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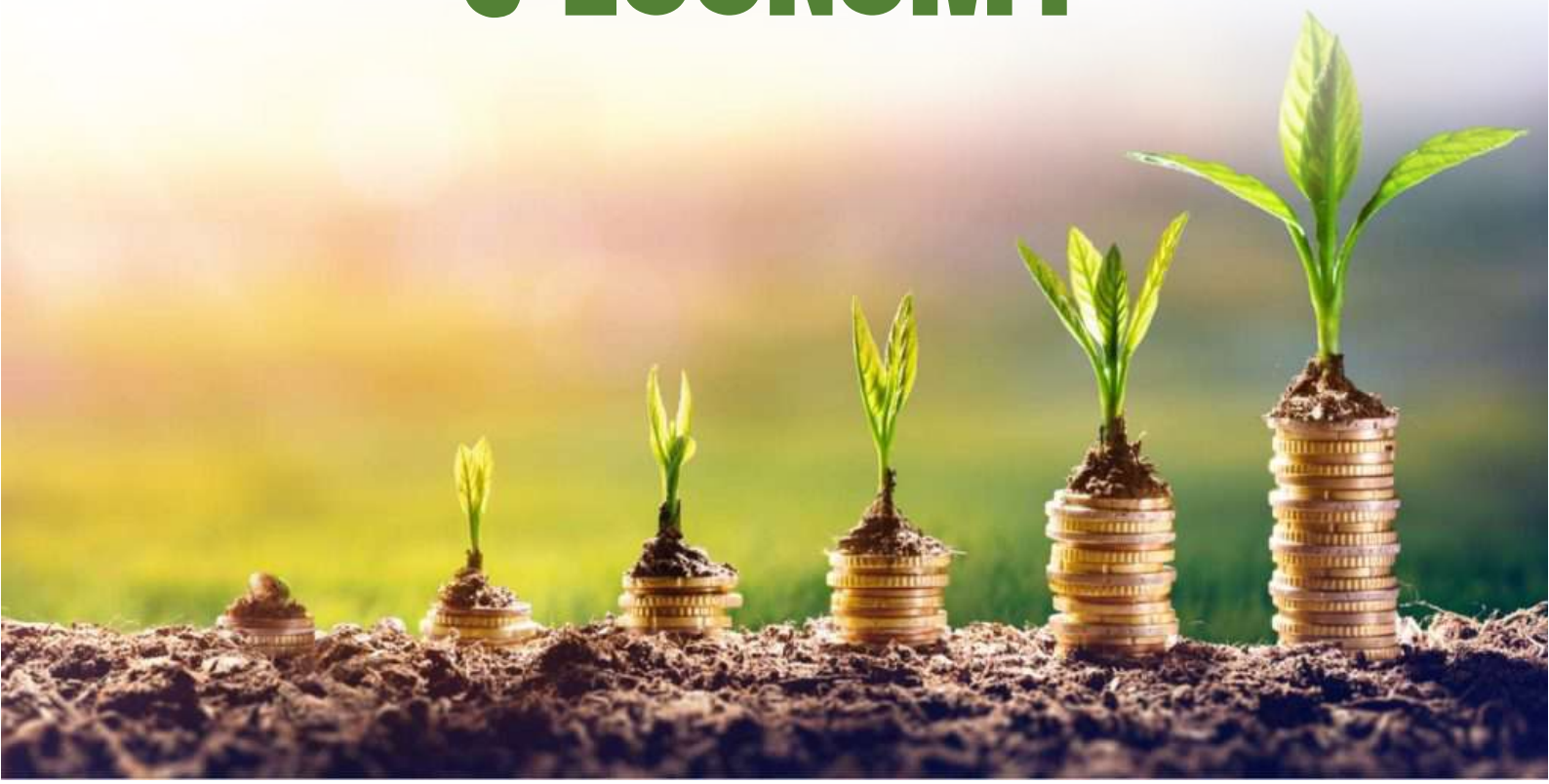

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Impact of GST Reforms on Healthcare, Banking, and Pharmaceutical-Sectors: An Empirical study via VAR Model Perspective

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Abstract
The current study aims to examine the impact of the GST reforms on the banking, pharmaceutical and healthcare sector of the Indian economy. The study has employed the monthly closing prices of NSE sectoral indices from January 2013 to December, 2021 as a representative to the selected sectors of the Indian economy. The finding of the study illustrates that the policy uncertainty due to the GST reforms negatively affect the banking sector by increasing the tax rates on financial services and interbank transactions from 15% to 18% under GST regime.The increase in tax rate has resulted in increasing the cost of financial services provided by the banking sector to its customers which directly affect their banking business in India as depicted by contemporaneous negative response in Impulse Response Function analysis. On the contrary, the adoption of GST has created an opportunity for the pharmaceutical and healthcare sector which has resulted in instantaneous positive response to both of these sectors. However, this positive response is wiped off in the short run within a time period of two months on an average for both of these sectors.
Keywords:[Economic Impact; GST Reforms;Sectoral Indices; Impulse Response Function; Vector autoregressive model]

Introduction

Tax revenue is a major source of funding for government spending on public goods and services around the world. The revenue from taxation builds the government's capability to meet basic needs, ensure vertical equity and foster economic growth, but the ability of the government to generate revenue from taxation is limited.After Independence, the India innate a taxation structure which is regressive in naturewith anti-trade bias for international and domestic trade (Purohit, 1992). Afterward, the Indian government has introduced a number of taxation and fiscal reforms in India with the purpose to intensify the efficiency and transparency in the tax collection system, as well as to formulate a more competitive and transparent taxation system for the country. In 2005, the introduction of the Value-added tax (VAT) was the initial step by the government at the state level to improve the tax base and buoyancy of the state governments (Mukherjee, 2015). The value added tax is called as self policing taxation system as the implementation of the VAT encourage the taxpayers to demand their invoices in order to ensure to get the tax credit to lower down their tax burden by claiming tax credits on already paid taxes. However, the implementation of the VAT is still have some cascading effect as this system does not offer for set offs for CENVAT which is already paid at the distribution and consumption stages (Neporam, 2011). Cascading effects means tax on already paid some taxes resulting in extra burden on a taxpayer. Since, the cascading effect results in an extra burden on taxpayer in the form of extra price, it results in increase in general price level in an economy (Khoja and Khan, 2021).Therefore, in order to remove this prevailing cascading effect of taxation, the Government of India has introduced harmonized system of Goods and Services Tax (GST) on July, 2017 in India. GST is a destination-based taxation system in which tax is levied on value addition at each stage of the manufacturing and distribution process.The introduction of GST has resulted in the elimination of 13 cesses and subsumption of 17 central and state taxes, i.e., Octroi duty, Service Tax, Turnover tax, Stamp duty, and State level Sales Tax, etc. in India. Vasanthagopal (2011) found that the adoption of GST in India would eliminate all the complexities in the current taxation system and would be a great leap in the Indian taxation system. However, the implementation of the GST in India is well criticized by various academicians, researchers and the opposition political parties in India due to its initial inflationary effects in some countries in its inception year. However, the international experience with the implementation of GST is not uniform around the world. For example,Gelradi, 2004 found that the introduction of VAT has no significant impact on UK, however, the introduction of GST in Canada faces an increase in general price level. Valadkhani and Layton (2004) revealed in their study that the adoption of GST increases the prices of goods and services by 2.8% during its implementation stage in Australia. However, the impact of inflation is found to be transitory which

prevails only during the implementation phase. Palil and Ibrahim (2011) also found that the consumers are worried about price hikes of at least 4% with the implementation of GST in Malaysia.Similarly, Sahooet al., (2017) found in their study that China faced an inflation increase of 9.81% in the introductory year and an increase of 15.215% in the immediately subsequent year. However, according to their study New Zealand and Portugal experienced a price drop after GST implementation. Similarly, the adoption of the GST has changed the tax structure for all the industries working in Indian environment.With the adoption of the GST, SBEs (Small Business Enterprises) are required to update their business processes and accounting systems, as well as be prepared to set up the improved accounting and record-keeping systems, train their employees and have the appropriate software to facilitate successful documentation and recording keeping for GST compliance (Chen and Taib, 2017, and Ramli et al., 2015). SBEs were required to train their personnel to deal with the complexity of this newly adopted taxation system at the initial stage, which increased the compliance cost of their taxes.Similarly, the announcement of the GST in the Indian economy has changed the tax structure for the whole Indian economy as some industries have gained a benefit from it, while others have borne up an increase in their tax rates. The GST adoption is a new experience for the Indian economy which creates an environment of anxiety and worries among Indian households and industrialist. Sankar (2017) has found that the adoption of GSThas a favorable impact on the Indian economy as a whole. But when we do the sectoral categorization, the GST has both positive and negative effects on every industry, creating a speculative environment of uncertainty and anxiety among investors and shareholders. Therefore, the present study tries to focus on exploring and determining the impact of adoption of GST on the selected sectors of Indian economy and to provide future guidance and research gaps for further study.

The Current study has been structured into 5 different sections. Section 2 of the study deals with the theoretical framework and previous empirical studies conducted in this domain. Similarly, it covers up the research gap formulated from the available literature for conducting this study. Section 3 presents the objective and hypothesis formulation for the current study. Section 4 explains the research methodology used for conducting the present study. Section 5 and 6 summarizes the results, policy implications and scope for conducting future study.

Literature Review

The field of public finance, especially, taxation in general has received major attention of the policy makers, academicians and the professionals over time. The change of taxation policy in a country by their respective government creates an environment of uncertainty and anxiety among various taxpayersand households. The announcements of macro-economic news usually came as a shock and create an environment of uncertainty in an economy as some sections of the society get benefit from it while other sections bear it up.A lot of studies have already been conducted on policy uncertainty and its impact on GDP and investment of a country. **Niemann (2004)** found thatincrease in tax rate uncertainty has an equivocal effect on investment behavior under risk neutrality without time flexibility. Handley and **Limao(2012)** found in their study that the state policy uncertainty has a significant impact on firm entry and investment decision in context to international trade. Similarly, **Barrero et al.,(2017)** found that rise in policy uncertainty will have a long-term implication on economic growth as well as on capital investment. **Bhagat et al., (2013)** also studied the relationship between economic policy uncertainty and fixed investment. They found that there persists a inverse relationship between uncertainty in economic policy and fixed investment in India. Similarly, **Zare et al. (2013)** found that monetary policy announcement has a higher impact on the volatility of the stock market in bear periods in comparison to bull market periods, as predicted by finance constraint models. **Adra and Menassa (2022)** demonstrate that the shock cause by monetary policy decision of Federal Reserve plays an important role in determining both risk adjusted and absolute returns from value investing. Similarly, the change of the taxation structure in India from Value added tax to Goods and Service tax has resulted in creation of uncertainty, anxiety and worries among various sectors of Indian economy. The implementation of the GST has changed the tax slabs for all the industries working in Indian economy by creating an opportunity and threat for them. **Haron and Ayojimi (2018)** found in their study that the Malaysian stock market index volatility increased with the GST announcement which illustrates that the awareness programs organized by their respective government before the announcement of the GST do not yield meaningful results. Similarly, **Nutman et al., (2021)** found in their study that the complexities in GST computation and filling of returns, exaggerated rules, and frequent amendments in GST rules are

the major cause for the abolishment of the Goods and Service tax in Malaysia. **John and Dhannur (2019)** found that the uncertainty caused in the Indian market due to the announcement of the GST adversely affected the service sector, but does not have any significant or major impact on the manufacturing sector. **Nayaka and Panduranga (2021)** also found that the GST return filing and tax collections are increasing in India at a rapid rate but the compensation to states is continuously delayed by the government which is affecting state government spending on numerous welfare activities. Similarly, **Sankar (2017)** found upon performing sectoral classification of the Indian economy, the GST has both positive and negative effects on every industry.The adoption of the GST in India has increased the tax rate on financial services from 15% to 18% which directly impact the banking and other non-banking financial service providers directly **(Baliyan and Rathi, 2018).**Similarly, the pharmacy sector companies are taxed at the 18% slab rate under the GST regime which is previously 15-20% under the VAT system. Therefore, it becomes imperative to analyze the impact of GST on numerous sectors of the Indian economy as there is a vast scarcity of empirical studies on this phenomenon.

The present study is different from past studies in many ways conducted in this area for India. Firstly, the previous studies have mainly focused on change in monetary and other economic policies and there is hardly any study on the sectoral impact of GST in India. This study is different from past studies as it primarily focused on the impact of the implementation of GST on various sectors of the Indian economy through the application of the VAR and IRF analysis. However, the majority of the existing studies in this domain are conceptual and theoretical which only focus on change in taxation rate for different sector of the Indian economy. Moreover, this study also takes some exogenous macroeconomic variables which equally triggered the Indian market volatility to avoid spurious results while investigating the impact of GST on various sectoral indices of NSE. As a novel study, this study contributes significantly to the available literature and provides a pathway of future directions for further study in this domain. Finally, this study contributes to developing a better understanding of how macroeconomic news announcement uncertainties affect the small emerging markets i.e. India, whose institutions, organizations, and structures are dissimilar toother developed markets.

Objective of the Study

The current study aims to examine the impact of implementation of Goods and service taxation reforms on the banking, pharmaceutical and healthcare sector. For fulfilling this objective, the study has taken NSE sectoral indices as a proxy to these sectors of the Indian economy.

Hypothesis formulation of the Study

In order to examine the impact of the GST on selected sectors of the Indian economy, the following hypotheses are formulated:

- H01: The return series has a unit root.
- H02: There is no autocorrelations in the residual of constructed VAR model up to lag h
- H03: There is no serial correlation at lags 1 to h in the residuals of the constructed VAR model.
- H04: The residuals of the constructed VAR models are normally distributed.
- H05: There exists no ARCH effect up to order q in the residuals of the constructed VAR model.

Data and Research Methodology

The present study has examined the impact of the implementation of the GST on selected sectors of the Indian economy as the announcements of GST in India have changed the tax structure for the whole economy. The study has undertaken three major sectors of the Indian economy i.e. Pharmacy, Healthcare and banking sector (both private and public banking sector) that are vastly affected by the implementation of GST in India. The study has employed the monthly closing prices of NSE sectoral indices as a representative to the selected sectors of the Indian economy. The study has employed the monthly closing process of the NSE sectoral indices from the CMIE Prowess IQ database as the monthly data avoids the spurious correlation which is often detected in annual or quarterly data (Patra and Poshakwale, 2006). Similarly, the study has employed the EPU index (Economic Uncertainty index) to measure the uncertainty caused in the Indian economy due to the announcement of GST tax reforms. The EPU index is an uncertainty index of a country which illustrates the relative frequency of the newspaper articles of a particular country that include three terms pertaining to economy (E), policy (P) and uncertainty(U) of their respective country. The EPU index of India is developed by Baker et al., (2016) which have been constructed using the same approach as they use for the US-based EPU Index by including the 7 Indian newspapers. In order to provide realistic and unbiased results, the study has used

the exchange rate, CPI and call rate as exogenous variables.The growth of the call rate has been utilized as a proxy for the interest rate in the Indian economy. The data onthe exchange rate, call rate, and CPI has been extracted from RBIwebsite. The price series of the Nifty-50 sectoral indices, CPI, and the exchange rate has been transformed by the use of logarithm compounding returns with the following formula:

$$NSI_t = \log\left(P_t^{close} / P_{t-1}^{close}\right) \times 100$$

Where NSI_t represent sectoral indices of NSE India, P_t represents current closing prices, and p_(t-1)represents lagged closing prices of the NSE India.

Unit Root Test for stationarity

The study has focused on examining the impact of GST announcement and implementation of GST on selected sectors of Indian economy. The study has employed both the parametric and non-parametric test for checking the stationarity of the return series. As a parametric test, the study has employed the familiar ADF test and as a non-parametric test, Phillips Perron (PP)stationarity test has been employed. The major difference between the ADF and PP unit root test is that ADF uses the parametric structure in order to detainthe serial correlation and Phillips Perron test uses the non-parametric correction on the basis of the log run variance of the ΔX_t. ADF and PP unit root test statistics have been used as below:

$$\Delta X_t = \propto + \beta t + \delta X_{t-1} + \sum_{i=1}^{k} \emptyset_i \, \Delta X_{t-i} + \varepsilon_t$$

$$\Delta X_{t-1} = \propto_0 + \rho X_{t-1} + \varepsilon_t (2)$$

Where X_t = price series, β = coefficient on a time trend, k= maximum length of the lagged dependent variable, □_(i)= parameter of lagged first, ΔX_(t)= first difference of series□ X□_t, ε_t = pure white noise error term.

Table I show that all the variables including the return series of sectoral indices, CPI, and exchange rate are stationary at level after converting them into natural logarithm. Similarly, interest growth rates are stationary at level (I~ (0)).

In order to examine the response of the endogenous variable (sectoral indices of NSE) due to shock caused by the implementation and announcement of GST in the Indian economy from the EPU index, the study has employed the Vector Autoregressive model (VAR). VAR models are vastly applicable for multivariate time series in which each variable is a linear function of its own and other variables past lag. The equation and matrix representation of a multivariate VAR model with three different time series variables denoted by X_t,Y_t,andZ_t with lag 1 is as below:

$$X_t = \propto_1 + \delta_{11} X_{t-1} + \delta_{12} Y_{t-1} + \delta_{13} Z_{t-1} + U_t$$

$$Y_t = \propto_2 + \delta_{21} X_{t-1} + \delta_{22} Y_{t-1} + \delta_{23} Z_{t-1} + V_t$$

$$Z_t = \propto_3 + \delta_{31} X_{t-1} + \delta_{32} Y_{t-1} + \delta_{33} Z_{t-1} + W_t$$

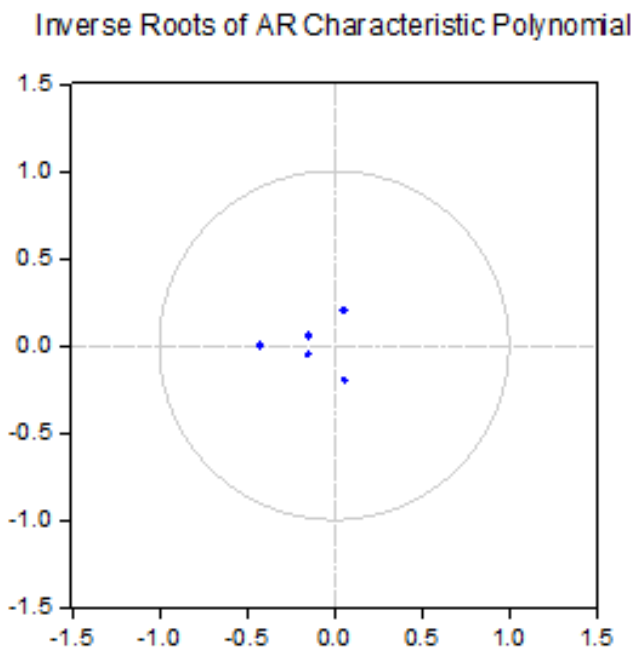
Matrix representation

$$\begin{bmatrix} X_t \\ Y_t \\ Z_t \end{bmatrix} = \begin{bmatrix} \propto_1 \\ \propto_2 \\ \propto_3 \end{bmatrix} + \begin{bmatrix} \delta_{11} & \delta_{12} & \delta_{13} \\ \delta_{21} & \delta_{22} & \delta_{23} \\ \delta_{31} & \delta_{32} & \delta_{33} \end{bmatrix} \begin{bmatrix} X_{t-1} \\ Y_{t-1} \\ Z_{t-1} \end{bmatrix} + \begin{bmatrix} U_t \\ V_t \\ W_t \end{bmatrix}$$

Where X_t, Y_t, and Z_t are stationary variables. U_t, V_t, and W_t are white noise disturbances or shock terms. The coefficients in the main matrix are computed through OLS.

