.894	-7.449	0.000	I(1)
NPA_CITI	-0.216	0.991	-6.179	0.000	I(1)
GDP	-2.232	0.460	-6.249	0.000	I(1)
REPO	-2.798	0.206	-11.401	0.000	I(1)
EXR	-1.808	0.683	-6.002	0.000	I(1)
BSE_REA	-2.657	0.259	-5.960	0.000	I(1)

Variables	Levels		First Difference		
	Statistic	P-value	Statistic	P-value	Inference
BSE_PSU	-1.872	0.651	-5.786	0.000	I(1)
BSE_MET	-1.980	0.595	-5.011	0.001	I(1)
BSE_ENE	-2.317	0.416	-8.370	0.000	I(1)
BUS_CON	-3.208	0.097	-4.867	0.002	I(1)
AGRI	-2.872	0.182	-10.727	0.000	I(1)

Critical values were taken at the 1% level of significance

(Source: Author's calculations)

Determination of Optimal Lag Length

In order to determine the lag length of the VAR model, we used the Akaike Information Criteria (AIC) and the Schwarz Bayesian Criteria (SBC). The working rule with these scientific criteria is to select the lowest non-zero lag by comparing both criteria. The optimal lag length for our VAR model was found to be three quarters for all the three banking groups. After performing these initial diagnostics, we move onto estimating the VAR equations for the banks.

VAR Model Results and Insights

A Dummy variable was considered for all banks accounting for '2014 - Q2' – Global Oil price shock and '2019 – Q2' for a sudden spike in the agricultural prices due to a supply shock.

Table-3: VAR Results of State Bank of India (Public Sector banks)

Variables	D(NPA_SBI)	D(GDP)	D(REPO)	D(EXR)	D(BSE_REA)	D(BSE_PSU)	D(AGRI)
D(NPA_SBI (-1)	-0.115 [0.467]	0.108 [0.773]	**0.084** **[1.167]**	0.043 [0.506]	-0.184 [-0.480]	-0.081 [-0.363]	0.002 [0.042]
D(NPA_SBI (-2)	0.391 [2.017]	0.089 [0.810]	0.012 [0.210]	-0.099 [-1.488]	0.655 [2.175]	0.548 [3.131]	-0.035 [-0.850]
D(NPA_SBI (-3)	0.442 [1.664]	**-0.127** **[-0.845]**	0.065 [0.843]	0.025 [0.277]	-0.327 [-0.792]	-0.220 [-0.917]	-0.0007 [-0.012]
D(GDP(-1)	**-0.581** **[-1.301]**	0.119 [0.472]	0.065 [0.501]	-0.124 [-0.805]	0.535 [0.769]	0.513 [1.27]	-0.0180 [-0.188]
D(GDP(-2)	0.542 [1.463]	-0.762 [-3.64]	-0.052 [-0.478]	0.134 [1.045]	-0.394 [-0.683]	-0.254 [-0.759]	0.1097 [1.381]
D(GDP(-3)	-0.145 [-0.488]	-0.200 [-1.191]	-0.061 [-0.707]	0.034 [0.334]	-0.037 [-0.081]	0.044 [0.167]	0.036 [0.581]
D(REPO(-1)	-0.922 [-1.368]	0.486 [1.275]	0.356 [1.810]	-0.296 [-1.276]	0.415 [0.396]	0.532 [0.876]	-0.065 [-0.452]
D(REPO(-2)	-1.606 [-3.113]	0.187 [0.642]	0.156 [1.036]	0.280 [1.574]	-0.207 [-0.258]	0.195 [0.418]	-0.005 [-0.049]
D(REPO (-3))	**0.993** **[1.678]**	-0.032 [-0.096]	-0.072 [-0.415]	0.004 [0.022]	-0.318138 [-0.345]	-0.229 [-0.429]	-0.003 [-0.025]
D(EXR(-1)	-1.138 [-1.141]	0.629 [1.115]	-0.129 [-0.442]	0.010 [0.031]	0.171 [0.110]	0.316 [0.350]	-0.079 [-0.373]

Variables	D(NPA_ SBI)	D(GDP)	D(REPO)	D(EXR)	D(BSE_ REA)	D(BSE_ PSU)	D(AGRI)
D(EXR(-2)	-0.360 [-0.424]	0.226 [0.470]	-0.797 [-3.216]	0.348 [1.190]	-0.859 [-0.650]	-0.952 [-1.239]	0.027 [0.149]
D(EXR(-3)	**-1.608** **[-1.358]**	0.196 [0.293]	0.306 [0.885]	-0.763 [-1.868]	2.472 [1.342]	2.353 [2.198]	0.017 [0.067]
D(BSE_REA(-1)	-0.171 [-0.670]	-0.124 [-0.862]	-0.126 [-1.692]	-0.011 [-0.126]	0.210 [0.530]	-0.047 [-0.208]	0.008 [0.152]
D(BSE_REA(-2)	**-0.636** **[-2.599]**	0.086 [0.622]	-0.145 [-2.038]	0.137 [1.621]	-0.616 [-1.617]	-0.247 [-1.116]	-0.045 [-0.858]
D(BSE_REA(-3)	-0.677 [-2.007]	-0.025 [-0.134]	0.188 [1.915]	-0.084 [-0.728]	0.254 [0.484]	0.294 [0.964]	0.038 [0.531]
D(BSE_PSU (-1)	**-0.447** **[-1.111]**	0.531 [2.337]	0.107 [0.919]	-0.098 [-0.710]	0.045 [0.073]	0.534 [1.469]	-0.110 [-1.285]
D(BSE_PSU (-2)	1.054 [2.673]	0.133 [0.595]	-0.007 [-0.061]	-0.058 [-0.427]	0.562 [0.917]	-0.007 [-0.020]	0.01562 [0.184]
D(BSE_PSU (-3)	0.723 [1.523]	0.004 [0.016]	-0.070 [-0.508]	0.006 [0.038]	-0.144 [-0.196]	-0.300 [-0.699]	-0.004 [-0.004]
D(AGRI (-1)	0.032 [0.023]	1.267 [1.565]	0.054 [0.129]	-0.018 [-0.036]	-0.063 [-0.028]	-0.218 [-0.168]	-0.496 [-1.618]
D(AGRI (-2)	0.497 [0.404]	-1.404 [-2.017]	0.823 [2.289]	0.456 [1.074]	-2.510 [-1.309]	-1.814 [-1.629]	0.411 [1.559]
D(AGRI (-3))	**-0.949** **[-0.757]**	-1.472 [-2.077]	0.040 [0.111]	0.427 [0.988]	-1.1308 [-0.579]	-0.501 [-0.442]	0.414 [1.541]
DUM (-1)	-0.174 [1.560]	0.209 [3.330]	0.024 [0.747]	-0.020 [-0.525]	0.016 [0.093]	0.173 [1.726]	0.020 [0.860]
C	0.048 [1.423]	0.033 [1.697]	-0.007 [-0.717]	0.009 [0.833]	0.015 [0.288]	-0.019 [-0.642]	0.004 [0.573]
R squared	**0.727**	0.835	0.883	0.583	0.612	0.718	0.760
DW statistic	**1.629**	1.911	2.04	2.11	1.677	2.248	2.048

Source: Author's calculations

The most significant impact on the NPAs of SBI came from the Real estate sector as indicated by the t-stat of '-2.599' with a lag of two quarters. A deterioration in the financial position of real estate companies over time, increased the Sectoral Defaults on the SBI books. The second variable, apart from the lagged values of NPA, which impacted the default ratios of SBI the most, is the REPO rates (Miroslav Misina, 2006) as indicated by the t-stat of '1.678' with a lag of 3 quarters. An increase in the policy rates by the central bank may not immediately result in an increase in defaults by borrowers, given the pace of monetary policy transmission. A persistent change or stance in the policy rates over a few quarters would most likely result in an increased probability of default. Apart from the agricultural prices, all the other variables impacted NPAs of SBI significantly apriori to the economic theory and logic.

The Asset quality of the country's largest lender certainly had a significant spillover effect on the policy rates, reflected by a t-stat of '1.167'. Piling up of NPAs in a systematically important bank like SBI has the power to influence the monetary policy transmission mechanism through the credit channel and thereby push up the policy rates to reduce credit growth in the economy. The bank also had negative feedback on the GDP, given by the t-stat of '-0.845' with a lag of 3 quarters, indicating a slower impact on the real economy as compared to the financial economy. This spillover ensures that our model is sophisticated as per the BIS.

Table-4: VAR Results of ICICI Bank (Private Sector Banks)

Variables	D(NPA_ ICICI)	D(GDP)	D(REPO)	D(EXR)	D(BSE_ MET)	D(BSE_ ENE)	D(AGRI)
D(NPA_ICICI(-1)	0.432	-0.040	0.071	0.309	0.269	-0.229	-0.038
	[1.700]	[-0.229]	[0.354]	[2.280]	[0.396]	[-0.633]	[-0.365]
D(NPA_ICICI(-2)	-0.036	0.099	-0.189	-0.152	0.064	0.102	0.082
	[-0.132]	[0.528]	[-0.882]	[-1.057]	[0.088]	[0.265]	[0.731]
D(NPA_ICICI(-3)	**0.363**	0.010	0.062	-0.016	-0.080	-0.149	-0.150
	[1.787]	[0.071]	[0.383]	[-0.149]	[-0.147]	[-0.516]	[-1.787]
D(GDP(-1))	0.003	-0.169	-0.279	-0.238	0.030	-0.089	-0.122
	[0.006]	[-0.634]	[-0.911]	[-1.156]	[0.028]	[-0.163]	[-0.764]
D(GDP(-2)	**-0.215**	-0.178	-0.009	-0.019	-0.197	-0.353	-0.031
	[-1.339]	[-1.605]	[-0.067]	[-0.225]	[-0.458]	[-1.550]	[-0.464]
D(GDP(-3)	-0.276	-0.082	-0.164	0.203	-0.569	-0.357	-0.053
	[-1.298]	[-0.556]	[-0.975]	[1.791]	[-1.000]	[-1.182]	[-0.606]
D(REPO(-1)	-0.200	0.007	0.454	-0.356	0.167	-0.423	0.145
	[-0.533]	[0.028]	[1.532]	[-1.787]	[0.167]	[-0.797]	[0.935]
D(REPO(-2)	-0.589	0.035	0.127	0.769	0.334	0.000	-0.161
	[-1.106]	[0.094]	[0.300]	[2.712]	[0.234]	[-6.5e-05]	[-0.730]
D(REPO(-3)	**0.462**	-0.231	-0.089	-0.212	-0.432	-0.178	0.205
	[1.156]	[-0.838]	[-0.280]	[-0.997]	[-0.404]	[-0.314]	[1.240]
D(EXR(-1)	-0.378	0.286	0.408	0.005	1.572	0.359	-0.142
	[-0.775]	[0.848]	[1.057]	[0.019]	[1.205]	[0.519]	[-0.706]
D(EXR(-2)	**-0.678**	0.199	-0.327	0.004	0.010	-0.102	0.137
	[-1.471]	[0.625]	[-0.897]	[0.015]	[0.008]	[-0.156]	[0.717]
D(EXR(-3)	-0.423	-0.065	-0.204	-0.194	0.353	0.753	-0.049
	[-0.978]	[-0.217]	[-0.595]	[-0.844]	[0.305]	[1.229]	[-0.271]
D(BSE_MET(-1)	0.198	0.009	0.136	-0.115	0.094	0.261	-0.028
	[1.027]	[0.067]	[0.887]	[-1.120]	[0.182]	[0.952]	[-0.352]
D(BSE_MET(-2)	0.299	-0.032	0.109	-0.130	0.387	0.331	0.038
	[1.515]	[-0.233]	[0.697]	[-1.234]	[0.734]	[1.182]	[0.462]
D(BSE_MET(-3)	**-0.379**	0.163	0.041	-0.059	-0.270	0.162	-0.064
	[-1.956]	[1.220]	[0.265]	[-0.574]	[-0.521]	[0.587]	[-0.802]
D(BSE_ENE(-1)	-0.516	-0.109	-0.285	0.213	0.268	-0.513	-0.076
	[-1.511]	[-0.464]	[-1.054]	[1.174]	[0.293]	[-1.060]	[-0.541]
D(BSE_ENE(-2)	**-0.616**	-0.098	-0.092	0.070	-0.189	-0.526	0.047
	[-1.679]	[-0.387]	[-0.316]	[0.359]	[-0.192]	[-1.011]	[0.307]
D(BSE_ENE(-3)	-0.104	-0.081	-0.074	0.192	0.286	0.029	0.026
	[-0.294]	[-0.333]	[-0.264]	[1.019]	[0.303]	[0.058]	[0.177]
D(AGRI (-1)	0.168	-0.206	-0.198	-0.193	-0.829	-1.905	-0.465
	[0.241]	[-0.429]	[-0.360]	[-0.519]	[-0.445]	[-1.929]	[-1.616]

Variables	D(NPA_ICICI)	D(GDP)	D(REPO)	D(EXR)	D(BSE_MET)	D(BSE_ENE)	D(AGRI)
D(AGRI (-2)	-0.900	0.004	0.162	0.596	-1.853	-2.443	-0.231
	[-1.025]	[0.006]	[0.232]	[1.276]	[-0.789]	[-1.961]	[-0.634]
D(AGRI(-3)	**-1.131**	-0.185	-0.685	1.022	-0.944	-0.382	-0.308
	[-1.197]	[-0.283]	[-0.916]	[2.032]	[-0.373]	[-0.285]	[-0.788]
DUM(-1)	0.135	-0.013	0.012	-0.051	0.121	0.012	0.033
	[1.575]	[-0.217]	[0.182]	[-1.120]	[0.529]	[0.095]	[0.925]
C	0.053	0.025	0.022	-0.008	0.012	0.093	0.020
	[1.229]	[0.837]	[0.661]	[-0.352]	[0.105]	[1.532]	[1.121]
R-squared	**0.800**	0.909	0.680	0.633	0.431	0.675	0.669
DW Stat	**1.440**	1.794	1.976	2.186	2.076	2.187	1.738

Source: Author's calculations

The regression equation pertaining to ICICI Bank as part of the VAR model had a very good explanatory power as indicated by the R-squared of '0.80.' The most significant variables that influenced NPAs of ICICI Bank negatively were the market indices of 'Metals and Mining' indicated by t-stat of '-1.956' and 'Energy' with t-stat of '-1.679'. The metals sector contributed to the NPAs of the bank with a lag of 3 quarters and the Energy sector with a lag of 2 quarters. This could be due to the fact that these sectors require huge capital investments spread out across long gestation periods. The bank was also significantly and negatively affected by the Nominal exchange rates (Murali, 2015) as the export credit extended to trade and services industries is a highlight of all the private sector banks, with ICICI Bank not being an exception. The impact was seen with a t-stat of '-1.471' and a lag of 2 quarters as the impact is due to persistent rupee depreciation. The other variables were also significant in the VAR model.

Table-5: VAR Results of Citibank (Foreign banks)

Variables	D(NPA_CITI)	D(GDP)	D(REPO)	D(EXR)	D(BUS_CON)	D(AGRI)
D(NPA_CITI(-1)	0.001	0.452	-0.002	-0.138	0.043	-0.046
	[0.004]	[1.407]	[-0.016]	[-1.085]	[0.960]	[-0.433]
D(NPA_CITI(-2)	-0.043	-0.039	-0.095	0.009	-0.014	0.078
	[-0.305]	[-0.228]	[-1.293]	[0.131]	[-0.592]	[1.372]
D(NPA_CITI(-3)	**0.134**	0.067	-0.045	-0.082	-0.009	-0.033
	[0.875]	[0.354]	[-0.559]	[-1.104]	[-0.342]	[-0.531]
D(GDP(-1)	0.301	0.030	-0.297	-0.193	-0.033	-0.159
	[1.640]	[0.134]	[-3.088]	[-2.182]	[-1.033]	[-2.136]
D(GDP(-2)	**-0.386**	-0.543	0.120	0.134	0.014	0.010
	[-1.770]	[-2.035]	[1.042]	[1.271]	[0.372]	[0.113]
D(GDP(-3)	-0.195	0.179	-0.087	0.039	0.032	-0.029
	[-1.095]	[0.821]	[-0.935]	[0.457]	[1.045]	[-0.400]
D(REPO(-1)	-0.879	0.160	0.007	-0.153	0.031	0.012
	[-1.964]	[0.292]	[0.029]	[-0.710]	[0.409]	[0.068]

Variables	D(NPA_ CITI)	D(GDP)	D(REPO)	D(EXR)	D(BUS_ CON)	D(AGRI)
D(REPO(-2)	**0.861**	0.252	0.314	0.372	0.018	-0.026
	[2.013]	[0.482]	[1.399]	[1.802]	[0.240]	[-0.148]
D(REPO(-3)	0.623	-0.385	-0.277	-0.145	-0.131	0.177
	[1.201]	[-0.608]	[-1.017]	[-0.578]	[-1.471]	[0.839]
D(EXR(-1)	-0.176	0.262	0.543	0.076	0.115	0.014
	[-0.387]	[0.471]	[2.274]	[0.346]	[1.470]	[0.077]
D(EXR(-2)	-0.150	-0.328	-0.252	0.110	-0.067	0.011
	[-0.381]	[-0.682]	[-1.220]	[0.580]	[-0.994]	[0.068]
D(EXR(-3)	**0.172**	-0.521	-0.362	-0.359	0.036	0.076
	[0.402]	[-0.997]	[-1.614]	[-1.741]	[0.483]	[0.440]
D(BUS_CON(-1)	4.483	-1.407	0.812	-1.179	0.718	0.787
	[3.100]	[-0.796]	[1.068]	[-1.688]	[2.890]	[1.341]
D(BUS_CON(-2)	**-3.814**	2.263	1.043	-0.243	-0.495	-0.950
	[-1.831]	[0.889]	[0.953]	[-0.241]	[-1.383]	[-1.123]
D(BUS_CON(-3)	-3.412	1.281	2.756	-0.396	0.461	-0.024
	[-1.482]	[0.455]	[2.280]	[-0.356]	[1.165]	[-0.026]
D(AGRI(-1)	**-1.389**	0.764	-0.024	-0.076	-0.352	-0.694
	[-1.901]	[0.855]	[-0.063]	[-0.214]	[-2.802]	[-2.338]
D(AGRI(-2)	-1.731	1.316	1.239	-0.215	0.296	0.241
	[-1.615]	[1.004]	[2.201]	[-0.415]	[1.605]	[0.553]
D(AGRI(-3)	-1.392	1.156	0.717	0.247	0.159	-0.089
	[-1.353]	[0.919]	[1.327]	[0.498]	[0.896]	[-0.214]
DUM(-1)	-0.139	0.220	0.027	0.016	0.011	-0.021
	[-2.706]	[3.507]	[0.992]	[0.662]	[1.270]	[-0.998]
C	0.039	0.004	-0.010	0.007	-0.003	0.013
	[1.673]	[0.141]	[-0.780]	[0.582]	[-0.695]	[1.355]
R-squared	**0.769**	0.615	0.810	0.593	0.742	0.571
DW stat	**1.961**	2.101	1.854	1.890	1.863	2.203

Source: Author's calculations

The most significant determinant of Default ratios of Citibank as per our model is the REPO rate with a t-stat of '2.01'. This is consistent with 'Retail loans' being the major chunk of loans given by the bank in India in the form of credit cards and REPO being its major determinant. The next significant driver in the model was the Agricultural Price Index with a t-stat of '-1.90,' which reflects the commitment of the bank towards the agricultural Priority sector lending. This was followed by the Business Confidence Index with a t-stat of '-1.83' and GDP with '-1.77'. The impact of real economy and production activities was felt with a lag of 2 quarters.

VAR Stability Diagnostics

After estimating the VAR equations, we need to check for the stability of the model. We used the Characteristic polynomial test to check if all the roots had a modulus value <1. It was found that all the roots were within the unit circle and thus, the VAR model was found to be stable. This is a prerequisite for estimating the Standard errors and deriving the Impulse responses. We complemented our VAR model with some often used post-VAR estimations as follows.

VAR Granger Causality Tests

This is a popular multi-variate causality test employed specifically with dynamic models like VAR, VECM and ARDL to understand which variables along with all their lagged values, are significant in the equation of another variable within the dynamic system. The decision rule used in this test is Chi-squared statistic above '7.0' with p-value less than '0.05'. Only those variables that Granger caused the dependent variable are presented below bank-wise.

Table-6: VAR Granger Causality Test of SBI

Dependent variable: D(NPA_SBI)			
Excluded	**Chi-sq.**	**df**	**Prob.**
D(REPO)	14.21094	3	0.0026
D(BSE_REAL)	10.61151	3	0.014
D(BSE_PSU)	9.41738	3	0.0242
Joint Significance	33.42513	21	0.0417
Dependent variable: D(BSE_PSU)			
Excluded	**Chi-sq.**	**df**	**Prob.**
D(NPA_SBI)	11.47657	3	0.0094

Source: Author's calculations

There was a uni-directional causality from REPO(Drehmann, 2009) and Real estate to the NPAs of SBI. However, a bi-directional causality existed between Public Sector undertakings and SBI Defaults, reflecting the relationship that exists between Public banks and companies. The Joint significance of the variables considered for studying SBI Defaults was quite high.

Table-7: VAR Granger Causality results of ICICI Bank

Dependent Variable: D (NPA_ICICI)			
Excluded	**Chi-sq.**	**df**	**Prob.**
D(BSE_MET)	10.6884	3	0.0135
Joint Significance	26.04744	21	0.2046

Source: Author's calculations

There existed a uni-directional causality running only from the 'Metals and Mining' sector to the NPAs of ICICI Bank, indicated by the Chi-squared statistic and p-values. This reinforced the results obtained from the VAR model of the bank. This sector enjoys a large share in the credit pie of ICICI bank and thus had a significant explanatory power in the NPAs of the bank.

Table-8: VAR Granger Causality Results of Citibank

Dependent Variable: D (NPA_CITI)			
Excluded	**Chi-sq.**	**df**	**Prob.**
D(GDP)	9.055235	3	0.0286
D(REPO)	14.79382	3	0.002
D(BUS_CON)	16.15823	3	0.0011
Joint Significance	54.2059	18	0.0001

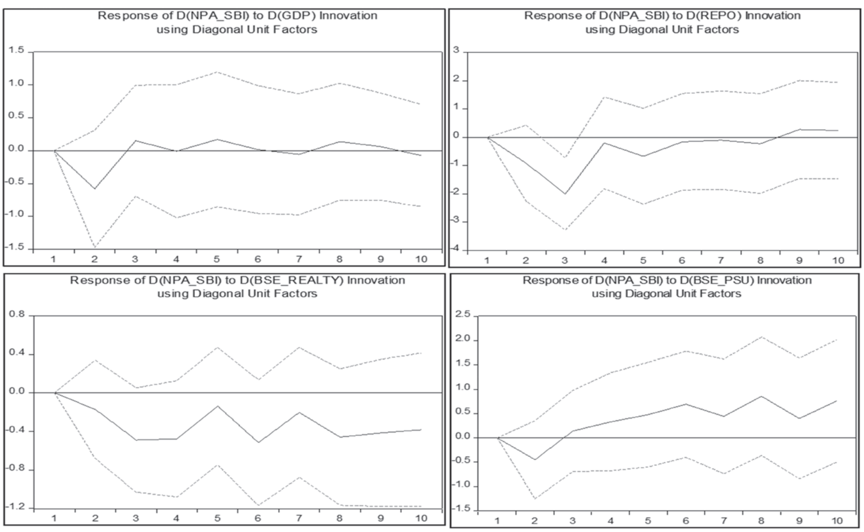
Source: Author's calculations

The results from the Granger causality tests indicate a uni-directional causality from REPO, Business Confidence Index and GDP to the NPAs of Citibank. The most significant causality was from Business Confidence Index, followed by REPO and GDP. (Prasad, 2010) These Granger causality results are important to identify significant drivers of credit risk and analyze the responses of NPAs to impulses given to those variables over time.

Results from the Impulse Response Functions (IRF)

This is the most important component of the VAR framework, where we analyze the behaviour of the endogenous variables for a one-time exogenous shock introduced into the model through the innovation terms. For our analysis, we have measured innovations in terms of diagonal unit factors. The ordering of the variables for performing this analysis is paramount and hence we follow the Choleski ordering same as the VAR model and FEVD test in order to structurally separate the shocks for meaningful interpretation. We first look at the SBI case.

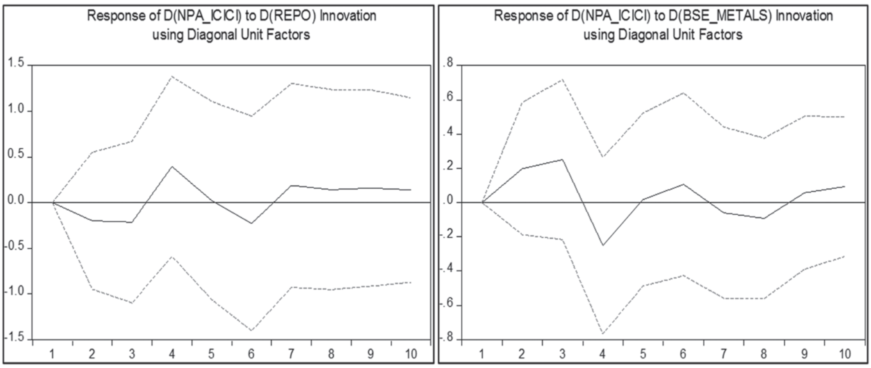
Figure-2: Impulse Response Functions of SBI (Public Sector Banks)



Source: Author's formulations

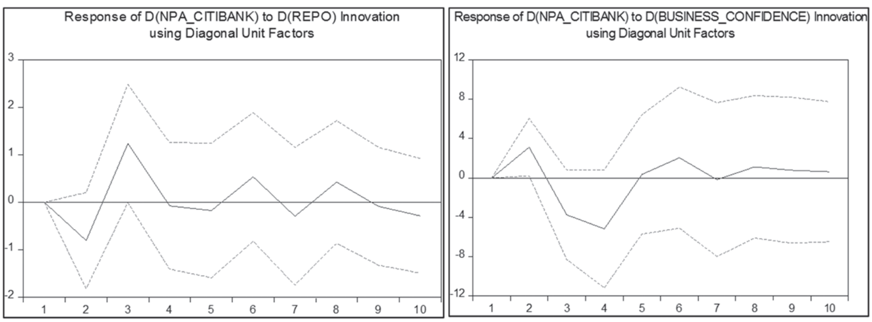
When a 1% positive innovation is introduced to GDP, NPA falls by 0.5%. Since our methodology makes the assumption of linearity, a 1% contraction in GDP must spike the NPA within two quarters of introducing a negative innovation of the same measure. The NPAs of SBI increased by close to 2% for an increase in the REPO by 1% (100 bps) after three quarters. This was the most significant response of NPA for an impulse introduced into the dynamic system. The NPAs of the bank rose by about 0.4% for a fall in the BSE Realty index by 100 bps, within three quarters and for a fall in the BSE PSU index by the same amount within a quarter of giving such a negative shock. These shocks did not stabilize even within 10 quarters which reflects the long-term impact these sectors have on the bad loans of the bank. The other variables did not have a very significant response on NPAs when shocks were introduced, which is consistent with our Granger Causality tests. Let us now consider the ICICI Bank case.