The study has also appliedthe inverse roots of the AR characteristic polynomial to examine the

Fig1 Inverse Roots of computed VAR model



stability of the VAR model. If the estimated ARMA process is stationary, then all the unit roots should lie inside the circle. Figure 1 demonstrates that there is no unit root outside the circle which authenticates the stability of the estimated VAR model. The number of lags to be regressed under the VAR model has been selected

on the basis of AIC, BIC and FPE Criterion. The equation of the computed VAR model is as below where each lag represents a month:

LNEPU = LNEPU.l1 + LNNiftypharmal1 + LNNiftyHC.l1 + LNNiftyPVTbank.l1 +LNNiftyPSUbank.l1+ const + Int +LNExR + LNCPI

LNNiftypharma = LNEPU.l1 + LNNiftypharmal1 + LNNiftyHC.l1 + LNNiftyPVTbank.l1 +LNNiftyPSUbank.l1+ const + Int +LNExR + LNCPI

LNNiftyHC = LNEPU.l1 + LNNiftypharmal1 + LNNiftyHC.l1 + LNNiftyPVTbank.l1 +LNNiftyPSUbank.l1 + const + Int +LNExR + LNCPI

LNNiftyPVTbank= LNEPU.l1 + LNNiftypharmal1 + LNNiftyHC.l1 + LNNiftyPVTbank.l1 +LNNiftyPSUbank.l1 + const + Int +LNExR + LNCPI

LNNiftyPSUbank.l1 = LNEPU.l1 + LNNiftypharmal1 + LNNiftyHC.l1 + LNNiftyPVTbank.l1 +LNNiftyPSUbank.l1 + const + Int +LNExR + LNCPI

Where HC represent healthcare sector, PVTbank represent private sector and psubank represent public sector bank of NSE India.

The above equation illustrates that the endogenous variables are regressed onto each other and the exogenous variables (exchange rate, CPI, and interest growth rate) – appear as independent variables. In a VAR model, the individual coefficient estimation provides only a limited amount of information about the system's response to a shock because all the variables in a multivariate VAR model are dependent on one another.Therefore, to undercover this problem and to provide a holistic view of the model dynamic's behavior, the study has applied the Impulse Response Function (IRF).The Impulse Response Function analysis is an advanced versionof the Forecast Error Impulse Response (FEIR) analysis. An important limitation of the FEIR is that it cannot be used to examine the contemporaneous reactions of the variables. The major aim of IRF analysis is to describe how the variables of the model react in response to a change of one unit in the current value of the error term of the VAR model.This property of IRF analysis allows us to trace the diffusion of a single shock in a noisy system of equations, which build them particularly as a helpful tool for evaluating economic policies.

Results and Discussion

The basic condition for the return series for random walk is that it must have a unit root. The study has applied the two familiar tests i.e. ADF and PP Test for checking the unit roots of the return series. The major difference between the ADF and PP unit root test is that ADF uses the parametric structure in order to detainthe serial correlation and Phillips Perron (PP) test uses the non-parametric correction on the basis of the log run variance of the ΔX_t. A financial time series is assumed to be stationary when the statistical properties of a distribution i.e. mean, variance, and covariance of the distribution remain constant throughout the time or the series is not displaying any trend over time. If a financial series has a unit root, then it needs to be corrected by employing differencing (Idrees et al., 2019). The null hypothesis (h01) of the study for both of the test statistic used in the current study is that the return series of NSE sectoral indices and other variables has a unit root in comparison to the H1 of no unit roots i.e. the series is stationary.

Table I: Results of Unit Root Test (with trend and intercept)

Variable Name	Test Statistic	P-value	Critical Value		H0	Dec.
			1%	5%		(H0)
Augmented Dickey-Fuller Test (Trend and Intercept)						
LNEPU	-10.221*	0.0000	-4.046	-3.452	The LNEPU series has a unit root	Reject
LNPharma	-11.387*	0.0000	-4.046	-3.452	The LNPharma series has a unit root	Reject
LNHealth	-11.955*	0.0000	-4.046	-3.452	The LNHealth sector has a unit root	Reject
LNPSU	-9.379*	0.0000	-4.046	-3.452	LN of PSU bank series has a unit root	Reject
LNPVT	-10.634*	0.0000	-4.046	-3.452	LN of Pvt bank series has a unit root	Reject
LNCPI	-18.584*	0.0000	-4.046	-3.452	The natural log of CPI series has a unit root	Reject
LNExR	-9.727*	0.0000	-4.046	-3.452	The natural log of ExR has a unit root	Reject
Intr	-14.745*	0.0000	-4.046	-3.452	The Interest series has a unit root	Reject

Phillips-Peron Test (Trend and Intercept)						
LNEPU	-53.233*	0.0001	-4.046	-3.452	The LNEPU series has a unit root	Reject
LNPharma	-11.350*	0.0000	-4.046	-3.452	The LNPharma series has a unit root	Reject
LNHealth	-11.840*	0.0000	-4.046	-3.452	The LNHealth sector has a unit root	Reject
LNPSU	-9.336*	0.0000	-4.046	-3.452	LN of PSU bank series has a unit root	Reject
LNPVT	-10.669*	0.0000	-4.046	-3.452	LN of Pvt bank series has a unit root	Reject
LNCPI	-21.199*	0.0000	-4.046	-3.452	The natural log of CPI series has a unit root	Reject
LNExR	-17.282*	0.0000	-4.046	-3.452	The natural log of ExR has a unit root	Reject
Intr	-22.597*	0.0000	-4.046	-3.452	The Interest series has a unit root	Reject

Table 1 illustrates the results of the unit root test for both test statistics used in the current study. These tests statistic has been performed for the whole sample of the study on the level with constant and constant & trend. If the p-value of ADF statistics is less than 5%, the null hypothesis is rejected. The null hypothesis (h0) of a unit root in the level series can be rejected for all the variables as the computed t-statistics are greater than the test critical values as shown in table I.This indicates that all the variable under the study are stationery at level after converting them into returns with natural logarithm compounding (Natural log is not for Interest rate as it is a variable in percentage). Hence, in further analysis, all the variables have been consideredas integrated of I(0).

Table II Results of VAR Model

	LNEPU	LNPSUbank	LNPVTbank	LNPharma	LNhealthcare
LNEPU(-1)	-0.379958	0.022256	-0.009966	-0.004023	-0.001986
	(0.09902)	(0.02895)	(0.02108)	(0.01598)	(0.01472)
	[-3.83704]	[0.76878]	[-0.47284]	[-0.25176]	[-0.13496]
	0.0001*	0.4424	0.6365	0.8013	0.8927
LNPSUbank(-1)	-0.272999	0.193705	0.143709	0.087851	0.122138
	(0.53091)	(0.15521)	(0.11300)	(0.08566)	(0.07891)
	[-0.51421]	[1.24800]	[1.27172]	[1.02551]	[1.54775]
	0.6073	0.2126	0.2041	0.3056	0.1223
LNPVTbank(-1)	-0.661563	-0.085799	-0.230420	-0.129655	-0.149049
	(0.74604)	(0.21810)	(0.15879)	(0.12038)	(0.11089)
	[-0.88677]	[-0.39338]	[-1.45107]	[-1.07708]	[-1.34413]
	0.3756	0.6942	0.1474	0.2820	0.1795
LNPharma(-1)	-0.987809	2.173273	1.255052	0.641485	0.643964
	(3.12389)	(0.91327)	(0.66492)	(0.50405)	(0.46433)
	[-0.31621]	[2.37966]	[1.88754]	[1.27266]	[1.38688]
	0.7520	0.0177**	0.0597***	0.2037	0.1661
LNHealthcare(-1)	1.054827	-2.253687	-1.255968	-0.796863	-0.812108
	(3.37404)	(0.98640)	(0.71816)	(0.54442)	(0.50151)
	[0.31263]	[-2.28475]	[-1.74887]	[-1.46370]	[-1.61933]
	0.7547	0.0228**	0.0809***	0.1439	0.1060

C	-0.000488	0.000919	0.014001	0.011767	0.013605
	(0.03745)	(0.01095)	(0.00797)	(0.00604)	(0.00557)
	[-0.01302]	[0.08395]	[1.75636]	[1.94716]	[2.44390]
	0.9896	0.9331	0.0797***	0.0521***	0.0149**
LNExR	-0.087310	-0.366675	-0.369367	-0.046067	-0.041304
	(0.50185)	(0.14672)	(0.10682)	(0.08098)	(0.07459)
	[-0.17398]	[-2.49920]	[-3.45789]	[-0.56889]	[-0.55371]
	0.8620	0.0128**	0.0006*	0.5697	0.5800
LNCPI	-0.001437	0.001105	0.000597	0.000616	0.000573
	(0.00315)	(0.00092)	(0.00067)	(0.00051)	(0.00047)
	[-0.45572]	[1.19905]	[0.88980]	[1.20973]	[1.22169]
	0.6488	0.2311	0.3740	0.2270	0.2224
Intr	-0.004016	0.001232	0.000463	-0.000101	4.44E-06
	(0.00223)	(0.00065)	(0.00047)	(0.00036)	(0.00033)
	[-1.80290]	[1.89156]	[0.97733]	[-0.27993]	[0.01341]
	0.0720***	0.0591**	0.3289	0.7796	0.9893

Source: Author's Compilations
Standard errors in are provided ( ) & t-statistics are provided in [ ]
*, **,*** denotes Significant at 1, 5 and 10 percent respectively.
The results of the VAR model analysis as presented in table II illustrates that the EPU is negatively affected by its own lagged value and the interest rate factor. The public sector banking index is positively affected by the lagged value of the pharmaceutical sector and interest rate factor as denoted by positive coefficient value in the third column of table II. The PSU banking sector is negatively affected by the lagged value of the healthcare sector and the exchange rate factor as represented by significant p-value. Similarly, the private sector index is positively affected by lagged value of the pharmaceutical sector index and the intercept term.As observable in table II that some of the estimates have not entered significantly in the estimated VAR model, therefore, we have computed a restrictive VAR model to generate the impulse response function of our computed VAR model.

Diagnostic Testing

Table III Results of the Vector Autoregressive Residual Portmanteau Tests for Autocorrelations

H02:There is no autocorrelations in the residual of the constructed VAR model up to lag h					
Lags	Q-Statistic	Prob.	Adj Q-Statistic	Prob.	Df
1	2.349246	-	2.371409	-	-
2	26.99907	0.3559	27.49076	0.3318	25
3	41.89378	0.7857	42.81511	0.7544	50
4	62.92200	0.8388	64.65996	0.7971	75

Source: Author's Compilations

Table IV Results of VAR Residual Serial Correlation LM Tests

H03: No serial correlation at lags h						
Lags	LRE* stats	DF	Probability-Value	Rao F-statistic	Df	Probability
Value						
1	19.72441	25	0.7611	0.784883	(25, 332.1)	0.7615
2	26.48371	25	0.3822	1.064386	(25, 332.1)	0.3828
3	15.35789	25	0.9326	0.607225	(25, 332.1)	0.9327
4	22.87342	25	0.5850	0.914413	(25, 332.1)	0.5855
H03: No serial correlation at lags 1 to h						
1	19.72441	25	0.7611	0.784883	(25, 332.1)	0.7615
2	39.28868	50	0.8623	0.776394	(50, 386.5)	0.8634
3	69.93083	75	0.6439	0.926343	(75, 382.6)	0.6495
4	100.9826	100	0.4537	1.008293	(100, 365.7)	0.4673
*Edgeworth expansion corrected likelihood ratio statistic.						

Source: Author's Compilations

Table V Results of VAR Residual Normality Tests

H04: Residuals are normally distributed			
Components	Jarque-Bera	Df	Prob. Value
1	0.167514	2	0.9197
2	0.043769	2	0.9784
3	95.45883	2	0.0000
4	0.465577	2	0.7923
5	8.913054	2	0.0116**
Joint	105.0487	10	0.7243

Source: Author's Computations
*, ** Sig at 1 and 5%

Table IV Results of VAR Residual Heteroskedasticity Joint Tests

H05: There is no ARCH effect in residuals (et) up to order q		
Chi-sq	Df	Prob.
244.3566	240	0.4098
VAR Residual Heteroskedasticity Tests (Includes Cross Terms)		
632.2684	660	0.7751

Source: Author's Computations

The diagnostic testing which is performed after computing the restricted VAR model is presented in table III to VI. Table III and IV represents the results of the autocorrelation and serial correlation test respectively. The probability value for both of these tests are insignificant as illustrated in table III and IV which represent that the computed restricted VAR model is free from serial correlation and auto-correlation. Similarly, Table V represents

the results of the EPU, Public sector banks, private sector bank, pharmacy and healthcare sector normality results under the component section under 1 to 5. The p-value denotes that EPU, Public sector banks, private sector banks and pharmacy sectors are normally distributed. However, the healthcare care sector is not normally distributed as denoted by significant p-value at 5% level of significance. The joint probability test shows the result of the overall normality results of all the 5 variables which shows that jointly all the five variables are normally distributed. The VAR residual heteroskedasticity test (without cross term and including cross term) shows that the variance of the residuals is constant over time and the constructed VAR model does not have ARCH effect. Afterward, passing all the diagnostic testing, the impulse response function has computed to analysis the impact of GST announcement on the sectoral indices of NSE. The result of the Impulse Response Function (IRF) in figure 2 and 3 show the responses of the banking sector to the shocks caused by 1 unit changed in error or innovation term of the EPU index which is due to the implementation of GST reforms in India. The result shows that the contemporaneous response of the EPU index is negative to both of the banking sectors in India. Afterward, both of these sectors move in upward direction towards the base line. The public banking sector recovers up instantaneously with a time range of around one and half month and become positive afterward.

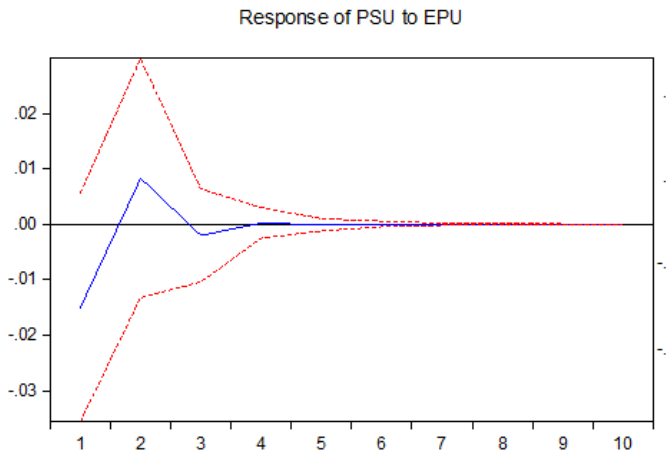


Fig 2 impulse response of PSU Banking Sector

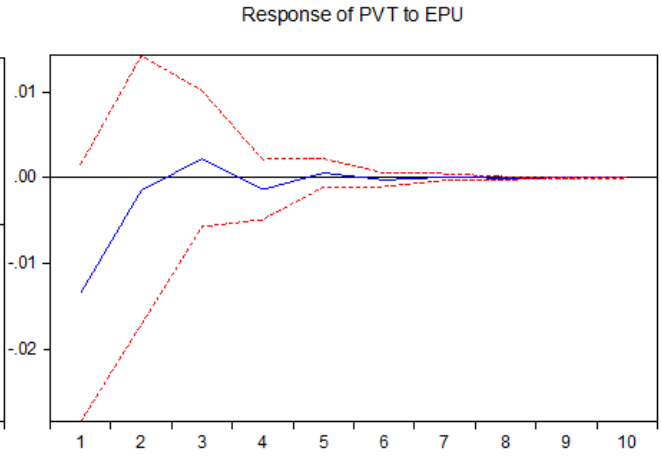


Fig 3 impulse response of Private Banking Sector

On the other hand, the private banking sector recovers up gradually from the shocks of EPU index to the announcement of the GST in India. The private banking sector take a time period of around 2 and half month to taper off the negative effect of the EPU index. Afterward, the impact of the EPU index to both of these banking sector forces them reversely back towards the negative region which depicts an overall negative impact of the shocks from EPU to the Indian banking sectorfrom the announcement and implementation of GST in India. The implementation of the GST in India has increased the tax rate from 15% to 18% on banking services i.e. locker facilities, tax payment and interbank transactions which has resulted in negative instantaneous impact of GST on banking sector in India.

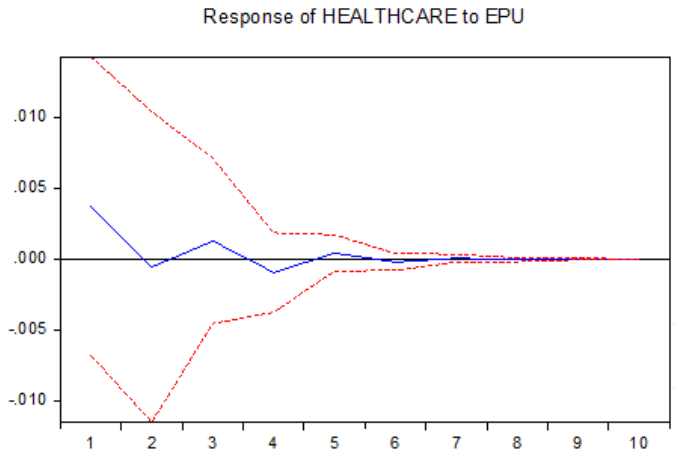


Fig 4 impulse response to healthcare sector

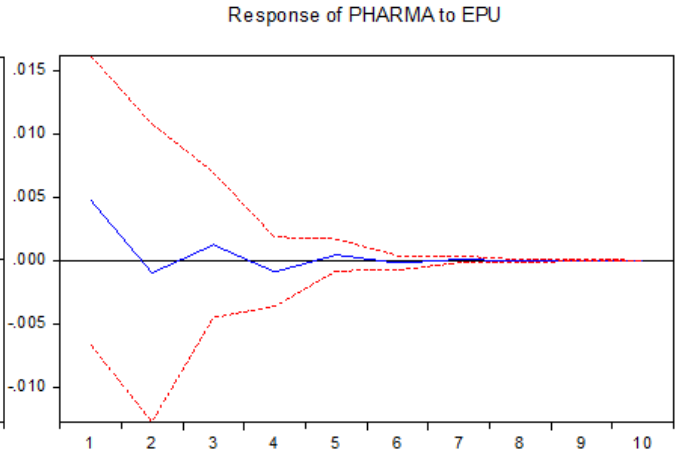


Fig 5 impulse response to Pharmacy sector

Figure 4 and 5 represents the impact on healthcare and pharmaceutical sectors respectively to the shock caused by one unit change in EPU index due to the GST tax reforms in India. The results depict a contemporaneous positive impact of GST reforms on both sectors of Indian economy. The figure of orthogonal response of the healthcare sector represents that immediate positive impact of GST on healthcare sector start declining immediately after its announcement and which is wiped off to the base line within a time period of 2 months. Similarly, the positive impact on pharmaceutical sector is also wiped off within the simultaneous time period. Afterward, both of these sectors tend to move around the base line in short run and afterward merge into the base line into the long run.

Thus the results depict a contemporaneous negative response to the banking sectors from the shocks of EPU due to taxation policy reforms in India by the government. On the contrary, the policy uncertainty due to GST reforms create an opportunity for the pharmaceutical and healthcare sector resulting in contemporaneous positive response to these sectors as indicted in plot 4 and 5. Thus, the results illustrate a negative response to banking sector and positive impact on pharmaceutical and healthcare sectors of the GST reforms in India.

6 Conclusion

The study aims to analyze the impact of the GST reforms on the banking, pharmaceutical and healthcare sector of the Indian economy. As GST reform in India is one the major tax reforms recently performed by the Indian government. The finding of the study illustrates that the policy uncertainty due to the GST reforms negatively impact the banking sector by increasing the tax rates on the financial services and interbank transactions. The implementation of GST has increased the tax rate from 15% VAT rates to 18% under the GST regime which negatively affected the both public and private banking sector in India. As a result of increase in tax rates, the financial services provided by the banking sector to its customers become costly which directly affected their banking business in India as depicted by contemporaneous negative impact in IRF analysis. On the contrary, the adoption of GST in India has created an opportunity for the pharmaceutical and healthcare sector which has resulted in instantaneous response due to uncertainty in the EPU index. However, this positive response to both of these sectors is wiped off in the short run within a time period of two months on an average. This can be due to the reason that the adoption of GST has reduced the tax rate instantly in India by providing the input tax credits to the firm but ultimately increase their compliance cost latterly wiping off the positive impact on these sectors. However, the overall results show that in the long run GST has resulted in increasing the tax base and its impact is wiped off in the long run with the passage of time.