Figure-3: Impulse Response Functions of ICICI Bank (Private Sector Banks)



Source: Author's formulations

Figure-4: Impulse Response Functions of Citibank (Foreign banks)

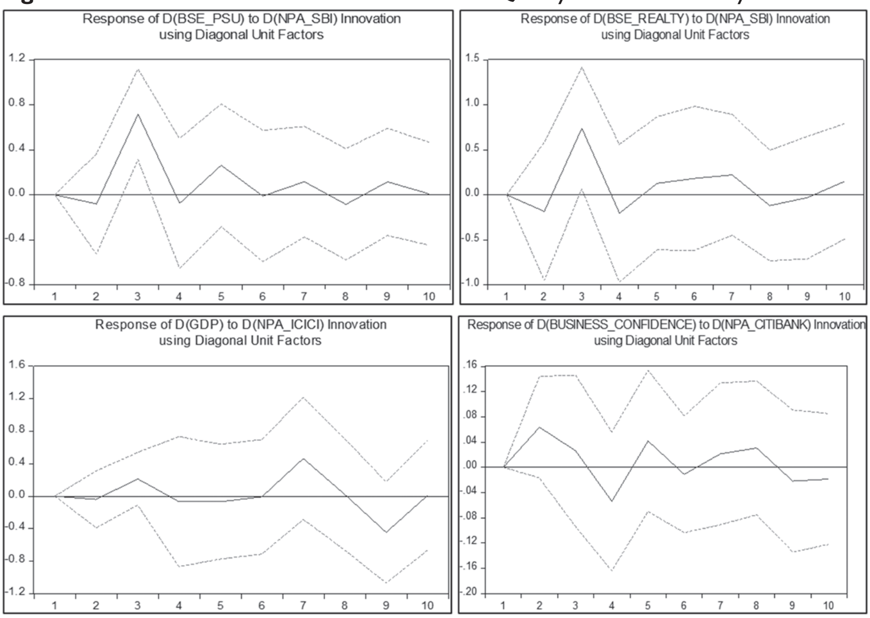


Source: Author's formulations

The most significant impact on the NPAs of ICICI bank came from REPO rates and the Metals and Mining industry. When the REPO rates increased by 100 bps, Defaults spiked by 0.7% after three quarters of introducing such a positive innovation to REPO.(Kapur, 2017). The impact that the NPAs of ICICI Bank had was alike to a negative innovation introduced in both the BSE index of metals and energy sectors. When the market indices pertaining to these sectors contracted by 100 bps, the NPAs rose sharply by 50 bps within three quarters of introducing such a negative innovation into the model towards these variables. Let us now examine Citibank.

The most significant impact on the NPAs of Citibank apart from the REPO rates, came from a fall in the Business confidence index (Glenn Hoggarth, 2005) by 1% which resulted in almost an 8% spike in Default ratios from the beginning of the 2nd quarter after the negative shock was given. A contractionary monetary policy by raising the policy rates by 100bps, resulted in a 2% increase in NPA before the 3rd quarter. We now turn to the most important policy implication from this study – the feedback effects of credit risk into the macro-economy.

Figure-5: Feedback Effects of Shock in Bank Asset Quality into the Economy



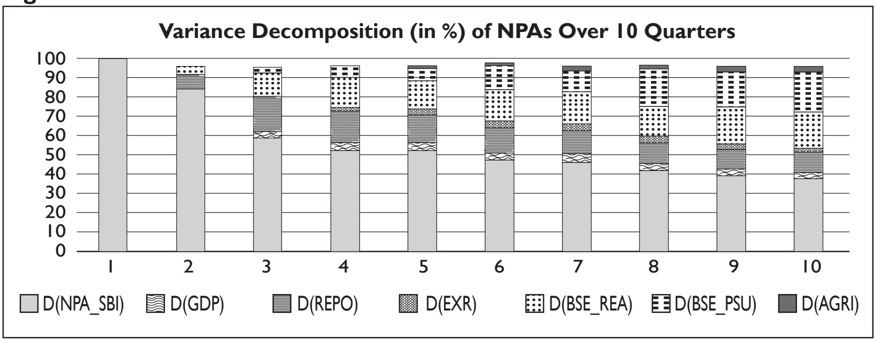
Source: Author's formulations

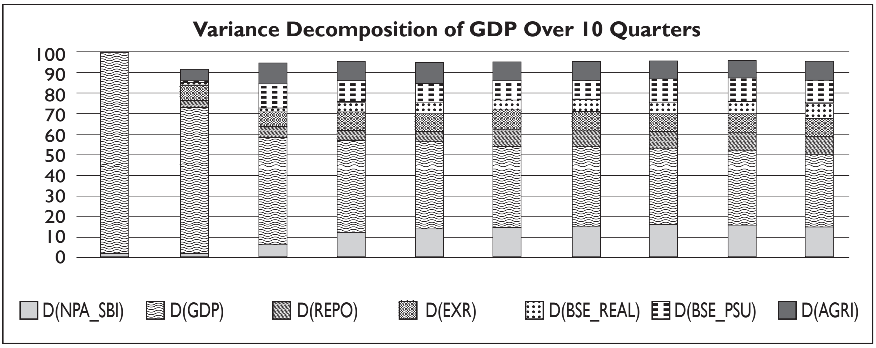
When a positive innovation of 1% was introduced into the model for SBI on the Default ratios, there was a negative spillover effect on the security market indices of the Public sector and the Real estate sector, both of which fell by about 0.8% approximately in the 3rd quarter aftershock. This finding was supported by the VAR model and the Granger causality tests. The default ratios of ICICI bank had a spillover effect on the GDP (Miroslav Misina, 2006) of the economy to an extent where an increase in the NPAs by 1% led to a contraction in the GDP by 0.8% between 6 to 9 quarters after such innovation was introduced. There was thus a long-term impact that was not meditated by the model due to taking a lag of 3 quarters. In the case of Citibank, there was an intricate relationship between the NPAs of the bank and the Business Confidence Index, which was the most significant explanatory variable of defaults. When the NPAs of Citibank rose by 1%, the Business confidence index fell by about 1.2% within 4 quarters of introducing such an innovation into the dynamic system.

Forecasted Error Variance Decomposition (FEVD) results

After understanding the behaviour of variables in the presence of shocks introduced into the model over a period of time, we take our analysis one step further by performing the FEVD. This test tells us how much of error variance in the NPAs is attributed to itself and other endogenous variables in the dynamic system when an exogenous innovation is introduced into the model. This is relevant especially during periods of economic crisis when shocks are there. To get meaningful results, the Choleski ordering is followed, which was the same as in the VAR model, to structurally segregate shocks and obtain an orthogonalized model.

Figure-6: FEVD Results of SBI

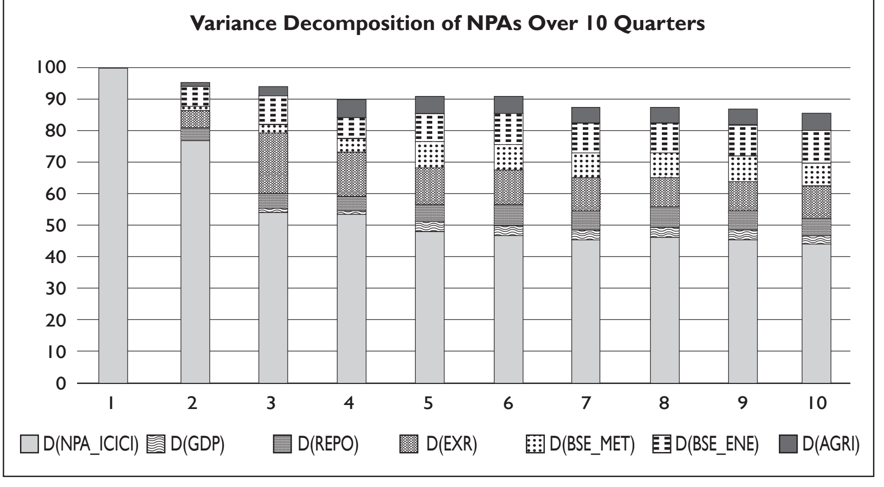




Source: Author's formulations

The Variance error decomposition results in the case of NPAs of SBI revealed that in the long run, over a period of 10 quarters, about 20% of NPAs were explained by the Public sector, 18% by the real estate sector and about 10% by the REPO rates using error variances. This is consistent with the results from the VAR model and the Granger causality tests, as these were important determinants in the equation of NPAs of SBI and had causality effects. Studying FEVD results of GDP, around 16% of error variances were explained by the NPAs of SBI. (Murali, 2015) 11%and by the Public sector, thus reflecting negative feedback effects.

Figure-7: FEVD results of ICICI Bank



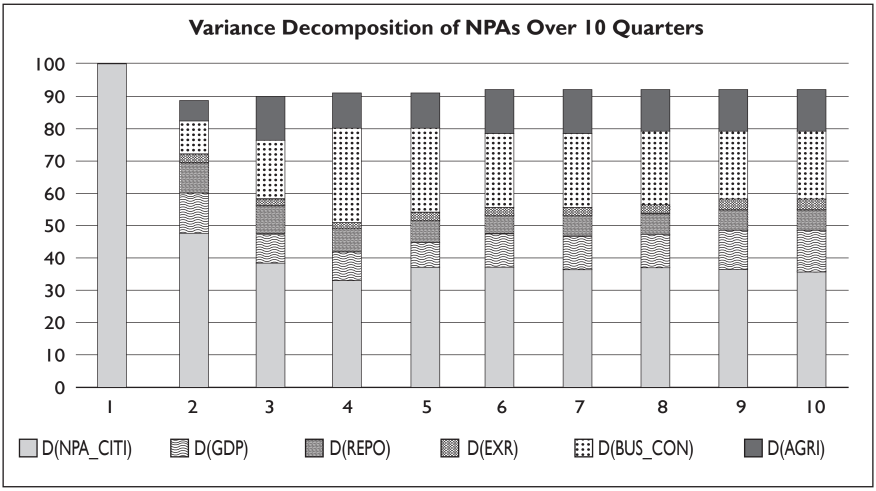
Source: Author's formulations

The results for the Private sector bank indicated that around 10% of error variances in NPAs were attributed to the Energy sector, about 9% by the exchange rates and 8% by the metals sector at the end of 10 quarters for an exogenous shock introduced in the model today.

The Variance error decomposition of the NPAs of Citibank revealed that about 28% of error variances in NPAs was explained by the Business Confidence Index, 11% by the agricultural prices, 9% by the GDP and 8% by the REPO rates after three quarters for an innovation introduced in the model today. These results were consistent with the VAR model and the findings from the Granger causality tests. These impacts continued to persist in the long run, over ten quarters. This can be explained using the Figure-8.

A limitation with the normal IRF and FEVD is that the shock introduced into the model is assumed to be measured by either 1 S.D or a unit diagonal innovation which is seldom the case in reality. When an actual economic contraction takes place, such innovations are quite large and thus, we need to take the study further from the IRF and FEVD. Authorities have laid down a Stress testing framework where we first need to identify 'Extreme yet Plausible' events.

Figure-8: FEVD Results of Citibank



Source: Author's formulations

Results and Insights from the Macro Stress Test

During a crisis period, each variable would move by a different magnitude due to the unique dynamics associated during that period of time with that variable. Due to this, we need to study a crisis period quantitatively to measure the movement in each of the variables. In our macro-prudential stress test, we have identified the two largest crisis scenarios that impacted the Indian financial system - the Global Financial Crisis and the current Covid-19 pandemic. During these two periods, we studied how the variables considered in our model reacted in order to conduct the stress test.

An important observation we could make is that the negative shocks during periods of recessions are in several multiples of the IRF shocks. However, based on the IRF output and the below sensitivities, we performed a stress test to see how the NPAs of all the three banks are affected during these recessions. The sensitivity factors among variables are given below:

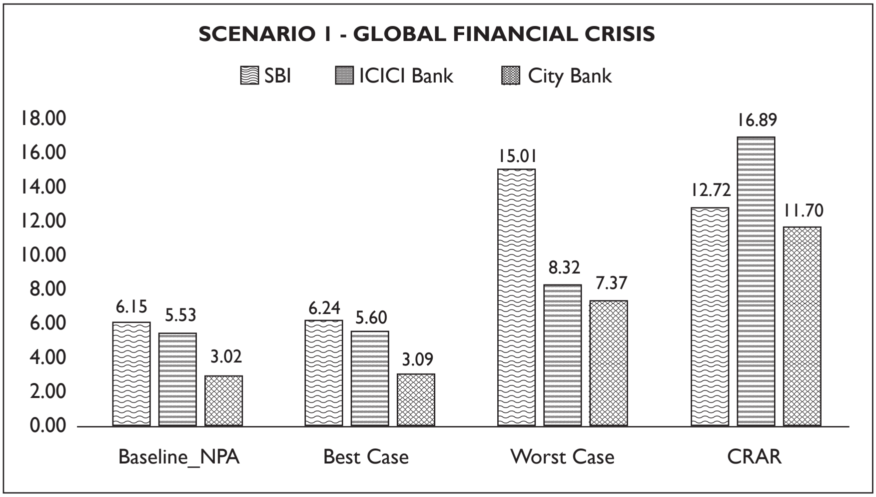
Table-9: Variables During Stressed Scenarios

Variables	Scenario 1- GFC	Scenario 2 - COVID-19
GDP	3%	9%
REPO	72%	30%
EXR	17%	9%
BSE_PSU	56%	38%

Variables	Scenario 1- GFC	Scenario 2 - COVID-19
BSE_REA	89%	46%
BSE_MET	78%	45%
BSE_ENE	53%	31%
AGRI	7%	10%
BUS_CON	13%	9%

Source: Author's calculations (All values refer to contractions)

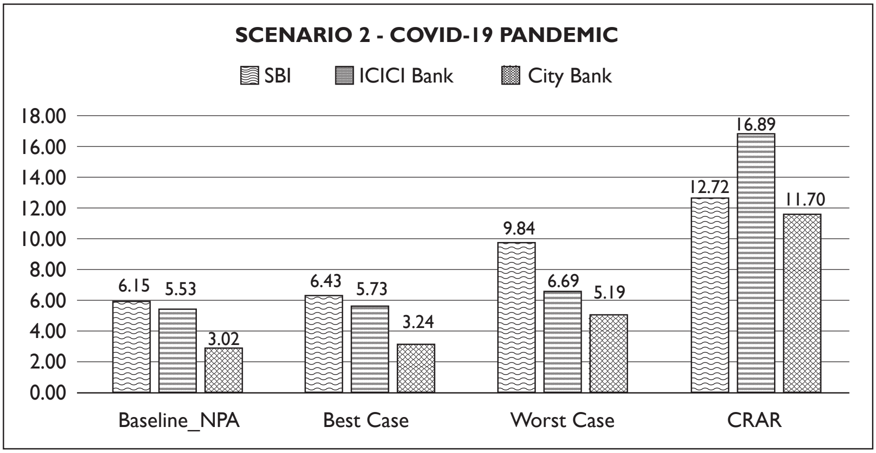
Figure-9: Stress Test Results from Scenario 1



Source: Author's simulations

In our Macro Stress Tests, we have followed a bottom-up approach as we are evaluating the resilience of the banking system using a few representative large institutions. We have used a combination of sensitivity and scenario analysis. The Pandemic scenario is presented below:

Figure-10: Stress test Results from Scenario 2



Source: Author's simulations

By studying the impact of a movement in each of the variables on the NPAs of all the banks, we have two possible situations within the scenarios. The 'Best case' refers to the lowest possible NPA estimated from shocks given to all the variables. Such an NPA for all the three banks arose from the contraction in 'GDP' by 3% during GFC and 9% during Pandemic. The 'Worst case' refers to the highest possible NPA estimated for all the banks. Here, it was a result of the shock given to the 'REPO' by 72% during GFC and 30% during Covid-19. This shows that the most important determinant of NPAs during a recession or market downturn is the policy rates of the Central bank. An important thing to note here is that the Baseline NPA (Actual NPA during a period) and the Capital to Risk-Weighted Assets Ratio (CRAR) pertain to the quarter 2019 – Q4. This means we are trying to understand the behaviour of NPAs if a financial crisis like the GFC occurs today through a simulation exercise to evaluate capital adequacy. The reason behind selecting 2019-Q4 for simulation is because the Pandemic hit the Indian economy precisely at that time. All the banks remained sufficiently capitalized as indicated by the CRAR being greater than the Stressed and actual NPA figures during the period 2019-Q4. The only exception to this was the NPAs of SBI during the worst–case situation, where there was a shortfall in CRAR by 3%. Thus, the Private sector and Foreign banks are resilient to weather the storm like the GFC in today's context, but the Public sector banks need to be capitalized to meet shocks in REPO. The Best and Worst case NPAs being more than the Baseline during the Pandemic indicates the effectiveness of 'RBI moratorium.'

Conclusions and Policy Implications

We started this study with the objective of understanding how the financial institutions of our country have evolved historically, looking at many major reforms that took place since 1991, which define the way the banking business is conducted in the Indian economy. This enabled us to gauge how important the 'banking system' is to the Indian Financial system, especially in today's context where the country is moving towards 'Cashless societies'. Next, we wanted to find a solution to a major problem that threatens banks in our country, especially the Public sector banks, namely the NPAs in the post-financial crisis period. An understanding dawned upon us that such a problem cannot be solved but can only be quantified and monitored to better prepare the financial institutions to meet such events. From our VAR model and all the post-VAR estimations, it has become clear that the Default ratios of banks in India are not merely explained at a customer level but at the macroeconomic level through market risk variables. This proves our initial idea of inter-relationships between risks. The Public Sector Banks were significantly affected by REPO, Real estate and Public sector undertakings. Private lenders by the Mining and Energy sector and Foreign banks by Business Confidence, REPO GDP and the Agricultural sector through the Priority Sector lending as enforced by the RBI.

The Spillover effects of the banking system on the GDP, Business confidence, Real estate and Public companies prove that an economic crisis can unfold from a banking crisis. Thus, the creation of a 'Bad-Bank' and Asset Reconstruction Companies (ARC) by the government is a wonderful move in this direction. The banks have sufficient capital adequacy to deal with the current Pandemic by comparing the 'Worst case' scenario with the CRAR figures. However, due to the second wave of Pandemic and further worsening of the economic situation in India, banks need a liquidity boost and further 'Recapitalization' as announced by the RBI. An important finding from our Macro Stress Test results is that the NPAs of all the three banking groups in India were higher in both the 'Best case' and 'Worst case' scenarios within the COVID-19 scenario as compared to the Baseline NPA. This indicates that the RBI has been successful in curtailing a sudden increase in Credit risk throughout the Indian Banking system by enforcing the 'Moratorium period.' The author sides with the Supreme Court of India and recommends that the Moratorium period be lifted in a very gradual manner as the Pandemic continues its onslaught. Above all, there is a need for a higher commitment of bankers towards ethics and moral values to ensure 'Privatization of losses and Socialization of gains.' Bankers need to be more prudent to promote the financial and economic development of our country!

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Resonant Leadership of Managers in Indian Organizations: An Investigative Study

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Abstract

The term Resonant Leadership denotes leading with Emotional Intelligence. Resonant leadership, with all its attributes, particularly important with recurring incidents of industrial violence (Manesar, 2012 and Wistron, 2020). Empathy, one of the key elements of resonant leadership, is the connection between managers and workers. The paper investigates the level of resonant leadership of Indian managers and comes to a conclusion that resonant leadership is one of the dominant styles of leadership among Indian managers. Resonant leadership patterns across age, gender and public versus private sector have also been explored. The study was done in the Indian context entailing a sample of 1027 respondents. Greta Cummings scale (2008) was the primary instrument used in the study for measuring resonant leadership. Further t-test and ANOVA were used for statistical analysis of resonant leadership patterns.

Keywords: Cummings Resonant Leadership Scale, Emotional Intelligence, Empathy, Industrial Violence, Leadership Variations, Resonant Leadership

Introduction

Leadership has become a major challenge for organizations in the present scenario. Organizations today are fraught with a multitude of challenges and with it, the ways of conducting business are also changing. With fierce competition brought about by the Liberalization, Privatization and Globalization (LPG) syndrome post-1991 on India's corporate landscape and ever-changing technology, a sort of uncertainty has crept into organizations, making leadership tasks all the more difficult. Bringing about changes in organization to keep pace with competitors and managing the workforce have made the business environment so complex, dynamic and scarce that it is rather called a high-velocity turbulent environment. On the human resource side, entire demographics and psychographics

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are changing. Attitudinal variables have changed a lot, imposing new HR challenges. Maruti's Manesar (2012) incident was an eye-opener for HR heads in the country. Hardly had the dust of this incident settled, in 2020 happened**,** the Wistron plant violence in Bengaluru. One of the clear reasons was the lack of ability of managers to empathize with blue-collar workers, a vital ingredient of leadership in today's times.

Inevitably Indian organizations are facing leadership issues. Tackling workforce complexity requires a move from the traditional mindset to more contemporary forms of leadership which can engage and empathize. Now managers, apart from the traditional skills, also need relationship skills also to become effective leaders. Managers need to build the trust in their employees, listen to others about their ideas and their feedback, empower and motivate employees, respect and appreciate them for their work. The panacea to these new-faced problems,which Manesar (2012) and Wistron (2020) have brought to the fore, lies at the foot of resonant leadership (RL), which is about engaging and empathizing – the essential elements which leadership in organizations are missing today. Connecting through emotional intelligence to create a healthy workplace has become of paramount importance today and this is resonant leadership.

What is Resonant Leadership?

Resonant leaders have the knack **for** understanding and managing their own emotions as well as of people around them. Building trust and high emotional intelligence are the cornerstones of resonant leadership. The inspirational value of resonant leadership is profound. Boyatzis and Mckee, in their book Resonant leadership (2005),describe the resonant leader as one who can connect and sustain relationships. As Boyatzis (2012) puts it, "Leaders who can create resonance are people who either intuitively understand or have worked hard to develop emotional intelligence - namely, the competencies of self-awareness, self-management, social awareness and relationship management. In addition to knowing and managing themselves well, emotionally intelligent leaders manage others' emotions and build strong, trusting relationships." A great leader, he says, is not a person, "it is a relationship."

Resonant leaders can resonate or work in sync with their team through compassion, hope and mindfulness. A compassionate style of working means being aware of the feelings of others, understanding their problems, respecting and empathizing with them and thus building relationships. This connection with the workforce inspires them to work in collaboration and give their best to the organization. Resonant leaders work with hope, optimism and vision about future goals. They work with an infectious passion and energy, leading to the heightened sense of organizational performance. Mindfulness or self-awareness is an understanding of one's own emotions, strengths and limitations. They overcome emotions with consciousness and this creates a harmonious relationship with team members. In a nutshell, resonant leaders are able to nurture a healthy work environment which fosters the growth of the organization, taking it to greater heights.

Thus we see that the role of the resonant style of leadership is becoming all the more important for organizations in the present scenario, and to study it further in the Indian context, this study was done, which entailed measurement of resonant leadership of Indian managers and investigating the patterns of resonant leadership across gender, age and nature of the organization. This will give insights on Indian managers and the need to overcome them.

Literature Review

A vast literature is available on different leadership styles and traits required for a successful leader**.** but the concept of resonant leadership has emerged lately and is still being explored. A lot of research on resonant leadership and emotional intelligence**,** particularly in the health sector**,** has been done and outlined below. However, studies of the impact of gender, age and nature of organization on only traditional forms of leadership are available in the literature.

Overview of Research Done in Resonant Leadership

Boyatzis and McKee, in their book "Resonant leadership: Renewing yourself and connecting with others through mindfulness, hope and compassion*"*(2005), have focussed on the role of mindfulness, hope and compassion for a holistic approach towards the inculcation of resonant leadership. Emotional intelligence also plays a role in making better leaders. (Rosete, D. & Ciarrochi, J, 2005). Boyatzis and Soler (2012) also focussed on the major role of emotional intelligence and social intelligence in the development of a shared vision for family businesses. Boyatzis et al**.** (2013) delved **into** the development of resonant leaders through emotional intelligence, vision and coaching. A resonant style of leadership makes a positive impact on the organization as a whole. Larina Kase (2010)**,** in her article *Great Leaders are Great Decision-Makers* in *Graziadio Business Review* dwells upon the capacity of resonant leaders to take decisions which have a positive impact on all stakeholders. Binita Tiwari and Dr. Usha Lenka (2015)**,** in their paper - *Role of Resonant Leaders in Engaging Employees of Firms Facing Economic Crisis***,** have found that resonant leadership hasa deep impact on employee engagement. Bahar Taner and Berna Aysen (2013) have studied the changing role of leaders and resonant leadership and observed that compassion has a significant impact. Lenka and Tiwari (2016) came to altogether a new finding. They propounded that altruism can be an additional element of resonant leadership in downsized Indian organizations. The recent study conducted by Niharika Gaan and Yuhyung Shin (2022) revealed that resonant leadership is directly proportional to the work performance of subordinates.

Resonant Leadership in Health Sector

Seminal work has been done in the context of health care with respect to resonant leadership. Laschinger etal.(2013) found that resonant leadership can reduce cases of employee burnout and workplace incivility. Nursing administrators had a high perception of emotionally intelligent leadership (Duckworth, 2011). Morrison (2008) concluded that resonant leadership is of utmost necessary for nursing leaders to create a stress-free environment. It is necessary for nurse leaders to develop EI competencies in order to decrease stress in the workplace and enhance teamwork. Squires(2010) developed a conceptualization that resonant leadership and interactional justice together improve the work climate leading to a decrease in nursing turnover and a low rate of on-the-job errors. Resonant leadership was found to be an important predictor in influencing nurse faculty intention to remain employed (Tourangeau, 2013). (Estabrooks et al., 2009)developed the Alberta context tool extremely useful in research in healthcare. Resonant leadership has been found to be an important development in the field of leadership (Cummings et al, 2008).Resonant leadership and individual empowerment had significant influence on job satisfaction and organizational commitment (Wagner et al, 2013). Organizations intending to strive for high nursing manager retention and attract front-line staff into nursing leader positions must create a climate of empowerment (Hewko et al., 2015). Resonant leaders help in creation of empowering environments which lead to higher job satisfaction and retention among nurses (Bawaafa, Wong, Laschinger, 2015).

Age and Leadership

Leaders and styles of leadership may vary based upon age or number of years of experience. Kearney(2008) propounded that older leaders result in higher acceptance of their transforming abilities because of acceptance of the leader's special status attributed to age. Van Vugt (2006) pointed to a complex relationship between age and leadership. While there is a positive correlation between age and leadership, there has been some research that either correlates negatively or zero. Even now there is a considerable correlation between age and leadership in professions or areas which require specialized experience and knowledge, such as science, politics and arts (Van Vugt, 2006). Cagle (1988) has regarded age as one of the factors that determine the leadership style. In many cultures, the myth is that as people get older, they become wiser due to more exposure and experience.

Mirini, Narjo and Kumbhar (2003) studied that age and leadership competencies were significantly related. Ojodeet al.(1999) postulated that gender and age impact the leader styles. Studies have been conducted taking age, gender and other demographic variables. The studies of Payden (1997), Thomas (1996) and Rasor (1995) showed notable differences in leadership styles due to age. Based on the study on *Age influences on the leadership styles and behaviour of managers*, Titus Oshagbemi (2004) concluded that there are significant differences between the styles of younger managers and older managers. The participative style was much more evident in the case of older managers.

How RL varies with age and experience is yet to be explored and because EI is the basis of RL, it may affect the level of RL in leaders.

Gender and Leadership

Some findings from literature regarding gender and leadership are quite interesting:

- If there are at least three women on board, it was a potent combination for success (Joy, Wagner & Narayanan, 2007).
- Companies with more number of women on board are able to give better corporate governance and ethical behaviour. (Franke, Crown & Spake, 1997).
- Research done by Zerger Folkman (2015) taking a sample of almost 7000 women leaders, concluded that women are excellent at nearly every leadership competency.
- A global leader requires not only a great degree of cultural and emotional intelligence but also sensitivity towards one's own values and purpose. This quality is displayed better by women (Hanna, 2012).
- Women's styles are more empathetic and people-friendly. (Desvaux, Devillard & Sultan, 2009).
- There is a certain streak of participation in their styles. (Eagly & Johnson, 1990).
- Women are more collaborative (Eagly, Johannesen-Schmidt, & van Engen, 2003).
- Initiative, integrity, honesty and result orientation are some of the values of women leaders. (Folkman, 2015).
- Study done by Ayman and Korabik (2010) explains why gender matters in leadership.
- Chakraborty and Chatterji (2020) and Dutta Gupta et al (2015) were in favour of a gender-inclusive policy and practice in IT sector in India. How RL varies with gender will be studied in this paper.

Public and Private sector Leadership

According to S. Subramanian & Kruthika J. (2012), private sector executives face much more occupational stress, job involvement, burnout etc., than public sector executives. However, the private sector has younger leadership and they get more opportunities for self-development.

A lot of differences exist in the working environment of both sectors and studies on resonant leadership in private and public sector organizations have not been found in the literature.

Research Gap

As described in the Literature Review section, a lot of research regarding the impact of resonant leadership has been done in the health sector, but few studies have been done in the corporate sector. Measurement issues related to resonant leadership have also not been addressed. Hence this study to evaluate the level of resonant leadership in organizations would immensely help organizations and managers to develop their leadership skills to make it more effective and sustainable.

Leadership styles keep evolving and may vary with age or number of years of experience. In many cultures, the myth is that as people get older, they become wiser due to more exposure and experience. However, in the present times, a number of organizations are being led successfully by younger generation leaders. Several studies have been done in the past to study the relationship of age with the type of leadership style. Resonant leadership has been analysed experience-wise in this paper also.

It has often been stated that women are better leaders and with increasing women empowerment, gender plays a significant role in defining roles and responsibilities in an organization. To study whether the concept of resonant leadership is gender-specific, gender wise level of resonant leadership has been evaluated in this paper to see if any difference exists.

Another area in which leadership styles differ because of the basic structural differences and distinctive characteristics is the public and private sectors. A comparison of resonant leadership in some public sector and some private sector organizations has been made to determine whether the type of organization matters.

Objectives of the Study

- To investigate the level of resonant leadership of Indian managers in industrial organizations.
- To study the relationship between gender and experience with resonant leadership of Indian Managers
- To study the differences between the private and public sector in resonant leadership of Indian managers.

Methodology

The Greta Cummings (2008) resonant leadership scale was used to conduct the survey. The concept map of the Cummings scale is as given below:

Domain	Concept
Self-Awareness	Openness
Self-Management	Integrity
Self-Management	Optimism
Self-Management	Team Achievement
Self-Management	Self Control
Social Awareness	Empathic
Relationship Management	Developing Others
Relationship Management	Conflict Management
Relationship Management	Visionary / Inspiring
Relationship Management	Empowering

These terms and how they help in developing relationships and creating resonant leadership are briefly described below.

Openness is necessary for building trust and positive relationships and as is said above resonant leadership is a relationship, so openness in communication is an important dimension of RL. A leader who acts with Integrity will always be valued by the team members and with Empathy, can have a positive effect on others and thereby build committed teams, thus promoting Team Achievement. Hence these three dimensions measure the level of RL. Moreover, Empowering and Developing Others create job satisfaction and also help in building trust, there by leading to positive relationships. Leaders have to be Optimistic to overcome problems, seek new opportunities and promote hope to their subordinates. Visionary leaders look forward to the future of the organization and share it with their subordinates, motivating them to achieve the goals of the organization. Self Control or self-management is another important trait of RL, because a lack of control of emotions like anger can destroy any leader. A leader who connects to people emotionally can help build positive relationships between team members also and can manage Conflict successfully. Thus these ten dimensions can measure the level of resonant leadership.

The Cummings resonant leadership scale already had tested reliability of alpha = 0.95 and validity through correlation with variables above 0.5, mostly 0.6. Each of the ten factors of the Cummings scale was measured using the Likert scale 1 to 5 (1 – strongly disagree, 5 – strongly agree), and the average of these ten factors gives the value of resonant leadership. The norms for resonant leadership were defined as <=3- low, >3 &<=4 - moderate and >4 - high. This is in consonance with the properties of the Likert scale.

The survey was done in the Uttarakhand industrial belt (three regions- (Haridwar, Pantnagar and Dehradun) which boasts of organizations like BHEL, ONGC, TATA Motors, THDC, HUL, ITC, WIPRO, Mahindra, HERO Motocorp, ABB, etc.
A sample of 1027 respondents consisting of 915 respondents from private organizations and 112 respondents from three public sector organizations in Uttarakhand was collected. These respondents comprised of managers of all age groups, gender and experience groups. Efforts were taken to maintain consistency in the experience distribution (0-10 years, 10-20 years and above 20 years, experience groups). The respondents were asked to give their opinion about their superiors or team leaders. Demographics were added**,** such as age, qualification, experience and gender.
The demographics of the sample are as given in Table-1. The total sample of 1027 respondents consisted of 87.2 per cent males and 12.8 per cent females. Experience-wise categorization showed that 54.8 per cent of respondents were in the younger age group having experience of less than 10 years, while 30.6 per cent were in the middle experience group and 14.6 per cent had experience of more than 20 years. The majority of the respondents (89.1 per cent) were from the private sector.

Table-1: Demographics of the Sample Data

Dimension	Category	N	Percentage
Gender	Male	896	87.2%
	Female	131	12.8%
Experience	<= 10 years	563	54.8%
	>10 and <= 20 years	314	30.6%
	>20 years	150	14.6%
Nature of organization	Private	915	89.1%
	Public	112	10.9%

SPSS was used for doing Statistical analysis of the data. T-test was used for testing hypotheses 1, 3 and 4, while F test using Anova was used for testing hypothesis 2.

Findings

- Mean resonant leadership of Indian man**a**gers as per Cummings scale

The descriptive statistics of the calculated average level of resonant leadership factor-wise for the total sample is given in Table-2. It can be seen how each factor is affecting the total resonant leadership.

Table-2: Descriptive Statistics of Each Factor and Total RL

	N	Minimum	Maximum	Mean	Std. Error	Std. Dev.
Openness	1027	1	5	4.10	.024	0.78
Integrity	1027	1	5	3.50	.036	1.15
Optimism	1027	1	5	4.14	.030	0.96
Team achievement	1027	1	5	4.25	.034	1.08
Self-control	1027	1	5	4.20	.023	0.75
Empathic	1027	1	5	4.02	.033	1.05
Developing others	1027	1	5	3.07	.041	1.32
Conflict management	1027	1	5	4.24	.021	0.68
Visionary	1027	1	5	3.82	.033	1.07
Empowering	1027	1	5	3.73	.038	1.23
Resonant Leadership (RL)	1027	1.20	5.00	3.91	.014	0.45

Table-2 shows that the overall resonant leadership (RL) taking the total data of 1027 respondents is 3.91, which is close to high. The lowest factor is Developing Others, having a mean of 3.07 only, which is nearly in the low category. The factors Integrity, Visionary and Empowering are in the moderate category, while the other factors are above 4, the highest being Team Achievement which is 4.25. Empathic is 4.02**,** which is just in the high category.

- Relationship of gender and experience with resonant leadership

  a) Gender and resonant leadership

  As there are supposed differences in leadership styles of males and females, the T-test was used to compare the means gender-wise. This is a two-tailed test with a significance level of $\alpha = 0.05$ and null and alternate hypotheses as follows:

  Ho: mean RL of males = mean RL of females

  Ha: mean RL of males $\neq$ mean RL of females

  If RL varies with gender, the null hypothesis will be rejected.

  Gender-wise statistics are shown in Table-3 and it can be seen that the average RL for the female group is 3.89 and for the male group is 3.91, indicating that there is hardly any difference between the two groups.

Table-3: Gender wise Descriptives of Total RL

	Gender	N	Mean	Std. Deviation	Std. Error Mean
RL	Female	131	3.89	.57	.05
	Male	896	3.91	.43	.01

The T-test results in Table-4 show that for Equal variances not assumed, the significant two- tailed P value is 0.76, which is greater than 0.05 so the null hypothesis cannot be rejected i.e., the T-test failed to reveal a statistically reliable difference between the mean RL values of the two groups.

Table-4: T-Test for Comparison of Means Gender Wise

	Levene's Test	F	Sig.	T	Df	Sig. (2-tail)	Mean Diff.	Std. Error	95% Confidence interval of the Difference Lower	Upper
				T-test for Equality of Means for Equality of Variances						
RL	Equal Variances Assumed	13.77	.000	-.37	1025	.71	-.02	.04	-.10	.07
	Equal Variances Not Assumed			-.30	152.12	.76	-.02	.05	-.12	.09

b) Experience with resonant leadership

The F test using Anova was used to compare resonant leadership of the three categories of experience to see if experience had any marked effect on RL at a significance level of $\alpha = 0.05$ using null and alternate hypotheses as below:

Ho: mean RL of the three categories of experience are equal

Ha: mean RL of all three categories are unequal

If RL is affected by the experience, the null hypothesis will be rejected.

Experience-wise statistics given in Table-5 show that mean RL values for the three groups are 3.90, 3.91 and 3.95 i.e., there is hardly any difference in the mean values.

Table-5: Descriptives of Total RL of Experience Wise Groups

Experience	N	Mean Dev.	Std. Error	Std. Interval	95% Confidence for Mean Lower	Upper	Minimum	Maximum
<=10 years	563	3.90	.44	.02	3.86	3.93	2.20	4.90
>10 and <=20 yrs	314	3.91	47	.03	3.86	3.96	1.20	4.80
>20 years	150	3.95	.45	.04	3.88	4.02	2.70	5.00\

The F test results are given in Table-6. The p-value is 0.420, which is greater than the α level, so the null hypothesis cannot be rejected. Thus there is no significant difference in the RL values of the three experience groups.

Table-6: ANOVA for Experience Wise Groups

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.349	2	.175	.868	.420
Within Groups	205.845	1024	.201		
Total	206.194	1026			

- Difference of resonant leadership between public and private sector organizations

  As stated earlier, there is a lot of difference in the leadership and management styles of private and public sector organizations. A comparison of resonant leadership in the private sector and public sector organizations was made using the T-test with a significance level of $\alpha = 0.05$.

  Ho: mean RL in the private sector = mean in the public sector

  Ha: mean RL in the private sector ≠ mean RL in the public sector

  If RL varies with the nature of the organization, the null hypothesis will be rejected.

Table-7 shows that the mean RL value of 3.972 in the public sector is slightly higher than the mean RL value in the private sector.

Table-7: Organization wise Descriptives of Total RL

	Organization	N	Mean	Std. Deviation	Std. Error	Mean
RL	Private	915	3.90	0.43	0.01	
	Public	112	3.972	0.55	0.05	

The T-test results in Table-8 show that for Equal variances assumed, the significant two-tailed P value is 0.11, which is greater than 0.05, so the null hypothesis cannot be rejected i.e., the T- test failed to reveal a statistically reliable difference between the mean RL values of the two groups.

Table-8: T-test for Comparison of RL Means of Private and Public sector

	Levene's Test	F	Sig.	T	Df	Sig. (2-tail)	Mean Diff.	Std. Error	95% Confidence interval of the Difference Lower	95% Confidence interval of the Difference Upper
		T-test for Equality of Means for Equality of Variances								
RL	Equal Variances Assumed	3.46	.06	-1.62	1025	.11	-.07	.04	-.16	.02
	Equal Variances Not Assumed			-1.35	128.67	.18	-.07	.05	-.18	.03

Each of the ten factors of the Cumming scale was also analysed for the public sector and private sector. The factor-wise means in Table-9 show that though there is not much difference in the overall value of RL in both sectors, but there is a considerable difference in some of the factors of RL. Openness in public organizations is 3.85, which is moderate and lower than in private organizations having a value of 4.13. Integrity is moderate in both sectors and lower in the private sector. Self-control is much higher in the private sector, whereas Developing Others is the lowest factor in private organizations. Conflict management is lower in the public organizations. Visionary and Empowering are moderate in both sectors.

Table-9: Comparison of Factors of RL in the Private and Public sector

Factor	Mean (Private, 915)	Mean (Public, 112)
Openness	4.13	3.85
Integrity	3.47	3.72
Optimism	4.14	4.19
Team achievement	4.23	4.45
Self-control	4.25	3.86
Empathic	4.00	4.21
Developing others	2.96	3.98
Conflict management	4.28	3.93
Visionary	3.80	3.96
Empowering	3.75	3.59
Resonant Leadership (RL)	3.90	3.972

As there was considerable variation in some of the factors, a further T-test was used to compare the means of all the factors for both sectors using null and alternate hypotheses as:

- Ho: mean of $Factor_n$ in private sector = mean of $Factor_n$ in public sector
- Ha: mean of $Factor_n$ in private sector ≠ mean of $Factor_n$ in public sector

where n varies from 1 to 10, denoting each factor of the Cummings scale in sequence, as shown in Table-9.

The T-test results in Table-10 show that the significant two-tailed P values for the factors Openness, Integrity, Team achievement, Self Control, Empathy, Developing Others and Conflict management are less than 0.05, so the null hypothesis cannot be accepted i.e., there is a significant difference in the means of these factors for the private and public organizations.

Table-10: T-Test for Factor Wise Comparison of Means of Private and Public Sector

Levene's Test		F	Sig.	T	Df	Sig. (2-tail)	Mean Diff.	Std. Error	95% Confidence interval of the Difference Lower	Upper
				T-test for Equality of Means for Equality of Variances						
Openness	Equal variances assumed	1.15	.28	3.69	1025	.00	.28	.07	.13	.44
	Equal variances not assumed			3.37	133.53	.00	.28	.08	.12	.45
Integrity	Equal variances assumed	30.62	.00	-2.18	1025	.03	-.25	.12	-.48	-.03
	Equal variances not assumed			-2.84	169.95	.01	-.25	.09	-.43	-.08

Levene's Test		F	Sig.	T	Df	Sig. (2-tail)	Mean Diff.	Std. Error	95% Confidence interval of the Difference Lower	Upper
		T-test for Equality of Means for Equality of Variances								
Optimism	Equal variances assumed	9.50	.00	-.54	1025	.59	-.05	.10	-.24	.14
	Equal variances not assumed			-.66	161.17	.51	-.05	.08	-.21	.10
Team achieve - ment	Equal variances assumed	13.35	.00	-2.03	1025	.04	-.22	.11	-.43	-.01
	Equal variances not assumed			-2.58	166.24	.01	-.22	.09	-.39	-.05
Self-control	Equal variances assumed	6.19	.01	5.27	1025	.00	.39	.07	.25	.54
	Equal variances not assumed			4.06	125.23	.00	.39	.10	.20	.58
Empathy	Equal variances assumed	2.46	.12	-1.94	1025	.05	-.20	.10	-.41	.00
	Equal variances not assumed			-2.43	163.33	.02	-.20	.08	-.37	-.04
Developing Others	Equal variances assumed	97.60	.00	-8.00	1025	.00	-1.03	.13	-1.28	-.78
	Equal variances not assumed			-11.69	194.79	.00	-1.03	.09	-1.20	-.85
Conflict Mgmt.	Equal variances assumed	.83	.36	5.19	1025	.00	.35	.07	.22	.48
	Equal variances not assumed			4.15	126.70	.00	.35	.08	.18	.51
Visionary	Equal variances assumed	16.89	.00	-1.46	1025	.15	-.16	.11	-.36	.05
	Equal variances not assumed			-1.82	163.20	.07	-.16	.09	-.32	.01
Empowering	Equal variances assumed	1.30	.25	1.32	1025	.19	.16	.12	-.08	.40
	Equal variances not assumed			1.49	151.01	.14	.16	.11	-.05	.38

Significance of the Study

While nurturant task leadership has been the hallmark of Indian managers, the newer forms of leadership such as RL are also taking roots. From

Intelligence Quotient (IQ) to Emotional Quotient (EQ) or Emotional Intelligence (EI) the shift has been phenomenal and significant. While IQ is still a desirable trait for managers but EQ or EI has emerged as the more salient counterpart. Emotional intelligence is required among managers more than any other form of intelligence. So leadership with EI is a natural outcome of this shift. Resonant leadership is emotionally intelligent leadership. This study, which investigates the resonant leadership of Indian managers, will lead to the knowledge for greater vistas of practice and research. Moreover, a study along the components of resonant leadership would intricately point out the strong areas and the grey areas. Also, there would be an estimation of how much distance has to be traversed or has been traversed in making Indian leadership resonant,particularly when it is so imperative.

Discussions

The mean score of RL comes out to be 3.91, which indicates that resonant leadership is close to high. There is no significant difference in the distribution of resonant leadership with respect to experience. This may seem surprising to some who believe that it is the hardened veterans who must be having higher resonant leadership. However, what exactly happens is that the in the company, socialization after joining and the initial few years of experience provide the much needed impetus to young leaders. "It is the first few blows on the anvil which gives the human weapon the set and temper which carries it through life's battles".

There is no significant difference between male and female managers as far as resonant leadership is concerned. Female managers respond equally well in tough situations and possess the adjustment and emotional stability coupled with intelligence to tide over both professional and personal crises. This breaks the stereotype in the Indian Industry that female managers are less stable and provides new avenues of recruitment exploration for female professionals. Moreover, career planning of female managers has to be accorded the same priority as that of male managers.

The factor Developing Others came out to be lowest at 3.07,highlighting the need for leaders to create leaders or for that matter,a leadership pipeline should exist. Perceived threats to own leadership once alternative leadership develops is a classic situation in Indian organizations.

The integrity factor is in the moderate category. An explanation for integrity not being high in the country can be attributed to rising corruption in society and the belief that the ends justify the means. The leadership is rather self-centred and belongingness to organizations is not high. This has emerged from the discussions conducted by the author, as mentioned in the methodology.

The visionary factor is also not high. From the discussions, it emerged that Indian managers still need to look at the larger picture and the sooner, the better.

Empowering is also not high. Traditionally also,we have a large/high power distance in India. So the tendency of leaders to not let it go off is natural. In fact it is in the moderate category. This itself is a revelation pointing out a change in Indian leaders.

The overall private and public sector leaders do not show a significant difference, the reason being that the catchment for young leaders remains the same for both of them and both have the same pre-arrival socialization practices to face. However, factor wise there are some differences which can be explained:

- Openness is much higher in the private sector, the reason being that if leaders are not expressive organizations may sweep the problems under the carpet which ultimately affects the crucial bottom-line approach. So even if employees are expressive and end up with counter arguments it is still accepted in the private sector. But in public sector organizations, it has largely been seen that it is the supremacy of leadership which is more important, and nobody wants to be tagged as a noise maker. Precisely for the same reason, conflict management which involves confrontation with problems and issues, is lower in the public sector.
- In the private sector, leaders do not create leaders because of the fear that creating another line of leadership shall make them irrelevant. Public sector leaders, because of an extremely rigid hierarchy,do not have such apprehensions.
- Self-control is high in the private sector,pointing out the fact that managers in the private sector cannot afford to make too many mistakes.

Conclusions

In these high-velocity turbulent environments, resonant leadership has been supposed as the new panacea to a plethora of organizational problems. Be it lack of trust or empathy or workplace incivility or workforce retention, resonant leadership mitigates all. Moreover, the above research shows that the Indian industry has not been found to be lacking in resonant leadership. The study has been done on a very large sample of more than 1000 managers strewn across the who is who of Indian industry, which makes the conclusion all the more obvious. While classically, there are differences in leadership if factors like experience, gender and private versus public organizations are concerned, but the research comes to a conclusion that there are hardly any differences in resonant leadership considering these factors. This shall have significant affect on recruitment, selection, training and development, career planning, succession planning and socialization practices in organizations. For example induction of male and female managers needs to be looked at from an equal opportunity angle. Another implication is that even young managers can be singled out for senior management positions subject to competency and threshold experience.

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Newer Facets of The New Education Policy (NEP 2020): Forward Integration

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Abstract

The New Education Policy of India is all set to scale up the standard of the Indian education system. It would play a significant role in enhancing the employability skills of students and youth of the nation. It is a collaborative effort of all the stakeholders of the education system and was approved by the cabinet of India on 29 July 2020. This study is an attempt to explore the benefits and challenges of the New Education Policy. It was observed that prior to NEP 2020 main motive of India's education system was to increase GER (gross enrollment ratio) in the schools in India. However, there is a lot of focus given in the NEP towards generating and creating an employable workforce from the school itself. The policy is designed to transform education as an experiential learning for students in a stage-by-stage manner by inculcating vocational and analytical skills into young minds. Vision of this policy is to reduce the skilled workers' demand and supply gap and help Indian youth to sustain in the changing global world environment and gain efficiency. It is equally important to nurture the collaborative research culture in higher education institutions by the acquisition of numeracy and analytical skills to make India sustainable and competitive in the world market.

Keywords: Employability Skills, Gross Enrollment Ratio (GER); NEP 2020, Vocational Skills

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Introduction

The Indian Education system needs a total revamp in the light of the new National Education policy in the Indian context. It was launched on 29 July 2020; NEP is all set to revamp India's education system into a more in-depth skill and ability-based system. This policy is an attempt to eradicate the passive learning education system that was prevalent in India. The Government of India with an objective to make the Indian education system holistic, inclusive, sustainable and employable, has brought revolutionary changes with the introduction of higher education in the vernacular language and has opened many opportunities to India's youth. This policy is a future-oriented policy that aims to generate better quality for employable youth having higher competence with acquisition of skill based education. The New Education Policy has envisaged a smooth continuation from school education to higher education. The implementation of NEP in India was a prime objective of the "2030 Agenda for sustainable development". The NEP is not just focused on "Standardized Degree Based Earning," but it gives immense emphasis on skill and knowledge acquisition. The objective of promoting and enhancing quality-based education can only be achieved by developing a system and processes to develop intellectual, thoughtful, and well-rounded individuals. This education policy will enable students to inherit in-depth constitutional values and develop a character that can inspire, fostering technical temperament and skills of the new age. The new education policy is a framework to bring fundamental changes to the current obsolete system of education and is focused on the holistic development of students with the birth of the National Research Foundation to foster an excellent peer-reviewed education system.

The Strategic Planning of New Education Policy

The decision to transform India's education with the implementation of NEP was not taken in haste; the seeds of NEP were sown way back in 2015. In January 2015, a committee under former secretary T.S.R. Subramanian started their deliberation process. Based on this committee report in June 2017**,** after a lot of deliberation**,** a panel was formed under ISRO chief Krishnaswamy Kasturirangan. The Draft of NEP consisted of 484 pages and the government did have an extensive discussion on different aspects of education from elementary education to adult education, based on the inputs received from around 2.5 lakh rural gram panchayats, urban education bodies as well as regulators, policymakers, government authorities, research organizations, industry experts, young entrepreneurs health and child development authorities and local as well as religious bodies.

The feedback received from different stakeholders across diverse sections of education, highlighted major problems that Indian student's faces are forced separation of subjects and streams after 12th which later make student's career limited to a few domains by giving them an early specialization. Also the curriculum is not research-friendly, which makes students less adaptive to new research and think beyond the textbooks, students study to get marks, not for knowledge and expertise.

Table-1: Participatory and Democratic Approach of NEP

Government of India Initiative helped the Human Resource Ministry to get Inputs from All Stakeholders of Education through Participatory and Democratic Approach

110623 Villages	*3250 Blocks*	*962 Urban Local Bodies*	*406 Districts*	*21 States*
31 Government Officers	*29 state and Union Territories*	*76 Member of Parliament*	*324 Institutions*	*33 themes were identified*
35,000 online suggestions from general public	485 letters from individuals	7613 electronic communications Prime Minister's Office and the President's Secretariat	*305 Very Important Persons*	20 themes from higher education and 13 themes from school education.

Source: Draft National Education Policy 2019,https://innovate.mygov.in/wpcontent/uploads/2019/06/mygov1559651011.pdf

Literature Review

Education plays a very crucial role in the development of the nation; education projects the growth and prosperity of a nation. The role of education can never be neglected; it's as essential as oxygen for life. Adoption of technology in the primary education system and the emergence of education startup firm depicts the need for transformation of education from a demand and supply perspective. Raveendran B, Founder and CEO BYJU'S founder, believes India is home to the largest K12 population and NEP 2020 will help globalize the education system and will increase the gross enrolment ratio, and will focus on new-age skills. Lal D, Managing Director, Fliplearn, believes that NEP will create new opportunities for the Ed-tech industry. She also appreciated the Smart initiatives like SAFAL (Structured Assessment for Analyzing learning level) would surely benefit the students.

The Introduction of vernacular language in higher education will help many students to pursue their education. Chanda AN, Technical Specialist Education, Child Fund India, said that promotion of the mother tongue in the education system is a very welcoming step but needs to be available in all the languages as well. Child Fund India is a child development organization that represents the voice of deprived, excluded, and vulnerable child vulnerable children. On the other hand, educationists who know English as well as vernacular language will help to facilitate the process of developing higher education content in the local language. Rajagopalan **S,** Co-Founder and Chief Learning Officer, Educational Initiatives believes that if children study in their mother tongue during the primary stage. He also said that it's important to learn English as well.

Making education as a continuous process and giving students an opportunity to continue education after a break in education is a progressive thought process for the Indian education system and would of immense benefit to students. Gandhi S, Founder, Global Classroom Private Limited (GCPL) & Global Education & Training Institute (GETI), said that NEP 2020 has a very interesting element in that it will provide support for dropouts in different ways of formal and informal education.

Kalyani P (2020), in an Empirical study based on the perception of parents and peer group of students about NEP concluded that more than sixty per cent welcomed the innovative steps taken in the NEP and were positive about outcomes of the NEP 2020. Mathew (2016) N. M investigated the functioning of autonomous colleges according to the prescribed guidelines, investigation of improvement and potential disadvantages of the system in Kerala. The results pointed toward the lack of autonomy and synergy between higher education, which automatically yields a poor quality of education and learning that a lack of autonomy in higher education results in the poor quality of education. Many engineering colleges follow strategies that are very obsolete in comparison with the new age.