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Capital Structure Determinants of Start-Up Businesses: An Empirical Study of India

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Abstract
One of a firm's most crucial decisions is undoubtedly its financing structure. It is described as how a company finances its assets by carefully balancing equity and debt. Through this study, we have investigated the capital structure determinants of startup firms in India by applying panel data regression methodology. The sample consists of 21 startup firms located in the Delhi NCR region of India and the period from 2017 to 2021 has been considered in this study. The results have revealed that firm size, profitability and liquidity are the main factors that have significantly influenced the capital structure decision of start-up firms in India. This study will help the present and future entrepreneurs consider some important factors while deciding on their financial structure and also help the policymakers to frame policies that promote a friendly entrepreneurial system in the country.
Keywords: [Capital Structure, Determinants, Leverage, Startups, India]

Introduction

The majority of emerging economies rely substantially on start-ups; start-ups have been identified as a metric of innovation and progress, and nations with more start-ups have better economic stability (Okrah et al. 2018).An organisation in its early phases of existence is referred to as a start-up. Start-ups are established by one or more entrepreneurs who wish to create a good or service they think people will pay for and which will solve an existing problem they are facing in the current scenario. At the early stage of its development, the start-up gets funding through informal sources like own savings of entrepreneurs, other start-up team members, credit cards family and friends (Nofsinger and Wang 2011, Gartner et al. 2012, Calopa et al. 2014) and later on resort to external sources like banks and other financial institutions to finance its business operations. Bank debt and trade credit also played a quite important role in financing these new small ventures (Berger and Udell 1998, Huyghebaert and Van de Gucht 2007). Finance is one of the most crucial elements that link with the successful growth of a business.

Small firms are distinguished from huge corporations by informational opacity, which is a major distinction between small, privately held businesses and large, publicly-traded businesses. These businesses typically have owner management and choose to issue external debt over external stock to preserve both the right of ownership and control (Coleman et al. 2016). Start-up companies have little prior experience or reputation, a significant risk of failure, and highly concentrated ownership (Huyghebaert and Van de Gucht 2007) so due to these distinctive characteristics, they struggle in getting the sufficient finance required for the smooth running of their business.Various studies have documented that newly established businesses experience severe financial challenges at the start-up stage, which could lead to their eventual failure. (Huyghebaert 2003, Dennis 2004, Abor 2008, Chong and Luyue 2014, Cotei and Farhat 2017).

Various studies have been conducted yet that have identified the factors influencing the capital structure of publicly listed firms and small and medium enterprises (Titman and Wessels 1988, Rajan and Zingales 1995, Berger and Udell 1998, Cassar and Holmes 2003, Huang and Song 2006, Sheikh and Wang 2011, Chadha and Sharma 2015, Pratheepan and Yetiwella 2016, Rao et al. 2019, Shah et al. 2022). Some of the factors that have significantly influenced the capital structure of these firms that have been reported in the existing literature are firm size, profitability, growth, liquidity, earning volatility, tax etc. Few studies have been conducted on the financial structure of start-up businesses (Cassar 2004, Huyghebaert and Van de Gucht 2007, Nofsinger and Wang 2011, Rob and Robinson 2014, Coleman et al. 2016). Therefore, there is a need to conduct some more studies in this later context. So this research is an attempt made to fulfil the gap by investigating the factors that explain the capital structure decision of start-up firms in the case of India by studying the sample

of 21 manufacturing start-up firms from 2017 to 2021. To the best of the author's knowledge, this is the first study to use the most recent data to evaluate how capital structure influences start-up businesses in the context of India. The main aim of the present study is to extend the existing capital structure literature to newly founded firms.

The remaining sections of the research are structured as section 2 provides briefly the review of existing literature, section 3 deals with the data and methodology, section 4 presents the results and interpretation of the current research, and finally, we conclude in section 5.

2. Literature Review

For decades, capital structure has been an interesting area of research among academicians, researchers and policymakers. Various empirical studies have been carried out on the determinants of capital structure of firms all around the world. These studies have been performed mainly in the context of listed firms and SMEs in developed and developing countries. The predictions of various capital structure theories like static trade-off, pecking order theory and agency theory have also been supported by various empirical researches.

The study of Titman and Wessels (1988) determined the determinants of capital structure using manufacturing firms for which data were taken from Annual Compustat Industrial files (1974-1982). Growth, non-debt tax shield, asset structure and earning volatility were not found to be associated with debt ratios, however, uniqueness and profitability were found to be negatively associated with debt ratios. Additionally, it was discovered that smaller businesses utilised short-term loans more frequently than bigger ones. In the study, Berger and Udell 1998, they had examined the sources of funding for small firms, their interdependence, the financial growth cycle, the effects of the macroeconomic environment, and the relationship between the capital structure and the size and age of the firm. The findings suggested that the principal owner, commercial bank and trade creditors, three constituted the largest source of finance (70% of total funding) and even they were largest for every size and age group of firm although larger firms used more proportion of debt than smaller firms. Different capital structures would be ideal at different points in the growth cycle as a firm progressed from the early to the late stage owing to more growth, more experience, and becoming less informationally opaque, although the model might not fit all small enterprises.

Cassar and Holmes (2003) explored the determinants of capital structure and use of financing by SMEs by using OLS regression on data of a large Australian nationwide panel survey (1994-1998). The asset structure, profitability and growth were found to be important determinants of capital structure. The firm size, asset structure, and growth were positively related to leverage while profitability, risk was negatively related to leverage this research has highlighted the importance of short-term debt over long-term debt in SME financing the findings supported the static trade-off and pecking order theory. **Huang and Song (2006)** found firm size, profitability asset tangibility, non-debt tax shield growth and managerial shareholding as important factors affecting listed Chinese firms. **Newman et al. (2010)** studied the firm-level determinants of capital structure of Chinese SMEs and tested the applicability of financial theories using Cross-sectional regression on a dataset taken from the Zhejiang Provincial Statistics Bureau (2004-2005). The firm size, profitability, age, and incorporation were found to be significantly related to debt assets ratios while there was weaker evidence exhibited for the asset structure. The results supported the applicability of the pecking order theory. Pahuja and Sahi (2012) examined the factors that determine the capital structure of Indian firms by using annual reports of 30 companies listed at BSE (2008-2010). The dependent variable was taken as the debt-equity ratio, the independent variable was represented by size, growth, profitability, liquidity, and tangibility. The correlation and OLS regression were used. The debt-equity ratio was found to be positively related to liquidity and growth, whereas negatively related to size, profitability, and tangibility but the relation was statistically insignificant. The finding supported the pecking order theory of capital structure.

Using multiple regression analysis, the study by **Handoo and Sharma (2014)** determined the factors that affected the capital structure decisions made by 870 Indian companies (which included both private and government companies) listed on the NSE (2001–2010). Leverage had been seen as significantly impacted by the factors like size, asset tangibility, profitability, cost of debt, growth, debt serving capacity and tax rate. Another study by **Pratheepan and Yetiwella (2016)** explored the capital structure determinants of companies listed on the Colombo Stock Exchange of Sri Lanka by conducting a panel data analysis (2003-2012). The results depicted that profitability firm size and growth were important determinants having a significant effect

on leverage while tangibility and non-debt tax shield were found insignificant. **Sofat and Singh (2017)** in their study identified the key factors affecting the capital structure of Indian manufacturing companies and investigated whether the financial theories of developed nations can be applied to developing country like India. A correlation matrix and multiple regression models were applied on 100 BSE-listed manufacturing companies. Firm size and debt servicing capability were found to be negatively associated with the debt ratio, while asset structure, business risk, and ROA, were found to be positively related. The findings confirmed that the tradeoff, pecking order, and agency theory predictions were useful in explaining the financing practices of Indian manufacturing companies.

Rao et al. (2019) explored the factors influencing SMEs capital structure decisions in India by taking into account 174 non-financial firms and how their relationship with leverage influences SMEs financing decisions. The leverage of businesses was influenced by variables like age, size, growth, liquidity, tangibility, non-debt tax shield, ROE and cash flow ratio and it was discovered that debt was a significant source of funding, with short-term debt being more common. The findings were in line with the pecking order theory for SMEs. **Jaworski and Czerwonka (2021)** examined the factors affecting the capital structure of energy firms in European Union countries during the period 2011-2018 using multiple regressions. The results had shown a significantly positive relationship between size and tangibility with the debt while a significantly negative relationship between profitability and liquidity with the debt. In the case of country-specific variables, we found stronger evidence of a negative relationship between inflation, GDP growth, and stakeholder rights protection for Energies, capital market development, and debt levels of the energy companies which are taken under this study. **Shah et al. (2022)** explored the capital structure in three South Asian countries i.e Pakistan, India and Sri Lanka using the panel regression technique. The finding had revealed that profitability, tangibility, volatility, NDTS and tax are the key factors influencing the capital structure of firms in these countries.

In the case of newly established businesses, regarding firm-specific characteristics the firm size, growth (Gartner et al. 2012), asset tangibility (Cassar 2004, Sanyal and Mann 2010) profitability (Coleman et al 2016, Loan et al. 2020) had significantly influenced debt composition of these firms. As regard to entrepreneur related factors education, prior experience (Gartner et al. 2012, Ko and McKelvie, 2018), age (Achleitner et al. 2011, Loan et al. 2020) gender, ethnicity (Scherr 1993) were found to be playing an important role in the financing decision making of the startup firms.

3. Research Methodology

3.1. Sample and Data Collection

The current study employs panel data regression methodology to examine the important determinants of the capital structure of start-up firms in the manufacturing sector of the Delhi NCR region in India. The sample size consists of 21 firms from the manufacturing industry extracted from the Tofler database based on the following criteria: a) firms being incorporated during the year 2014, b) an annual turnover below 100 crores, c) location of the firms in Delhi NCR and d) certain firms are eliminated due to the lack of information on all necessary proxies used into this study for both dependent and independent variables and the entire 5 years of data. For running the panel data regression models, the Eviews statistical software has been used here in this study.

The audited financial statements of these firms from the year 2016-2017 to 2020-21, have been used for the empirical analysis. The data has been collected from the Tofler database. This database may also gather information from many websites run by governments, businesses, and other public domain sources. About 1 million firms' worth of data is in Tofler's database, which is continually updated with both new and old businesses. Since the information was taken from the website of the Ministry of Corporate Affairs, it is credible.

3.2. Variables and hypothesis formulation of the study

Based on the above literature, the proxies used for measuring dependent and independent variables are explained in this section. Those variables are taken into the study which are found to be significant in most of the studies and can be calculated from the required dataset. The dependent variable of the current study is the debt ratio which is measured as the total debt to total assets ratio. The total debt contains both long-term and short-term debt (Cassar and Holmes 2003, Sheikh and Wang 2011, Chadha and Sharma 2015). The first independent variable taken into this study is the firm size which is measured as a natural logarithm of sales (Titman and Wessels 1988, Huang and Song 2006, Rao et al. 2019), We assume here a positive relationship between firm size and debt ratio. Due to economies of scale that reduce information asymmetry, transaction costs, the ex-

istence of obstacles to market access, and risk exposure, firm size is a crucial element in defining a firm's capital structure (Cassar 2004). The next variable is tangibility which is calculated as tangible assets divided by the total assets of the firm (Rajan and Zingales 1995, Abor 2008), here we are assuming a positive relationship between tangibility and debt ratio. As if a firm has more of its assets in tangible form would help it in raising financing due to its collateral capacity.

Another one is the growth variable measured in terms of total sales in the current year minus total sales in the previous year divided by total sales in the previous year, growth is expected to tighten the retained earnings and thus force the company to borrow so, therefore, leads to a positive relationship with debt (Benkraiem and Gurau 2013). Therefore, we assume a positive relationship between growth opportunities and debt ratio. The next variable is the profitability of the firm measured as profit before interest, tax and depreciation to total assets, the firm managers would choose risky debt over equity and internal finance over external funding because information asymmetries, in this case, are the only important factor for outside funding. Pecking order theory also states that more profitable businesses have access to greater internal financing and the retained earnings are the preferable method of funding future investments (Psillaki and Daskalakis, 2009) so we are expecting here a negative relationship between profitability and debt ratio.

Lastly, the liquidity variable is computed as current assets divided by current liabilities.Because a firm with greater liquidity prefers to use internally generated funds when financing new investments, so that's why the pecking order theory predicted a negative relationship between liquidity and debt of a firm (Loan et al. 2020). Accordingly, we are assuming a negative relationship here in this study.

3.3. Model Specification

We have used a balanced panel dataset for the empirical analysis. The hypothesis of independent variables being determinant of the capital structure of firms will explain the variation in the dependent variable which is the debt ratio here is tested using panel data regression models. The regression model is estimated as follows:

$$DRit = \beta o + \beta 1SIZit + \beta 2TANit + \beta 3GROit + \beta 4PROit + \beta 5LIQit + \varepsilon it$$

Where:

DRit = total debt to total assets ratio of the firm i at period t

SIZit = size of firm i at period t

TANit = tangibility of firm i at period t

GROit = percentage change in Sales of the firm

PROit = profitability of firm i at period t

LIQit = the ratio of current assets to current liabilities of the firm

βo = common y-intercept

β1-β5 = coefficients of the independent variables

εit = error term

4. Empirical results and Interpretation

4.1. Descriptive statistics

The descriptive statistics of the dependent and Independent variables used in the current study are presented in Table 1. The average value of debt ratio of the startup firms is 57.02 percent which shows that a major part of the total assets of the firms gets financed through debt in the case of startup businesses in the manufacturing sector and the remaining 42.98 with the help of equity. The average asset tangibility of these firms is found as 33.81% of the total assets of the firm. The mean profitability of the firms is very low 0.29% only, which indicates that the case of new ventures is different; they suffer losses or rarely can generate profit in the early years of their operations.

Table 1 Descriptive Statistics of the sampled data

Variables	Mean	Std. dev.	Median	Minimum	Maximum
DR	0.570269	0.469814	0.568678	0.011778	2.940434
SIZ	18.28983	1.321497	18.49557	14.03071	20.55935
TAN	0.338148	0.332897	0.256589	0.000592	1.682381
GRO	1.542592	4.327739	0.391556	-0.587446	28.73048
PRO	0.002903	0.205940	0.051242	-0.954986	0.293034
LIQ	1.699041	1.564302	1.198856	0.060005	7.938285

4.2. Correlation matrix

The multicollinearity of the sample data has been investigated. For each set of dependent and independent variables for manufacturing start-up companies included in the study, Table 2 shows the correlation analysis. The ma-

trix showed that the cross-correlation coefficient for the majority of each pair of independent variables is less than 0.80, indicating that multicollinearity among the independent variables used in this study is not a serious problem.

Table 2 Matrix of correlations of variables

Variables	DR	SIZ	TAN	GRO	PRO	LIQ
DR	1.0000					
SIZ	-0.4779	1.0000				
TAN	0.1527	-0.1784	1.0000			
GRO	-0.1397	-0.0171	0.0794	1.0000		
PRO	-0.1132	-0.0755	0.2052	-0.0525	1.0000	
LIQ	-0.3744	0.0710	-0.1688	0.0068	-0.2550	1.0000

4.3. Regression Analysis

Panel data methodology consists of three types of models: pooled ordinary least square model, random effect model and fixed-effect model. In the case of pooled OLS model, we assume that every individual's coefficients with the intercept are the same. So in Pooled OLS, we, therefore, combined all of the observations. The fixed-effect model enables heteronomy or individuality for all enterprises, by allowing each company to have its unique intercept value. In the random effect model, the intercept's mean value is shared by all companies. Now the question is which model is the best?

We used the Likelihood Ratio (LR) test and the Hausman test to determine which model would be most appropriate for the data under consideration. These tests are presented in Table 3 of this section. First, the pooled OLS and fixed effect models were compared using the likelihood ratio (LR) test. The fixed effect model is chosen above the pooled OLS model because the cross-section chi-square p-value was less than 0.05, rejecting the null hypothesis that it is the best model. After the selection of the fixed effect model now there is a need to apply the Hausman test to examine which one, whether the fixed effect model or the random effect model is appropriate. Here, under this test, the null hypothesis is that the Random Effect model is the best-suited model for the data under consideration. Because the p-value is higher than 0.05, the null hypothesis that the random effect model is the proper model is not rejected. As a result, the panel data from this study were analysed using a random effect model to investigate the association between capital structure and firm-level determinants of start-up firms in the manufacturing sector in India.

Table 3 Likelihood Ratio (LR) Test and Hausman Test

Model	LR Test	Hausman Test
DR	81.81 (0.0000)*	5.56 (0.3510)
p-value * indicates significant at 1% and 5% level.		

The regression estimation results are presented in table 4 which revealed that firm size, growth, profitability and liquidity are the key determinants of the capital structure of start-up firms in India. Among these, the three variables firm size, profitability and liquidity are found to be significant at 1 % level of significance, and the growth variable is found to be significant at 5% level of significance. The tangibility factors are not found to be significant.

In the results, the F-statistic p-value was observed to be less than 5% level of significance, indicating that the model is well-fit. It implies that all independent variables considered simultaneously in the investigation have the potential to affect the debt ratio i.e the dependent variable here in this current study. The value of R2 showed that the independent factors used in this study explained 42.56 per cent of the variation in the dependent variable. There is no autocorrelation in the residuals, according to the Durbin-Watson test value of (1.219495), which is in the range of 1 to 3. The Jarque-Bera test's p-value of (0.068810), which is more than 5% level of significance, indicates that the null hypothesis that residuals are normally distributed is not rejected.

Table 4 Regression Analysis

Variables	Coefficients	Std. Error	t-statistic	p-value
Constant	3.310545	0.756804	4.374375	0.0000
SIZ	-0.139277	0.040535	-3.435963	0.0009***
TAN	0.211768	0.179117	1.182289	0.2407
GRO	-0.014912	0.007483	-1.992749	0.0498**
PRO	-0.713455	0.265328	-2.688955	0.0088***
LIQ	-0.140933	0.028413	-4.960130	0.0000***
R2 0.425674				
Adj. R2 0.388858				
F-statistics 11.56227				
Prob.(f-statistics) 0.000000				
Durbin Watson 1.219495				
Jarque-Bera 5.352806				
Probability 0.068810				

Note: ***, ** significant at 1% and 5 % respectively.

The results of the Random Effect model, which is determined to be the appropriate model for the data taken into consideration, are provided in Table 4. The tangibility factor is found to be positively associated with the debt ratio but it is not statistically significant. This positive relationship between tangibility and debt ratios indicates that the larger the composition of fixed assets in the total assets would help the firm to take debt more easily by putting them as collateral for financing the business activities. Therefore, the hypothesis is rejected here. This result is different from that of these studies (Rajan and Zingales 1995, Cassar and Holmes 2003, Ortqvist et al. 2006, Chadha and Sharma 2015) which have shown a positive significant effect of asset tangibility on debt financing but the current finding is supported by some existing studies which have documented the tangibility as insignificant (Huang and Song 2006, Pratheepan and Yetiwella 2016, Loan et al. 2020). In this model, debt is negatively correlated with firm size, which shows that bigger businesses have more steady earnings and hence views debt financing as a less advantageous alternative. The findings are consistent with those (Titman and Wessels 1988, Chadha and Sharma 2015, Rao et al. 2019). A significantly negative relationship is found between the growth and debt ratio. The results indicated that higher growth firm uses a lesser amount of debt which is found to be as per the prior empirical studies (Rajan and Zingales 1995, Huang and Song 2006, Vijayakumaran and Vijayakumaran 2019). The firm's profitability turned out to be negatively related to the debt ratio. Therefore the higher debt level with low profitability suggested that startup firms follow the pecking order theory. This is consistent with most of the previous empirical findings (Rajan and Zingales 1995, Hall et al. 2000, Huang and Song 2006, Psillaki and Daskalakis 2009, Benkraiem and Gurau 2013 Sofat and Singh 2017, Jaworski and Czerwonka 2021). Thus the null hypothesis is not rejected here. The results have revealed a significant negative relationship between Liquidity and Debt ratio implying firms having higher liquid assets can meet their liabilities though these funds hence require a lesser amount of debt. This result also confirms the pecking order theory and is in line with these studies (Sheikh and wang 2011 Ohman and Yazdanfar 2017, Lamichhane 2020). Thus, the null hypothesis is not rejected in this regard.The negative relation of Profitability and liquidity with the debt ratio shows that firms having more internal funds with them tend to use a lesser amount of debt. So they supported the predictions of the pecking order theory (Ohman and Yazdanfar 2017, Lamichhane 2020).