Theoretical Background

There was an urgent need for reconstruction and redevelopment in light of the Indian education system. Though the old challenge to get sustainable gross enrolment of students into the school has still not been achieved, but along with this the quality of education must be kept into consideration creating happy and productive young individuals is the need of current times and India being one of the epicenters of manufacturing and Information Technology sectors need to realize and utilize their full potential. The NEP 2020 aims to eradicate the difficulties and will integrate cultural and linguistic groups. The New Education Policy is an initiative to bring transition in Indian education from authoritative to participatory approach with collaboration and collectivism of all stakeholders. Well, this change in the educational system of India was much needed and crucial with an increase in India's contribution in the global environment. Education was one such sector that required major change and reforms to make the young minds of India to be able to stand at par with global employability standards. It was very prudent that now education should not be about heavy bags, it should be about quality content. As GER of India was low, this was directly a reliable parameter that India lacked a potential workforce that could work properly. NEP 2020 is said to be a great revolution for Indian education.

Objective

This paper is a minuscule attempt to analyze study and explore the NEP 2020, how this policy will lay the foundation and nourish the future workforce with amicable employable skills and attitude. The objective of the study is to explore how the New Education Policy of India (NEP 2020) will promote employability skills in the upcoming generation and also this paper discusses the current standard and quality of education and its constraints to the workforce of India. This study can act as a base and niche for future research about the shift in standards, quality of future generations in to New Education Policy 2020. The research is based on secondary data. The result and conclusion have been derived from the literature review and recommendations have been made accordingly.

Constraints of India's Education Policy

This education policy was implemented on the recommendation of the Kothari Commission (1964-1966). During that time, the goal of the Policy was very different and the main focus was on disparities and equalizing educational opportunity. The main idea behind NEP 1968 was to eradicate the difference between social classes and make education accessible for all. There was no provision for sign language, their existence wasn't addressed, they were not empowered. A lot of focus was given on mid-day schemes and supplement programs to develop healthy minds. Under the 1986 policy India saw a great boost in the infrastructure of the education sector of India and untouchability issue in rural India.

But this policy lacked to address the evolving and changing dynamics of the global workforce and education system. A lot of emphasis was given to theoretical learning and earning degrees. There was also very strict segregation of streams and very less practical subjects. This Policy wasn't able to instill employability skills to face real-world scenarios and the entire pedagogy was based on theory rather than application.

Significance of NEP 2020

The education system of India has been working on the traditional and typically outdated methodology of education for around more than three decades. But with new advancements in the technological world and more globalization in almost every sector of India, it has become difficult for Indian graduates to cope up with international standards. NEP 2020 is a ladder that will edge up the skills and aptitude of young minds that were missing for three decades.

India's economy can be said to be a liberalized economy and India as a nation has witnessed major shifts and changes in many sectors, with an increase in the population, they need employment and for this, they need to have more competitive skills to be able to get a job. There were some major lacunae in the old education policy as they were not able to address the new evolving trends, technologies, and skills that are required to be employed. NEP 2020 will make India's education system of International Standards and this will have a significant effect on the future graduate and education system of India. For a long time, India required a change in the landscape of the education system, NEP 2020 was a much-needed silver lining, it is a progressive road map that would make India bloom.

Goals of NEP 2020

India is one of the youngest nations that need to utilize its full potential and for this making youth skilled is very important. To utilize their full potential, they wouldn't be a burden on such a big developing economy. Making the population educated or making them able to read and write is not enough; providing them with a quality education is very important. Also, according to the consumer price index, it showed that in June 2019 there was around 50% increase in the consumer price of education. This reconfirms that the demand for Indian spending on education is inelastic. To make India's education globally competitive, it is essential to ensure the following parameters in policy implementation:

Enhance Employability Skills

Employability skills are a set of skills that involve knowledge and personal attributes that are likely to benefit an individual in the professional domain and whatsoever occupation he/she is involved in and these skills are an important asset of an individual that helps them to grow in the corporate ladder. Well, Indian graduates and school pass-outs don't have very promising data to back it. There have been several types of research and surveys done by various organizations that claimed that the majority of Indians lack basic skills to be employable. According to the Indian skills report in 2019, only 46.21 per cent of students were employable, meaning they were the ones having certain skills to be on the job.

According to the UNICEF report 2019, only 47 per cent of Indian school graduates in 2030 will have the basic skills to be employable. UNICEF quotes"low quality of education and suboptimal vocational training which do not give students the desired skill levels the labour market demands" unquote as major obstacles to addressing the youth skills gap. Very few Indian graduates possess technical skills and knowledge about their respective domains.

Table-2: Gap between Skill Required and Skill Acquired by Higher Education Students

Course	2015	2016	2017	2018	2019	2020	2021
B.E/B.tech	54.00%	52.58%	50.69%	51.52%	57.09%	49%	46.82%
MBA	43.99%	44.56%	42.28%	39.4%	36.44%	54%	46.59%
B.Arts	29.82%	27.11%	35.66%	37.39%	29.3%	48%	42.59%
B.Com	26.45%	20.58%	37.98%	33.93%	30.06%	47%	40.3%
B.Sc	38.41%	35.24%	31.76%	33.62%	47.37%	34%	30.34%
MCA	45.00%	39.81%	31.36%	43.85%	43.19%	25%	22.42%
ITI	44.00%	40.90%	42.22%	29.46%	NA	NA	NA
Polytechnic	10.14%	15.89%	25.77%	32.67%	18.05%	32%	25.02%
B. Pharma	56.00%	40.62%	42.30%	47.78%	36.29%	45%	37.24%

Source : Indian skills report as accessed on 29 December 2021

Table-3: Talent Acquisition and Talent Required Hiring Gap in Higher Education Institutions

Year	2015	2016	2017	2018	2019	2020	2021
Per centage	23%	14%	7%	10%	15%	10%	10%

Source : Indian skills report as accessed on 29 December 2021

The data from India skills Report 2021, as in Table-2 depicts that not even a single course has surpassed the 50% mark. This might be the result or effect of the new era of 'E-Learning' which might have made the learning difficult with very less practical and classroom learning. But still this data is not satisfactory for the development of the nation. These numbers themselves are very worrying to go with as the maximum employable course MBA is also not close to the 50% mark. MBA in India is not an easy affair because the fee of an MBA college in India is somewhere between 40,000 to 10,00,000 that too these figures are average values. If we calculate the time and resources that a candidate is investing in higher education is immense, but as per the report, not even 50% are eligible for getting employed, it is a matter of concern that the course structure and pedagogy that Indian education system practising is not yielding benefits to students.

Strengthen Macro Fundamentals of the Country

The Indian household consumption is based on the level of education. It helps the economy to grow as with good education, they are more likely to get a good job which will help them to afford better lifestyles. Which in result will help them to buy more, their purchasing capacity will be high and consumption will increase. This will help the economy to widen its scope. With increase in the usage of new technology-driven products it would attract foreign investments into the country. Educated and skillful youth will help India be a better manufacturing hub. As with an increase in skills, the marginal productivity of workers will increase. This will further ease and help India's "Make in India" campaign. This will further boost India's international trade. If this policy is implemented, it will be a positive catalyst for trade, employment and the demands of Indians. India recently emerged as the second most attractive manufacturing hub globally by Cushman and Wakefield's, this itself is a proof that how much great potential is in the Indian market and a highly employable workforce,it will make India's market more lucrative.

Three-Pronged Strategy to Enhance Qualitative Higher Education

In this new policy the government aims to provide individual focus on each student and help them realize their true potential through holistic development approach. It is aimed to make the new education system more flexible in terms of subjects that a student is willing to study and learning trajectories.

There is no such hard separation of streams like science, arts and commerce or between curricular activities. This will further eliminate the so-called harmful hierarchies. There is less emphasis on rote learning and more focus on conceptual based learning. The three-pronged strategy adopted to enhance qualitative higher education are as follows:

Multidisciplinary and Accessible Education

- Legal institutes, health sciences universities, and other stand-alone institutions must aim to become multidisciplinary institutions. This would further make it easy for students to get higher education in proximity in terms of distance.
- As India's agriculture sector accounts only for around 14 per cent of the country's economy but for 42 per cent of total employment. So the government is planning to generate a quality workforce that would further yield better productivity and better-skilled labour.
- The NEP 2020 will also focus on technical education, accumulating it with multidisciplinary programs, which means technical subjects would be integrated along with other subjects in the program.

Internationalization of Education

India has one of the largest networks of education, with more than 40,000 colleges in India, but the quality of education is not at par with other nations. The Indian government is planning to give international exposure to Indian students. NEP 2020 has a provision that will allow top-performing foreign universities and colleges to come to India and will help students to face the challenges and will give them the opportunity to educate under different pedagogy. This will reduce the gap between the quality of education in India and other nations.

Effective Assessment Process

A new assessment procedure PARAKH is set up with an objective to set up some standards, PARAKH stands for Performance, Assessment, and Review Analysis of knowledge for holistic development. PARAKH would help to shift rote based learning towards competency-based assessment and will promote critical and creative skills that are required in the 21st century.

Conclusion

It can be concluded that NEP 2020 is a very effective step towards the bright future of new-age India. In this new policy the government aims to provide individual focus on each student and help them realize their true potential through holistic development approach. It is aimed to make the new education system more flexible in terms of subjects that a student is willing to study and learning trajectories. Making education technology-friendly, NEP 2020 is aimed to make students more adaptive to technology and help students to get the taste of the new global world. The regulatory framework now can be termed as "light but tight" to ensure transparency and resource efficiency of the education system by continuous autonomy and good governance. Enriching the feeling of proud Indian factor and focusing on equality for all language and culture based ethnic groups. It will provide strong values, ethics, morals and new skills to the students. Also, NEP 2020 will help in the inclusive growth in India but still the time for implementation of NEP to ground level will take time and will change the dynamics of India. NEP 2020 will make the education less burdening & more interesting, which would help bring students to school and will help create a positive outlook. NEP 2020 focuses on the holistic development of individuals rather than just intellect level, which makes NEP more promising in terms of its effectiveness. But the major challenges to gain benefits of the NEP2020 are how faculty members,institutions, policy maker and regulators are going to define and structure the course content, acquire the teaching pedagogy skills, meet their expenses and reframe their vision and mission, assess and reframe their objectives as well as process to contribute constructively to society and nation. It is equally important to nurture the collaborative research culture in higher education institutions by the acquisition of numeracy and analytical skills to make India sustainable and competitive in the world market.

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Antecedents of Job Embeddedness and Its Outcome on Intention to Stay Among Teachers in the higher Education Sector

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Abstract

In a highly completive and globally challenging education industry, employee retention, especially the teaching fraternity, is indispensable. In this context, job embeddedness plays a predominant role in retention. By keeping this tenet as a basis, this research paper attempted to explore the antecedents relevant to job embeddedness and its outcome on the intention to stay among teachers in the higher education sector. The research paper is exploratory and descriptive – exploring aspects of job embeddedness antecedents and their outcome on the intention to stay. The study employed a survey method to collect the data / information / responses from teachers who are engaged in the higher education sector. The sampling unit of the survey covered the teachers from the disciplines of science, arts, management and engineering. The socio-economic profile of teachers as participants chosen for the study considered their age, sex, designation and experience. The study explored seven antecedents relevant to job embeddedness: workplace socialisation, workplace benefits, organisational perceived value, perception of the peer work group, trust in the organisation, working environment, and workplace autonomy. It observes from the structural equation model that workplace benefits and perception of peer work groups significantly influence the participants' stay back intention in the present job. Job embeddedness is an emerging HR concept that explains the reasons for the attitude of vacation intention by the employees in the organisation. A reasonable study undertakes to verify the grounds for quitting among employees because of job dissatisfaction, stress and job disengagement, etc. The present study is unique since it attempted to explore the antecedents of job embeddedness and its outcome on non-quity intention, especially in the higher education sector.

Keywords: Intention to Stay, Job Embeddedness, Workplace Autonomy, Workplace Benefits, Workplace Socialisation

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Introduction

The higher education sector in the present day scenario surfing in a competitive edge, the growth of academic fraternity, **technological-driven** education, the augment of professionalism and the outcome of research-oriented faculty are the critical elements for retention constraints in the higher education sector. The mushrooming of the higher education delivery system, the ability to pay good packages for professionally talented teachers by the employers' attributes workplace chunk and level of intention to quit. In this injection, the retention of qualified faculty or teachers is essential for educational institutions. To retain and bring the attitude of intent to stay by the teachers for the benefit of students, community and organisation, educational institutions need to employ stay related HR practices in terms of relationship, fit, link and communal attachment. All these practices in the higher education sector for teachers' retention and attitude of stay collectively termed as 'Job Embeddedness Theory'.Wijayanto & Kismono (2004)validates in this study a complete set of factors that influence the decision of a worker to continue or leave an organisation. Job Embeddedness (JE) is a theory that explains why individuals stay in their employment (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001). The novel way of thinking about JE theory proposes three dimensions: fit, linkages, and sacrifice. The seeming compatibility or comfort with one's organisation or group refers to as fit. Links are official or informal links with other people, groups, places, objects, or activities at work or in the community. Finally, the perceived monetary or psychological expenses associated with leaving one's existing employment or neighbourhood are called sacrifices. Each dimension considers both on and off-the-job embeddedness, producing six variables concerned with job embeddedness (Mitchell et al., 2001). Job embedding defines as "a general sense of difficulty in escaping the current social, psychological, and financial framework" (emphasis added; Yao et al., 2004, p. 156). Job embeddedness is conceptualised as a sense of difficulty using a perceptual or attitudinal assessment approach.

Studies have found that organisational dimensions can help forecast employees' retention if workplace transfer not consider. Workplace retention is an imperative phenomenon in modern-day human resource practices. Workplace retention is a kind of brand promotion and cost management for any organisation. However, it is always tricky for employers to meet the requirements and aspirations of their employees in terms of economic, social status, working environment, and psychological contracts. It is because of so many binding forces that need to align at workplaces to retain skilled human resources for the betterment and efficiency of the organisation. In recent days, this demand realises in modern management practices organisation and the collective binding forces are termed 'Job

Embeddedness'. Shaftqae (2009) said that businesses are focused on reducing staff turnover because of the high standby costs. Employee recruiting expenses constitute a 17 per cent of pre-tax yearly income (including turnover, absenteeism, lateness, and effort cover-up, as well as new recruitment, selection, and training costs). Therefore, to understand the job embeddedness factors and intention to stay among teachers in the higher education sector were carried out.

Statement of the Problem

After China and the United States, India's higher education system has the third biggest student population globally. India will be one of the world's foremost educational centres in the future. Since **its** independence, India's Higher Education sector has seen a massive increase in the number of Universities/University level Institutions & Colleges. A strong faculty is an essential asset for every school that provides higher education. Educational institutions must attract and retain competent teachers since poor faculty retention rates can have financial and academic implications (Rensselaer, 2012). In this background, creating a mind-set among the quality teacher to stay in their current institution is mandatory by the stakeholders like employers, management and administrators. It is always well known that a well-pooled faculty team will elevate the institution's brand value and develop professionally qualified students. But unfortunately, the economic, social and personal needs of faculty always look for enrichment and benefits. An institution will balance the resources to requirements and retain and imbibe in the teacher's mind to stay in a good attitude. The components that applies to make the teachers stay collectively lead to job attachment or embeddedness. But the collective elements under the job embeddedness are heterogeneous and differ from organisation to organisation. The theories of job embeddedness advocate that the constructs are formative. Still, in the present changing scenario, the possibility of exploring new constructs to be covered under job embeddedness in the education sector needs to be probed.

Significance of the Study

The majority of current theory and research on intentional turnover contends that voluntary employee leave is caused by an individual's degree of work satisfaction and the perceived frequency and kind of job changes. The practical proposal defines a moderate link between happiness and turnover but an unpredictably variable relationship between perceived quantity and type of options and turnover Griffeth, Hom, & Gaertner (2000). Management scholars have looked into and continue to look into why individuals choose to leave a company. Mitchell, Holtom, Lee, Sablynski, and Erez (2001b) countered by proposing the notion of job embeddedness (JE) as a force that is both diverse and determinative in the sense of items. Each dimension's items united to produce on-the-job and off-the-job elements of one's current condition, and the dimensions merged to make Job embeddedness (Yao, Lee, Mitchell, Burton & Sablynski, 2004). But the efforts are taken to study the job embeddedness in selected sectors, namely banking, hospital and telecommunication. But higher education is a fragmenting industry, and the evoking of new education policy, the liberation of education, and global intervention demand quality teachers to face a competitive educational system. In this aspect, education institutions, especially in the higher end, need to retain their talents to benefit students, institutions, and the economy. In this aspect, the present paper contributes to understand the job embeddedness factors and **their** outcome on intention to study among teachers in the higher education sector.

Overview of Literature

The notion of job embeddedness is very new, and its definition is still a little unclear. To demonstrate the likely overlap while justifying the distinction and necessity for the Job embeddedness construct, a better understanding of how this construct differs from job satisfaction or organisational commitment is required. After controlling for gender, contentment, duty, job search, and perceived substitutes, Mitchell et al. (2001) and Holtom and O'Neil (2004) discovered that work embeddedness predicted the intention to quit and unpaid turnover. Therefore, employers should focus on increasing perceived organisational and supervisor support, encouraging employees to take advantage of benefit programmes, providing them with training opportunities, and providing clearly defined rules for organisational newcomers and job incumbents, according to Giosan, Holtom, and Watson (2005). Swider, Boswell, and Zimmerman (2011) discovered that when employees had lower levels of job embeddedness and job satisfaction and higher levels of accessible alternatives, the job search–turnover relationship was more robust. According to Chen, Chow, and Wang's (2010) study, open-mindedness and organisational commitment have a beneficial impact on workers' understanding of job embeddedness in the workplace.

Most prior research has shown that when a person dedicates to their profession and is content with their current position, their inclination to live reduces. The words depart and remain used interchangeably in the literature on intention studies (Ngoc, Phuong, Chi, & City, 2018). Various factors might influence how workers understand their intentions; as a result, while investigating turnover, investigators prefer to focus on the choice to leave rather than the employee's real intention to stay. In terms of organisational embeddedness, three corporate drivers motivate employees to remain on the job. These are the terms "fit," "links," and "sacrifices" (Mitchell & Lee, 2001). Fit refers to an individual's capacity to manage an organisation's requirements while also being interested in the organisation's rewards. The degree or type of relationship a worker has with their co-workers and job performance refers to linkages. However, workers who leave an organisation and the profits they are willing to concede as a sacrifice. Mitchell et al. (2001) defined community embeddedness as a workplace external constraint that forces people to stay where they are.

Research Gap

The review of various literature related to job embeddedness and intention to stay suggests that reasonably updated studies carry in sectors like information technology, banking, health care, and very negligible studies. Therefore, it attempted to understand the role of job embeddedness and its effect on the intention to stay among teachers in the higher education sector.

Objectives

- To understand the antecedents relevant to job embeddedness among teachers in the higher education sector
- To test and validate the effect of antecedents of job embeddedness on intention to stay among participants in the teaching community of the higher education sector

Hypothesis

Job embeddedness defines as the interconnected influences that prevent a person from leaving their job. JE more closely links the employee with the company and their role. A more significant consequence of job embeddedness is that employees tend to stay inside the organisation rather than leave. There is a one-of-a-kind relationship between work embeddedness antecedents and remaining intention among instructors in the higher education sector. Education institutions, for example, are labour-intensive enterprises that rely heavily on human resources. Thus, efficient organisational performance necessitates complete management of people resources, infrastructure, and services – this link between work embeddedness and desire to stay aided in developing the hypothesis presented below.

- The dimensions of embeddedness significantly influence the intention to stay among teachers in the higher education sector

Research Methodology

Method

Table-1: Research Methodology

Item	Description
Research Design	Exploratory cum descriptive in nature
Type of Population	Teachers employed in higher education who are working in Government, Government-aided and Self-financing colleges
Sampling Unit	Teachers from different disciplines and socio-economic profiles
Sampling Method	convenient Method
Sample Size	415
Sources of Data	Both Primary data and Secondary data
Sources of Primary data	Obtained from the respondents of teachers who are working in Government, Government-aided and Self-financing colleges
Sources of Secondary Data	Gathered from the previous studies, research articles and periodicals
Nature of Questionnaire	A structured questionnaire with suitable scaling
Types of Questions	Closed ended, itemized ranking and likert scale
Pre testing	A pilot questionnaire prepared to understand the reasons for staying in the institutions among 50 selected participants. The questionnaire was pre-tested for its validity and reliability among the selected respondents who are actively presenting in the institutions. Based on their opinion some of the modifications were drawn and restructured questionnaire was used for the survey purpose
Testing of Validity	Was done to check the content, criteria validity
Testing of Reliability	Cronbach alpha value (0.805)

Measures

The study employed a survey method to collect the data from a cross-sectional group of teachers in higher education. To collect the data, a constructive questionnaire was used. The questionnaire comprises two parts. The part I consisted of questions enquired about the personal and professional background of participants. The part II of the questionnaire covered the inquiries related to participants' view on job embeddedness and intention to stay. To develop variables to probe the job embeddedness and intention to stay, a pilot survey was undertaken. The pilot survey employed literature references of existing adopted questionnaires and field surveys to collect the opinions of participants for the reasons to the intention of stay. The prepared statements were verified for their content and criteria validity with a selected panel of experts, including academicians, subject experts and teachers. The fine-tuned items were further taken for reliability checking through the test and re-test method. There was a total of 43 items related to embeddedness and intention to stay were employed for data collection.

The 43 statements were tested for their reliability. The obtained internal consistency in reliability analysis with the Cronbach alpha value of 0.805 (more than 0.7) permitted to consider of all the items for data collection. The item developed used the literature reference of items developed by the survey (Mitchell et al., 2001; Maertz, Stevens and Campion, 2003; Mallol, 2007). After the reliability analysis, the refined questionnaire was administered for data collection from 415 participants.

Table-2: Socio-Economic Profile of the Participants

Sl. No.	Attributes	Classification	No. of Respondents	Per centage to Total
		Less than 35	99	23.9
1	Age	36 to 40	197	47.5
		41 and Above	119	28.7
2	Sex	Male	203	48.9
		Female	212	51.1
		Post-Graduation	61	14.7
		Post-Graduation with M.Phil.	92	22.2
3	Educational Background	Post-Graduation with Ph.D.	102	24.6
		Post-Graduation with NET/SLET	99	23.9
		All the above	61	14.7
4	Marital Status	Married	200	68.2
		Single	215	31.8
		Arts	111	26.7
5	Belonging Discipline	Science	179	43.1
		Engineering	125	30.1
		Less than 10 Years	102	24.6
6	Experience	11 to 20 Years	210	50.6
		21 Years and above	103	24.8
		Assistant Professor	109	26.3
7	Designation	Associate Professor	212	51.1
		Professor	94	22.7
		Government	85	20.5
8	Type of Institute	Government Aided	112	26.9
		Self-Finance	218	52.6
Total			**415**	**100**

Note. From Primary data

From Table-1, the participants' socio-economic profile was described. Among the participants of the survey, 47.5 per cent belong to the age group between 36 to 40, regarding their gender background, 51.1 per cent are female and 48.1 per cent are male. 23.9 per cent of participants possess post-graduation, M.Phil., Ph.D. and other eligibility qualifications like NET/SET. Among the participants, 68.2 per cent is married. 43.1 per cent belongs to the science discipline and 30.1 in Engineering. Regarding their experience, 50.6 per cent have 11 to 20 years of experience, and 51.1 per cent is in the cadres of Associate Professor. 52.6 per cent of participants belong to self-finance institutions.

Results And Discussion

The data were initially reviewed for the preliminary examination. The suggested model's validity is evaluated using factor analysis. After a brief descriptive analysis, the second step included exploratory and confirmatory factor analyses.

Data Cleaning and Screening

The researchers mostly validated data inspection. The researcher examined the normality of the data and the missing data and outliers, which was necessary for factor analysis. Data normality was required for SEM analysis. Another Shapiro-Wilks test was performed ($p>.05$). The Kolmogorov-Smirnov test ($p>.05$) was used. Both normality tests reveal that the result is larger than.05, indicating that the data is normally distributed.

Exploratory Factor Analysis

The data reduction and factor exploratory analysis is carried out to evolve the antecedents relevant to JE and intention to stay. The 43 items developed and validated were verified for their internal consistency and normality was pooled, and necessary data reduction analysis was carried. In the data reduction analysis through EFA totally of 33 items were loaded with more than 0.7 correlation values. The loaded 33 items are further grouped into 8 factors through a rotated component matrix (varimax rotation).

Table-3: Summary of Exploratory Factor Analysis

Factor Label	Item Code	Reliability	Factor Loading	Convergent Validity	AVE
Workplace Socialisation	WS1	.790	.884	0.8784	0.77
	WS2	.789	.883		
	WS3	.791	.877		
	WS4	.791	.877		
	WS5	.790	.871		
Workplace Benefits	WB1	.798	.854	0.8068	0.653
	WB2	.793	.850		
	WB3	.792	.810		
	WB4	.791	.793		
	WB5	.796	.727		

Factor Label	Item Code	Reliability	Factor Loading	Convergent Validity	AVE
Organisational Value	OV1	.786	.910	0.86425	0.748
	OV 2	.787	.899		
	OV 3	.786	.838		
	OV4	.786	.810		
Intention To Stay	ITS1	.799	.886	0.8248	0.683
	ITS2	.801	.879		
	ITS3	.803	.834		
	ITS4	.800	.807		
	ITS5	.801	.718		
Peer Perception	PP1	.320	.878	0.804	0.695
	PP2	.349	.843		
	PP3	.364	.816		
	PP4	.371	.796		
Trust	T1	-.003	.835	0.833	0.648
	T2	.161	.827		
	T3	.155	.823		
	T4	.182	.731		
Working Environment	WE1	.047	.947	0.927	0.806
	WE2	.101	.922		
	WE3	.110	.914		
Workplace Autonomy	WA1	.082	.865	0.825	0.682
	WA 2	.199	.821		
	WA 3	.057	.791		
KMO Value.	**0.803**				
Approx. Chi-Square	11176.902				
df	528				
Sig.	.000				
Cumulative Per centage of Variance (8 factors)	**78.614**				

Note. From computed primary data

ITS: Intension to Stay; WS: Workplace Socialisation; WB: Workplace Benefits; WA: Workplace Autonomy; OV: Organisational Value; PP: Peer Perception; T: Trust; WE: Workplace Environment

From Table-2**,** it is understood that the KMO value of 0.803 is more than 0, 7 proven the sample adequacy to perform factor analysis. The significant value of 0.000,which is less than 0.05 to carry out the factor analysis for the reliable items. The reduced 33 variables are formed as eight factors which explained the cumulative total variance of 78.614, showing the reasonable grouping of variables under factor. The outcome of the rotated component matrix grouped the 33 variables under eight major factors. The factor one converged five items with the validity of 0.8784 described the aspect of workplace socialisation required for the employees to feel comfortability of work and which is termed as" Work Place Socialization". According to (Dirks & Ferrin, 2002), employees under valid organisational socialisation plans such as co-worker support and prospects for the upcoming are likely to notice more links within the organisation and more sacrifice if they leave an organisation, resulting in job embeddedness (a safe attachment relationship with organisation). This literature support helped to constitute workplace socialisation as one of the important antecedents for job embeddedness. The factor two comprised five items described about the quantum of benefits expected by the employees and the content received will help to bind in their job. This derived the second factor organisational benefits are another construct under job embeddedness. It is also proven by the study carried out by (Albdour et al. 2014) that workers may be so anxious about salary and benefits the control costs, which comprise new health care or pension plans, should be seriously measured. Other unthinking but very important benefits that possible sacrifices can bring upon an individual are stability and improvement regarding the job. Also, when a worker decides to remain on his (or her) job, benefits such as promotion or pension are thoroughly enjoyed. The valuable insight of employees about their workplace and their image sensitivity also makes them to reason of stay at their workplace. There are four items that describe the value aspects are grouped under the factor "organisational value" with the convergent validity of 0.864. A study undertaken by Mitchell et al. (2001) argue that the healthier the fit between the employee's morals (e.g. career goals and plans for the future) and the organisation, the less likely the employee is to leave. Similarly, the well the fit with the community and the surrounding environment, the less likely the employee is to leave. The fourth factor is termed as peer perception by understanding the importance of individual perception of peer and vice versa will create community fit at workplace and that also leads to job embeddedness among employees. The fourth factor peer perception is constituted the convergence of 4 items with a validity of 0.804. The studies that were undertaken in educational research also insist on the importance of workplace perception on job embeddedness. The fifth factor is termed as "Work Place Trust" with the convergence of four items with the validity of 0.83325. The same aspect is insisted by the study carried out by Kim and Fernandez (2017) suggested that organisational team leaders usually shape trust among team members by showing personal apprehension and respect for followers. In an uncertain business environment, leadership is important as a key gauge of development and definitely affects performance. The sixth factor converged items relevant to the working environment by the description of three items is termed as "Working Environment" encountered by the employees on job embeddedness. According to Zeffane (1994), working environment and relationships with co-workers; satisfaction touches on intention to leave and actual turnover. They also specified that job satisfaction is largely related to specific and tangible features of the work environment, such as pay, promotion opportunities, co-workers, supervision, and the work itself. The seventh factor relevant to job embeddedness identified in the study in "Work Place Autonomy" with the constitution of three items with the convergent validity of 0.825. It is also substantiated by the studies carried out by Giosan, Holtom, & Watson (2005) proposed that people who perceive that the organisation provisions them and those who trust that their skills are transferable are more likely to become embedded. The final and eighth factor is termed as intention to stay with the convergence of three items with the validity of 0.825. The intensity of job embeddedness of employees will increase their intention to stay. It is also supported by the studies of Mallol, Holtom & Lee, 2007 which states job embeddedness is shown to be a healthy forecaster of retention across varied groups of employees, including law enforcement officers, military personnel, informational technology personnel, hospital, retail, bank employees, and coaches at the academic level.

The exploring of seven major antecedents like workplace socialisation, benefits, values, trust, environment, peer relation and autonomy constitute job embeddedness and further to that in order to validate the hypothesis that the antecedents of job embeddedness on intention to stay confirmatory factor analysis was carried out.

Confirmatory Factor Analysis

The CFA was performed to test and validate the hypothesised model that the antecedents of job embeddedness significantly influence intention to stay. It is performed in two stages:

- Measurement fit
- Structural Equation Model

The measurement fit was carried out and identified the model where in which all eight constructs are deployed for the covariance matrix and the model fit was verified. Initially the constructs were fit into the model without modification indices but were unable to obtain the necessary goodness of fit and other fit indices with the higher error value. Later by drawing four modification indices under paired parameter error removal process, the required fit indices were obtained and the saturated model was further taken for the structural equation stage. The details of measurement fit and fit indices are given below.

Figure-1: Measurement Fit Model

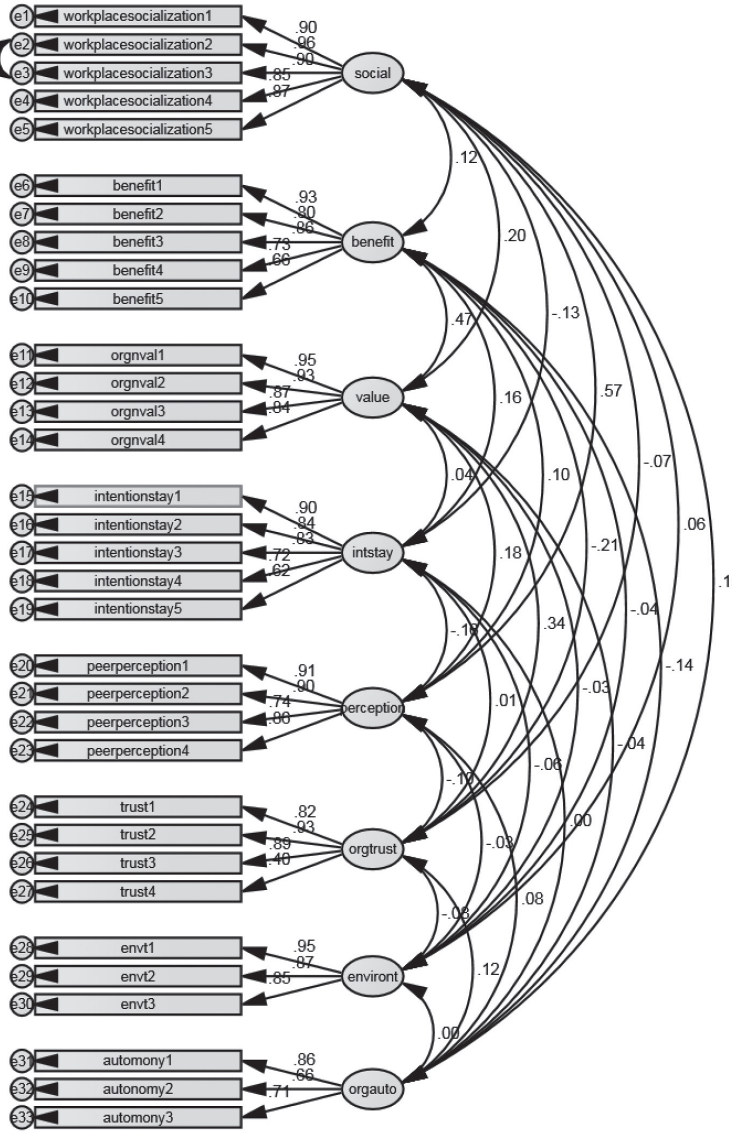


Table-3: Fit Indices

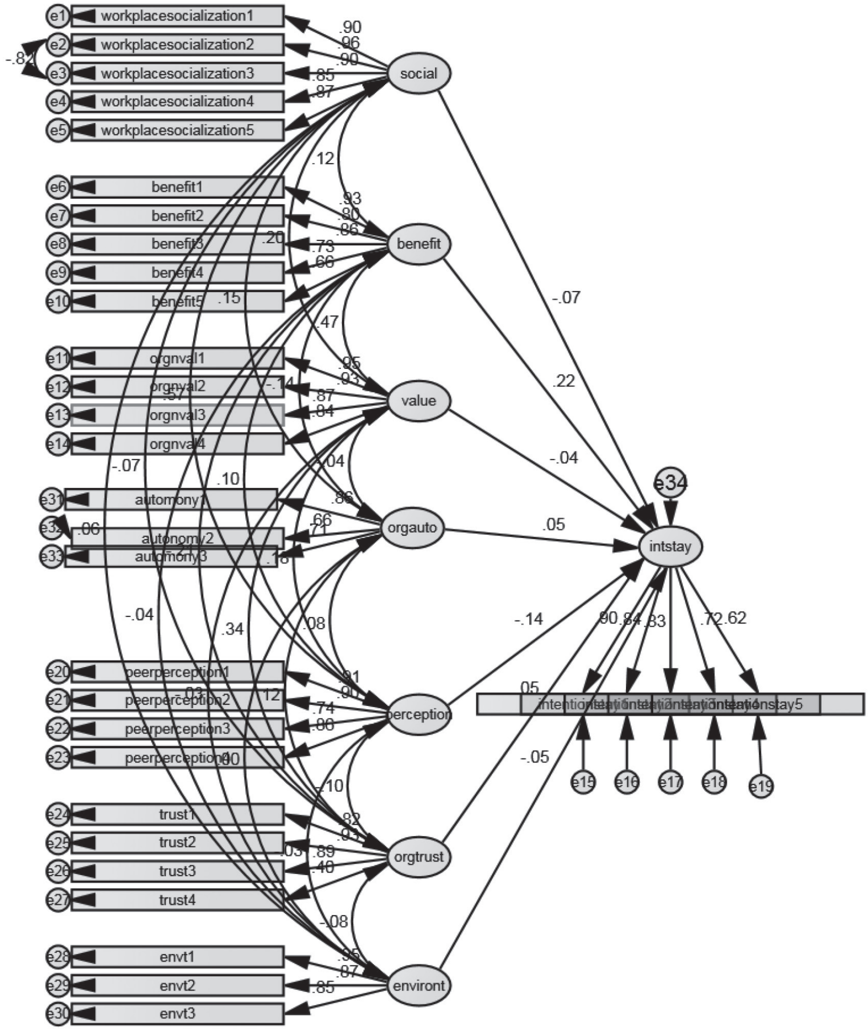
Statistics	χ2	Proba-bility Level	χ2/df	GFI	AGFI	NFI	RFI	TLI	CFI	RMR	RMSEA
Model Values	1425.188	0	3/058	0,840	0.807	0.876	0.86	0.901	0.913	0.58	0.71
Recommended value for good fit	—	≥ 0.05	≤5.00	≥0. 9	≥0. 9	≥0. 9	≥0. 9	≥0. 9	≥0. 9	≤0. 05	≤0. 08

Note. From Davey & Savla, 2010; Hair et al. 2010; Tabachnick & Fidell, 2007

Structural Equation Model

After verifying the measurement fit of the construct and convergence of items under constructs in measurement fit, further to arrive the prescribed fit indices, the constructs were taken for the structural equation model.

Figure-2: Structural Equation Model



The purpose of **the** structural equation model is to test and validate the hypothesis that the antecedents of job embeddedness on staying intention among teachers in higher education. The antecedents, namely workplace socialisation, benefits, environment, trust, value, peer relationship and autonomy, were taken as exogenous constructs and intention to stay was taken **as** endogenous constructs. The below diagram shows the causal relationship.

Table-4: Testing of Hypothesis

			Estimate	SE.	CR.	P	Label
ITS	<---	WS	-.074	.068	-1.075	.282	Not supported
ITS	<---	WB	.253	.079	3.198	.001	**Supported**
ITS	<---	WA	.049	.057	.860	.390	Not supported
ITS	<---	OV	-.038	.066	-.571	.568	Not supported
ITS	<---	PP	-.165	.077	-2.155	.031	**Supported**
ITS	<---	T	.053	.075	.714	.475	Not supported
ITS	<---	WE	-.051	.055	-.927	.354	Not supported

Note. From primary data

ITS: Intension to Stay; WS: Workplace Socialisation; WB: Workplace Benefits; WA: Workplace Autonomy; OV: Organisational Value; PP: Peer Perception; T: Trust; WE: Workplace Environment

Results and Discussion

The outcome of the structural equation model estimates that there is a significant positive influence of benefits received by the participants in their respective institutions on their intention to stay. The obtained p-value of 0.01, which is less than 0.05, shows a significant influence. The standardised estimate reveals a positive influence of 0.253; when one unit of benefit increases, the intention to stay increases to 25.3 per cent. According to research, a worker may be so concerned about income and benefits that control expenses, such as new health care or pension plans, should be carefully considered. Other hidden but substantial rewards that prospective sacrifices may offer to individuals are employment security and advancement.

Furthermore, when a worker chooses to stay on the job, advantages such as promotion or pension are much appreciated (Albdour et al. 2014). Similarly, when the peer perception is harmful, and it reduces the intention to stay of participants. The obtained p-value of .031, which is less than 0.05, shows a significant influence but the negative standardised estimate of -0.165 reveals that when one unit of negative peer reception influences 16.5 per cent of intention to stay by the participants.(Ferreira & Coetzee, 2013; Jiang et al., 2012) has identified the major predictors that are directly involved in creating JE in the workplace. These are the following: (a) supervisory support, (b) employee advocacy, (c) self-actualisation, (d) ineffective work conduct, (e) burnout and job stress, (f) peer relations, (g) organisational silence, and (h) personal variables (i.e., employee attitudes and on-work factors). It is also observed that there is no significant influence of other antecedents like organisational value, trust, autonomy, environment and socialisation on the intention to stay among the teachers in higher education.

Conclusion

In order to evaluate employees' intention to stay in higher education, the findings support the importance of considering job embeddedness. Given the argument that embedded employees perform better and have fewer plans to leave the organisation (Halbesleben & Wheeler, 2008), it is suggested that the participating higher education institution and its management consider programmes to improve employee embeddedness **to** reduce turnover intentions. Supervisor support, which provides instructions, assistance, trust in, and praise for subordinates, is proposed in this context to help employees better suit their roles and the organisation, as well as to enable them to create stronger ties with colleagues (Bergiel, Nguyen, Clenney & Taylor, 2009). Employees will be more committed to their jobs and less inclined to leave the company as a result (Mitchell et al., 2001a). According to the findings, engaged and dedicated employees are less likely to leave, so the higher education environment should encourage meaningful work activities, flexible working arrangements, opportunities for growth and development, and incentive compensation to help sustain employees' vigour and dedication (Saks, 2006; Van den Berg et al., 2008). In this study, the higher education institution should investigate the extent to which personal and professional growth is provided. Embeddedness can be encouraged by implementing training programmes that address both organisational and individual well-being, resulting in a healthy emotional climate in the workplace (Schaufeli & Salanova, 2008). Employees with growth opportunities have the opportunity to develop and demonstrate their potential, allowing them to better match their roles and the organisation. When there are opportunities for personal and professional development, employees may be more invested in their work and less likely to leave (Bergiel et al., 2009). Management might boost employee engagement by educating them on goal-setting, building career objectives, pointing out hazards and providing guidance as needed (Barkhuizen & Rothmann, 2006). Furthermore, positive employment resources such as supervisor evaluation, collegial support, social engagement, and personal growth may result in increased levels of enthusiasm and dedication among employees (Van den Berg et al., 2008).

Non-monetary incentives, such as sabbatical leave or flexible work schedules, are suggested by Mitchell et al. (2001a) to improve employee embeddedness. To actively integrate newcomers in the organisation, socialisation strategies, network groups, and mentoring could be used to satisfy early career demands for guidance, support, affirmation, and building a sense of belonging (Allen, 2006; Freidman & Holtom, 2002).

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Autoregressive Integrated Moving Average & Gold Price in India

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Abstract

Gold is one of the precious and expensive metals in world-wide. Earlier, Gold was only purchased at the time of marriage, any occasion / ritual or at any specific function in the family. But now, it is seen as one of the important instruments of investment and acts as a hedge against inflation and strengthens during the financial crisis. Making prediction about gold prices is relevant from the point of view of an investor, banks, jewellery makers, and other individuals too. One of the most widely used and popular techniques for estimating future prices is Time Series Analysis, it helps to make an estimation about the future prices of a variable and also investigates the trend. This article uses ARIMA forecasting for Gold prices in India. The data from June 2015 to June 2021 has been used in this study. The main objective of this article is to guide investors to reduce their risk at the time of investing in gold. ARIMA (1, 1, 0) model is the appropriate model to forecast the gold price over the study period.

Keywords: ADF, ARIMA, Autocorrelation, Gold Price, RMS

Introduction

Gold is one of the most demanded metals in India due to its uses in nearly all festivals, rituals, weddings and in any special occasion across all over the country. From ancient times to current times, it catches the huge attention of all the individuals. As it is known that its demand is very high, so its prices keep moving upward with the passage of time and here it creates

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an opportunity for the investors to take active participation regarding investment in gold.

Evaluation of investment in gold could be traced from the traditional way of buying to investing in GOLD ETFs. Investors are putting their money with mainly two focuses; one is to hedge against the inflation and secondly to diversify the risk of their portfolio. It is also very important from the point of view of an investor to have awareness of the changes and variations in the prices of gold, so that they can make a better decision towards investment in it.

The purpose of investment by individuals in gold is to beat inflation and get a good return. The individual sees the growth in long-term as well as security. As per past record the growth is outperforming the inflation rate. In the time of uncertainty, gold seems to be a very safe investment. It will also increase the stability of the portfolio.

Indians generally purchase gold jewellery instead of only gold because of the use of gold in day-to-day life. This choice needs to pay extra money for the making or conversion charges. On the other hand, investing in Gold ETF also creates demand for gold. NSE & BSE two important stock exchanges, placed various instruments to make the investment path in gold much easier. Therefore, it is critical for investors to be well educated almost variance within the price to make a smart choice in contributing to Gold. Thus this article provides an understanding of estimating of gold cost through the model known as the ARIMA model.

Review of Literature

Parisi, Parisi, & Díaz (2008), in their research work investigated the rising prices of gold by using the ARIMA models to forecast gold prices. The authors found that gold ETF was able to get a significantly higher returns over the period of time and at the same time it reduced the risk involved in the transaction of gold. This study also found that the use of the "rolling recursive model" was able to increase the power of prediction of the movement of gold prices.

Lazim Abdulla(2012) forecasted gold prices using the ARIMA model in a study. During the years 2002 and 2007, daily selling Malaysian gold coin prices were used to conduct this research with reference to the economy of Malaysia. They came to the conclusion that the ARIMA model alone is not sufficient to forecast the gold price as some other factors also have an impact on the movement of prices of gold.

The study conducted by Deepika, Gautam Nambiar and Rajkumar in 2012 found and predicted the movement in the price of gold in long-term and short-term using two different methodologies. Time series modelling was used to estimate short-term gold prices, and multiple regression analysis was used to forecast long-term gold prices. Their research was based on gold price information from 1980 to 2012. On the basis of conclusion, the authors ARIMA was not found a suitable method to forecast the estimated price of gold.

Dr. Ali Khan and Massarrat M(2013) suggested establishing a show for Gold cost estimating and a system for assessing the program's accuracy. The hypothesis was based on data from gold cost tests conducted between January 2003 and March 2012. It was discovered that ARIMA(0,1,1) would be a determining model for Gold Cost Estimating. The RMSE was used to determine the model's exactness.

Rebecca Davis, et.al (2014) did a study on calculating the cost of gold using the ARIMA model. For this study, the month-to-month averaged gold price from January 2003 to April 2012 was used. For a six-step estimate, the fitted ARIMA display was used. To obtain estimating precision, the anticipated values were compared to the genuine.

Ganguly, Kausik, et.al (2014) using the Vector Blunder Redress demonstration, sought to differentiate the cost of gold in the long-term with some factors like exchange rate, oil prices, US bond rates, stock showcase list and consumer price. Because of non-stationary data, the author used a coordination strategy to conduct their research, employing Vector error correction.

Hossein Hassanix, Emmanuel Sirimal Silvax and Rangan Gupta(2014) compared the prescient control of 17 different determining procedures. The analysis was based on gold price data from 1972 to 2013. Considering outcomes, the authors came to the end that there is no uniform show that can provide the 2014 most accurate gold cost estimate over various time horizons. Exponential Smoothing (ETS) will be the best show if we use the most decreased normal Root Cruel Square Blunder as the basis for determining the prescient control of a model.

Aarti Sharma(2015), in his paper attempted to predict the gold price in India using the historical data and movement in the prices during the time period of study by investigating trends. The objective was to find out the most suitable forecasting model for estimating movement in the gold prices, and ARIMA was applied in the study to get the work done. She had chosen the time period from April 1990 – July 2015 to estimate the prices using the software SPSS. In the research, she has also examined the Stationarity with the use of the Augmented Dickey Fuller test and using other charts.

Guha, Banhi & Bandyopadhyay and Gautam (2016), in their work focused on the use of a time series model known as the ARIMA model for estimating the price movement of gold in India. They considered the time frame during the period of 2003 and 2014 for their study to reduce the volatility involved in the purchase of gold and assist them in making a decision regarding the purchase or sell. At concluding their paper, they came to know that ARIMA (1, 1, 1)is the best-suited model which meets all the requirements of statistics, and other used techniques may not suit it at best.

Yaziz, Siti Roslindar, Azizan, Noor, Ahmad, Maizah and Zakaria, Roslina (2016), in their study, used five innovative methods in the model and measured the performance of ARIMA-TGARCH and tried to estimate the prices of gold. Considering the time period from 2003 to 2014 and taking the daily gold prices, they have worked on forecasting the prices. From the study they got to know that a model with some innovative techniques known as hybrid model ARIMA(0,1,0) TGARCH(1,1) was found to be a good fit model for predicting the movement in the prices of gold.

B. Kishori and V. Preethi (2018), in their research work focused to estimate gold prices using historical data. Their objective was mainly concerned with two major things, the first one is how the variability affects the gold prices and the second one is to forecast the gold prices. Collecting the gold prices from the World Gold Council for considering the time frame from January 2012 to December 2017 of the techniques Durbin-Watson test & ARIMA model, they have estimated the future prices of gold in their research work.

Shankar, P and Reddy (2021), M. did research focusing on the target of comparison between two models: the first one is known as the conventional time series and the second one is known as the deep learning algorithm. They have developed some models like the ARIMA model and also predicted the movement of prices of gold in the Indian market by using some techniques like MLP, CNN and LSTM. They took into consideration the daily data from year 2016 to 2020 for their study. At the conclusion, they found that the LSTM model is better than other available three models considered in the study for forecasting the gold prices in India.

In their paper, J. Surendra, K. Rajyalakshmi, B.V. Apparao, G. Charankumar and Abhishek Dasore (2021), tried to forecast the Gold prices from 2020 to 2029, considering the Gold prices in India from 1964 to 2019. They have implicated the ARIMA model in their research and also used PACF for estimating the prices. Estimating the gold prices and the increasing trends for the next ten years based upon the historical prices from 1964 to 2019, that price in 2019 for per 10 grams of 24 carat Rs. 35,220 to in 2029 10 grams of 24 carat Rs. 69846.6. And they concluded if the same trend goes on forecast prices will be Rs. 35,220 to Rs. 118403 per 10 grams in the year 2019.

Data & Methodology

The research employs a monthly data set on gold prices (in Rs./ 10 Grams) of India. The data spans the months of June 2015 through June 2021. The data have been collected from https://www.mcxindia.com/market-data/bhavcopy. Log series of the data have been used.

To obtain the optimum match, we employed the Box-Jenkins technique (ARIMA procedure). The ARIMA(p,d,q) model is a model which uses a moving average and is integrated auto regressively.

p denotes the number of terms in autoregression,

d denotes the number of times of difference of time series to make it stable,

q denotes the moving average.

For studying a non-stationary time series, the ARIMA model is utilized. By differencing the time series, non-stationarity can be removed. Correlogram charts, the Augmented Dickey Fuller test and the P-P test were used to assess non-stationarity. The software Eviews was utilized.

ARIMA Model for Gold Price Data and Forecasting

The model identification needs an examination of stationarity of the series concerned.

Stationarity Test

The ADF test, PP test, and Correlogram analysis were used to examine the stationarity of the variable Gold Price. The following is a list of them. In Table-1, the findings of the Augmented Dickey-Fuller Unit Roots & P-P test on Gold Price tests are shown. Figures-1 and 2 show the Correlogram plots.

Table-1: Findings of ADF Test & PP-Test

Nul Hypothesis: Gold Price at Level has a unit root	**Test Critical Values**				
Exogenous: Constant, Linear Trend	**ADF Test Stat**	**Proba-bility**	**1% Level**	**5% Level**	**10% Level**
Lag Length: 1 (Automatic - based on SIC, maxlag=11)	-2.040747	0.5691	-4.09255	-3.47436	-3.1645

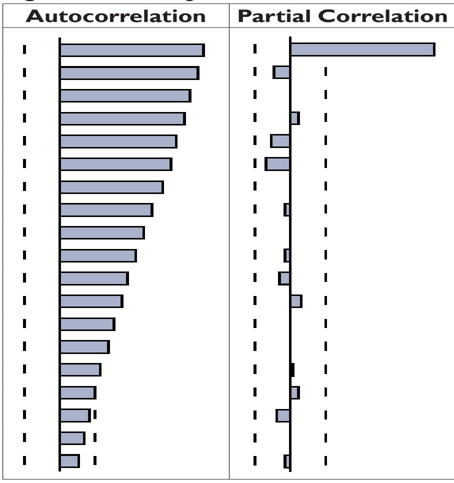
Nul Hypothesis: Gold Price at 1st Difference has a unit root	**Test Critical Values**				
Exogenous: Constant, Linear Trend	**ADF Test Stat**	**Proba-bility**	**1% Level**	**5% Level**	**10% Level**
Lag Length: 0 (Automatic - based on SIC, maxlag=11)	-6.52373	0	-4.09255	-3.47436	-3.1645

Nul Hypothesis: Gold Price at Level has a unit root	**Test Critical Values**				
Exogenous: Constant, Linear Trend	**P-P Test Stat**	**Proba-bility**	**1% Level**	**5% Level**	**10% Level**
Band Width: 1 (Newey-West Automatic) using Bartlett Kernel	-1.930034	0.6286	-4.0906	-3.47345	-3.16397

Nul Hypothesis: Gold Price at 1st Difference has a unit root	**Test Critical Values**				
Exogenous: Constant, Linear Trend	**P-P Test Stat**	**Proba-bility**	**1% Level**	**5% Level**	**10% Level**
Band Width: 6 (Newey-West Automatic) using Bartlett Kernel	-6.378964	0	-4.0906	-3.47345	-3.16397

Authors' estimation

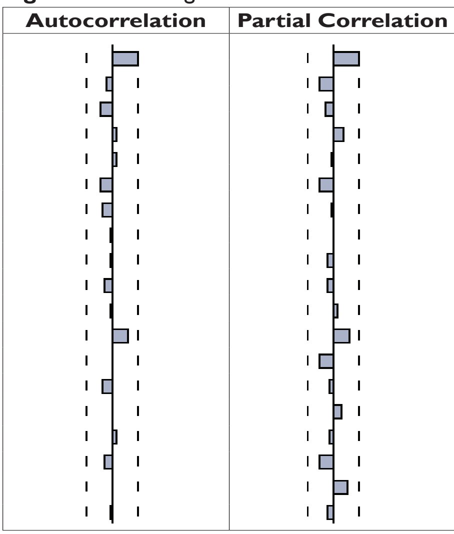
Figure-1: Correlogram of Gold Price at Level



	AC	PAC	Q-Stat	Prob
1	0.961	0.961	70.159	0.000
2	0.914	-0.108	134.62	0.000
3	0.870	0.004	193.76	0.000
4	0.832	0.062	248.66	0.000
5	0.787	-0.132	298.49	0.000
6	0.730	-0.160	342.02	0.000
7	0.673	-0.007	379.57	0.000
8	0.617	-0.004	411.62	0.000
9	0.564	-0.006	438.88	0.000
10	0.511	-0.026	461.56	0.000
11	0.453	-0.081	479.64	0.000
12	0.402	0.076	494.14	0.000
13	0.355	-0.007	505.65	0.000
14	0.313	-0.002	54.71	0.000
15	0.271	0.012	521.66	0.000
16	0.236	0.048	527.01	0.000
17	0.199	-0.096	530.87	0.000
18	0.164	0.001	533.55	0.000
19	0.130	-0.034	535.27	0.000

Authors' estimation

Figure-2: Correlogram of Gold Price at 1st Difference



	AC	PAC	Q-Stat	Prob
1	0.242	0.242	4.4057	0.036
2	-0.052	-0.117	4.6101	0.100
3	-0.108	-0.071	5.5142	0.138
4	0.041	0.088	5.6437	0.227
5	0.034	-0.014	5.7342	0.333
6	-0.108	-0.125	6.6765	0.352
7	-0.093	-0.018	7.3792	0.390
8	-0.016	0.001	7.3999	0.494
9	-0.023	-0.061	7.4432	0.591
10	-0.073	-0.059	7.9052	0.638
11	-0.009	0.039	7.9116	0.721
12	0.152	0.134	9.9705	0.619
13	-0.006	-0.118	9.9735	0.696
14	-0.083	-0.037	10.613	0.716
15	-0.003	0.068	10.614	0.779
16	0.038	-0.036	10.751	0.825
17	-0.081	-0.135	11.389	0.836
18	-0.001	0.127	11.389	0.877
19	-0.022	-0.050	11.438	0.908

Authors' estimation

The Findings

The following observations can be found in Table-1:

The Augmented Dickey Fuller test accepts the Unit Root hypothesis for the variable log gold price (GT) at the level. However, at the first difference, the Unit Root test fails for the variable Gt (in log).It indicates that at the first difference, the price of gold becomes stationary.