5. Conclusion and Research Directions

Start-up businesses contribute significantly to the creation of new jobs, innovations and the expansion of the national economy and make it a more developed and better-functioning economy. A start-up company is a recently established, rapidly expanding firm that in-

tends to fill a market need by providing the people with a novel good or service. They help the economy grow over time while also establishing newer industries and are becoming a major contributor to economic expansion. Taking into consideration their important role it is necessary to conduct a study on start-ups. This study looked at the factors that affected the capital structure choices made by start-up firms in India. The final sample consisted of 21 start-up firms located in the Delhi NCR region for a period from 2016-17 to 2020-21. The findings show that firm size profitability growth and liquidity are significantly related to the debt ratio while tangibility is found to be insignificant. Hence the findings of this study would contribute to the empirical literature on capital structure. Thus from this study, it is concluded that firm size, profitability, growth and liquidity are found as the main determinants of the capital structure of start-up firms in India. Additionally, it is revealed that the pecking order theory is more applicable in the Indian context in the current scenario. This study identifies the key elements influencing start-up financing decisions, enabling financial managers and owners of the businesses to concentrate on them when choosing the capital structure of their business. It may help the present and future entrepreneurs regarding their financing planning of business so that that may help them to avoid the risk of failure due to ineffective financial structure. This study is based on five-year data and some selected variables, so any future research can be conducted with a longer time duration and some other important variables can also be considered along with these and having an impact on the financial decision of these firms.

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Green Banking Initiatives- Avenues & Infrastructure in India

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Abstract
With the rise in industrialization, there is a misuse of natural resources, a rise in the emission of harmful gases, deforestation, and global warming. So, it is the need of the hour that quick and effective measures must be taken to preserve the environment and ensure sustainable economic growth. As banks are the largest source of finance for various urban, and rural business ventures and industries, thus they can play a vital role in controlling the carbon footprint, which means the emissions of carbon dioxide in the atmosphere which has catastrophic effects on nature. The term Green Bank is new, but the concept goes back to the year 1980 when Triodos Bank was founded in the Netherlands. It had branches in Germany, Spain, the United Kingdom, and Belgium. The bank was known as an ethical bank as it believed in adding value to the environment with the use of eco-friendly methods. Green banking includes environment-friendly approaches to conduct different banking activities in an eco-friendly infrastructure. This study aims to focus on the Green Banking Initiatives- Infrastructure and avenues (processes, strategies, and products) adopted by Indian Banks (Public and Private Bank) and the advantages and challenges faced by the Indian Banks over the years. Suggestions have been provided to overcome the challenges.
Keywords: [Green Banking, carbon footprint, environment friendly, sustainable growth, public and private sector banks]

Introduction

The progress of any country depends on its varied factors, one of which is Sustainable Economic Growth. It means that the needs of human beings, must be fulfilled along with the conservation of the natural resources, climate, and environment for the generations to come. Many countries follow Sustainable Development Goals (SDGs), and India being member country, attempts to adopt the economic, social, and environmental goals mentioned under it. In today's era, business ventures, industries, and factories not just want to earn more profits, but they even strive to utilize natural resources effectively and efficiently as they ensure corporate social responsibility. The stakeholders of businesses like customers, government, employees, investors, and others urge to know about the eco-friendly and socially responsible activities performed by the business groups. The Banks act as a financial mediator for these ventures and can play a pivotal role in ensuring sustainable economic growth. The term 'Green Banking' came into existence to bring awareness that banks have the onus to be more responsive toward the environment, climate, and natural resources as they provide funds, loans, and financial aid to the working groups. Many Foreign Banks are rigidly following Green Banking. Indian Banks have slowly and steadily adopted Green Banking in their day-to-day functioning. Green Banking comprises two facets- first, how the banks ensure paperless transactions- online banking, and second, how the funds are diversified into various green projects (projects which try to make renewable products, use less energy, and emit fewer greenhouse gases like carbon dioxide, Hydrochlorofluorocarbons, methane, ozone, hydrofluorocarbons, and nitrous oxide). According to Indian Banks Association, Green Banks have the same functioning as ordinary banks, but the banks now emphasize on the social, environmental, and economic features to reduce the carbon footprint through their banking activities. Carbon footprint means the number of greenhouse gases like carbon dioxide emitted into the atmosphere as an outcome of different activities. Green Banking encourages activities that curb the burden on energy consumption, natural resources, water and tries to accelerate environment-friendly activities, and integrates green banking -processes, products, strategies, and infrastructure. State Bank of India (SBI) is one of the largest public sector Indian banks and was the first bank that adopted Green Banking by constructing windmills and generating green power through them in the states of Gujarat, Tamil Nadu, and Maharashtra for the captive use. Now many other banks have come forward and taken steps to implement Green Banking- HDFC Bank, ICICI Bank, Axis Bank, Bank of Baroda, Canara Bank, HSBC Bank, YES Bank, and others.

Literature Review

(Biswas, 2011) states that the adoption of Green Banking practices will help in increasing operational efficiency and will lower costs in banking activities. The Banking sector can play a pivotal role in promoting

sustainable growth as they finance commercial projects. Banking activities are divided into internal and external, have a positive or negative impact on economic growth and development. Internal activities of banks include proper usage of energy, paper, water, emission of carbon, and pollution. External activities of banks include banking activities linked with customer activities. Green banking will help in improving the asset quality of banks.

(Bahl Sarita, 2012) analyses various green banking strategies using Garrett's technique. The respondents have ranked the various strategies and further, it is converted into score values with the help of the formula. This method has revealed that an online saving account is an effective method of green banking followed by online banking. Different ways are also suggested to ensure awareness among internal (managers and personnel), and external (customers, subsidiaries, and public) subsystems to achieve sustainable development.

(Yadav & Pathak, 2013) categorizes the top-performing banks both Public and Private based on net profit into 3 phases of Green Marketing (as mentioned by 'Peattie') in banks. The phases are Ecological, Environmental, and Sustainable. 8 banks showed different phases and out of which ICICI Bank categorized into Sustainable Green Marketing phase as the bank's initiatives are adopted to attain sustainable growth.

(Ch, 2014) studies green banking initiatives of selected 2 public and 2 private banks in India. Research shows that the banks are taking initiatives to go green and have even started understanding the need for green banking. Moreover, results show public sector banks have taken more initiatives in comparison with private sector banks.

(Sharma Neetu et al., n.d.) highlights "A study on customer's awareness on green banking initiatives selected public and private sector banks with special reference to Mumbai". The study has identified that the customers are using Green products- Online Banking, ATM, and others but a majority of customers weren't aware of the concept of green banking. As per the respondents, some of the Green initiatives – Solar ATMs, Green CDs, Communication through Press, Bank environmental policy, and concession on energy saving are still not introduced to them by the banks. Banks are taking various initiatives but the stakeholders- customers, NGOs, and business communities are still not familiar with some of the initiatives undertaken by the banks.

(Dipika, 2015) Green Banking is essential in today's time of new developments and technologies. Several initiatives are taken by banks for sustainable development but India is still in its nascent stage. The study is done in two phases, first by reviewing the existing literature and secondly by collecting data from secondary published sources. The study has highlighted some of the challenges- banks are in the start-up stage, lack clear policies, unavailability of skilled employees, fear of loose reputation if they involve in big ventures and they aren't environment friendly. Green Banking if adopted properly will reap benefits for banks, industries, and the economy.

(Ahuja Neyati, 2015) "Green Banking in India: A review of the literature" attempts to study the existing literature and has concluded that consumer awareness is important to attain the desired success for the Green banking concept. Banks being corporate citizens have social responsibility toward the environment, and surroundings to ensure sustainable growth which is possible even by adopting green lending policies.

(Gopinath et al., 2017) aim to study "Green banking initiatives as a catalyst for Demonetisation Chaos- A study with a reference to ICICI Bank". The study adopted a stratified sampling technique to conduct a sample of 350 account holders of different branches of ICICI Banks. The study has found that the use of green banking has accelerated because of demonetization like the use of cashless transactions, net banking, ATM, NEFT, and others.

(Park & Kim, 2020) provides an overview of the role of financial regulators and institutions in green banking. The financial institutions have created their platforms or have joined already existing platforms such as United Nations Environment Programme, Equator Principles, Sustainable Banking Network, and Global Alliance for Banking on Values intending to attain sustainable development. The green policy adopted by different countries has been discussed. The study concluded that the banks should be quick to get a first-mover advantage to attract more clients by providing green financial products.

(Prabhu, 2021) analyses the green banking on SWOC

analysis- Strengths, Weakness, Opportunities, and Challenges of green banking. The study shows there is a shift from long documentation to paperless transactions, green cards and green loans are provided. Despite the long-time efforts Indian Banks are still lagging. The banks need to gear up by imparting knowledge to employees, consumer awareness is important and can be done through their intranet and public websites.

(Suryalakshmi & Vijai, 2020) aims to show that both private and public banks can use green banking products & services like internet banking, mobile banking, ATM, Green Deposits, Green CDs, Green Finance, and others. Even the Banking Infrastructure can be made more environment friendly with rooftop solar panels, and green use of laptops, computers and servers to pose less harmful effects for sustainable growth. It is concluded that different public and private banks are taking steps to implement green banking but still the progress is meagre in comparison with western countries and the banks can implement green banking with more seriousness to attain sustainable growth.

(Sharma & Choubey, 2022) the study proposes Green Banking initiatives (green banking products, processes, and corporate social responsibility) taken and their positive outcomes in form of Green Brand image and Green Trust. The data has been collected from 36 middle to senior-level bank employees from 12 private and public banks using purposive sampling and an interview was conducted to collect relevant information for the study. The study reflected that 60% of respondents find a positive correlation between green banking initiatives and Green Brand image & Green Trust.

(Bhola & Chopra, 2022) explains that there is a paradigm shift in the approach to conducting business activities. The organizations want to earn profits and even want to be socially responsible. The study is conducted to understand that it is the need of the hour to implement green banking initiatives properly and take necessary measures to ensure their success.

Objectives

1. To study the concept Green Banking.
2. To identify various Green Banking Avenues and study about Green Banking Infrastructure.
3. To study the initiatives taken by Indian Banks.
4. To find the advantages and challenges faced by Indian Banks in implementation of Green Banking.

Research Methodology

This study is based on the systematic analysis of the existing literature and secondary data related to the topic under study. Firstly, a proper literature review of existing work on Green Banking in India was done followed by the collection of secondary data from websites, journals, Banks' Annual reports, and Sustainability Reports, IDBRT reports used to find the green banking initiatives taken by different banks in India. Six banks (3 public sector banks and 3 private sector banks) are taken based on their performance in terms of Net profit earned. This secondary data is taken from the website- Money Control. Further, the need and challenges are mentioned, followed by the suggestions to overcome the problems faced by banks in the implementation of green banking.

Green Banking- Meaning and Levels as per Reserve Bank of India

RBI has defined Green Banking "as an umbrella term which refers to the policies, guidelines, practices that make banks sustainable in social, economic and environmental dimensions." Green Banking influence the investment portfolio and asset quality of lending. Indian Banks are taking small steps to develop a sustainable business model which attempts to protect and preserve the environment.

As per the IDRBT- Institute for Development and Research in Banking Technology report by RBI, green banking can help in reducing carbon emissions, and pollution and will ensure sustainable growth of the environment, this goal can be attained when various stakeholders work together in unity. In the report, guidelines for green banking are given under two levels:

1. Green Processes, Products & Services, and Strategies: It includes the products and services provided by the banks and the eco-friendly strategies and processes adopted for daily operations.
2. Greening Infrastructure: The infrastructure of the bank should be eco-friendly. The infrastructure includes both IT (data center) and physical (buildings).

The report has also mentioned the 'Green Coin Rating' system that includes both the levels written above for rating a bank for its efficient practices. Banks will be rated for their eco-friendly initiatives like reduction in pollution, carbon footprint, number of green projects financed, and the amount of savings done by recycling, reuse, and refurbishment of systems used like computers, servers, printers, or other things used in building.

Green Banking - Processes, Products & Services and Strategies

The IDBRT- Institute for Development and Research in Banking Technology report by RBI, has given four avenues for green banks. The banks accept deposits and advance loans either directly or through financial markets. The bank provides different channels to use banking products and services- ATM, online banking, mobile banking, and others. The following avenues are explained hereunder:

Green Processes: The banks must include environment-friendly processes and activities for functioning their operations. Some of the green processes are mentioned below:

- Paperless transactions to preserve the environment from deforestation.
- Electronic means are used to maintain contact with customers.
- Vendors are selected based on their sustainability ratings.
- Provision and designing of those banking products which reduce carbon footprint.

Green Products and Services: The following are some of Green Banking products and services:

- **Green Mortgages:** It is a reward for adopting energy-efficient standards. Thus, a higher amount of loan is advanced than normally given to promote sustainable growth of environment.
- **Green Credit Cards:** It means doing cashless transactions, using biodegradable credit cards with a higher limit as a reward to customers for going green.
- **Green Loans:** Advancing loans to those projects which are socially responsible and do not harm the environment with their activities.
- **Green CDs:** It includes bonus rates provided by banks to those who use more online banking for different activities, thus reducing use of paper and saving trees.
- **Online Banking:** Online banking helps in carrying out transactions using the internet like NEFT, IMPS, and RTGS. It has helped in reducing paperwork, and time and even helps in the preservation of natural resources.
- **Green Saving Accounts:** If a bank has more savings in their accounts, then they will contribute more to save the environment.
- **Electronic Pay Cheques:** Banks are now promoting e-cheques which saves paper and paperwork. Now the employees can have option of receiving pay cheques electronically.
- **Net Banking:** It means online banking but, in this case, the customer must have an ID and password to conduct different transactions like online shopping, payment of bills, and others.
- **Mobile Banking:** The banking transactions and operations are done via mobile phones. It saves time and resources. One can transfer funds, check balance in their saving account and ask for a bank statement via mobile bank app.
- **Carbon Credit Business:** The banks can identify Clean Development Mechanism projects and finance them. Carbon credit means the sale or trade of ownership of one metric ton of carbon dioxide with an aim to carbon offset which means an actual reduction of carbon emissions in the atmosphere.

Green Banking Strategies: It includes the blueprint of policies, plans, and guidelines which are eco-friendly.

- Creating awareness among the different stakeholders regarding the environmental issues and highlighting the importance of green banking.
- Encourages the workforce to follow the eco-friendly measures.
- Publicize the green initiatives adopted by the bank to gain consumer trust and enhance brand image.
- Those policies have adopted that help to reduce energy consumption and have a less adverse effect on the environment.

Other Green Banking Activities: Some other green banking activities help banks to set short and long- term green goals:

- Banks redesign their policies from time to time to meet green banking initiatives.
- Banks advance loans to green projects like fuel-efficient vehicles, biofertilizers, installing solar panels, and others at a lower rate.
- Banks finance those projects which help in climate change, saving water, trees biodiversity and more.

Greening Banking Infrastructure

The infrastructure (physical and IT) must be eco-friendly to reduce the total cost incurred. Following are some guidelines for greening banking infrastructure as per the IDRBT- Institute for Development and Research in Banking Technology report, RBI:

1. **Greening use of Desktop Computer, Laptop, and Servers**: The computers and laptops use a lot of energy, and the chargers when in a power socket they convert voltage from AC TO DC whether the laptop is getting charged or not. Green chargers must be used

to reduce wastage of energy and switch off the chargers when not in use. The brightness of the screen should be reduced to save energy and the background processes should be closed when not in use as they consume energy. The software can help to shift the mode of computers into standby or hibernate mode when not in use.

2. **Greening Data Centers:** Data centers are used for storing a large amount of data at one place. As per the RBI report, Green Data Center should be designed keeping in mind eco-friendly techniques for optimal utilization of energy. The running data centers use all the available power and force banks to build new data centers for this IT hardware with efficient star ratings should be selected, and the data cables should be properly managed. Site infrastructure includes all the services like fire safety, power cooling, water-based cooling, and replacement of batteries should be done at regular intervals. A collocated data center can help reduce energy bills. PUE(Power Usage Effectiveness) is the best measure to test the efficiency of data center as mentioned in IDRBT report **PUE= (Total Data Center Energy Consumption or Power / IT Energy Consumption or Power)** Lower PUE means the data center is more efficient.
3. **Green Buildings:** The building which is designed or constructed in such a manner that it poses less harmful effects on the environment. The building must have proper ventilation and daylight penetration. The plan should be made in such a manner that the landscape and trees are preserved. The solar panels can be installed along with biomass with a power boiler burning vegetable oil to generate electricity. Banks are using GSL bulbs and have made rainwater harvesting on their premises to save water.

Green Banking Initiatives adopted by Public and Private Sector Banks

The following top 6 banks have been taken based on the amount of Net Profit earned, to explain the green initiatives taken in the Indian Banking System. Out of the six banks- 3 are public banks and 3 are private banks. The following data is mentioned in tabular form.

List of Private Banks

Sr. No	Name of the bank	Net Profit (Rs. Cr)
1	HDFC BANK	36,961.36
2	ICICI BANK	23,339.49
3	AXIS BANK	13,025.48

*Source: https://www.moneycontrol.com/stocks/marketinfo/netprofit/bse/

List of Public Banks

Sr. No	Name of the bank	Net Profit (Rs. Cr)
1	SBI BANK	31,675.98
2	BANK OF BARODA	7,272.28
3	CANARA BANK	5,678.41

*Source: https://www.moneycontrol.com/stocks/marketinfo/netprofit/bse/

A. Green Banking Initiatives in Public Sector Banks: The banks where more than 50% of the stake is held by the government are known as Public Sector Banks (PSBs). They are listed on the stock exchange. In India, there are 12 public sector banks.

State Bank of India (SBI)

As per the last sustainability report the following green banking initiatives have been taken by SBI.

- ₹144.88 crores are spent on corporate social responsibility.
- A total of $ 800 million in green bonds has been issued. Green bonds are the fixed-income instrument that is used for climate change and the preservation of the environment.
- More than ₹30,000 crores were sanctioned for renewable energy.
- More than 300 tons of paper have been saved through digital applications in the financial year 2019-2020. Thus, approximately saving 7900 trees.
- A total sum of ₹ 1744 crore has been sanctioned for 241 Solar Photovoltaic projects.
- More than ₹ 14.31 crore have been financed for the e-vehicles loan.
- More than 4.78 lakh agricultural gold loan has been sanctioned under YONO Krishi.
- Green Bonds have been used to reduce more than 1.6 million annual carbon dioxide emissions.
- The commercial infrastructure has rooftop solar panels to popularize the use of renewable energy and reduce expenditure on electricity.
- SBI has State Bank Foreign Travel Cards which are chip-based for ensuring security, and convenience and for paperless transactions in different currencies- US, Canadian, Singapore, and Australian dollar, euro, sterling, and pound.

Bank of Baroda

The following initiatives are mentioned in the annual report of Bank of Baroda:

- The bank has a biogas plant on its site to convert the wet waste into manure or cooking gas.
- There is proper digitization and paperless banking, which has saved 33 crore papers that are scanned digitally.
- The corporate office buildings and banks have solar-powered compound lights.
- The buildings of the banks are categorized as Green Buildings because of the minimal use of energy by the Indian Green Building Council.
- LED Lights have been installed in bank offices thus reducing power consumption.
- They have approximately 120 solar-powered branches thus using natural renewable sources of energy.

Canara Bank

The following initiatives are mentioned in the annual report of Canara Bank:

- The bank provide housing cum solar loan for the purchase of the rooftop solar photovoltaic system.
- Loans are advanced for the installation of water harvesting systems to save water.
- The bank has already stopped financing those units engaged in manufacturing of Aerosol by using CFCs.
- While advancing loans they ask for a No Objection Certificate granted by the government to the manufacturing units assuring that they do not harm environment with their activities.
- In 2019 as a part of 'Go Green' initiative, the corporate office of Canara Bank in Bengaluru installed and commissioned a 50KWp rooftop solar panel plant to reduce greenhouse gas emissions. Other banks located in other states and UTs are also under consideration.
- B. Private Sector Banks: The banks where the majority of stake is with the private shareholders and not by the government are known as Private Sector Bank. They are also listed on the stock exchange. In India, there are 21 private sector banks.

HDFC Bank

The following initiatives are mentioned in the HDFC Integrated Report 2020-2021.

- The banks screen different projects to check their environment and social amount of risk before advancing loans. The bank does not advance loans where the end-use is the production of asbestos fibres.
- The banks deploy funds for green housing- to install solar panels and small biogas treatment plants for wet waste or for rainwater harvesting.
- The bank recycles e-waste and reduces carbon emissions. The bank even discloses carbon emissions in the Carbon Disclosure Projects Report.
- The bank provides a digital platform for all customer related services through mobile apps multilingual websites, blogs, social media, and other modes. It helps in less use of paper and avoids tedious documentation.
- The bank has taken several social responsibility initiatives and has attained 13 Sustainable Development Goals mentioned by United Nations.
- The bank has partnered with many NGOs to restore and preserve the biodiversity by planting trees, rainwater harvesting and soil conservation.

ICICI Bank

The following initiatives are mentioned in the Annual Report 2020- Building a Sustainable future:

- The bank has maintained green workplaces to reduce the carbon footprints by recycling, reusing, and conservation of natural resources. The bank's different offices like ICICI RSETI, in Jodhpur, the building have been certified under the platinum category as a green building by the Indian Green Building Council.
- The bank promotes the use of renewable energy in branches and offices by using a solar water heating system and has replaced old air conditioners with standard rating inverter-based which has helped in saving energy by 25%.
- The bank have signed a Power Purchase Agreement to purchase solar and wind energy for their 3 main large offices – Mumbai, Chennai and Hyderabad which have contracted capacity by 9MWp.
- The bank safely disposes off e-waste and hands it over to certified recyclers.
- Under the green banking initiative the bank has reduced use of paper through digitization and the use of copier paper which is manufactured from the agricultural residue of wheat straw.

Axis Bank

The following initiatives are mentioned in the Sustainability Report 2020-2021.

- The branches and offices of axis bank have solar

power generation and renewable energy aggregating 7.05 MW and helped in reducing carbon emissions by 2868. 37 tons.

- The banks also use on-grid inverter solutions to reduce diesel consumption.
- Daily 150 KL of water is recycled through a sewage treatment plant located in Mumbai.
- Collection and disposal of 12.6 tons of e-waste with the help of government-authorised vendors.
- Conversion of wet waste into compost which is further used in gardening.
- The bank aims to digitalize banks real estate data and related processes by March 2030.

Importance and Need of Green Banking

The importance of green banking is manifold, if it is implemented properly then it can help in achieving sustainable economic growth in the Nation. The points mentioned below discuss some of the key reasons why we need green banking:

- **Paperless Banking:**The tedious job of prolonged documentation can be replaced by computer-based recording, where the data of the customers is kept safe. The paperless transaction is an outcome of internet banking, mobile banking, and other modes. With the advancement of technology audit reporting, and KYC (Know Your Customers) norms are conducted electronically. This also prevents the environment from deforestation.
- **Green Loans are offered at lower interest rates:** The loans advanced by banks to businesses for environmentally friendly projects such as green building projects, fuel-efficient vehicles, installation of windmills for generating power, bio-fertilizers, biomass are offered comparatively at lesser rates.
- **Propagating Environment Consciousness:** Green Banking helps in creating awareness among public and business houses about environment sustainability. They take different green banking initiatives and participate in different propaganda related to social responsibility to give a message to public at large.
- **Increases Customer Loyalty and Brand Image:** The banks that follow eco-friendly measures will have a positive brand image. Moreover, the customers tend to show their loyalty and prefer to deal with Green Banks.
- **Reduces carbon footprint:** The rise in carbon emissions has increased global warming and has further shown some of the catastrophic impacts on the environment. So, it becomes the need to reduce carbon footprint- which means the harmful emissions of gases from industries, factories, offices, and households must be controlled by taking eco-friendly measures.
- **Increases Employees Engagement:** The employees and staff members of a bank would be more committed to their work and be philanthropically minded if the banks abide by social responsibility toward the environment.
- **Increases Profitability and Sales:** Banks will receive more cash deposits from customers and advance loans to various green projects. The difference in interest rates of loans and deposits will help the banks to increase the profit margin.
- **Creating Competitive Advantage:** Different business groups will gain a competitive advantage as the banks have to follow environmental standards of lending loans. This will motivate different business groups to adopt environment-friendly activities to gain financially from the banks and to perform day-to-day activities.

Challenges faced by Indian Banks in Implementation of Green Banking

Banks can support financing those projects which are socially responsible to control carbon emissions and save energy, water, and natural resources. But it is not a cakewalk as some challenges come their way. The following points highlight the challenges faced by Indian Banks' employees and management in the implementation of green banking (Giridhar & Sudhakar, 2017)

- **Operating costs and expenses are high:** The Green banks face higher operational costs and more expenses than in a regular scenario as they need to train the staff, employees, and management for better implementation of Green Banking Initiatives. Experienced employees are required to manage green banking products & services and can deal with customers and invest in green business houses.
- **Lack of customer awareness:**The customers are using green banking products and services. However, most customers are still not aware of the concept of 'Green Banking'. Due to their lack of awareness, the overall implementation of green banking is still lagging in India.
- **Risk of losing Reputation and Brand Image:** If the Green Banks invest in projects that adversely affect the environment, then they might lose their reputation and brand image as they promise to conduct socially responsible activities.

- **Diversification in a smaller pool of customers:** It is one of the biggest challenges that Green Bank experiences as their business transactions are limited to those customers who are involved in green business. After screening, a small pool of customers is left that affects their business.
- **Lack of Environmental Audit:** It becomes cumbersome for the banks to hold their clients responsible for the environmental damage caused by their business. Even no law is present that can help banks assess projects before financing.
- **Fear of Credit Risk:** It arises dueto change in policies regarding environmental regulations, and the cost of controlling pollution can also increase. There is never a certainty that amount lent as finance will return along with the interest amount. Green business and banking both face several challenges in conducting green banking activities.
- **Some banks are in the Start-up phase:** It takes a couple of years (3 to 4 approximately), for the banks to properly adopt green banking in their daily functioning and train employees for the same. That is why some Indian Banks are still in their start-up phase and cannot reflect their progress in adopting green banking initiatives.
- **More challenges in Going Green:** Normal banks face several challenges in daily routine, but Green Banks face even more challenges than regular banks. And the challenges are not taken into consideration before adopting green banking measures. Moreover, an additional cost is incurred by banks to implement green banking initiatives. Banks tend to lose customers due to mismanagement which can be a setback for them.
- **Lack of proper follow up:** The lack of follow-up measures to check the socially responsible activities by bank management and business houses increases credit risk and environmental risk. The government has made legislation. However, the laws and regulations are not being followed in their true spirit and form.
- **Most of Indian Banks haven't adopted Equator Principles:** Equator Principles areinternational guidelines to identify, manage and assess environmental risks while financing projects. Just one Indian Bank- Infrastructure Development Finance Company (IDFC) Limited, has become the signatory of Equator Principles. The rest of the Indian Banks haven't adopted Equator Principles despite RBI recommendations.

Suggestions

The following points are some of the ways by which banks can use to Go Green and can ensure ease in the implementation of Green Banking Initiatives:

- It is imperative to make consumers aware of Green Banking. The knowledge can be shared via the official websites of the Banks and even through social media platforms.
- The management and staff of Banks must be properly trained through workshops, seminars, and conferences so they can deal with green businesses and customers with their skilled knowledge and ease. They should be trained at regular intervals to keep abreast with new technologies.
- Indian Banks must adopt international initiatives like Equator principles so that the banks can assess the amount of risk quickly while financing green projects.
- Indian Banks must promote different green banking products like online banking, green loan, and green cards and should highlight their importance to the customers.
- The Indian Banks can improve the quality of their assets by promoting green banking products, strategies, and processes.
- Banks should take the required steps to reduce carbon emissions, use green infrastructure, and save water and natural resources. All the green banking initiatives must be mentioned in the Annual Report so that the various stakeholders can receive the information.
- Banks must adhere to all the guidelines stated by RBI for internal and external activities.
- The banks must invest in those projects which are more responsive to the environment and ensures sustainable economic growth. This can even increase the competitive advantage amongst the businesses.
- Even after financing, the green banks must keep a proper tab on various business activities and take corrective measures if need be.
- The banks must accelerate their speed in adapting green banking initiatives so the bank can shift from the start-up phase of adopting green banking to the sustainable growth phase.
- To avoid ambiguity transparent policies should be adopted by banks to deal with green banking initiatives. The policies adopted should be disclosed clearly in the reports.

Conclusion

The Indian Banks are taking initiatives to 'GO Green'. The banks both public sector and private sector banks have mentioned in their Annual or Sustainability Reports how they are taking different measures to preserve

the environment. A good amount of expenditure is incurred by banks to implement these initiatives. But still, India is lagging in comparison to its western counterparts. As per Economic Times, India has slipped 3 ranks and is on 120th position on attaining Sustainable Development Goals as mentioned as part of 2030 Agendas by United Nations. India is behind all South Asian Nations except Pakistan. And only IDFC Bank has signed Equator Principles (on 3rd June 2013). Since then, no other bank in India has adopted Equator Principles for mitigating and assessing environmental risk while financing projects. To ensure better and positive results for the green banking initiatives then it is important to make consumers aware of the concept of green banking as currently, most people aren't aware, and banks must use their websites and annual reports to sensitize the different stakeholders about preservation of environment. The banks must use a dedicated space on the website to highlight the Green Banking Initiatives adopted by them for eco-friendly surroundings. It becomes important to train employees to be technology savvy to deal with green consumers and green business products & services. When all banks and their stakeholders work in unison, then we will attain desirable results for a happier, cleaner, and better living.

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Financial Retirement Planning and Financial Literacy: A Review of the Literature

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Abstract
The paper provides a summary of the research on the factors that influence financial literacy and financial retirement planning. Furthermore, it identifies an important gap in the research as well as its significance. The majority of the literature on financial literacy and retirement planning reveals a lack of financial management among individuals. The majority of study on this topic has been conducted in developed nations. Retirement planning has become more important as people have been asked to take greater responsibility for their retirement and personal welfare.Elderly People have to take the final decision accordingly. Plans being made for retirement can facilitate the post-retirement life only if the person is aware of the financial market, financial calculations, employees' retirement benefits, social security benefits, and medical benefits.This review also addresses the driving factors of retirement planning revealed in the research. Socio-demographic and psychological factors and financial literacy are examples of these.
Keywords: [Financial Literacy, Financial Planning, Retirement Planning]

Introduction

Financial retirement planning is a step-by-step strategy for achieving life objectives. A financial plan acts as a roadmap for navigating life's path. Essentially, it aids in the regulation of revenue, expenditure, and investment, as well as the management of finance and the achievement of objectives. The financial plan increases the analysis ability of the person to think about the investment decision as to what is right and get the proper results. If financial retirement planning is properly done then even small savings will help to get bigger gold on post-retirement or help the person to accumulate enough funds by the time of retirement to enable him to get a regular flow of income for the rest of his life so that he can live comfortably without compromising on his standard of living, having taken into consideration the effect of inflation. And financial literacy can be defined as: "A combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing." Although financial literacy varies with income and education, data suggests that well-informed people with high earnings can be just as uninformed about financial concerns as less-educated, lower-income people. Furthermore, people regard investment decisions as complicated and stressful. According to the investigation, picking the correct investment for a retirement plan was more unpleasant than going to the dentist. Financial literacy is critical for assisting individuals in managing these issues and savings to provide enough income in retirement while not paying large amounts of debt that could lead to bankruptcy (OECD, 2018).

In foreign, according to Canilang et.al (2020) found that several Americans are unready for retirement in its "Report on the Economic Well-Being of U.S. Households in 2019." One-fourth of those polled said they have no retirement funds, and three in 10 said their retirement savings are on target. Nearly60% of people with self-directed retirement savings acknowledged having poor confidence levels in making retirement plans. And in India,according to the report of HSBC (2009), just 13 percent of people around the world feel that they are very well prepared to cope with their future of retirement.Household Finance Committee, (2017)77 percent of Indian households either do not expect to retire or do not actively plan for retirement. The average Indian household has 84 percent in real estate and other physical items, 11 percent in gold, and five percent in residual financial assets. Retirement accounts play a very limited role in the domestic balance sheet, even at the top of wealth distributionLoans continue to accumulate near retirement age in Indian households, and most loans are unsecured (56 percent), indicating an unusually high dependence on non-institutional sources such as moneylenders.As per the United Nations Population Division, the world's life expectancy is anticipated to rise to 75 years by 2050 from the current level of 65 years. In India, improved health and sanitary conditions have increased life expectancy. As a result, the number

of years spent after retirement grows. As a result of the rising inflation, cost of living, and life expectancy, retirement planning is essential in the present era (Department of Economic and Social Affairs, 2019).

Aside from expanding study on financial literacy, recent years have seen several government welfare reforms, resulting in changes to the age of retirement and retirement plans. These government reforms exist in both developing and developed nations, but each has its particular framework in which retirement programs are designed. However, a common issue when discussing pensions is retirement anxiety. With the uncertainties of the future and the shift from working career to retirement, retirement planning is an important issue in the private and public sectors, focusing on the availability of retirement income.The importance of preparing for retirement varies according to the stage of life. During one's youth, retirement planning involves setting aside only a sufficient amount for retirement. Throughout one's career, it may shift to setting reasonable earning goals and making efforts to achieve them. Decades of investments will pay off after a person reaches retirement age.

Investors must accept responsibility for an expanding array of investment decisions, the two more crucial of which may be the purchase and financing of a property and retirement planning. The complexity of these decisions is rising, as are the stakes: the 2008-09 financial crisis, for example, highlighted the implications of making any further judgments without sufficient tools. The debt crisis has taught two important lessons regarding the impact on the economy as a whole. First, a bad investment decision may be a fairly frequent occurrence. Second, such issues may go unrecognized for a long period until a crisis occurs. Thinking beyond the financial crisis, such lessons raise fresh issues for people and politicians as they consider the future, specifically as the Boomer Generation plans to retire. Inadequate investment and savings decisions may be less noticeable, but they have substantial consequences for the long-term financial security of a large portion of the U.S. population. With the change to defined-contribution (DC) retirement plans and uncertainties about government Welfare Benefits, people are increasingly being asked to do their retirement financial planning.The financial environment is ever-changing. As an international market, there are many more players and influencing elements. Financial markets are becoming even faster and more unpredictable as a result of the rapidly changing environment caused by technological breakthroughs such as digital trading. When these elements are combined, they can lead to competing viewpoints and make designing, implementing, and adhering to a financial strategy challenging.

In the days of a joint family system, families lived together and elderly parents were taken care of by children. They enjoyed a retired life looking after their grandchildren, telling them stories, and helping them with their studies. These concepts are slowly changing due to many factors. Families are becoming a nucleus. Children have to move out of the cities for jobs and parents are not always in a position to move with them due to many compulsions. Sometimes children do not earn enough to support their parents financially as the cost of living is also increasing. Longevity has also increased due to improved medical facilities.Decisions related to retirement planning are becoming multifaceted over time. Elderly People have to take the final decision accordingly. Plans being made for retirement can facilitate the post-retirement life only if the person is aware of the financial market, financial calculations, employees' retirement benefits, social security benefits, and medical benefits.

Review of Literature

Financial Literacy about Financial Retirement Planning

Lusardi (2009) revealed that Individuals who contributed to the retirement planning process in the United States had more wealth after retirement than vice versa. The performance of the financial markets was also influenced by wealth. The importance of financial literacy is a key contribution to better financial planning for retirement. The author evaluated the relationship between financial literacy and financial planning in the study. The author found that financial literacy in the US was very low. Also, financial education led to an improvement in financial planning for the retirement of low-income groups.

Bucher-Koenen and Lusardi (2011) studied financial literacy and socio-economic (age, gender, education) characteristics in Germany using data from the SAVE survey. They had found that women did not have knowledge of basic financial concepts. Interestingly, in the past, there was no gender inequality in financial education. To identify the work-cause between retirement planning and financial literacy, they had developed an instrumental variable technique using regional variation in peer financial knowledge and found a positive effect of financial knowledge on retirement planning.

Ntalianis and Wise (2011) had shown that financial

education programs positively affected retirement planning and the savings behavior of individuals. Primary data were collected from 406 respondents from 27 Australian universities. For data collection electronically mailed questionnaire (web-based survey) was created. Statistical tools like ANOVA F-Test, Chi-Square Test, Fisher LSD Test was used to analyze the collected data. Research had shown that seminars, written communications, and website information were effective methods in the communication of financial education. In this study, members of the Retirement Fund were examined in their consideration of the elements of financial education resources provided to them through their retirement funds. Empirical evidence suggested that age and gender were significant factors with women and young individuals less likely to use educational information and more at risk of not saving enough money for retirement.

Sekita (2012) analyzed the determinants of financial literacy and link financial literacy to retirement planning. Microdata was collected on Japanese households. Ordinary least squares (OLS) regression and the Generalized method of moments (GMM) model were used to analyze the collecting data. She found that women, youth, and people with low incomes and low educational attainment had the lowest levels of financial literacy and that financial knowledge may raise the likelihood of having a retirement savings plan.

Pant (2013) assessed the awareness of women faculty members for investment in retirement plans. For this, the sample of 50 female teachers working at Banasthali University in Rajasthan was divided into two classes (married and unmarried). Analyzing the data, it was concluded that unmarried women were less aware of retirement and married women had more retirement plans than unmarried women. Also, married women were moderate-risk bears and made low-risk investments. The author also gave appropriate guidelines to women faculty members through this paper so that women can plan for retirement in a better way.

Thakur and Jain (2017) tried to know how individuals set retirement objectives. For this, a well-structured questionnaire was created and the questionnaire was answered based on 5-point Likert's Scale. The analysis had revealed that house rental income was considered by the respondents to be the best option for achieving the post-retirement objectives and NPS received the final rank. Despite NPS being mandatory at the government level, it could not make room for achieving the retirement objective. Several studies could be done to find out the reason for removing the NPS deficiency. The study also revealed that the central government will change the pension fund from defined benefit to defined contribution in the future.

Talib and Manaf (2017) assessed the research about retirement behavior conducted among employees of the Employees Provident Fund (EPF). It included 172 employees from various groups, ranging from the professional management group to the support group. In this, an attempt was made to know the relation of Age Group and Self Awareness with retirement planning behavior. A variety of research analysis tools were used for this, including Pearson Correlation and ANOVA. The study revealed that Age Group and Self Awareness had no significant relationship with retirement planning. Malaysian employees were aware of the rewards received after retirement but lacked information about various factors such as health, lifestyle, new career.

Vinmalar (2018) tried to find out how aware the person was about the various investment avenues. For this, the author collected data from working people of both genders. The aim of the study was how a person would invest in his early retirement plan, after paying all his expenses for secure retirement life. Both types of data were used (primary and secondary data). 100 respondents from Chennai city were used for primary data. Different types of research analysis methods are used. Kruskal Wallis Test was used to test the demographic data and investment behavior. In the same way, Mann Whitney U Test to know the relation in investment in avenues and marital status. The analysis revealed that there is no relation between the democratic factor and investment behavior as well as no relation between Investment avenues and Marital Status. When married and unmarried were compared, it was found that working married invested on a vast basis for retirement.

Vakil and Modi (2019) had tried to find out the behavior of the person while doing retirement planning. For this, the author included working persons belonging to different age groups and occupations. Two categories of this group were created (1) 21-39 years (2) 40-59 years. A sample size of 137 individuals who belonged to Ahmedabad city was selected. SPSS v20 and Excel 2013 were used for data analysis. The analysis revealed that the majority of respondents did not know about early retirement planning. The majority of respondents did not base their investment on retirement savings. PPF was given first preference by the majority of respondents for retirement investment.

Arpana and Naidu (2020) performed a study to un-

derstand financial planning awareness and identified various investment avenues among professionals in Bangalore. To get data, 100 respondents were professionals in Bangalore city. A convenient sampling technique was used for data collection. Descriptive statistic has been used for data analysis. The study concluded that the level of awareness about financial planning was good in doctors and professionals than the lawyers and engineers. The majority of the professional took life insurance.