The Phillips-Perron test accepts the presence of Unit Root for the variable log gold price (Gt) at the level.

However, the availability of Unit Root in the variable log gold price (Gt) at the first difference is not completely ruled out.

The autocorrelation functions (ACFs) and partial autocorrelation functions (PACFs) have been used to investigate the stationarity of the gold price (Gt) at the level (PACFs). Figures-1 and 2 show the ACFs and PACFs of the variable concerned.

According to observations, the gold price (GT) series at the level is non-stationary and requires differencing. Figure-2 depicts the ACF and PACF of the first differenced series of gold prices.

Observations testify for the stationarity of the first differenced GT series. Consequently the GT series is I (1) and d=1.

Model Determination

Identification of AR(p) Structure

Figure-2: the observation is as follows:

(i) there is a significant spike at lag 1 in PACF & ACF.

These indicate that the ΔG_t series is an AR(1) structure.

Hence, the estimable AR (1) model is as follows:

$$\mathbf{\Delta G_t = \alpha + \beta \Delta G_{t-1} + u_t} \quad ...1$$

Table-2: Results of Estimation

Dependent Variable: Log Gold Price at 1st Difference				
Variable	**Coefficient**	**Std. Error**	**t-Stat**	**Prob**
Dependent Variable at Lag 1	0.24	0.12	2.09	0.04
C	0.00	0.00	1.60	0.11
R-squared	0.06	AIC		-5.64
Adjusted R-squared	0.05	SC		-5.57
F-static	4.38	Log likelihood		202.07
Prob (F-static)	0.04	Durbin-Watson Stat		1.95

Authors' estimation

The estimated equation is as follows:

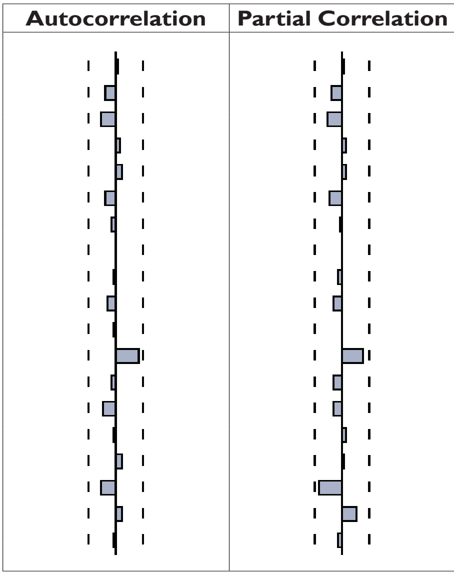
$$\mathbf{\Delta G_t} = 0.0 + 0.24\ \mathbf{\Delta Y_{t-1}} \quad ...2$$

Findings

Equation 2 found that

- $\hat{\beta}$ is significant at a 1% level,
- the equation is free from autocorrelation since DW=1.95

Figure-3: Correlogram of Residual of Equation-2



	AC	PAC	Q-Stat	Prob
1	0.021	0.021	0.0331	0.856
2	-0.087	-0.088	0.6080	0.738
3	-0.121	-0.118	1.7298	0.630
4	0.037	0.034	1.8343	0.766
5	0.049	0.028	2.0232	0.846
6	-0.098	-0.110	2.7903	0.835
7	-0.037	-0.019	2.8998	0.894
8	0.006	-0.001	2.9025	0.940
9	-0.012	-0.047	2.9151	0.968
10	-0.073	-0.077	3.3640	0.972
11	-0.013	-0.005	3.3782	0.985
12	0.195	0.175	6.7220	0.875
13	-0.043	-0.080	6.8884	0.908
14	-0.102	-0.077	7.8317	0.898
15	-0.010	0.039	7.8413	0.930
16	0.058	0.009	8.1547	0.944
17	-0.134	-0.196	9.8772	0.909
18	0.047	0.119	10.096	0.929
19	-0.023	-0.028	10.148	0.949

Authors' estimation

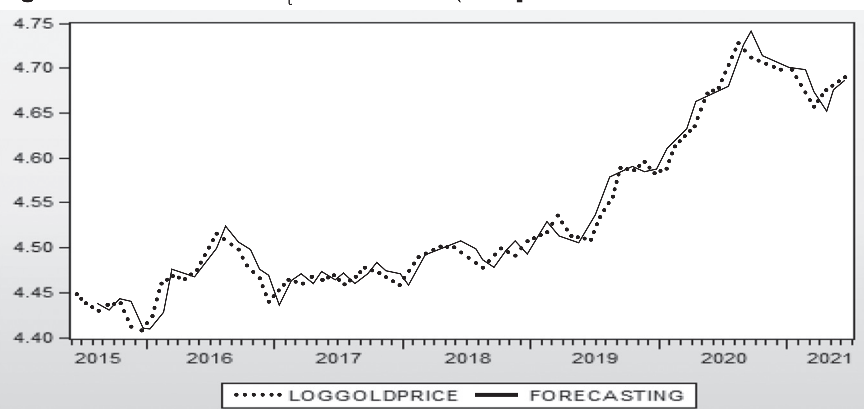
MA (q) Structure Identification

The ACF and PACF of the residuals of equation (2) are plotted in Figure-3. These observations testify for MA (0) structure for $\Delta Y_{t.}$

ARIMA (1, 1, 0) Forecasts for G_t

The ARIMA (1,1, 0) model, as described in equation 1, was used to generate a one-period forecast for GT. In Figure-4, the time charts of GT and the matching forecast (GF) are shown. Over the time period in question, GF is shown to be almost identical to GT.

Figure-4: Time Plot of the G_t and the ARIMA (1, 1, 0] Forecasts.



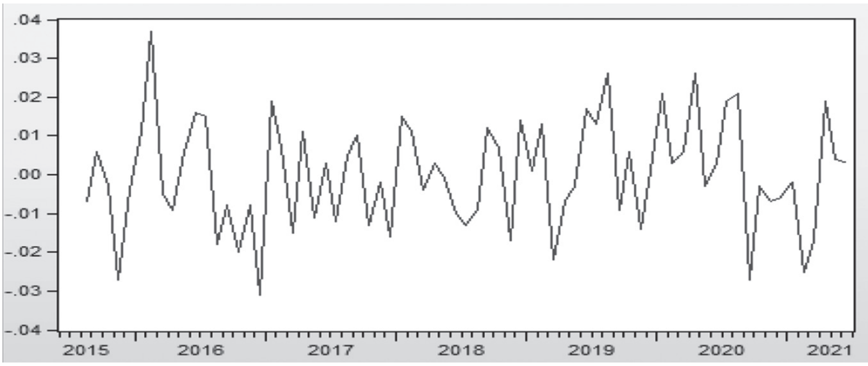
Authors' estimation

Findings

Figure-4 depicts that

- the ARIMA (1, 1, 0)forecasts almost coincide with the gold price at level data.
- $logG_t$ set is marked by the absence of unusual volatility over the study.

Figure-5: Time Plot of Forecast Errors



Authors' estimation

The Efficiency of Forecasts

If the residuals (e_t) are white noise such that $e_t \sim$ iid N (0, $\sigma^2\varepsilon$), then these errors would have no AR structure. The ACF and PACF of the residuals of ARIMA (1, 1, 0)equation 1 are given in Figure-3 showing the residuals generated by an ARIMA (0,0,0) process and offer no systematic and deterministic information for improving upon the forecast. Residuals are free from autocorrelation. Since there is no cluster in the forecast error and Residual Mean Square is equal to 0.00019, there is no heteroscedasticity in the residual.

Conclusion

Analysis of 7 preceding years' data of prices of gold which was traded in MCX suggests a model ARIMA (1,1,0) and it was found suitable for forecasting the future prices of gold.

ARIMA(1,1,0) is the efficient forecast as residuals are free from autocorrelation and heteroscedasticity. In Table-3 & Table-4, monthly Gold prices in Rs/10Grams along with Forecasting are presented in the appendix.

Future Scope of Investigation

The ARIMA model was used to forecast gold prices under the presumption that it follows a completely linear pattern. As a result, non-linear forecasting strategies based on computational intelligence techniques can be investigated with a lower white noise term.

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Appendix

Table-3: Monthly Gold Price Along with Forecasting

Month	Actual Gold Price	Forecasting	Month	Actual Gold Price	Forecasting	Month	Actual Gold Price	Forecasting
Jun-15	27993		Jun-16	31079.18	29968.35	Jun-17	29318.14	29137.33
July-15	27300.52174		July-16	32780.62	31637.45	July-17	28750.19	29572.58
Aug-15	26848.14286	27308.8004	Aug-16	32029.91	33420.16	Aug-17	29109.32	28797.24
Sep-15	27302.68182	26910.7068	Sep-16	31440.59	32054.26	Sep-17	30094.86	29384.15
Oct-15	27422.66667	27589.7378	Oct-16	30073.45	31499.62	Oct-17	29622	30533.38
Nov-15	25966.04762	27627.676	Nov-16	29391.05	29941.18	Nov-17	29547.73	29697.31
Dec-15	25545.31818	25788.3897	Dec-16	27406.77	29414.92	Dec-17	28664.9	29718.84
Jan-16	26235.95	25607.1671	Jan-17	28324.9	27118.22	Jan-18	29634.09	28636.83
Feb-16	28911	26575.5043	Feb-17	29233.05	28735.23	Feb-18	30868.15	30065.58
Mar-16	29417.40909	29790.0488	Mar-17	28660.17	29646.51	Mar-18	31112.14	31375.03
Apr-16	29134.66667	29730.8573	Apr-17	29440.63	28705.47	Apr-18	31606.52	31371.29
May-16	29650.95455	29252.5868	May-17	29046.74	29823.04	May-18	31886.3	31930.9

Table-4: Monthly Gold Price along with Forecasting

Month	Actual Gold Price	Forecasting	Month	Actual Gold Price	Forecasting	Month	Actual Gold Price	Forecasting
Jun-18	31434.14	32159.23	Jun-19	33506.8	32189.4	Jun-20	47316	47026.92
July-18	30615.36	31525.96	July-19	35138	34095.6	July-20	49952.78	47810.36
Aug-18	29959.59	30614.66	Aug-19	38003.62	35773.44	Aug-20	53518.95	50938.85
Sep-18	30807.95	29993.39	Sep-19	38168.05	38981.84	Sep-20	51502.18	54770.88
Oct-18	31727.82	31216.12	Oct-19	38969.3	38452.76	Oct-20	50946.57	51350.96
Nov-18	30948.64	32159.87	Nov-19	38168.29	39417.15	Nov-20	50358.82	51138.01
Dec-18	31991.15	30959.4	Dec-19	38337.19	38219.54	Dec-20	49845.73	50538.76
Jan-19	32521	32456	Jan-20	40496.65	38624.08	Jan-21	49770.2	50040.39
Feb-19	33864.15	32860.04	Feb-20	41549.9	41301.76	Feb-21	47225	50070.5
Mar-19	32724.43	34417.49	Mar-20	42626.68	42077.44	Mar-21	45085.61	46925.66
Apr-19	32153.85	32661.44	Apr-20	45778.61	43166.93	Apr-21	46910.1	44866.57
May-19	32017.57	32221.89	May-20	46540.76	46876.54	May-21	48060.33	47667.33
						Jun-21	48977	48653.37

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Exploring Purchase Intention of Customers towards Self Help Group Products

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Abstract

SHGs play an important role in creating employment opportunities for the economically and socially backward community of village women. Much work has been done on nurturing and developing Self-Help Groups in India by the central government and various state governments. Studies have shown that much effort has been put into the formation of SHGs at every level to engage the marginalized section of society, but majority of them failed to sustain their business activities in a profitable manner. It is very important to know the factors shaping the buyer's mindset about their products. The perception of their market, i.e., the end consumers, about the products of SHGs, in terms of product quality, consistency, packaging, hygiene, price and availability is measured to find the true picture. This study has been conducted keeping in mind about recording the consumer perception about SHG products.

Keywords: Consumer Perception, Homemade Products, Organic Products, Product Acceptability, Product Positioning, Self-Help Groups

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Introduction

Positioning plays an important role in the marketing and branding of products. An entrepreneur's perception of his own products is immaterial, what matters most is, consumer perception of his product offering. Big brands have deep pockets and an organized marketing department which takes care of the image of their products, starting from advertising to packaging and final delivery. Advertising can generate strong, specific, emotional attachment and expectancy, but it must be followed by a favorable brand usage experience to be the successful brand (Rossiter, J., & Bellman, S. 2012). Due to limited financial resources, it is a big challenge for small and micro level organizations to invest heavily in branding and positioning of their products in the market. Yet branding is an important instrument for sustainability, even for small and micro-level organizations (Lahiri, I., & Banerjee, M. 2018). These small businesses are the major source of innovation (Ghouse, S. M. 2014), which makes it imperative to indulge in branding and customer acceptance as critical to their survival (Lahiri, D., & Banerjee, M. 2019).

The urban Indian consumer buying behaviour is undergoing changes. Deloitte's Global Powers of Retailing revealed about the growing trend toward convenience, social wellbeing, and blended commerce models in retailing (Porus & Ramanathan, 2021). A large wealthy middle-class customer with much of disposable income is now getting health conscious, hygiene conscious and moving towards environmentally friendly products. Instead of foreign branded products and chemical-based products, the masses are turning towards homemade and green products. In 2019, unorganized sector dominated the Indian Retail sector, as stated in the report of Assocham-Primus (2020). Research suggests that in the ever-increasing quest for "organic" products, consumers are even willing to pay a price premium. Instead of imported products, natural, home-made, and locally procured / made products have become a fad in this society now-a-days.

Self-help groups are small groups, predominantly of the poor village and suburban women, who come together to produce economic goods and thus give their members financial independence. Self-help groups are essential in generating employment among village and sub-urban populations.

As per Basargekar (2009) it is an informal group of persons numbering between 10 and 20 people from the economically poorer section of the society. SHG can also be described as a formal group of persons, which has been created for collective support towards the process of empowerment and financial independence (Thyagarajan, S., Nambirajan, T., & Chandirasekaran, G. 2019). Membership of these groups empowers women by way of generating income by way of improving women bargain power in the family (Swain, R. B., & Wallentin, F. Y. 2009).

Since SHGs consist predominantly of female members, the acceptability of their products and sustainability of SHGs are important for the social security of women in India. It is not that consumers perceive village and home-made products of poor quality, sometimes the acceptance of these products is high due to factors like natural ways of production, organic methods of growing and handmade growing products that adapt to the taste buds of Indians.

Many SHGs (in fact near to 5000) as per the data of NRLM (National Rural Livelihoods Mission, 2019) are operating in the Delhi NCR region. The population of NCR is nearly 4 Crores and offers a great opportunity for these SHGs to market and sell their products to this lucrative market. But the road to success is not that easy. Although the SHGs are into business activities, but inadequate product quality and packaging, absence of pricing techniques, lack of marketing and branding, and poor distribution result in failure of them (Chakraborty, A. & Chaturvedi, C. 2020). For the success of any business, understanding consumer phycology is the key. What exactly is needed by the consumer at what price? The preference of any specific product / brand are required to be studied to make and offer appropriate products. Further training, production and retailing can make these ventures successful (Siddhartha, T., Nambirajan, T., & Ganeshkumar, C. 2019).

In India, state and central government entities are working to promote SHGs under various schemes, with an element of subsidy, with bank linkage as part of the schemes (Harper, M. 2002). Many fairs and exhibitions are organized by the NRLM (National Rural Livelihoods Mission) and SRLM (State Rural Livelihood Mission) under various schemes to promote the SHG products and to provide them a market. Studies revealed that NRLM, which is implemented at the grass root level, have different effects (Joshi, S., & Rao, V. 2018). But most of the people buying SHG products in those exhibitions buy more out of empathy towards the efforts of poor members than of actual need for the product by them. In order to have a sustainable and profitable business model in the long term, SHGs need to work on strategies of marketing and branding that can create a positive attitude and perception of their product among consumers. Their products should be regularly 'demanded' by the customer instead of one time empathetic purchase. Favorable consumer perception and consumer demand actually get converted into a pulled demand and retailers and shop owners will also be interested in displaying and selling SHGs' products in their stores. Finding out the real-time consumer perception about the products of SHGs can help them strategize and prepare ways to target this lucrative urban market of Delhi – NCR which has strong purchasing power. This study analyzes the current perception of this market about the products offered by SHGs.

Background of the Study

In this study, the researchers attempted to determine the average consumer perception of the NCR region market. The respondents are mainly from urban and semi-urban families of middle and upper middle class. A large number of SHGs are operating in the NCR and nearby regions and if they can take advantage of the market with great potential, that would be great for the financial wellbeing of the marginalized society.

Also, merely starting a business as a small group doesn't always help. One needs to examine the consumer needs & wants and make products that can satisfy them. The perception of the consumers about the quality, purity and hygiene plays an important role in consumer adoption of SHG products. These micro entrepreneurs need to understand the mindset of consumers and develop a marketing strategy that can get them to sell their products in the lucrative Delhi NCR market.

Need and Scope of the Study

In recent years the creation of employment opportunities for rural and suburban women has been a focus of all Governments. Central and state governments have laid great efforts for setting up various SHGs in villages and encouraging poor and marginalized women to start something of their own. Economic activities not only give financial power to women but also ensures increased status in society. But for the viability of a business these SHGs need to understand the exact taste and preferences of their consumers. The SHGs location in the areas of Noida, Greater Noida, Ghaziabad, Hapur and Faridabad has got the geographic advantage of access to the vast market of Delhi NCR provided the consumers perceive favourably about their products.

In the current scenario of COVID-19, the entire market is in the transition phase and so is the consumption pattern. The urban customers who were spending a lot on western food, chemical shampoo and other cosmetics earlier are now moving towards greener ayurvedic options. They are looking towards villages for organic vegetables, homemade pickles, organic homemade Holi colours, and other village produce. This study is conceptualized to identify to what extent there is a scope for these SHGs to tap the nearby urban market in the current scenario. The mindset of the urban customers towards the products of various SHGs is examined to some extent in this study. The market understanding gained from this paper can be used by various SHGs to develop their products and offers in a consumer-friendly way. The motives and intentions underlying purchase of Delhi-NCR consumers are studied in this paper. Careful investigation and implementation of corrective actions can help these SHGs to grow with a sustainable income model, that ultimately contribute to the success of these

SHGs as a form of employment for the marginalized section of the society. The study also helps the SHGs to introspect about their current products and the techniques by which they are marketed.

Objectives of the Study

The present study is conducted to achieve the following research objectives:

- To find out the factors affecting buying of SHG products by end consumers of NCR region
- To explore buying intentions of urban consumers towards SHG products
- To understand the acceptability of SHG products among consumers

Review of Literature

There are a number of studies undertaken by researchers to highlight issues faced by SHGs and the acceptance of their products in the market. Srinivas Subbarao P. and Suseetha Rani P. (2011) in their research paper highlighted the major problems related to SHGs. The members do not get any assistance or training from trainers and they lack the avenues for marketing and sales of their products to the common people. In the absence of the market, the only avenue they are left with is self-consumption of their produce, and that too doesn't happen because of the poor economic status of the group members. According to a study by Purshotam (2004) "Marketing Support to Self Help Groups" it was found that no market development strategy is static and universally reproducible. He stressed the need to continuously identify, take account and measure the market support in order to adapt to local needs. Market conditions, especially in rural areas. SHG members could be effectively supported in identifying and establishing micro-enterprises as a source of employment.

Narasimhan T. (2012) in the paper "Tamil Nadu to give a boost to products made by women SHGs" mentioned that the state government had started a program to provide a logo and monogram to each SHG so that they can brand and differentiate their product in the market. The state government also plans to develop Marketing Societies, which will work hand in hand with District and State level marketing cooperatives to help SHGs in providing a huge market and acceptability of their products. SHGs can even sell their products at state, national and international levels.

Ahmed et al. (2014) in their empirical study on the components of packaging and their influence on consumers' buying behaviour decisions, identified the main package elements such as graphics, colour, size, form and material used for packing, wrapper design, innovation, product information, producer, country of origin and their impact on consumers' purchase decisions had been evaluated. The study concluded that the impact depends on involvement level, time pressure or individual characteristics of consumers.

Karpagavallia and Ravi (2017) tried to evaluate the purchase intention of customers about prepared food items. He surveyed the areas around Bangalore and collected primary data. The data were analyzed using Chi-square, F-Test, mean and standard deviation. He found that customers are ready to pay more for hygienic and green products. They found that customer taste and preferences are changing constantly so new products and variants should be launched by sellers from time to time.

Yi Chang (2017) in his study examined the effect of brand awareness and knowledge on the perception of people. He collected primary data from 568 respondents and analyzed it to conclude that awareness and learning plays an important role in brand acceptance. His study revealed a strong relationship between seen quality and buying goals of the consumers. The source of the brand impacts the perception of quality and shapes the aim of purchase.

Balamurugan and Sethuraman (2018) in their study found that consumers are ready to pay a bit of extra price for products which are homemade, green, and environment friendly. For this study, they collected primary data from 140 respondents and used tools like mean and standard deviation. Their study revealed that consumers prefer to buy products which are grown and produced in neighborly locations than regular branded products.

Gurumoorthy (2000) says that the Self-Help Group (SHG) is an executable alternative to achieve rural development goals and accomplish community assistance in all rural development programs without insisting on an ancillary guarantee to encourage entrepreneurial activity and turn them into entrepreneurs. To create a broader market in India – products made by women in SHGs, the Ministry of Rural Development has taken the initiative to add them into the centre's ecommerce platform. The government will aid the SHGs in the brand image including packaging and pricing.

Bali Swain (2007) has stated that hardly any activities that lead to an increase in a woman's wellbeing are necessarily self-empowering in and of themselves. Activities such as improving the diet of children, for example, result in a more efficient role for women within the prevailing norms of society, which leads to self-assuredness and esteem and well-being. In this way, conducive conditions can be created for similar community-driven advancement activities that are carried out as part of SHG initiatives, for example to solve drinking water problems in the village to improve the betterment of the health of women. all household members, especially children; However, most of these occupations are for the well-being of the home (including women) or the collective, but they do not directly empower as they emphasize in the existing gender roles in society.

The astutenesses of the bamboo basket, cotton weaving and pottery markets are some of India's outstanding ancient arts. Venkateswarlu, Rao and Reddy (2018) stated that there are several states in India such as Tripura, Gujarat, Kashmir, Maharashtra, Manipur, Uttarakhand, Tamil Nadu, Rajasthan and Kerala, known for their handicrafts, each offering a wide range of handicrafts from each state.

M.,Hawley and Frater (2018) suggested that there is an entirely new trend stream in which an increasing number of people are looking for products that are not only exclusive and high quality but also connect to the history of the ancient craft and the community of people, and Kundu (2013) implied that craft is also used in the ancient tradition as a tradition of loyalty and perseverance. Pani and Pradhan (2016) connoted factors such as simplicity, aesthetics, ecological attractiveness, and creative forms of expression that influence the consumer's purchase decision.

A study by Jain and Sharma (2015) indicated that government plans and administration to promote handicrafts did not have a significant effect on the artisans' perception of making a living from handicrafts, showing that there is a major need for government intervention in this sector.

According to Bhattacharyya and Datta (2016), channel intermediaries such as intermediaries, retailers or distributors, on the other hand, point out making substantial profits at the expense of the artisans (Rawat and Srivastav, 2016; Bhat, 2015). Proposed globalization It leads to a commodification of handicraft products, which leads to a dramatic increase in the face of strong rivalry from other countries, particularly from China and Asian countries.

A study by Kumari and Srivastava (2016) showcased that thousands of handmade handicrafts such as Saharanpur for its wooden articles, the pashmina scarf in Kashmir, the northwestern state of Rajasthan for the Jaipuri quilts, Punjab for Phulkari, Jodhpur for iron forged products, Gujarat for embroidery machines etc. The disorganized and fragmented sector needs a unified and responsible platform where artisan products are accessible to millions of potential customers across the globe with a simple click. This is where e-tailing or e-retailing comes into play as a promising marketing channel for Indian handicrafts to meet the increasing demand abroad in the fashion industry and the home decoration market.

A recent study in the area of "Impact of the microfinance program through the SHG's banking linkage: an empirical study to the socio-economic empowerment of the rural population, special women", Das Swarnabha, Dey Kumar Arun, Dutta Kumar Santosh (2009) examined that microfinance provides small loans to enable poor women to self-suffice to those who had no access to normal bank loans due to lower collateral.

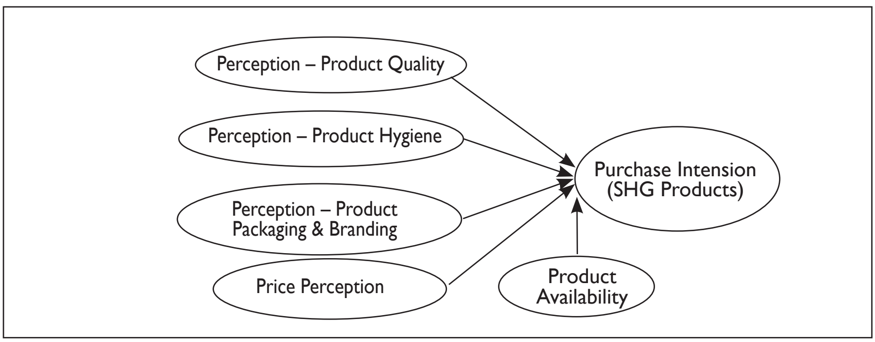
Goankar, Maya S. (2011), analyzed the role of self-help groups in the economic, social and political empowerment of women in Karnataka. The study included five villages in the Uttar Kaunata district of Karnataka. A sample of 300 female members was selected, each representing 10 members from 30 GAA with practical random selection. The investigation established that after joining SHGs, group members' income, savings, and investments increased, and their standard of living increased.

E-retailing is a promising marketing channel for Indian handicrafts to meet the increasing demand abroad in the fashion industry, home decoration market etc. Shah & Patel (2016) have stated that there could be support at the company level in the context of CSR which could help create a handicraft e-commerce platform to build. Ratnesh and Kumari (2020) cited CSR models from Jindal Steel and Power Ltd. and Tata Steel Ltd for promoting indigenous products in Jharkhand through SHGs, while Dash (2011) suggests the need to strategically position craft products on the marketing front is critical.