Hauff et al. (2020) described the relationship of financial literacy with retirement investment management, retirement saving activity, and retirement planning as demonstrated differently. In this research paper, the authors found the impact of financial literacy on Individual Retirement Financial Behaviour. For this, they used Fact-Based Financial Literacy (FBFI). The authors analyzed data of 551 Swedish citizens and showed that FBFI had a vital impact on all three phases of retirement financial behavior, however, with the maximum impact on the investment management stage.

- Financial Retirement Planning and Influencing Factors

Dorfman et al. (1984) had described in their studies that professors at several institutions had planned for retirement. Most faculties thought seriously about retiring, making financial plans, checking up on retirement problems. When it comes to retirement, the decisions have generally been favorable. The author also noted that the university's faculty appeared to be more prepared for retirement than faculty from other universities.

Hassan and Lawrence (2007) analyzed the financial preparation for retirement, regarding the contribution in retirement planning. Secondary data from the survey of Consumer Finances were collected for variables that affected retirement planning among women and men aged 30 to 39. Probit analyzed were used with a multiple regression model to analyze the collected data. The findings indicated significant positive effects on income and femininity. Education was important and positive as a prophet for the decision to contribute to the pension scheme for women in their thirties, thus supporting the hypothesis of an important positive association between education and pension plan contributions. In contrast, the result did not support the hypothesis of household size as a predictor of retirement planning.

Fernandez-Lopez et al. (2010) revealed what factors were driving retirement savings? The results showed that while the percentage of savers for retirement varied widely across countries, the driving force of the decision to save for retirement was quite similar. Retirement savings decisions were positively related to individuals' age, financial literacy, household income, and savings habits. In addition, the results indicated that country-level institutional factors also played an important role in a person's attitude toward retirement.

Bateman et al. (2010) examined whether retirement savers followed simple portfolio theory when selecting an investment. Data collection was done from 693 participants using scale adjusted version of the latent class choice model. They discovered that age and income level were significant factors of preference class, but variability was mostly determined by age and inherent risk tolerance. They also discovered that while selecting their most desired investment option, respondents compared the qualities of nearby investment options. They had observed that young and low-income retirement savers were more likely to respond positively to net expected returns and negatively to risk but were more likely to behave in contrast to older and higher-income retirement savers. The significance of risk and return factors of investment opportunities, and also their arrangement on the investment options menu, was reflected in this study.

Adams and Rau (2011) showed that Retirement had long contributed to influencing the people. The quality of life after retirement could be improved only by preparing for retirement early. Older Americans were already better prepared for retirement, which made them less stressed later. They were able to balance his after-retirement life. The demographic factor was instrumental in enhancing the ability to retire.

Moorthy et al. (2012) explained the impact of psychological factors including age, education, and income, including attitudes toward retirement, potential conflicts in retirement planning, and goal clarity on retirement planning behavior. Primary data were gathered from 300 respondents ranging in age from 25 to 55 years. The data were analyzed using several statistical methods, including One-Way ANOVA. In the demographic factor, the author concluded that apart from age, educational level and income level were shown to be important variables for retirement planning behavior. The psychological factor was also instrumental in influencing retirement planning behavior.

Shanmugam and Abidin (2013) investigated the scenario of retirement preparedness and confidence among working adults. The objective of the study was to examine the relationship between confidence and retire-

ment preparedness and financial literacy and attitude towards retirement. This study included 150 working adults ranging in age from 21 to 55. Data were collected using the convenience sampling method. Statistical tools such as One-Way ANOVA, R square, F test were used to analyze the data. The younger generation had a better sense of retirement preparedness and confidence than elderly people. Right now, they have enough time for retirement which can bring benefits for them. This enables them to achieve their goals and dreams. In addition, if there is a problem in preparing retirement plans, they should seek professional advice.

Shendkar (2017) studied financial retirement planning. For this, people in the age group of 25 to 45 years were selected in Pune city. Data collection was done from 394 sample sizes. Statistical Test tools like Spearman Rank Correlation, T-test(paired), One Way AVONA & Chi-Square Test were used. The research used the help of a statistical package SPSS. The analysis showed that men thought more about retirement planning than women. Both age and income affected retirement thinking. Young people used to think less about retirement planning. Demographic factors influenced everyone in the field of retirement planning. The most important thing was that retirement planning must be done, because social security measures, employer benefits, and family support were all unreliable.

Thakur et.al. (2017) studied the perception of individuals towards planning for retirement. Respondents from different ages and occupations contributed to descriptive research. A structured questionnaire was created, using the Cronbach Alpha and KM measure of adequacy to test its validity. 50 percent of the respondents knew that they were investing in retirement, another 50 percent of the respondents were also investing, but it was not known whether they were investing for retirement or not? Through analyses revealed that the investment was done by the respondents but the investment was on their faith which was not fair.

Kimiyaghalam et.al. (2017) studied the Financial Retirement Plan in Malaysia based on the Employee Provident Fund. This report was submitted by a government agency that managed retirement savings. 900 respondents were used to obtain primary data. The report stated that personnel involved in the private sector are forced to work even after retirement as they did not have sufficient savings at the time of retirement. The analysis suggested that future orientation and individual planned behavior were directly related to retirement planning behavior.

Vakil and Modi (2019) found a relationship between the factors affecting retirement planning behavior. For this, 300 working people were included in this study, whose age group was between 26 to 55 years. Through the results, the author explored various important variables (age, education level, and income level) that motivated the retirement planning behavior of individuals. The analysis showed that the potential conflict, attitude towards retirement, and retirement goal clarity were very important in estimating retirement planning behavior. To build a strong financial base after retirement, the results of this study needed to be implemented in retirement planning.

Kumar et.al. (2019) studied the prominent barriers that affected retirement planning. This result was very important for policymakers by which they could overcome major obstacles. As a result, retirement planning could be made easier by removing barriers, using an approach based on interpretive structural modeling (ISM) to identify key barriers. 15 barriers were included in the barriers to retirement planning like age, gender, income, marital status, education, financial literacy, goal clarity, etc. 17 participants were included, who were senior professors and senior industry managers. Data analysis showed that financial literacy, goal clarity was very important as they had high driving as well as dependence power and gender, income, education, marital status, worked as an agent with high driving power.

Baistaman et.al. (2019) provided a conceptual model for future studies using three factors, (1) financial outlook, (2) social impact, (3) Financial Retirement Planning. A sample size of 100 working adults in Malaysia was selected. A descriptive and cross-sectional design was used. In this, both financial outlook and social influence served as predictors of financial retirement planning and thus helped in knowing financial retirement planning behavior. In addition, the author pointed out that the Malaysian government should change personal financial attitudes, as attitude could have shaped an individual's behavior.

Aza and Patil (2019) evaluated the importance of psychological and demographic variables in saving and investing decisions, with strong attention to financial retirement planning. Two types of data primary and secondary were collected for the study in which a structured questionnaire was used for primary data. In order to get the data, 95 respondents, working in the private sector of Bengaluru city, were selected from 25 to 45 years of age. It was found in the analysis that about 90 percent of the answerer save their share of the money,

but only 24 percent of them save for retirement. Mutual funds were their first choice as an investment. The analysis also revealed that there was a high association among the act of saving with saving patterns and personal retirement plans. Also, none of the demographic factors affected the savings pattern.

Tan and Singaravelloo (2020) included 320 government employees of Malaysia who served in the Federal Government Administration. The study showed that there was no significant association between age and gender with the level of financial literacy. But both the level of education and personal income were involved in influencing the level of financial literacy. The conclusion also showed that there was no significant relationship between retirement planning and financial literacy among Malaysian government officials.

Research Gap

After reviewing the literature, it has been found that there a few studies have been conducted related to financial literacy and retirement planning. The majority of study on this topic has been conducted in developed nations (Bucher-Koenen &Lusardi, 2011; Ntalianis & Wise, 2011; Sekita, 2012; Kimiyaghalam et.al., 2017). Retirement planning has grown more important as people have been told to take on bigger accountability for their retirement and personal welfare. Adams and Rau, (2011), lots of people are underprepared for this period of their lives. Demographic and sociological factors affect retirement planning directly and indirectly and financial literacy acts as a moderator in all this. The person knows that one day he has to retire, yet he does not want to talk about retirement. There is a paucity of literature on after retirement life and the factors affecting retirement planning have been talked about, but it has not been talked told how one can enjoy the post-retirement life. How can he do his retirement planning? Therefore, for retirement planning, future planning can be done keeping all these in mind.

Relevance of the Study

Because seniors live for 25 to 30 years more than after retirement, and because the economy is volatile, retirement issues have become increasingly difficult. As a result, individuals who are ready to retire must establish clear objectives for how they will maintain their income, investments, and contribution plans. In general, saving has been described as the act of laying aside some of one's present income for future requirements. Thus, both individual future choices for present consumption and future revenue prospects influence how much people save.

In the present time, nuclear families, weakening family ties, enhanced medical expenditures and increasing aspirations of living life with dignity have made financial retirement planning all the more important. Ensuring a secure future for a self, spouse, and the family members; particularly in the fast-changing scenario is also an important aim of financial retirement planning. The present study highlights the relationship between various factors which affect financial retirement planning. The study derives its relevance from the following points:

- For an employee, it helps her/him in understanding the behavioral aspects related to financial retirement planning.
- For a business entity, it will help in designing an appropriate product and an advertising policy best suited to penetrate the market.
- For the government, ensuring social security especially for the old-aged is the prime focus. This study helps the government in analyzing how to encourage the habit of financial retirement planning among people by taping these factors.

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Asset Prices as an Early Warning Indicator of Banking Crises: A Critical Evidence from India

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Abstract
Banking crises caused such great chaos to economies in the past that economists always tried to make an early warning system which could signal crises in advance. This paper attempted to check the predictability of asset prices as an early warning indicator for banking crises. Signal Extraction Approach was used to check the predictive power and noise signal of the variable. A time span of 1980 to 2019 was taken to load the data values and three threshold limits were selected to analyse the results. Three threshold limits were decided to check the predictive ability of the indicator. It was found that the indicator performed well on the 0.5 threshold limit.
Keywords: Banking Crises, Early Warning Indicators, Asset Prices, Signal Extraction Approach, Threshold limit

Introduction

Banking crises represents bank runs or a loss of faith of customers in the bank. Banks play an important role in each economy. Loss of faith or their run can create a big issue on the macro level of economies. So, it was always tried by policymakers that such loss could be avoided by forewarning crises. Early warning indicators are the variables which show heat in the system if crises are going to happen in the near future. Previous literature showed that asset prices proved good early warning indicators in forewarning banking crises. Asset prices (Return on Investment) are the prices on which stocks and bonds are valued. Just like property prices if the prices of assets are more than their intrinsic value it also can create a situation of bubbles in the financial system and ultimately could be a reason for a burst.

Review of literature: Drehmann et. al revealed that enormous asset prices could act as an early warning indicator for crises period. Glick and Hutchinson (1999) found that there is a strong relationship between bank runs and asset prices in emerging and less developed countries. But Vila (2000) found the converse holds true in case of developed economies as her study claimed that there is a weak relationship between asset prices and banking crises.

Research Methodology: Primary objective of the paper is to check the predictive ability of asset prices in forewarning banking crises. A data series of 1980 to 2019 was taken to perform the results of the signal extraction approach on a 12 month window. Results of signal extraction approach can be compiled in a contingency matrix:

	Signal issued	No signal issued
Financial stress event	A	B
No financial stress event	C	D

A and D are the situations good for the system as these are the true calls while B and C are the situations of error 1 and error 2. Moreover, to check the responsiveness of the indicator, lead time was also calculated. Lead time is the time when the indicator gives signal for the first time and is persistent about the signal during the whole time till the crisis occurs. Utility of lead time lies in the fact that if signal is issued timely then policy can be modified but if signal issued just before the crisis then it is not possible to amend policies.Persistence of signal is also a desirable feature to become a good leading indicator. It shows the perseverance of the signal just prior to the crisis period (12 months for the study). To measure this behavior, the persistence table was framed by inverting the noise to signal values.

Model Formulation

As the first step, for India i, we define a banking stress as the banking stress index rises above an extreme value,

hbs_(i,t) = 1,if bsi_t> mean + μ.standard deviation
0 otherwise,

Here bs stands for banking stress and t denotes time. μis the threshold value which is 0.5, 1.0 and 1.5 for the study and chosen according to previous literature. For these thresholds model would become:

hbs_(i,t) = 1,if bsi_t> mean + 0.5.standard deviation
0 otherwise,

hbs_(i,t) = 1,if bsi_t> mean + 1.0.standard deviation
0 otherwise,

hbs_(i,t) = 1,if bsi_t> mean + 1.5.standard deviation
0 otherwise,

Data Analysis: Results summarised in this section are0.5 threshold limit as the indicator was not responded to 1.0 and 1.5 value.

Noise signal ratio	((B)/(B+D)) / ((A)/(A+C)	0.43
Conditional probability	A/(A+B)	0.70
Unconditional probability	(A+C)/(A+B+C+D)	0.50

Signal Matrix:

[A=0.83B=0.36C=0.17D=0.64]

Here A represents the correct signal, whereas false signals, missing crisis and correct silence are represented by B, C and D respectively.

Table: Result Analysis

Noise signal ratio of the indicator was found 0.43 which is a very good value and indicating strongly that it could have information about crises.

Conditional probability of the indicator is greater than unconditional probability and hence the second necessary condition is also fulfilled. High value of conditional probability indicates that other parameters of the indicators might be good.

Type 1 error	C / (A+C)	0.17
Type 2 error	B / (B+D)	0.36
Predicted/forecast crisis	A / (A+C)	0.83
Probability of banking stress event gives no alarm	C / (C+D)	0.21
Probability of false alarms in total alarms	B / (A+B)	0.30

Conditional probability (0.70) > Unconditional probability (0.50)

As both required conditions are fulfilled, a predictive ability table can be framed for the indicator to discuss the other variables.

Table: Predictive Ability of Asset Prices/ ROA

Type 1 error of the indicator is 0.17 which is a commendable value. It shows that only 17% of crises were missed by the indicator. Predictive ability of the indicator is 83% which is too good and best in selected indicators. It states that it predicted 83% of crises accurately. Type 2 error of the indicator is 36% which is decent and acceptable with such a high predictive ability. Only 21% times the indicator did not give any alarm even when crises occurred which is in favor of being a good indicator. False signals in relation to total signals were observed 30% times.

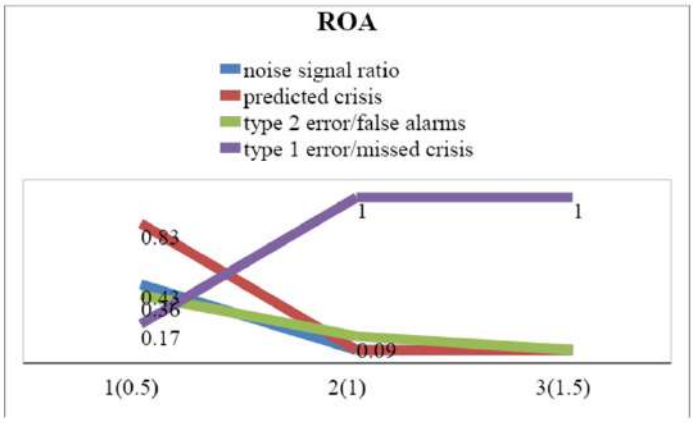
So, in conclusion it can be said that it is the best among all the selected indicators on this threshold value. It can be used for forecasting crises in Indian Banking background and can be used for composite indices with highest weight among all chosen indicators on this critical limit.

Discussion:

At both of the upper critical limits the indicator does not give any result because even the necessary conditions are not fulfilled. Consequently, further reduction in threshold has to be introduced to see the predictive power of the variable.

When threshold limit is mean+0.5(SD)

After revising the limit predictive ability would become 83%. The signal to noise ratio is not too low(0.43) but it may be admissible by researchers on such a high value of forecasting power. Chances of missing a crisis event are also reduced very much and became 0.17 and type 2 error enhanced and became 0.36%.



So, the results state that the indicator tends to have better predictive power on low threshold limits. Further, a proper threshold value is necessary to see the results otherwise the results could be misleading or the variable would not indicate a crisis event.

Comparative Analysis of ROA

In the given figure, comparative analysis of the indicator

ROA/ asset prices has shown at various threshold limits. The graph depicts all four critical indicators for more realistic comparison in a single chart.

Noise to signal Ratio: Blue line shows that noise to signal ratio is least on 1.0 and 1.5 threshold limits.

Predictive Ability: Red line shows predictive ability of the indicator is highest on 0.5 with 0.83 value which is highest among all selected indicators while it showed nil predictive ability on other threshold limits.

False Alarms: The results of this metric are the same as usual, with the lowest values found on 1.5, 1.0, and 0.5, respectively.

Missing Crisis: Missing crises are indicated by a purple line and it was found that these occurred least on 0.5. It can be seen from the graph that all crises are missed by the indicator at 1.0 and 1.5 threshold level.

The graph shows that the indicator performed excellent predictive ability on the 0.5 threshold value while it did not show any results on remaining thresholds.

Average lead time of the indicator on 0.5 threshold level is 3 years and persistence of signal was found 2.33.

Conclusion: It can be concluded from above discussion that asset prices proved very efficient in forewarning the crises in Indian banking Space. But it showed the results only on 0.5 threshold value. As the value of threshold was increased to 1.0 and 1.5, predictive ability reduced almost nil. Average lead time and persistence of signal is also good on this threshold limit. So, it is worth mentioning that the value of threshold limit and its proper selection is necessary.

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Impact of technological troubles in the direction of inexperienced enterprise practices in micro and small companies

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Abstract
Most of those smaller corporations are fragmented, and as a result, are not able to organise themselves so as to lessen procurement expenses from massive companies or streamline the output deliver chain. The inexperienced enterprise practices are the important thing to fought with all enterprise troubles. The count number of greening is taken into consideration as an obsession for the personnel as they notion it's miles a brand new try for which they need to study a lot. This form of technique makes the outcomes at the surroundings very least. To discover the effect of generation elements in inexperienced enterprise practices in of Micro and Small companies. The effect of generation withinside the employer is inevitable even as going into greening of enterprise operations, both immediately or indirectly. It can be withinside the shape of upgradation of generation, advent of latest generation or customisation of present generation. The variables of effect of generation which include troubles of competitiveness, troubles of human assets and advertising and marketing and income troubles are excluded on this regression evaluation, as those variables are having their tolerance restriction and collinearity as 0 and are taken into consideration as does now no longer make any effect because of exalternate in enterprise enjoy of the micro and small companies. By thinking about the large utilization of the phrases which include eco-consciousness, social ethics and company social obligation amongst numerous media, it's miles now an critical standards for the Micro and small companies to expose their inexperienced enterprise practices with social consciousness and its implications ought to be splendid one for the customers.
Keyword: Competitiveness, Human assets, Sales troubles, Financial troubles and overseas alternate

Introduction

Limited get right of entry to infrastructure which include power, water, and roads will increase operational expenses for those groups and makes them uncompetitive. Inadequate get right of entry to aid infrastructure discourages those gadgets from adopting more moderen technology, wherein available. Small companies don't forget demanding situations in get right of entry to finance as certainly considered one among the largest constraints in increase. An IFC 2012 take a look at on MSME finance additionally shows that the more than one increase constraints (like the ones stated above) may be in large part connected to insufficient get right of entry to finance. Micro and small companies in large part incorporate first-technology marketers, who've had a constrained based education on aid planning, capital control and labour control. As a result, loss of managerial competence regularly indicates in bad book-retaining and a constrained information of formal economic institutions, which similarly inhibits the increase of those companies. Most of those smaller corporations are fragmented, and as a result, are not able to organise themselves so as to lessen procurement expenses from massive companies or streamline the output deliver chain. The inexperienced enterprise practices are the important thing to fought with all enterprise troubles. This has been felt with the aid of using many industrialists within side the world. "Strength does now no longer come from bodily capacity it comes from indomitable will" – Words of Mahatma Gandhi may be taken into consideration right here because the MSEs ought to have the hobby to do the inexperienced enterprise practices with the aid of using thinking about it as a degree to enhance their enterprise performance and thereby the financial improvement.

Research Gaps

As in keeping with the essential evaluation of the literatures and opinions with the aid of using the researcher, it's miles observed that the subsequent regions are taken into consideration as missing withinside the studies filed to date and accordingly all of them are covered as studies gap. Firstly, the inexperienced enterprise practices are analysed within side the standpoint of personnel, customers, suppliers, authorities and criminal elements. It has now no longer been elucidated control factor of view and the tasks taken with the aid of using pinnacle control. Secondly, the important thing troubles taken into consideration in maximum of the evaluation are taken outside surroundings which include criminal, elements into attention for his or her take a look at. The inner surroundings evaluation is likewise analysed with outside affairs. The inner evaluation with inner affairs and its elements aren't but explored quantitatively. Thirdly, the micro companies sectors are

beneath explored for the inexperienced enterprise practices studies to date. The intention of this gift take a look at is to fill within side the gaps recognized and stated from the literature opinions.

Harijono Djojodihardjo (2018) , in his article "Overview of inexperienced quad bubble enterprise jet aerodynamic configuration layout", anticipated the opportunities of introducing some of visionary and pioneering thoughts and upcoming facilitating technology for a theoretical and aerodynamic layout of inexperienced enterprise jet plane to fulfill numerous necessities within side the Green angle and N + 2 Aircraft framework, and on the identical time, to fulfill the necessities of client demand, financial increase and eco-friendly upkeep. The studies layout is a synthesis of numerous plane layout methodologies has been executed via iterative optimization to reach on the conceptually designed plane with novel idea with most fulfilling overall performance within side the subsonic flight regimes. Through a meticulous attempt following the synthesized layout methodologies within side the conceptual layout phase, a conceptual layout of a quad-bubble enterprise jets with a hard and fast of specs that meet the inexperienced and N + 2 plane generation necessities and showcase promising performances is proposed and assessed inside latest plane generation improvement.

In this paper, "Turning to Sustainable Business Practices: A Macro advertising and marketing Perspective", Mark Peterson and Matthew B. Lunde, (2016) , reviewed latest trends in advertising and marketing-associated sustainable enterprise practices (SBP) that macro advertising and marketing students have researched and debated for 4 decades. Such SBPs ought to be seemed as high quality steps closer to a destiny wherein enterprise does extra appropriate than damage in society. Using the technique of a literature evaluate, this paper highlighted the movements of marketers and corporations to put in force SBPs attributable to evaluation of the interaction among markets, advertising and marketing and society. Such evaluation is within side the culture of macro advertising and marketing scholarship. This take a look at recognized critical trends approximately an critical shift closer to adopting SBPs amongst many corporations, in addition to amongst customers – especially, in advanced international locations of the world. This take a look at cautioned that taking a macro advertising and marketing view gives students a vast lens on modern-day complicated market phenomena a good way to show powerful in higher know-how sustainability troubles.

In this take a look at, "Corporate sustainable enterprise practices and skills attraction", Mohamad Abu Huzaifah bin Magbool et al, (2016) aimed to analyze whether or not businesses can leverage on their sustainable enterprise practices to draw precious abilities to benefit aggressive gain over their competitors. Using factorial layout, the authors carried out an test to evaluate the beauty of an employer in step with the social identification theory, primarily based totally at the Bursa Malaysia company social obligation (CSR) framework attributes (consisting of environmental overall performance, network relation, place of business and market overall performance).The findings of the modern-day take a look at supported the perception of social identification theory, as take a look at topics had been attracted extra to businesses with excessive company sustainable enterprise (CSB) practices than businesses with low CSB practices. Specifically, findings of the modern-day take a look at discovered that task candidates have a better aim to sign up for and willingness to just accept a task provide from businesses with extra sustainable enterprise practices.

Scope of the Study

Sustainability is described in specific approaches all through industries (Jones, Hiller, Comfort, & Eastwood, 2005). Marshal and Brown (2003)gave the maximum ideal definition of sustainability as "the capacity of modern-day generations to fulfill their desires without compromising the ability of destiny generations to fulfill theirs." Sustainability, which incorporates environmental quality and upkeep in addition to assembly the strain of emissions reductions, is swiftly turning into an critical difficulty for enterprise and additionally for public policy (Wooley, T. D., 2010). The time period sustainability is taken into consideration within side the shape of inexperienced enterprise practices on this studies. Organizations want to put in force new techniques to lessen dangerous environmental effect in their output (Lewis and Gretsakis, 2001; Sarkis, 1995, 2001). The purpose in the back of this is "consciousness of the customers approximately feasible surroundings troubles has pressured groups, authorities and each family to shop for inexperienced products" (Shultz and Holbrook, 1999). The inexperienced enterprise practices in Micro and Small companies are explored on this studies with the aid of using thinking about the subsequent important regions. The companies taken into consideration are best prepared Micro and Small companies wherein the companies are capable of be positioned with all of the enterprise features. The companies are taken into consideration for the studies best if they're positioned in Madurai and now no longer restricted with every other region.

Limitations of the Research

No studies is escaped from the phrase of limitation. It is

ideal to make the restrictions to be regarded with the aid of using the researcher to keep away from similarly extra misperception. The following are the restrictions of the studies recognized with the aid of using the researcher: The inferences and conclusions are drawn for the prepared MSEs registered best in Madurai and now no longer to be generalized for different states. The inexperienced enterprise practices of MSEs are analysed on the premise of control angle and now no longer covered the personnel' and customers' perspectives.

Implication of the problem

It is a boon to have a sustainable inexperienced enterprise surroundings with a approach of waste to wealth. Greening the surroundings is taken into consideration as a fine possibility to the surroundings to maintain itself with the aid of using the manner of having the whole lot proper and getting to know from failure. The sustainability is taken into consideration as an picture difficulty for micro and small companies to expose their futuristic view approximately their herbal wealth and its safety. The sustainability is a turnkey idea for micro and small enterprise corporations to have increase schedule as inexperienced giants with the element of performance in operations. The count number of greening is taken into consideration as an obsession for the personnel as they notion it's miles a brand new try for which they need to study a lot. This form of technique makes the outcomes at the surroundings very least. But assets can stretch best to date the brand new industrialists are recognized this possibility for higher overall performance. The critical parameters are recognized and the extent of sustainability of every and each element of the Indian society want to be concerted and amendments are encouraged in the ones parameters to enhance the inexperienced enterprise practices of micro and small companies in Madurai . Throughout this take a look at, the phrases surroundings-friendly, eco-friendly, sustainable and inexperienced is used interchangeably.

Objectives

1. To recognise approximately consciousness of Micro and Small companies in the direction of inexperienced enterprise practices with unique connection with Madurai
2. To discover the desire of Micro and Small companies in the direction of inexperienced enterprise practices with unique connection with Madurai
3. To discover the effect of generation elements in inexperienced enterprise practices in of Micro and Small companies

Research Methodology

The studies technique is exhibited via Research layout, pattern, survey device and gear for evaluation.

Research Design

The descriptive studies layout is appropriate for this studies because it analyzes the existing surroundings as it's miles without making any manipulation within side the gift status. Descriptive studies is studies used to "describe" a situation, subject, behavior, or phenomenon. It is used to reply questions of who, what, when, wherein, and the way related to a specific studies query or problem. Descriptive research are regularly defined as research which can be worried with locating out "what is". It tries to accumulate quantifiable facts that may be used to statistically examine a target market or a specific subject.

Sample

To check the hypothesis, the survey is carried out within side the prepared micro and small companies in Madurai with control factor of view of the inexperienced enterprise practices within side the employer. Totally 500 companies are taken into consideration for information series the use of stratified random sampling technique with the standards of 250 micro companies and 250 small companies.

Survey Instrument

With connection with the literature evaluate and extensive take a look at on inexperienced enterprise practices, a based undisguised questionnaire has been advanced which comprising 3 elements in it. First element is conveying facts approximately the employer and its details. The 2nd one consists with organizational mindset and belief and the closing element is ready the affect of essential parameters at the inexperienced enterprise practices withinside the employer. The Pilot take a look at of the questionnaire has been executed with the aid of using taking a pattern of 10% from the pattern length of the studies (500 respondents) with the aid of using taking 25 micro companies and 25 small companies and the questionnaire has been allotted with masking letter, the respondents are requested to fill the questionnaire. The guidelines approximately the questionnaire were obtained from them and people guidelines are up to date withinside the questionnaire and finalized for similarly studies. The Questionnaire is sent to 500 companies in India and Stratified Random sampling technique is used to acquire information. The number one information are accrued via Mailed Questionnaire technique and via Enumerators.

Period of Study

The Field paintings for information series has been carried with the aid of using the researcher for the duration from June 2021 to December 2021.

Reliability Analysis - Internal consistency trying out

The reliability of the elements are recognized the use of inner consistency trying out wherein the alpha fee is tiers from 0.61 – 0.93. This reliability trying out imply whether or not all of the objects covered will come beneath identical set or now no longer, with constrained diploma of variability.

Analysis Framework

The number one information accrued from the Micro and Small companies are analyzed primarily based totally at the goals of the studies. Confirmatory Factor evaluation, One manner ANOVA, Independent 't' check, Comparative Mean evaluation, Garret rating technique, percent evaluation, Multiple Regression evaluation and karlpearson correlation evaluation are used on this studies for evaluation.

Impact of technological troubles in the direction of inexperienced enterprise practices in micro and small companies

The effect of generation within side the employer is inevitable even as going into greening of enterprise operations, both immediately or indirectly. It can be within side the shape of up gradation of generation, advent of latest generation or customization of present generation. The micro and small companies also are stumble upon this generation effect of their enterprise sports. These affects are indexed on the premise of enterprise capabilities within qside the employer on this studies. They are indexed below: • Issues of competitiveness • Issues of Human assets • Marketing & Sales troubles • Financial troubles • Improving inner structures • Issues of Market increase • Issues in overseas alternate The troubles of competitiveness imply the improvement of aggressive gain within side the enterprise. The HR troubles imply the information updation of personnel, labour marketplace structure, education and improvement programmes for personnel, etc. The advertising and marketing and income troubles are associated with promotional sports, salesmanship, etc. economic troubles are the investment sports of numerous inexperienced enterprise practices it associated with acquisition and alertness of funds. Improving inner structures that specialize in inner operations which include best control, manufacturing sports, uncooked substances procurement, etc. Issues of marketplace increase imply the product recognition and desire of the customers. Issues of overseas alternate are the possibilities for extra export orders.

Impact of technological troubles at the enterprise enjoy of micro and small companies

The effect of generation even as greening the enterprise sports of micro and small companies are rated the use of 5 factor score scale with five factors for terribly essential, four for essential, three for now no longer essential. 2 for does now no longer exist and one for now no longer aware. The scores are assessed the use of Multiple regression evaluation to take a look at the effect of generation at the enterprise enjoy of micro and small companies

Table 1

Impact of technological issues on the business experience of micro and small enterprises

1.a Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
	1	.278	.077	.070	1.380

Source: Primary Data

The model summary indicated that the R square value is 0.077 with the standard error of the estimate as 1.380.					
1.b ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	78.955	4	19.739	10.371**	.000
Residual	942.123	495	1.903		
Total	1021.078	499			

Source : Primary data ** significant level – 1%

The significance of the regression analysis is checked using one way Anova and it is indicated that there is a statistically significant difference existing between the impact of technology and the business experience in years of Micro and small enterprises.

1.c Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1		B	Std. Error	Beta		
	(Constant)	3.298	.286		11.514	.000
	Financial issues	-.119	.056	-.106	-2.108	.000
	Improving internal systems	.276	.056	.269	4.955	.000
	Issues of market growth	-.095	.061	-.068	-1.550	.000
	Issues in foreign trade	.077	.055	.068	1.409	.000

Source: Primary Data

From the coefficients, the Impact of technology on the business experience in years of micro and small enterprises is indicated using the regression equation as follows:
Regression of X on Y = 3.298 - 0.119X1 + 0.276X2 + 0.095X3 + 0.077X4
The term X indicates the impact of technology in micro and small enterprises. Y indicates the business experience in years of micro and small enterprises. The variables X1, X2, X3 and X4 indicate the four variables stated in the form of issues to measure the impact of technology in the micro and small enterprises listed as financial issues, improving internal systems, issues of market growth and issues in foreign trade respectively. The variables are changed with change in the total number of years of experience in business as multiples of -0.119, 0.276, 0.095 and 0.077 respectively. The constant Beta coefficient is 3.298.

1.d Excluded Variables					
Model	Beta In	T	Sig.	Partial Correlation	Collinearity Statistics
					Tolerance
Issues of competitiveness	.a	.	.	.	.000
Issues of human resources	.a	.	.	.	.000
Marketing & sales issues	.a	.	.	.	.000

Source: Primary Data

The variables of impact of technology such as issues of competitiveness, issues of human resources and marketing and sales issues are excluded in this regression analysis, as these variables are having their tolerance limit and collinearity as zero and are considered as does not make any impact due to change in business experience of the micro and small enterprises.

Impact of technological issues on capital investment made in micro and small enterprises

The Multiple regression analysis is used to study the impact of technology on the capital investment made by the micro and small enterprises.

Table 2

Impact of technological issues on capital investment made in micro and small enterprises

2.a Model Summary					
Model		R	R Square	Adjusted R Square	Std. Error of the Estimate
dimension0	1	.327a	0.107	0.099	1.217

Source: Primary Data

The model summary indicated that the R square value is 0.107 with the standard error of the estimate as 1.217.

2.b ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	87.512	4	21.878	14.767**	.000
	Residual	733.390	495	1.482		
	Total	820.902	499			

Source : Primary data ** significant level – 1%

The significance of the regression analysis is checked using one way Anova and it is indicated that there is a statistically significant difference existing between the impact of technology and the capital investment made by the Micro and small enterprises.

2.c Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.861	.253		11.320	.000
	Financial issues	-.086	.050	-.085	-1.723	.086
	Improving internal systems	.243	.049	.264	4.939	.000
	Issues of market growth	-.060	.054	-.048	-1.117	.265
	Issues in foreign trade	.155	.049	.151	3.198	.001

Source: Primary Data

From the coefficients, the Impact of technology on the capital investment made by micro and small enterprises is indicated using the regression equation as follows:
Regression of X on Y = 2.861 - 0.086X1 + 0.243X2 + 0.060X3 + 0.155X4
The term X indicates the impact of technology in micro and small enterprises. Y indicates the capital investment made by micro and small enterprises. The variables X1, X2, X3 and X4 indicate the four variables stated in the form of issues to measure the impact of technology in the micro and small enterprises listed as financial issues, improving internal systems, issues of market growth and issues in foreign trade respectively. The variables are changed with change in the capital investment made in business as multiples of -0.086, 0.243, 0.060 and 0.155 respectively. The constant Beta coefficient is 2.861.

2.d Excluded Variables						
Model		Beta In	T	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Issues of competitiveness	.a	.	.	.	.000
	Issues of human resources	.a	.	.	.	.000
	Marketing & sales issues	.a	.	.	.	.000

Source: Primary Data

The variables of impact of technology such as issues of competitiveness, issues of human resources and marketing and sales issues are excluded in this regression analysis, as these variables are having their tolerance limit and collinearity as zero and are considered as does not make any impact due to change in capital investment of the micro and small enterprises.

Summary

The Impact of generation at the enterprise revel in in years of micro and small companies is indicated the usage of the regression equation as follows: Regression of X on Y = 3.298 - 0.119X1 + 0.276X2 + 0.095X3 + 0.077X4. The time period X suggests the effect of generation in micro and small companies. Y suggests the enterprise revel in in years of micro and small companies. The variables X1, X2, X3 and X4 suggest the 4 variables said withinside the shape of troubles to degree the effect of generation withinside the micro and small companies indexed as economic troubles, enhancing inner systems, troubles of marketplace increase and troubles in overseas alternate respectively. The variables are modified with trade withinside the general range of years of revel in in enterprise as multiples of -0.119, 0.276, 0.half and 0.077 respectively. The consistent Beta coefficient is 3.298. The Impact of generation at the capital funding made through micro and small companies is indicated the usage of the regression equation as follows: Regression of X on Y = 2.861 - 0.086X1 + 0.243X2 + 0.060X3 + 0.155X4. The time period X suggests the effect of generation in micro and small companies. Y suggests the capital funding made through micro and small companies. The variables X1, X2, X3 and X4 suggest the 4 variables said withinside the shape of troubles to degree the effect of generation withinside the micro and small companies indexed as economic troubles, enhancing inner systems, troubles of marketplace increase and troubles in overseas alternate respectively. The variables are modified with trade withinside the capital funding made in enterprise as multiples of -0.086, 0.243, 0.060 and 0.a hundred and fifty five respectively. The consistent Beta coefficient is 2.861.

Recommendations

By thinking about the large utilization of the phrases inclusive of eco-consciousness, social ethics and company social obligation amongst numerous media, it's far now an essential standards for the Micro and small companies to expose their inexperienced enterprise practices with social attention and its implications ought to be brilliant one for the consumers.

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Crop Diversification: An Emphatic Solution to Overcome the Crisis in Punjab Agriculture

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Abstract

This paper analyzed major problems and issues which lead to the present crisis in Punjab agriculture and Crop diversification as an emphatic solution to solve the emerging crisis of Punjab agriculture. In Punjab, the crisis of agriculture is deepening for the last more than one decade year after year. The crisis is the result of growth pattern of Punjab agriculture. With the prevailing cropping pattern in Punjab there is a serious threat to the future of agriculture. Ongoing system of agricultural production in Punjab is engulfed by the problems of marketing of crops, environmental pollution, problems relating to water like over exploitation of water, water logging, declining water-table, soil degradation etc. and unemployment in rural areas. The serious efforts were required to solve the crisis of Punjab agriculture. If the state government would not act swiftly then the coming years would be much more painful for the people of Punjab and particularly for the Peasants. The immediate remedy suggested for this crisis is crop diversification. The issue of crop diversification is significant from the point of view of policy perspective regarding agrarian and overall economic development, employment and poverty.

Keywords: [Crop Diversification, Crisis, Punjab Agriculture]

Introduction

Punjab is known as agriculturally prosperous state of India. Punjab is also being known as the "The Bread Basket" of the country as it plays very significant role for ensuring food security in India. Punjab covers only 1.53 per cent of the geographical area of India but due to high intensity of cropping it accounts for 3.90 per cent of the total cropped area. In spite of the Punjab's share in total geographical area in India is only 1.53 per cent but its contribution as its share in central pool of rice and wheat was 20.9 per cent and 37.8 per cent respectively in 2019-20 which clearly indicates its dominant role particularly in the case of wheat and rice crops. In Punjab, out of five million hectares of land 4.3 million hectares are cultivated.

Agrarian Scene of Punjab

Punjab agriculture (including live-stock) was contributing 39.85 percent to gross state domestic product in 1998-99, while at the national level the share of Primary sector was much less. Punjab has an export surplus of wheat, rice and other live-stock products. The Foodgrain production has increased from 7.3 million tones in 1970-71 to 30.7 million tons in 2019-20. The new agricultural technology introduced during mid 1960's led to significant growth in agricultural output. Taking the entire period from 1962-65 to 1992-95 , total agricultural output in India (at 1990-93 prices) increased at a compound annual growth rate of 2.71 percent. During this period, the highest output growth rate of 3.35 percent per annum was recorded by northern-western region of India, in which Punjab State had dominant share. Out of 5 million hectares of land area 4.3 million hectares are cultivated in Punjab. Table 1.1 shows that total cropped area is constantly increasing from 5678 thousand hectares in 1970-71 to 7941 thousand hectares in 2000-01 and after that there is slight decrease in total cropped area 7882 thousand hectares in 2010-11 and 7825 in 2019-20. The fallow land declined from 139 thousand hectares in 1970-71 to 91 thousand hectares in 2019-20. The net area sown is also continuously increasing during 4053 thousand hectares in 1970-71 to 4250 thousand hectares in 2000-01 and after that there is very less decreased in net area sown from 4158 thousand hectares during 2010-11 to 4119 thousand hectares in 2019-20. However the area sown more than once has been increased continuously from 1970-71 to 2019-20 which was due to the main source of increase in total cropped area. The increase in crop area during 1970-71 to 2019-20 made it clear that the cropping intensity in Punjab had increased sharply during this period and it was as high as 189.97 per cent in 2019-20. A higher cropping intensity indicates that the cropping area is being sown more than once during a year.