Research Gap

Much research has been undertaken on studying consumer buying behaviour across the world. Also, many studies have been conducted on Self-help groups. But very few studies focused on joining both aspects. Also, the research on SHGs focused mainly on women empowerment and the effectiveness of micro-finance. Perception and attitude of consumers toward products offered by Self-help groups is an important aspect of the sustainability and success of these micro-enterprises. There are very few researches that explored details of buying behaviour and consumer perception of the SHG products in a large market like Delhi-NCR, which consists of urban consumers having high disposable income. Most of the existing research conducted and reported are from south India and in north-eastern states only. Another environmental force - Covid-19 pandemic has also impacted the buying and usage patterns of consumers that need to be examined minutely.

Figure-1: Research Model



Source: Prepared by the researchers

The framework can be put into the following hypothesis

- H1: Perception about product quality has a statistically significant influence on consumer intention to purchase products of SHGs
- H2: Perception about hygiene of the product while manufacturing/ packaging has a statistically significant influence on consumer intention to purchase products of SHGs
- H3: Perception about Product packaging and Branding has a statistically significant influence on consumer intention to purchase products of SHGs
- H4: Perception about the availability of the product in the market has a statistically significant influence on consumer intention to purchase products of SHGs
- H5: Perception about Product pricing has a statistically significant influence on consumer intention to purchase products of SHGs

Research Methodology

Population Concerned: The study has been carried out on urban and suburban residents staying in societies of Noida, Greater Noida, Ghaziabad, and other nearby cities of NCR.

Research Design: Descriptive Research Design has been used to frame and conduct the study.

Data Collection Method: Survey method is used to collect data with the help of an online questionnaire administered to the sample elements, i.e. residents of various housing societies in NCR.

Data Type: Primary Data was collected through an online questionnaire made through Google Forms. Also, relevant secondary data was collected from various websites, journals, books, magazines and newspapers.

Sampling Method: The Convenience Sampling Method is used to draw the sample from the target population. Most of respondents are the residents of Delhi in NCR region residing in high-rise societies and individual houses.

Sample Size: Data was obtained from a total of 173 respondents.

Variables Used:

1. Perception of product quality
2. Perception of Hygiene of the product while manufacturing/ packaging
3. Importance of the packaging and Branding of the product
4. Availability of the product in the market
5. Pricing perception about the product

The scale used - Very Poor (0), Poor (1), Average (2), Good (3), Very Good (4) and Excellent (5)

Scale for the intention was also on 6 points from - no intention to buy (0) to definitely buy (5)

Data Analysis and Interpretation: Descriptive Statistics

For this study, a total of 300 residents of Delhi – NCR were contacted, out of which 173 respondents filled the questionnaire. Around 63% of the respondents were male and 37% of the respondents were female.

Table-1: Sample Demographics

Characteristic	Group	Cases	Per centages
Gender	Male	109	63
	Female	64	37
Age	Below 20 years	60	35
	21 to 30 years	52	30
	31 to 40 years	30	17
	41 years and above	31	18
Status	Student	68	39
	Home maker	12	7
	Service - Government	30	17
	Profession / Service - Private	42	24
	Business	16	9
	Other	5	3
Household monthly Income	Below INR 25,000	0	0
	INR 25,001 to INR 50,000	5	3
	INR 50,001 to INR 75,000	45	26
	INR 75,001 to INR 1,00,000	82	47
	Above 1,00,000	41	24
Highest Education	Graduation	76	44
	Post-Graduation	32	18
	Ph.D. and above	8	5
	Other	57	33

Source: Prepared by the researchers

The respondents when asked about their perception of SHG products, only a handful of them had a strong positive affinity for the products. Most of them were reluctant and doubtful about the product availability and quality. The poor response rate of the responses collected can be due to the limited unavailability of these products in the region.

Inferential Statistics

For hypothesis testing, Pearson product-moment correlation coefficient has been calculated. The objective is to check the impact of the selected perception variable on the customer intention to shop for products offered by SHG. All the assumptions are checked before testing. Variables are measured on interval scale, there is no linear relationship between the variables, no outliers, and due to more than 150 sample size, the data is assumed to be normally distributed. P-Value is used as indicative of a statistically significant effect. Following are the results of Hypothesis testing-

- H1: Perception about product quality has a statistically significant influence on consumer intention to purchase products of SHGs.

  Pearson Correlation of .441 coefficient means moderate to strong relation between quality and intention, .044 value is less than .05 implying statistically significant correlation.
- H2: Perception about hygiene of the product while manufacturing/packaging has a statistically significant influence on consumer intention to purchase products of SHGs.

  Pearson correlation coefficient of 0.016 means weak relation between hygiene perception and intentions to buy products offered by SHGs, .895 Sig.(2-tailed) value is higher than .05 implying no statistically significant correlation.
- H3: Perception about packaging and Branding of the product has a statistically significant influence on consumer intention to purchase products of SHGs.

  Pearson Correlation of .631 coefficient means high to moderate relation between perception of product packaging and branding with customer intentions to buy, .042 value is less than .05 implying statistically significant correlation.
- H4: Perception about the availability of the product in the market has a statistically significant influence on consumer intention to purchase products of SHGs.

  Pearson Correlation of .53 coefficient means moderate relation between product availability and intentions to buy products offered by SHGs, .039 value is less than .05 implying statistically significant correlation.
- H5: Perception about Product pricing has a statistically significant influence on consumer intention to purchase products of SHGs.

  Pearson Correlation of .321 coefficient means weak relation between product pricing and intentions to buy products offered by SHGs, .044 value is less than .05 implying statistically significant correlation.

Discussion

The data collected in the current research is from an urban area - Delhi-NCR, which can be used as representative of the National urban class of customers with diverse cultures, backgrounds and having regular sources of income. The findings on the customer preference and perception about different aspects of products offered by SHGs are interesting. As per the statistical testing, product packaging and branding are found to have strong relation with customer intention to buy. These findings with the research undertaken by Ahmed et al (2014) and Yi Chang (2017). Clearly it is indicative of the importance of branding for SHGs to stand apart and sustain their market position. Interlinked with this is ensuring continuous availability of its product to the consumer. Product availability and quality is found to be moderately related to consumer purchase intention, whereas surprisingly hygiene part is not found as statistically significant. This can be related to the consistency of providing quality and performance of the product so that not only for trial purchase but also for regular consumptions, consumer continue with using the products offered by the SHGs.

Product pricing is found to be statistically significant but with weak relation with customer intention to purchase products offered by SHGs. This finding support work cited by Karpagavallia and Ravi (2017) and Balamurugan and Sethuraman (2018), wherein customer willingness to pay a premium price for green products is reported. This can be an indication of consumers concern more for quality and performance rather than the price, which can be the resultant of the educated urban middle-income group of Delhi NCR respondents, who are well informed and aware of the benefits of the environmental-conscious, the societal obligation of supporting poor yet hardworking members of SHGs. Therefore, pricing is considered at second priority as compare to brand, quality, and performance of the SHG products.

The Implication of the Study

The government and NGOs are spending a lot on the employability of the poor in rural and urban areas. SHGs are a silver lining and a ray of hope in providing gainful employment to many populations. The success or failure of these micro-entrepreneurs decides the fate of employment and growth in our country. Also, the poor staying in urban and semi-urban localities are more vulnerable because of lack of social support, poor standard of living and increased cost of living in urban areas. If given the support of SHGs they can be engaged in gainful employment opportunities. Also, if used constructively, urban areas like Delhi-NCR can be used as a lucrative market for the consumption of the products produced by SHGs. The high purchasing power and disposable income of the market is in fact a boon for the SHG members. Consumers' concern for availability and consistent quality- specifically in terms of performance needs to be continuedly taken care by SHGs. Clearly, production (quality and hygiene) and marketing both are important, while taking care of pricing gets a secondary requirement to be addressed.

For targeting this market effectively, SHGs must understand consumer expectations and purchase intentions clearly. The motive behind selecting a product for consumption, be it for self-consumption or for family and friends, must be understood before taking an offering to them. This paper tried to understand the purchase intention of urban consumers toward the products of SHGs. The findings of this paper can be useful to understand the market mechanics and consumer intentions about SHG products. So, for SHGs and the other involved agencies, who are into the formation, training and nurturing of these SHGs, the finding can be used as input for devising future marketing techniques.

Conclusion

Although the terms 'organic', 'natural' and 'homemade' are selling readily to an increasingly health-conscious urban and suburban middle class, factors like cleanliness, hygiene, product quality, brand, and continuous availability of the product play an important role in acceptability of products by the consumers. It has been found in this study that in the current scenario, people are reluctant to buy products from unknown sources. They are skeptical about the hygiene and purity of the product and its impact on their health. Known and established brands have been preferred more by the customers in comparison to the shabbily packed products of SHGs. Especially in terms of food products, they have to work hard on product handling and packaging. Most of the SHGs have failed to make their products available in the local shops in this pandemic situation. Poor distribution networks and inability to provide home deliveries are some of the other problems faced by SHGs currently. The customers are preferring known brands and the lack of marketing and branding efforts by SHGs also adding on to their problems. Further, the study can be extended to semi-urban consumers and other parts of the nation for generalizability of the findings. Another approach can be measuring the impact of branding activities undertaken by the SHGs and further launch of improved version or more options can be studied.

As there are plenty of opportunities, self-help groups can utilize this changed scenario to sell their products to consumers by highlighting these characteristics. They must focus on product branding and packaging more so that the consumer acceptance can be more. The pictures of hygienic manufacturing of products by people using masks and gloves and less contact between the products and the workers are some points that will increase the acceptability of SHG products among prospects. Promoting products online, pricing them adequately, taking orders over the phone and through the website and delivering the products to consumers are some of the things SHGs should work upon to penetrate the market.

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ESG - The Future of Financing for Sustainable Infrastructure

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Abstract

Infrastructure is a critical instrument in the development of every nation. However, as the need for infrastructure grows endlessly, the financial resources to support this growth are always limited. To bridge the gap between ever greater demand for infrastructure and ever-limited supply of capital, Sustainable Infrastructure is the key. In simple words, infrastructure that sustains and frees up the limited capital for more infrastructure elsewhere. The key to developing sustainable infrastructure is the adoption of Environmental, Social & Governance (ESG) criteria. ESG criteria provide a major overlap with the key requirements of sustainability in infrastructure. The move towards the adoption of these criteria has already been initiated and there are financial products that have started to be used for the integration of ESG into infrastructure financing. Apart from reviewing the relevant literature on the subject, the paper provides a detailed explanation of the increasing shift towards ESG-integrated financial products. However, challenges remain in the adoption of ESG criteria in infrastructure financing. Solutions to some of these challenges are a point of the present discussion, as are some key players who can play a part in this solution.

Keywords: Brownfield Projects, Green Bonds, Greenfield Projects, Sustainable Infrastructure

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Introduction

Sustainable Infrastructure

The challenge of bridging the financing gap in infrastructure development can be addressed through Sustainable Infrastructure. The inclusion of sustainability criteria in the infrastructure project lifecycle - designing, financing, development, operation, and decommissioning - is key to

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ensuring that the infrastructure financing requirements are kept within manageable levels.

Now, the sustainability of infrastructure projects covers the following four dimensions:

- **The monetary dimension** examines the infrastructure project's utility compared to the expenditure that will be made on it. Estimation of revenues, manufacturing capacity, new job prospects etc., are taken into account.
- **Environment aspects** include things like reduction of environmental damage through pollution, environmental conservation, effective resource distribution and utilisation and waste reduction and its appropriate disposal.
- **Societal aspect** encompasses the project's effects on society, economic upliftment, individual and employee rights, preservation of the traditions and heritage of the nation.
- **Institutional aspect** requires the development of institutional capacity that covers alignment of the project with the domestic and global obligations, creating a meaningful administrative structure & establishing strong management and accountability systems.

The present research work aims to understand the impact of ESG considerations.

ESG Criteria

With the growing need for the development of sustainable infrastructure, a concurrent implementation of ESG criteria in infrastructure projects seems to be the way forward.

Environmental criteria of an infrastructure project typically include greenhouse gas emissions, pollution levels, power production, water & waste-water channelisation, minimisation of poisonous waste, ecological impact, preservation of non-man made raw materials etc., are all common environmental criteria for infrastructure projects. This analysis is necessary to determine the dangers that the project may undergo.

Societal criteria encompass the commercial relationships of the entity that owns the infrastructure asset owning entity These criteria help measure the entity's commitment towards all the stakeholders. They also measure if this infrastructure asset-owning entity works with organisations following similar business ethics.

Governance criteria in infrastructure investment cover the sourcing of raw materials, supply chain management, the ethics of the project and management, competitive behaviour, incident risk management, use of standardised accounting methods and giving the right to minority shareholders to vote on pertinent issues. These criteria unveil the degree of the governance norms being followed by the organisation.

Rationale

The primary objectives of this research paper are:

- Study infrastructure development in view of the ESG considerations.
- To explain the role of ESG in the investor mindset while making infrastructure investment decisions.
- To examine the sources used for procuring sustainable infrastructure financing.
- To analyse key issues in the ESG funding of infrastructure assets.
- To list the key players who can l the financing of ESG projects in infrastructure and their respective roles.
- Propose strategies to boost the country's long-term sustainable infrastructure financing.

Research Methodology

This research has been undertaken with the motive of understanding and highlighting the need for ESG criteria adoption in financing the development of sustainable infrastructure. The present study examines the challenges in financing infrastructure and in the adoption of the ESG criteria in financing the same. After listing these challenges, the study further explores the means and methods to overcome these hindrances and lists the players who can have an imperative stance in the universal adoption of ESG criteria in funding sustainable infrastructure.

Secondary sources have been used for the collection of relevant information. The information has been gathered from various sources, including government publications, documents from various national & international organisations, and other web resources.

Discussion and Findings

Financing the Sustainable Infrastructure

Traditional Infrastructure Financing

Governments are attempting to encourage non-state run companies to participate in contributing to meet the infrastructure funding demands as a part of their efforts to encourage viable and high-quality infrastructure investment for sustainable development. Infrastructure investment has traditionally been managed by the public sector; nevertheless, governments are finding it difficult to keep up with increased demands, necessitating the use of private money to complement the government financial inputs.

Since its independence, the Indian government has been the keystone investor of infrastructure projects in India. Nevertheless, the scarcity of financial investment to renew or build sustainable infrastructure is typical of developing economies. To overcome this gap and to meet the fast-rising demand for new and renewed infrastructure, the Indian government has focussed on mobilising finance for viable infrastructure from non-public organisations through the Public-private partnership (PPP) investment model. This has seen the rise of several private players in the investment space, accompanied by the rise in interest in financing infrastructure by institutional investors.

Infrastructure financing is not always sufficiently served by traditional banks and traditional lenders. This has typically to do with long investment horizons and low yields. Also, the recent tightening of lending requirements for banks like the Basel regulations. Long-term infrastructure loans as well as funding that isn't clearly high investment-grade, will face more stringent capital requirements. Consequently, regulated lenders are reticent to give to infrastructure. This reduces the money supply available for infrastructure financing.

Organisational investors, such as retirement funds, indemnity bonds, and government funds, have continuously lent capital to such projects over the years. A combination of variables, including a changing macroeconomic system on stricter lending guidelines for financial institutions and changing demand for investments for a longer duration has resulted in a reassignment of funds from the traditional sector to the non-banking sector as well.

Institutions lending for sustainable infrastructure, look for projects that can deliver predictable and long-term inflows. Furthermore, investors seek projects where governance norms are being adhered to strictly.

Business practices such as employing children below fourteen years, individual rights infringement, negative environmental effects, non-adherence to governance norms and inclusiveness have given rise to a socially conscious consumer. They are aware of social and environmental issues and are becoming increasingly concerned. An aware investor weighs the ESG factors before investing in a project.

Financial parameters have always been accounted for before making an investing decision. In the present business landscape, due weightage has to be given to the non-financial parameters as well. This changing behaviour continues to influence the approach to infrastructure.

In this context, emphasis is placed on responsible investment products issued by recognised organisations such as Green Bonds or Impact Bonds. These financial products are commonly used to fund viable infrastructure projects.

Infrastructure Financing Evolving to Accommodate ESG Considerations

With the growing need to accommodate ESG criteria in the development of sustainable infrastructure, financing in infrastructure is evolving and taking the lead in the adoption of ESG criteria into the financing parameters of the projects. ESG criteria present a comprehensive checklist for the financiers to cover the broad risk categories to such projects. These risks to an infrastructure project are listed below:

- Reputational risks on account of failure to comply with ESG criteria
- Legal or Regulatory risks due to ESG non-compliance of the infrastructure project
- Operational risks arising due to ESG factors
- (Market risks due to ESG factors
- Risk to the environment (though not necessarily to the project itself)

On the positive side, the long-term investment horizon for infrastructure aligns with the long-term investing duration of the retirement funds & life insurers. However, the same long-term holding period forces these institutional investors to have a stronger incentive to consider long-term monetary or non-monetary risk factors. And therefore, the ESG risks - which may have a profound and long-term impact form a special consideration set for these investors. While the quantification of these risks is a still-evolving process, ESG criteria are increasingly impacting the investment decisions of fund managers.

ESG Financing and ESG Financial Products

Existing financial instruments like bonds, loans, NBFC lending etc can be modified to incorporate ESG norms. ESG finance has gained traction since the first green bond was issued by the EIB in the year 2007, under the label of the *Climate Awareness Bond.* This is a structured instrument whose earnings were channelised to renewable energy and similar other initiatives.

According to *International Financing Review* 2021, ESG debt issuance has shown a more than three-times year-on-year increase from US$108.88 bn in 2020. Record quarterly ESG bond issuance of US$270 bn and a record quarterly loan volume of US$90.034 bn, add up to a total of US$360 bn for the first quarter of 2021.

That US$270 bn of ESG bond issuance made up around 11% of total global bond issuance of US$2.5 trn in the first quarter of 2021. This is up from 9% in the last quarter of 2020 and just 3% a year earlier. The full-year figure for 2020 was 5%.

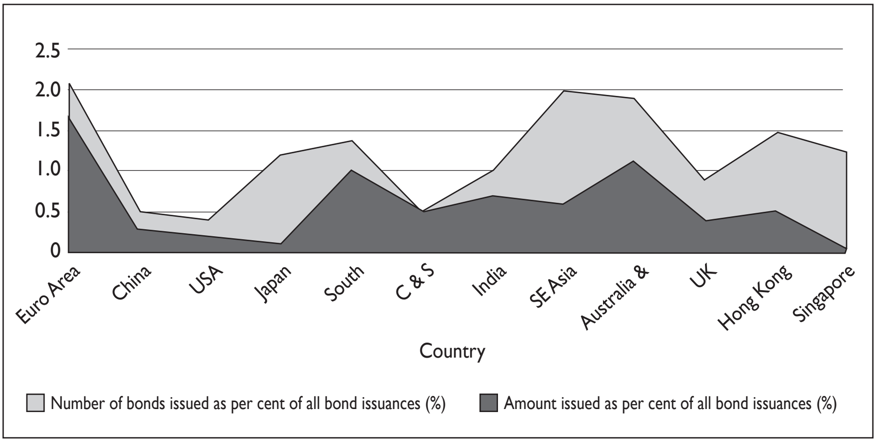
The financial instruments used to raise ESG-compliant financing are broadly classified below:

ESG Bonds

The typical form of ESG lending in the market is ESG bonds, which are also known as "green" or "social" bonds. Independent entities, government organisations, state-centre alliances and corporations issue these bonds. The earnings from these instruments are used to fund only ecologically friendly projects. Green instruments allow money to be channeled to such initiatives that support positive environmental or social outcomes. Investors should be certain that these projects are beneficial for the environment and not "greenwashed."

In May 2013, convertible bonds for US$600 million were issued by Tesla Motors Inc.. Nigeria also issued a US$ 64 million green bond which targeted domestic lenders. The following chart exhibits the status of Green Bonds issued by the corporates and government bonds across various countries since January 1, 2018.

Figure-1: Green Bonds Issuance Since 1 Jan 2018 (Corporate and Government: All Maturities)



Source of Data: RBI Bulletin 2021 on Green Finance in India: Progress and Challenges.

- Euro Area includes all of Europe except the UK, Russia & Switzerland
- SE Asia includes Indonesia, Thailand, the Philippines, Malaysia and Vietnam
- C & S America includes Mexico, Brazil, Chile & Argentina

The Indian Green Bond Market

The issue of green bonds was initiated in 2015 in India. The outstanding amount of green bonds in India was $16.3 billion as of February 2020.

The maturities of such instruments range between five and ten years. However, several issues like the 2015 issue of Yes Bank Ltd., 2017 issue of Indian Renewable Energy Development Agency Ltd,.etc of five years and less too are not that uncommon. EXIM Bank of India floated $500 mn bonds for a duration of five years. The World Bank too issues similar bonds from time to time to fund sustainable infrastructure projects, including in India. The World Bank's Green Bond Impact report of 2019 estimates that the outstanding amount dedicated to facilitating Indian green initiatives stands at US$ six hundred and forty million.

These are still early days for green finance in India. Between 2018 and 2020, nearly eight per cent of loans in the power sector have been to fund renewable power assets. However, toward the conclusion of FY 2017-18, green finance stood at a dismal less-than-one per cent of all bonds issued. As can be seen from these numbers, there is still a long way for these markets to mature.

Green Loans

A green loan is a type of funding that aims to help institutions to fund projects with a significant environmental effect. These funds can be deployed only for green projects with clear advantages to the environment.

In 2015, the RBI added the small renewable energy industry to its Priority Sector Lending scheme. At the end of March 2020, total outstanding lending to this category was roughly thirty-six thousand five hundred and forty-three crore rupees, accounting for approximately eight per cent of total pending loans. Most recently in November 2020, DBS Bank of Singapore announced the issuance of India's first green loan totalling Rs 1,050 crore to CapitaLand.

Sustainability Linked Loans (SLLs)

Under this, the cost of borrowing is tied to a borrower's performance as assessed against predetermined sustainability performance criteria. In SLLs the borrowers are not restricted to any particular green projects. There is a concession if a borrower achieves the set goals and a penalty is charged in case the said individual is unable to achieve the goals, thereby making the funds more expensive.

This could also result in a lower ESG rating for the infrastructure project.

NRG Energy, a well-known name in the power sector in the United States, secured a US dollar 1.9 billion loan and flexible lines of credit in June 2016. The purpose of this loan is to help them reduce GHG emissions at its facilities.

In its Sustainability Report (2019), this organisation had pledged to gradually decrease its toxic gas releases aiming for a fifty per cent reduction by 2025 and bring it down to zero by 2050. If NRG achieves its projected targets of applicable Baseline Sustainability, then the company expects its borrowing costs to reduce by 30 basis points.

Gradually these instruments to raise financial resources for the development of sustainable infrastructure are becoming prominent across the globe.

Credit Enhancement Schemes

This scheme can be used to enhance the grading of a well-defined monetary instrument or transaction. This thereby boosts the rating of the project and lowers the risk level of the investment. One of the earliest partial risk guarantee arrangements in the country was the Asian Development Bank's (ADB) Solar Generation Guarantee Facility. This scheme addresses the difficulties that the Indian banking sector has, such as asset-liability mismatch, CAR and many more. Certain renewable energy infrastructure projects have also been supported through this scheme by lowering their borrowing expenses and then recapitalising with these instruments.

Aggregation and Securitization

For small projects where bank financing and access to capital markets is limited, aggregation and securitisation could help raise funds.

Aggregation is a process of bundling smaller assets together. In this process, small assets (generally of similar risk and following the same investment principles) are bundled into a single (generally tradeable) asset.

Monetization of these aggregated assets is called securitisation. These aggregated (bundled) assets could then be used to raise bank financing or be sold on capital markets. Aggregation allows for monetization through securitization. The Finance Act 2016 provided clarity on the securitisation of assets in India and thereafter, the participation of foreign investors has been growing steadily. The aggregation and securitization of mortgages and vehicle loans paved the way for the aggregation of green assets. This market increased from just over US$ 2 billion in 2015 to over US$7 billion in 2017.

Blended Finance

This concept of the type of finance is relatively recent. During UN negotiations in 2015, it was highlighted as a financial investment tool. Green assets are mostly financed by the government and international development institutions, as non-governmental players look for higher yields on investment. This is due to the absence of validated business models and related risks. Such funding, on the other hand, can be increased with the cooperation of the non-state run sector. Concessional financing is used to catalyse private finance through guarantees or grants in blended finance. The characteristics of every source of finance can be purchased through this financial vehicle towards the common goal of increasing private investment and, with it, the effect on global warming. To enhance green investments, special funds that can take up blended financing can be incubated.

REITs and InvITs

Infrastructure investment is structured similar to mutual funds. Once listed, securities tied to property/infrastructure can be bought and sold on the trading platforms. This allows interested investors to contribute small sums directly to infrastructure. Real estate and Infrastructure Investment Trusts put money into revenue-producing tangible projects. The profits generated by this instrument are divided between the unit holders. Unit holders receive earnings in the form of capital appreciation, rentals & subletting.

In 2018, a Bengaluru-based real estate developer backed by Blackstone Group LP, a worldwide private equity firm, launched India's first REIT.

The Infrastructure Financing Challenge

The public sector will always have a significant contribution to infrastructure financing in the immediate future. While the public sector continues to underwrite the costs, it is expected to focus on part-funding the infrastructure development costs through taxation and other charges which are levied on the infrastructure users. As the developing and underdeveloped countries have poorer governments and users as compared to the developed countries, this financing model – the users pay in part and the public sector underwrites – is expected to make it extremely difficult to catch up with their advanced counterparts.

To support infrastructure financing in the developing and under-developed world, certain funding is present as grants and subsidized loans. Many institutions have been engaged in bridging this financing gap, notable among them being the G20.OECD, MDBs, IFIs and alternate channels of private funding.

While the MDBs and IFIs continue to play a substantial role, they are still not able to fill the funding gap fully. Therefore, emphasis should be laid on how these assets can be utilised more effectively to create a multiplier effect in raising finance and bridging the gap even further.

In general, private entities are disinclined to invest in major sustainable projects due to the limitations of estimating operational expenses and timelines, as well as predicting profits due to lack of any past experience.

An effective way of bringing in private capital is blended finance that integrates the capital from MDBs and IFIs with private capital. This strategy aims to alleviate private capital constraints by decreasing risk through non-funded financial instruments such as warrants or equities. Blended finance need not unnecessarily subsidise private investors. It could incentivize investments by making private risk-taking more manageable.

Gap in Financing

Besides aggregation & securitization and blended finance, the funding gap for green infrastructure development in developing countries remains. According to the World Bank estimates, the traditional institutional investors in infrastructure - sovereign wealth funds, pension funds, mutual funds, etc. make up only a third of one percentage point of the entire global investment in emerging economies.

These truncated levels of expenditure are mostly as a result of assessed dangers of developing countries -political unrest, wide volatility in legal tender, changing rules around earning repatriation and poor implementation of laws.

Another problem is that the low quantum of investment in the early stages of the projects dissuades private investors from committing their capital at later stages. These are key reasons why the infrastructure funding in developing countries is not closing.

Problems in ESG-based Infrastructure Financing

General Problems in Implementation of ESG Criteria

Following are some of the significant concerns:

- In infrastructure, there is an absence of conceptual clarity and measures for quantifying ESG exposure. There are few structured guidelines for appraising a wide range of projects.
- Inability to conduct research due to the absence of good-quality information or data.
- ESG criteria are difficult to measure from the financial perspective. This results in the wariness of investors and investees to pursue ESG goals because of the delays it may cause in raising funds and the subsequent compliance issues that may crop up.
- Lack of transparency in valuation methodologies across the industry results from a lack of standardization in methods different investors may employ to value the impact of ESG criteria. This also causes obfuscation of the criteria for the investors and they might lose their trust.
- ESG analysis is an expensive process. This is another factor that hinders the broad-based implementation of ESG criteria.

Problems in the Development of A Financial Market for ESG-Compliant Products

Inspite of the factors that are driving ESG investing ahead, there are still some obstacles to attend to.

These are:

High Borrowing Costs for ESG Compliant Projects

In India the cost of raising funds for sustainable infrastructure has been greater than that of corporate debt instruments. In contrast to this, the yield to maturity from such US$ denominated bonds with maturity period greater than or upto ten years has been, however, lesser than the normal corporate bonds

Governance Issues

As long as there are inconsistencies in the definitions of ESG parameters, unscrupulous promoters can use these inconsistencies to falsely claim environmental compliance when in reality the compliance is not met.

Information Asymmetry between the project management and the investors

"Green-washing" may arise from the absence of standard definitions of green finance itself. It may so happen that investments that do not have green assets underlying may appear to be "green" and vice versa. This information asymmetry is expected to result in false signals about the green investments and result in mistakes in "green" pricing.

Maturity mismatch between green investment & investor needs

ESG investments - traditionally long maturity - and short maturity preferences of the investors may result in a mismatch of capital supply and demand. These mismatches may enhance the expense of borrowing.

Newness of ESG compliant monetary instruments

Due to the newness of these instruments, some investors may be hesitant to invest notably, in the cases where the instrument has not been floated by a well-known green sector such as sustainable energy. Higher borrowing costs may emerge as a result of this.

Challenges in ESG-compliance at Project Level

Managing the 'S' of the 'ESG': The 'S' or the social factor can be effectively managed by incorporating best practises and industry guidelines. Non-management of social elements could result in huge monetary and reputational aftermath.

Establishing the right balance between pragmatism and idealism: Creating an Environmental, Social, and Governance action plan that is both thorough and realistic is a fundamental requirement for a company. The plan has to incorporate the risks associated with community engagement, resettlement, and acquisition of land.

Formulation of An Action Plan: An ESG action plan is ineffective without accounting for the existing business realities and operating environment. While for Greenfield projects, the ESG can be incorporated into the Action Plan on day zero. However, for brownfield projects where the asset must be converted to a greater ESG-compliance, the ESG action plan and its implementation through the appropriate management principles becomes very important.

Implementation and Monitoring of the ESG Action Plan: Infrastructure investment requires engagement with various individuals who are directly concerned with the organisation. These interested participants may or may not follow similar practices and systems. To achieve the purpose of the ESG management strategy, professionals should consider how their ESG policy will be presented, executed, and assessed at the initial stage to meet the goals of the action plan.

Absence of a strong promoter of a Project: A comprehensive ESG strategy in infrastructure projects is easier where decision-making in the project is centralised. Moreover, centralization typically is the result of a project having a single promoter with a majority stake in the investment. In cases of scattered ownership, strong influence over project management might be difficult. Even the investors may not be on the same page over the application of ESG principles.

Type of the infrastructure plan

The scope of such a project has an impact on the formulation of an effective plan. Such projects require various appraisals. These assessments have to be carried out at an early stage under the supervision of the firm. For brownfield investments, the assessment of legacy impacts and retroactive review generally complicate the process of ESG implementation.

Overcoming Infrastructure Financing Challenges

Resolving the Policy Conundrum

Policymakers must take note of the fact that policies are going to play a significant role in deepening ESG financing. As it stands, the ratio of penetration of green financing instruments to the overall size of the Indian domestic market is fairly low. To improve this ratio, the policymakers should focus on:

- Improved synchronisation amongst outlay and ecological policies to achieve
  - standardization of terminology
  - deepening of ESG corporate bond market
  - enhancing consistency in (both listed and unlisted) disclosures by the companies.
  - reducing the knowledge gap between borrowers and lenders.
- Defining and Implementing a Responsible Procurement Policy taking relevant ESG considerations into account.

Reducing High Borrowing Costs by Solving Information Asymmetry

In raising funds for ESG integrated infrastructure, a common reason for high borrowing costs is the asymmetry of information. The project execution team – the consumers of funds – has more information than the lenders – the provider of funds. The project execution team traditionally shares only that information which does not increase their cost of funds but which may not be in the interest of the lenders – who may raise the costs even for good projects because they are not assured of the right facts. An effective project information system may assist in lowering cost overruns for ESG initiatives.

Some of the steps that could take us further in this direction are:

- Development of project databases for compilation of pertinent information on sustainable finance like several other developed nations. This move would plug the existing information gaps.
- Implementation of enhanced reporting of financial and non-financial information to the stakeholders by all the institutions related to the project.
- Development of an integrated structure in synchronisation with the predetermined objectives so as to reduce data heterogeneity.
- FAST-Infra is intended to support this exact requirement. The 'Finance to Accelerate the Sustainable Transition-Infrastructure' – was founded with a mission to evolve tenable infrastructure into a popular and fluid asset category with transnational standardization. The main thought behind FAST-Infra is that various barriers that hamper the mobilisation of finance for sustainable infrastructure, can not be addressed by a single institution.

Therefore in 2020, Climate Policy Initiative, Hongkong and Shanghai Banking Corporation Limited, OECD, the IFC and the GIF together conceived FAST-Infra. As it stands, FAST-Infra is tasked with suggesting practical and inclusive solutions to establish sustainable infrastructure as a transnational asset class.

It involves the participation of both the public and private sectors. And in just over a year, 50+ global organizations have joined the FAST-Infra initiative. These organizations represent non-government and (central and regional) government organizations, financial corporations, investors, insurers and rating agencies.

Four pilot projects under development under the FAST-Infra initiative are:

- Technology Enabled Securitization Platform
- Off Take / Revenue Guarantee
- Open-sourced Managed Co-Lending Portfolio Programme (OMCPP)
- Sustainable Financing Facility (SFF) for National Development Banks

Promoting Availability of Relevant Information

There exists a scarcity of information pertaining to sustainable investments and green projects. Therefore, the governments and regulators must take it upon themselves to improve general awareness of ESG and its importance in infrastructure development. Some of the key things to keep in mind while designing awareness initiatives are as follows:

- Create resources for awareness like videos, websites, articles, etc.
- Advertise on traditional & social media about the above resources to ensure the public in general is aware of these resources. The advertisements and message should be simple enough to connect with people with limited understanding of the subject.
- Awareness can also cover the do's and don'ts of the ESG-related investment decisions
- Awareness campaigns should also cover the potential ESG investment products
- Regulators and stock exchanges can conduct workshops on investor awareness for those who show an interest in ESG investment

Evolving Regulatory Framework

Regulatory frameworks have traditionally focused on general corporate governance, traditionally seen as a safer area understood by stakeholders more readily than ESG, which is often perceived to be more ambiguous. This ambiguity arises from the heavy use of jargon and complicated metrics of assessment which are sometimes inconsistent.

Regulators are introducing more and more "soft" initiatives to encourage voluntary ESG compliance. In India, voluntary ESG disclosure has been in place since 2018, with the guidance published by the Bombay Stock Exchange. In 2019, the MCA amended the recommendations to "National Guidelines on Responsible Business Conduct" to align with the UN's Sustainable Development Goals.

Key Players in achieving Broad-based ESG Adoption

To achieve the above objectives, there is a need for a well-coordinated approach amongst various government, regulatory and institutional players. These players and their respective roles in the achievement of the above objectives are discussed below:

Institutional Investors

As discussed above, Institutional Investors are increasingly the key to spearheading the adoption of ESG criteria when considering investment decisions into infrastructure companies or projects. They have traditionally supplemented the government's role as a financier of infrastructure and their increasing push towards ESG criteria is going to provide vital fillip to the universal adoption of ESG in infrastructure development.

Green Financial Institutions

Various Green Financial Institutions such as the UK GIB plc, the ADB and the USAID have been incorporated across different nations. India has also created the following green financial institutions.

- The Indian Renewable Energy Development Agency (IREDA), became India's first green bank in May 2016. This organisation promotes expenditure in the renewable energy sector.
- IIFCL launched the "Credit Enhancement Scheme".
- **Government (as a policy maker)**

Before thrusting ESG on companies, it is important to have ESG panels as part of policy-making bodies. This panel could propose the implementation of a comprehensive ESG implementation strategy. Both the central and the state governments need to make a joint effort to materialize ESG-favourable policy making.

Regulatory Bodies

The global regulatory structure can be classified as follows:

Sustainability Disclosure and Periodic Reporting

Of the world's hundred largest public companies, sixty are dedicated to keeping up with the TCFD recommendations by June 2020. Several stock exchanges, regulators and the ministry of corporate affairs have implemented these frameworks for companies included in their jurisdictions. These countries are China, India, Hong Kong, the UK, the Philippines, Vietnam, Singapore, etc.

Directed and Concessional Lending

Regulators may assist in the establishment of funds under the green refinancing scheme. They may lend funds at concessional rates to the institutions undertaking green initiatives. These financial incentives may also be extended to traditional industries to switch to greener technologies.

Micro and Macro-Prudential Regulations of Financial and Non-Financial Institutions

Introduction of measures by the regulators such as limiting the extent of loan provision to the institutions, based on the extent to which they have abided with the set guidelines on the subject. This has been followed by China since 2006.

- The commercial banks with a larger share of green projects in their loan portfolio have to follow lower reserve requirements as implemented by Lebanon in 2010.
- Environmental considerations have been considered in the bank's assessment framework , etc. Brazil implemented this in 2011.

Stock Markets

SSE is an endeavour that encourages stock exchanges in signatory nations to create ESG indices that track the performance of the companies involved in the sustainable projects. Such indexes are designed to assist individuals who want to engage in investing in environment-friendly activities. In India, the BSE and the NSE have their ESG indices.

Activists & NGOs

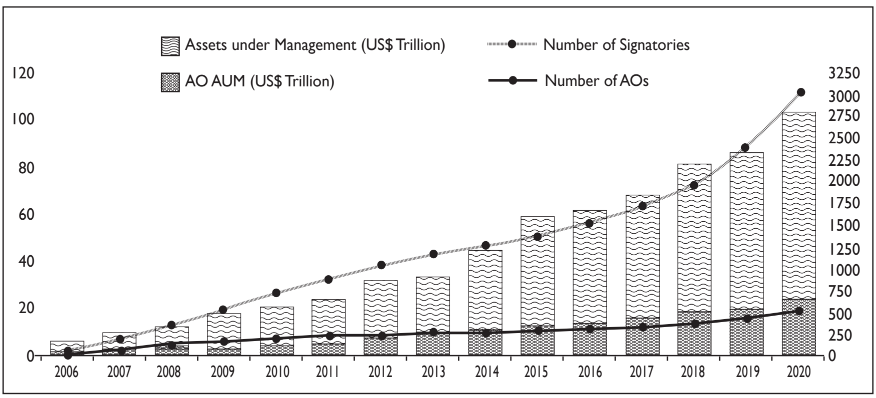
ESG activists can play a vital role in generating public opinion via demonstrations, movies, documentaries, etc. Their role goes beyond generating public awareness as they can create an environment conducive for the ESG measures to be universally accepted and implemented.

UNPRI as an Indicator of Increased ESG Adoption

Three hundred forty five huge asset holders are signatories to the UNPRI. This is a clear indicator of the growing inclination toward ESG investing. An increasing number of credit rating agencies in different countries too have started taking ESG considerations into account while rating companies and financial instruments. Apart from various stock exchanges across Asia, forty nine trading platforms across Europe have started publishing the reporting framework for companies to list on their respective trading platform.

With the environmental deterioration threat becoming increasingly real, there are several new initiatives that align with ESG principles. While solar & wind power generation have taken significant leaps and electric vehicle companies like TESLA are progressing leaps and bounds, traditional companies have started to put in efforts in this direction. These are clear indicators of a shift in the environmental paradigm.

UNPRI Growth 2006-2020 Signatories and AUM



Source: UNPRI

As can be seen from the chart above, between 2006 and 2020 the total number of signatories has crossed 3,000 and Assets under management have increased from US$250 trillion to over US$ 2,750 trillion.

ESG Enablement in India

With RBI's 2007 notification on *'Corporate Social Responsibility, Sustainable Development and Non- financial Reporting – Role of Banks',* India has a place among the earliest movers in sustainable finance. This notification is significant in the face of unfavourable global warming.

In 2008, the Indian policymakers outlined the broad policy framework aimed at reducing the negative effects of climatic fluctuations through *NAPCC. In 2011 the* Finance Ministry followed this up by forming the CCFU. In India, CCFU is tasked with coordinating the different organisations accountable for green finance.

While these have been important milestones, there have been major other strategic moves by RBI and GoI. These are listed below:

Thrust on Solar Power Generation

The various fiscal stimulus initiatives taken in India are all in conformity with the 2015 Paris Agreement. The objective is to gradually minimise the carbon emissions by 33%-35% below 2005 levels by 2030. Subsidies are being given on cost to those who are interested in getting solar panels installed .

Faster Adoption and Manufacturing of Hybrid and Electric Vehicles Scheme (FAME)

- The Government of India introduced FAME in two phases in the country -2015 & 2019. This scheme has been introduced to increase credit flow by lowering the upfront purchase price of all-electric automobiles and providing infrastructure (such as charging stations) to boost the manufacturing and purchase of electric vehicles.
- The SBI has introduced a 'green car loans' scheme. This move has been undertaken to encourage preference to buy electric vehicles. These loans are given at 20 basis point cheaper rates and a longer payback period than other car loans.

Production Linked Incentive (PLI) Scheme

In the field of renewable energy, the Government has also implemented a Production Linked Incentive (PLI) Scheme for encouraging efficiency of the production units.

Promoting Green Finance through Priority Sector Lending (PSL)

In 2015, the RBI added the small renewable energy industry to its PSL policy. Organizations involved in this sector are qualified for credit up to thirty crore rupees under this policy, whereas households can get credit facilities up to ten lakh rupees to invest for the above purpose.

Managing Systemic Risk from Carbon Bubble
RBI is tasked with mitigating systemic risks in our financial system. One such systemic risk is the potential bursting of the asset-price carbon bubble as India moves into a decarbonised nation

Building Awareness
Through various channels of communication such as it's reports and other modes, RBI for the advantage of interested investors (retail & institutional) and banks has been highlighting the significance and problems of adoption of green finance strategies. RBI has shared the progress of the G20 GFSG. These findings lay emphasis on sharing developments on environmental risks, enhancing overall green finance activities

Steps Taken by MCA & SEBI

Key steps taken by MCA and SEBI towards the development of markets and financing of ESG infrastructure are as follows:

- SEBI has made it compulsory for the top hundred (by market capitalisation) listed entities to publish annual BRSR.
- Under the Companies Act, 2013, the MCA has made it compulsory for companies to communicate their developments undertaken as CSR initiatives.
- In 2017, SEBI issued guidelines specifying the disclosure requirements for green bond issuance.
- The Report given by Committee on Corporate Governance, 2017 has made it compulsory for the board of directors to have at least one meeting yearly so as to discuss the agenda given in the report.
- The Business Responsibility and Sustainability Report (BRSR) - a new disclosure report - has been made mandatory from FY22-23.
- The new Indian Sustainability Reporting Standards are expected to incorporate metrics to measure environmental risks, energy consumption, etc.

Conclusion

The inclusion of Environmental, Social and Governance criteria in sustainable financing has been on a rising trend. This follows the investors' understanding that adoption of ESG criteria is not only right but also brings with it the benefits of enhanced financial returns.

ESG Bonds, Green Loans, Sustainability Linked Loans, Credit enhancement schemes, Aggregation and securitisation, Blended finance and REITs are some of the financial products that are already in use to cover the ESG criteria for the financing of infrastructure development. And, they all display a healthy increasing trend in application and usage - not just in the developed markets but also in developing economies, including India.

However, there are challenges in the adoption of ESG criteria in infrastructure financing. To overcome these challenges, work needs to be done on several fronts. Some of these areas are Resolving the Policy Conundrum, Reducing High Borrowing Costs by enhancing project transparency, Improving general awareness of the public and by Evolving regulatory frameworks to accommodate ESG criteria. The key players who have a vital role in meeting the above objectives are the traditional institutional investors, new Green Financial Institutions like IREDA, Government as a policy maker, the regulatory bodies, the stock exchanges and the activists & NGOs. While there is a lot of work still to be done, India is on the right track in embedding ESG into its infrastructure development.

Future Research Possibilities

After reviewing several research studies of the past, it came to light that there is immense scope of research on the issue of ESG. Based on this theoretical consideration, the present paper seeks to examine the ESG as the future of financing for sustainable Infrastructure.

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Creating, Building and Sustaining an Institution – A Momentous Journey of Institute of Public Enterprise

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By R K Mishra and Geeta Potaraju

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The book by Prof. R.K. Mishra and Dr. Geeta Potaraju, explores an absorbing journey of an institution from ideation to the current state. This is not merely the roadmap but the appealing tale of determined and foreseeing minds. This book contains the collective experiences of individuals who chose to make a difference in the domain of social science and institutions in the public sector. This book is divided into seven chapters. Each chapter describes a different set of attribute of the institute in a succulent manner.

Phase-1: The Making of an Institution

This chapter starts with incidents that describe the genesis of Institute of Public Enterprise. In 1963 at a seminar at Osmania University, academicians and senior government policy makers came to a decision that the time has arrived to have an institution that trains the employees from public sector in various matters in with efficient ways. This chapter divides the entire journey of IPE in four phases. The **Evolution Phase** (1964-1980), the contribution of Mr S.S. Khera, ICS, the Cabinet Secretary and Prof V.V. Ramanadham as the first director of the institute has been elaborated. Later the mantle was passed to Prof S.K. Raj Bhandari and many other illustrious persons who have contributed to strengthening of the institute and initiate various programs for training, seminars and lectures. Further, the authors illustrate, the contribution of various public sector units to the growth and development at the institute. Buy the year 1970 IPE had consolidated its position as a premier institution in the domain of public sector due to its contribution in seminar, research, conference and its publications. As a director, Prof Seshagiri Rao charted the path of sustainability of the institute. With his initiation Post Graduate Diploma in Public Enterprise Management (PGDPEM) was lunched and which later was named as MBA(PE). This program saw active contribution from Prof. K.S. Bhat, Dr. K.N. Gaur and Prof. R.K. Mishra. For this course Prof. R.K. Mishra was appointed the Director of the program in 1982.

Phase-2: The Making of an Institution

The period, from 1981 to 1993 has been named as the growth phase for IPE. During this period, IPE entered into deeper engagements with various state and central government departments to perform, specific consulting assignments. The reports from IPE found acceptance from Prime minister's office, and UN bodies. Under the leadership of Mr. Sankar, IPE lunched very successful programs to train the IAS officers. IPE continued its efforts in the domain of long-term management education. A diploma for the personnel of Industrial Development Bank of India (IDBI) was lunched in this period. The noteworthy achievement in this period is the Commercial Public Enterprise Management(1983-1999) program jointly designed by IPE and London Business School and supported by Government of India and British council.

Phase-3: The Phase of Volatility (1993-2004)

The time from 1993 to 2004 considered as the period in which IPE witnessed the several changes in the form of change of leadership. In the year 1995, IPE lunched its Post-Graduate Management Program (PGDM). In 1996 under leadership of Dr. Morton R Davis and Prof. Mishra, draft for institutions for rural development was formed. During this period that Prof Mishra was invited in 1996 by the Department for International Development (DFID), UK, and the University of Liverpool for developing a draft of institutions for rural development in South Africa with Dr. Morton R Davis as the Chairman of the mission. At the same time sound policies and systems were formulated under Prof T. Navaneeth Rao who served as the director at IPE. Further, Prof. Rao created the position of Dean and also established academic relation with Erasmus University. By the year 1995, Prof R. K. Mishra had become the Vice President International Association of Schools and Institutes of Administration (IASIA), after being inducted in 1994. Mr. Gopalakrishna as the next director is credited with streamlining the research work at IPE and Prof. R.K. Mishra was appointed as the Dean research. As the next acting director, renewed focus was placed enhancing the courses of PGDM program by Prof. R.K. Mishra. Prof K. Harigopal as the next director, focused at training programs for the large pool of employees of various public sector and government units.

Phase-4: The Transformation Phase (2004 onwards)

In this phase, Prof. R.K. Mishra was appointed as the next director. In this phase of growth at IPE several other, programs i.e., Post Graduate Diploma in Management-Banking Insurance and Finance (PGDM-BIF), Post Graduate Diploma in Management-Marketing Management, (PGDM-MM), Post Graduate Diploma in Management-International Business, (PGDM-HR) and Executive Post Graduate Diploma in Management Course for working professionals, (Executive PGDM) were initiated. For the expansion of IPE, work for the new campus of IPE at Shamirpet was started. IPE managed to finance this through a mix of own effort, support from banks and generous contribution from several PSUs and by 2014 the new campus at Shamirpet became operational.

Chapter-2: Contributing to Social Science and Management Research

Focus on research has been the pinnacle of IPE since its inception. In the second chapter the activities of IPE for research has been documented. Several international agencies, central government, state governments and a number of public sector units have supported IPE in research activities. With the financial support from the Indian Council of Social Science Research (ICSSR) IPE has concluded more than 280 research projects in the area of public policy, human resource management, corporate social responsibility, public enterprises, gender studies, banking, sustainable development, water management, finance, and marketing. The research activities undertaken at IPE have been divided into three types i.e., institutional research, sponsored research, and doctoral research. IPE successfully conducted and made a name for it doing significant number of sponsored research projects for public sector units, planning commission, state governments and government of India. As a result of its substantial contributions, ICSSR acknowledged IPE as the ***Center of Excellence*** for research which resulted in greater contributions from ICSSR. The research work was later converted into books and articles for research journals. With the increased recognition in the field of research IPE started getting visits from academicians from around the world and the collaboration with foreign institutions also increased manifold. Simultaneous with growing expertise and demand for specialized focus in research, IPE established several centers i.e., Center for Governance (CCG), Center for Corporate Social Responsibility (CCSR), Center for Governance and Public Policy (CGPP) and Center for Sustainable Development (CSD). IPE received 10 Doctoral Research Fellowships from ICSSR for research in Social Sciences. Utilizing this, 95 researcher scholars working at IPE have been awarded Ph.D. till 2019. IPE has been conducting, institutional research by writing case studies in matters of national and international significance and thereby documenting, the important events. Further, IPE had also created a database of State Level Public Enterprises (SLPE) which was appreciated by many organizations. With the generous support from ICSSR and several patron organizations, seven research journals are broughtout by IPE for the dissemination of the research findings. Apart from these IPE brings out white papers, impact evaluation studies for various government bodies.

Chapter-3: Management Development and Training

Chapter 3 explores the events and activities of getting into management development programs (MDPs) at IPE. MDPs were the first programs to be initiated at IPE for the purpose of capacity building for PSUs with medium and short term training programs. The MDPS were designed in response to the changing requirements of PSUS. These MDP programs were in the domain of material management, general management, personnel management, financial management, and production management. Later as per the business demands training programs were lunched for information technology, project management, international business and corporate management. The training programs in public policy, governance etc. conducted for IAS officials were highly appreciated. IPE also conducted training programs in association with London Business School. Further IPE also conducted series of programs on corporate governance in public enterprises, sensitization programs for Myanmar, training programs for South East Asian countries and advance leadership programs for senior leaders in PSUs which were well appreciated.

Chapter-4: Consulting Arm

Since 1980, IPE has been into the domain of consulting for various state and central government bodies. As part of it IPE had conducted performance management programs in the domain of corporate plan, training needs assessment, corporate social responsibility, Distribution Management, and Training Needs Analysis.

Chapter-5: Nurturing Management Education

Venturing into management education has been an event that turned a new leaf for IPE. In 1978, PGDPEM (Post Graduate Diploma in Public Enterprise Management) was lunched. It was followed by Post Graduate Diploma in Business Management (PGDBM) in the year 1995. This program has remained as the flagship program among the total five popular PGDM programs. To impart quality education IPE follows latest pedagogy, broad curriculum and acknowledged program. Several of the programs including flagship PGDM have received NBA, AIU and AICTE accreditations.

Chapter-6: Financial Sustainability and Transparency

As a registered society, IPE has to follow the guidelines of ICSSR and AICTE for its operations. Depending on various assignments, IPE is awarded financial assistance from global bodies, public sector units, central and state governments.

Chapter-7: Creating a Shared Future

From its humble beginnings IPE has covered a long distance in terms of establishing its name in India and abroad. Its contributions for state and central level organizations has been recognized across many forums and documented. For long term education IPE is striving for newer accreditations, evolving the programs to suit the needs of the future. IPE has instilled a culture that transforms as per changing market demand. The reason being, the realization that IPE has to sustain itself in future with its own efforts. This is not just a book, rather it is a compendium of contribution of illustrious individuals who have created and shaped an institute of repute. Prof. Mishra stands tall among these luminaries whose contributions to IPE have brought it to its present stature. Future is uncertain but determined and focused personnel at IPE are poised to excel in it using their skills and shared competencies.

The authors have weaved an enchanting story that describes the journey of an institute being built brick by brick. Each chapter narrates events that become epics in their own right. From humble beginnings to resounding name at UN is one of the many achievements at IPE. Renowned personalities from academia, civil service and other government bodies have shaped these stories. This book is a compliment to the creation of an institute of eminence which is equipped with world-class infrastructure and facilities. This book also acts as guide for next generation of leaders who can see what inspired leadership could achieve. Moreover, organizational change professionals can take cue from the example of IPE that started with a limited set of activities and today it has excelled in education, research, training and consulting.

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IPE strongly believes that HR development including education is crucial for economic growth. As part of its long-term education programme, the Institute runs an AICTE-approved PG Diploma in Business Management, which is also recognised as equivalent to MBA by the Association of Indian Universities (AIU). Added to it, the Institute offers MBA in Public Enterprise for practicing managers in collaboration with Osmania University. With the changing needs of the industry, the Institute also runs sector-specific PGDM programs in Marketing Management, Banking, Insurance and Financial Services, International Business and Human Resource Management. IPE also offers a 15 month Exe-PGDM program for Executives.

The Institute has a strong research wing with a number of research scholars, sponsored by ICSSR and IPE, working on topics of current interest. Its PhD programme is one of the largest in social sciences. Research, both basic and applied, is the forte of the Institute and helps it in its training and educational activities. IPE's research studies are extensively used by the Committee on Public Undertakings (COPU), other Legislative and Government Committees, the Economic Advisory Council to the Prime Minister, several Ministries of the Government of India, Planning Commission, Standing Committee on Public Enterprises (SCOPE) and several Finance & Pay Commissions.

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