TASK 1: Land Utilisation In Punjab

	1	2	3	4	5	6	7	8	9		
Year	Total Geog. Area	Forests	Land not Available for Culti-vation	Other Uncul-tivated land excluding fallow land	Fallows Land	Net Area Sown	Area sown more than once	Total cropped area	Cultivated area (4+5+6)	Percentage of cultivated ara to total goeg. Area	Cropping intensity
1970-71	5036	123	624	92	139	4053	1625	5678	4284	80.5	140.09
1980-81	5036	216	532	49	45	4191	2572	6763	4285	83.3	161.3
1990-91	5036	222	426	57	110	4218	3284	7502	4385	83.7	177.8
2000-01	5036	280	438	22	43	4250	3691	7941	4315	84.39	186.84
2010-11	5033	295	528	12	37	4158	3724	7882	4207	82.56	189.56
2019-20	5033	248	546	23	91	4119	3705	7825	4233	81.83	189.97

Source : Statistical Abstract of Punjab, Various Issues.

task 2: Discribuion Of Land By Farm Size Categories

Category hectare	Number of Land Holdings	Percentage of holdings								
	1970-71	1980-81	1990-91	2000-01	2010-11	1970-71	1980-81	1990-91	2000-01	2010-11
Below 1	517568	198060	295668	122760	164431	37.63	19.42	26.47	12.31	15.62
1 to 2	260083	199368	203842	173071	195439	18.91	19.54	18.25	17.35	18.57
2 – 4	281103	287423	288788	328231	324515	20.44	28.18	25.86	32.91	30.83
4-10	247755	261201	261481	300954	298451	18.01	25.61	23.41	30.18	28.36
10 and above	68883	73940	67172	72356	69718	5.01	7.25	6.01	7.25	6.62
Total	1375392	1009992	1116951	997372	1052554	100	100	100	100	100

Source: Punjab Statistical Abstracts for various issues

Structure of Land Holding in Punjab

There are considerable changes in the structure of land holding during 1970-71 to 2010-11 in Punjab. From the table 1.2 it clearly indicates that the number of operational holdings in Punjab were 10.52 lakh in 2020-11 out of which 34 per cent consisted of small and marginal farmers having less than Two hectares of land. About 65 per cent farm operators cultivated less than Four hectares of land which is below the estimated economic holding of five Hectares during 2010-11. Only 6.62 per cent of the farmers had 10 hectares and above land area. Whereas about 31 per cent medium farmers who cultivated between 4 to 10 hectares of land during 2010-11. The marginalization of operational holdings is a serious repercussion of the sub-division of land holdings which is resulting from breaking of joint families and shifting of agricultural land to non-agricultural uses.

The marginal and small farmers have two possibilities (i) These have no capacity to diversify the agricultural production and (ii) Already these are producing a diversified agricultural products to get the maximum return. So ultimately at the micro level the diversification issue is more relevant in the case of medium and large farmers.

The post-independence period is often divided into pre-green revolution period (1949-50 to 1964-65), green revolution period (1967-68 to 1985-86) and post-green revolution period after 1985. in the pre-green revolution period, the two main planks of agricultural policy were land reforms like consolidation of land holding and large investments in irrigation infrastructure. As a result the growth of Indian agriculture accelerated. Thus as compared with a growth rate of less than half per cent per annum in the pre-Independence period (1901-04 to 1940-44) the growth rate of all crops rose to 3.15 per cent per annum and in case of foodgrain crops to 2.82 per cent per annum during 1949-50 to 1964-65.

During the early phase of green revolution from 1962-65 to 1970-73, the High Yield Variety (HYV) technology was more or less confined to Punjab, Haryana and some districts in the Western Uttar Pradesh in north-western India. Its introduction brought about some major changes in the nature and pattern of agricultural development in India, first the new technology led to large increases in wheat yields and at a later period, in rice yields. Before the advent of green revolution during the mid 1960s, the increase in area was the major source of output growth and the contribution of yield was comparatively less important. One of the most significant impact of new technology was to luring about significant changes in the yield levels of major cereals namely wheat and rice and some other crops. In Punjab about 84 per cent of the geographical area is under crops. Practically the state gives a look of a vast farmstead.

Table 3: Cropping Pattern in Punjab

Year/ Crop	Wheat	Rice	Total Foodgrain	Sugarcane	Cotton	Total pulses	Total Oil seeds	Gross Area Sown
1970-71	2299 (40.48)	390 (6.86)	3928 (69.17)	128 (2.25)	397 (6.99)	414 (7.29)	295 (5.19)	5678 (100)
1980-81	2812 (41.57)	1183 (17.49)	4854 (71.77)	71 (1.04)	649 (9.59)	341 (5.04)	238 (3.51)	6763 (100)
1990-91	3273 (43.63)	2015 (26.86)	5668 (75.56)	101 (1.34)	701 (9.34)	143 (1.90)	104 (1.38)	7502 (100)
2000-01	3408 (42.91)	2612 (32.89)	6277 (79.04)	121 (1.52)	474 (5.96)	54 (0.68)	86 (1.08)	7941 (100)
2010-11	3510 (44.53)	2826 (35.85)	6504 (82.51)	70 (0.88)	483 (6.12)	20 (0.25)	56 (0.71)	7882 (100)
2019-20	3521 (44.99)	3142 (40.15)	6818 (87.13)	91 (1.16)	248 (3.16)	33 (0.42)	40 (0.51)	7825 (100)

Source :Statistical Abstract of Punjab, various issues.
Note : Figures in brackets are represent percentage.

There is dominance of wheat and rice in the cropping pattern of the Punjab state. During 2019-20, Approximately 87 per cent of the total cultivated land was used for cultivation of foodgrain. In 1970-71, 47.

34 per cent of gross cropped area was under wheat-rice rotation and this percentage increased 85.14 in 2019-20(Table 1.3). The wheat and paddy cultivation cover the major portion of the gross cropped area and area under these two crops has increased over years. Whereas the gross cropped area under Sugarcane, Cotton, Pulses and Oilseeds crops had been declining since 1970-71 to 2019-20. Sugarcane covered only 1.16 per cent of the total cropped area in 2019-20. The Cotton accounted for only 3.16 per cent of the total cropped area in 2019-20. However total pulses and oilseeds crops has been accounted only 0.42 and 0.51 per cent of the gross cropped area during 2019-20.

Table 4:Productions of Important Crops in Punjab

Year	Rice	Wheat	Pulses	Oilseeds	Sugarcane	Cotton
1970-71	688	5145	308	233	527	818
1980-81	3233	7677	204	187	392	1178
1990-91	6506	12159	105	93	5592	1909
2000-01	9157	15551	39	88	7230	1199
2010-11	10833	16472	17	73	4904	1822
2019-20	12675	17616	30	59	7302	1207

Source : Statistical Abstract of Punjab, Various Issues.

The green revolution in Punjab is called wheat-paddy revolution. Table 1.4 indicates that in Punjab the production of the wheat has increased from 5145 thousand tons in 1970-71 to 17616 thousand tons in 2019-20 and the production of rice has increased from 688 thousand tons in 1970-71 to 12675 thousand tons in 2019-20. There is constant decline in the production of pulses. The oilseeds production declined from 233 thousand tons in 1970-71 to 59 thousand tons in 2019-20. The main reason of the decline in the production of pulses and oilseeds is the decline in the area under these crops. However the fluctuations in the area under Sugarcane and Cotton have been resulted due to the fluctuation of the production of these two crops during 1970-71 to 2019-20.

Table 5 : Average Yield of Important Crops in Punjab (Kgs. Per hect.)

Year	Rice	Wheat	Cotton	Oilseeds	Sugarcane
1970-71	1765	2238	737	970	4117
1980-81	2733	2730	570	1816	5526
1990-91	3229	3715	766	3350	55369
2000-01	3506	4563	845	3251	59752
2010-11	3828	4693	1118	4752	70059
2019-20	4034	5004	1493	5321	80244

Source : Statistical Abstract of Punjab, Various Issues.

Punjab has not only achieved an irrigation coverage of 95 per cent of the net area sown, cropping intensity of 190 and 98 per cent HYV coverage which are all the highest among the Indian states, but even the yields of major crops wheat and paddy are of a very high order. With the introduction of new farm technology in mid 1960's, the average yield of crops especially of wheat and rice had been increased from 2238 and 1765 kilograms per hectares during 1970-71 to 5004 and 4034 kilograms per hectares in 2019-20 respectively. The increase in the average yield of pulses and cotton were marginal while the yield of sugarcane and oilseeds had increased significantly during this period. The policy of procurement prices fixed by the government resulted in the stability of income created imbalance in the cropping pattern in favor of wheat-paddy rotation.

The main reason behind the dominance of wheat and rice crops in the cropping pattern was assured market and price. In other words, the return from these two crops were not depending upon the instability in the market. It was not true in the case of other crops. Because the foodgrain surplus in the state found a comparatively ready market due to short supply of fodgrain in the country till 1985. Some how, the conditions at the national level changed after 1985 and the marketing has become a serious problem in 1990s particularly after 1995.

The pattern of growth of Punjab agriculture in the context of Indian situation was noticed in 1985 for the first time when problem of marketing of paddy had arisen. At that time to analyse the problem, Johl committee was constituted by the Punjab Government. Due to inactivity of the State government even in the light of Johl committee report, the situation deteriorated. This resulted in the sharp decline in the growth rate of agricultural and total net state domestic products (NSDP) and per capita income in Punjab during 1990s as compared to the decade of 1980s. It is the first time since the onset of green revolution when the growth rate of agricultural output in Punjab was lower than that of the national average (Table 1.6).

Table 6 : Trend Growth Rate in Net Domestic Product and Per Capita Income in Punjab and India. (Unit : Percent/annum)

	1980-81 to 1989-90	1990-91 to 1995-96
Net state domestic product-Agriculture		
Punjab	5.19	2.89
India	3.05	2.93
Net domestic Product- total		
Punjab	5.30	4.17
India	5.18	5.22
Per Capita Income		
Punjab	3.43	2.28
India	3.04	3.39

Source : Ramesh Chand (1999) : Emerging Cirsis in Punjab Agriculture, Economic and Political Weekly, Vol.34,No.13, March 27.

Crisis in Punjab Agriculture

As the output of crops increased in Punjab during 1970-71 to 1996-97, the cost of cultivation of crops also increased. The per hectare operational cost of cultivation of wheat and rice was as high as Rs. 8730.13 and Rs. 10194.66 per hectare in 1996-97. During 1990s the increase in per hectare yield of wheat and paddy was very low (Table 1.5) but the cost of production of crops is increased considerably. By the mid 1980s a wheat grower in Punjab was obtaining lower net returns per hectare, even after incurring higher costs per hectare on modern inputs, than a wheat grower in Madhya Pradesh (Nadkarni 1988). The Johl Committee Report on diversification of Punjab Agriculture (1986) recommended that at least 20 per cent of the area under wheat and paddy should be brought under new crops especially fruits and vegetables. The ongoing system of agricultural production is engulfed by the problems of marketing of crops, unemployment, pollution, water depletion, soil degradation, etc.

The production for the market in the agricultural sector is increasing. The commercialisation of agriculture has become the source of more and more trade of agricultural products. The market arrivals of crops have increased with the growth of production for the marketing. It is quite natural that the agricultural production is effected by the market forces more so by market ills. To provide safeguard to the agricultural production from market instability, the government has provided procurement prices and agencies for the purchase of crops. But, it is true only in the case of wheat and rice. The increase in the production of wheat and rice during 1990s is very less (Table 1.4) but most of the production is for the market. Due to the gap between demand and supply caused by many factors, the stocks of wheat and rice are increasing in the stores of government and semi-government purchasing agencies for the last many years. Most of these stocks are lying in the open and are not eatable. Same is the case of paddy. Wheat and paddy stocks are rotting and converting into non-eatable resulting in huge losses. Due to this situation, the government has started shedding its responsibility to provide assured market for paddy and wheat, which will result in a more serious crisis in the Punjab agriculture in the coming days.

The employment in agriculture as cultivators and labourers increased during 1961 and 1971. The percentage of cultivators and agricultural labourers in total workers was 55.89 in 1961. It increased to 62.67 per cent in 1971 and then declined to 54 per cent in 1981 (Table 1.7) This was the result of mechanisation of Punjab Agriculture. The percentage of agricultural workers to total workers declined sharply from 55.26 per cent in 1991 to only 39.36 per cent in 2001. The little increase in number of agricul-

tural workers during 1991-2001 is actually not indicating the increase in employment, rather shows the retaining of workers under compulsion. The annual rate of growth of total employment in urban India was 3.39 per cent during 1987-88 to 1993-94 and 2.55 per cent during 1993-94 to 1999-2000. But in rural India it was 2.03 per cent during 1987-88 to 1993-94 and only 0.58 per cent for the period 1993-94 to 1999-2000. It clearly indicates that there are very less opportunities for employment in agricultural sector. It is more relevant in the case of Punjab due to mechanisation of agriculture. The growth in agricultural workers in Punjab was 0.67 per cent per annum against the 4.99 per cent per annum during 1991 to 2001. The unemployment has taken a very ugly shape in the rural Punjab.

Table 7: Total Workers in Agriculture (Cultivators and Agricultural Labourers) in Punjab

Year	Total Workers in Punjab 1	Cultivators 2	Agricultural Labourers 3	Total workers in Agriculture (2+3=4) 4	Total workers in Agriculture as a percentage of total workers 5
1961	3466269	1602648	334610	1937258	55.89%
1971	3912592	1665158	786705	2451863	62.67%
1981	5288000	1767000	1092000	2859000	54.07%
1991	6098374	1917210	1452828	3370038	55.26%
2001	9141760	2099330	1498976	3598306	39.36%
2011	9127474	2065067	1489861	3554928	38.94%

Source :
1. Census of India Series 17 Part-IA, Punjab Gen. Report of 1961.
2. Census of India Series 17 Part-IA, Punjab Gen. Report of 1971.
3. Census of India Series 17 Part-IA, Punjab Gen. Report of 1981.
4. Census of India Series 17 Part-IA, Punjab Gen. Report of 1991.
5. Census of India 2001.
6. Census of India 2011.

With the expansion of irrigation net-work covering 95 per cent area in 1995-96 as compared to only 54 per cent in 1960-61, the agriculture production has increased manifold. But it also created problems relating to water and its management. The three different agro-climate zones of Punjab are suffering from the problem relating with water management. In submountaneous (kandi zone) due to denudation of upper hills resulting from overgrazing and deforestation, there is high run-off of water resulting from floods and heavy soil erosion. The south western zone (cotton belt) is suffering from the water logging problem and menance of pests has resulted in shifting the area from cotton to rice cultivation.

The central zone comprising the major part of state is highly productive and has well knitted system of irrigation, but the water table in this zone is falling with an average rate of 0.23 meter per year during last 15 years. The over-exploitation of water is due to the increase in the number of tubewells from 1.92 lakh in 1970-71 to 10.90 lakh in 1997-98. With the prevailing cropping pattern in Punjab there is serious threat of agriculture. If alternatives are not found or searched and not put into practice then what talk of crop diversification, the mere survival of the agriculture will be in danger. Burning of crop residual and application of insecticides and pesticides are the major sources of environmental pollution by agriculture activities. But the problem like declining water-table in some part, waterlogging in other parts, soil degradation and environmental pollution have reached such portion as to force the state government to make serious efforts to address these problems.

The crisis is the result of growth pattern of Punjab agriculture. With the prevailing cropping pattern in Punjab there is a serious threat to the future of agriculture. Ongoing system of agricultural production in Punjab is engulfed by the problems of marketing of crops, environmental pollution, problems relating to water like over exploitation of water, water logging, declining water-table, soil degradation and unemployment in rural areas.The Punjab government is much far behind to take necessary initiative to change this pattern. If the state government would not act swiftly then the coming years would be much more painful for the

people of Punjab and particularly for the peasants.

In Punjab, the crisis of agriculture is deepening for the last more than one decade year after year. To make efforts to solve the crisis of the Punjab economy particularly of the agriculture sector, one of the emphatic solution suggested is the diversification. Diversification is a wider concept even in the context of rural/agricultural economy.

Simple meaning of diversification is to making things varied. It means the process with which the different changes are being made in wider sense. Diversification is an integral part of the process of structural transformation of an economy at the macro level. The economy is diversifying with the secondary and tertiary sector for their contribution to national income as well as in disposition of the work force. Rural diversification is a process of broadening and strengthening the income sources of rural households. The process extends from the introduction of new crops and technologies into traditional farming system to the development of off-farm jobs in small-scale rural industries. In this way, rural diversification is gradual process and must happen with the passage of time and related to structural transformation of the economy.

In the light of above mentioned domain diversification issues can be approached at four levels : farm, regional, sectoral and intersectoral. The change in the past crop production at farm level shows that the diversification is not new for the farmers. The changes in the society, market conditions, profitability and risk are reflected in the adjustment by the farmers at the farm level.

The diversification at regional level is related to specialize in specific enterprises. The scope for the diversification is affected by the ability of each region to specialize in specific enterprises based on comparative advantage. Regional diversification is influenced by several technical factors. Its scope is determined by agro-climatic conditions including suitability of the natural environment (soil, weather and water) for expanding crop production or advancing specialized technology.

At the intersectoral level diversification implies that rural population seek better income-earning prospects off the farm or outside agriculture. Those have inadequate land or farm employment, they need diversification out of agriculture. But the changes at this level are complex and are desirable as a long-run response. For this purpose whatever may the type/level of diversification, it is influenced by government policies, input supplies, institutional support, technological development etc.

The significance of crop diversification gracious situation arises with the process of deterioration of farm income caused by sudden and sharp decline in earnings from specific crops or because incomes in farming rapidly decline relative to income in other sector.

For the last many years, scholars are suggesting the change in cropping pattern and crop rotation. The crop diversification depends on output prices, input prices and yields. These three variables are influenced by many factors. Relatively, the input prices and yields are inflexible as compared to output prices. So the instability in farm incomes is driven primarily by instability in output prices. While, the shift of area from one crop to another crop is suggested on the basis of deficiency in supply against demand then it is very difficult to asses what will happen to the price of crop in favour of which shifting is suggested. It is more important due to the nature of supply of crops particularly of perishable crops (fruits, vegetables, flowers etc.). The crop diversification is taking place very slowly due to crop specific Policy of the state.Only two crops(Wheat and Rice) have assured market and price. The market of these crops is almost synonymous with the markets administrated by state.

The return vis-a-vis risk of these crops (wheat and rice) is higher in comparison to other crops due to assured market and price. The cultivation of these crops by farmers is done with less risk/tension in the context of market instability. The recent crisis in Punjab agriculture is becoming more serious in the light of problem of marketing of rice and wheat resulting from the shedding of responsibility by the state. Besides the foodgrains output growth rate has declined sharply during 1990s but there is an unprecedented build-up of food stocks. The decline in growth rate had resulted in the decline of per capita food availability at the national level, which is at the same level now as in the hungry nineteen thirties. Moreover, the prices of wheat, rice, cotton, sugarcane, maize, groundnut and soyabean had declined during 1995-2001 in the international market.

Actually the crisis of agriculture is not only the crisis of this sector rather it is a crisis of the whole economy. As mentioned in Johl Committee Report it has to be understood and realized that there are no real surpluses of foodgrains in the country in terms of the needs of the society. It is only a situation of excess supplies over effective demand. A large majority of the poorer section of the society does not have enough purchasing power. The situation, since the Johl Committee Report, has not improved rather worsened and has become more complex particularly in the light of new economic policy/WTO.

To analyse the agrarian crisis in Punjab, it is very essential that the prospects of diversification in agriculture sector particularly crop diversification must be studied. Crop

diversification can play vital role for encouraging and promoting agricultural development. There is a need to analyze the whole problem in a comprehensive way and the state government should design and implement a comprehensive policy comprising innovative technology, policy support, infrastructural development and appropriate institutional arrangements to promote and accelerate the process of crop diversification in Punjab agriculture. Crop diversification will be helpful for increasing farmers income as well as to control the environmental problems, thus maintain environmental sustainability. The problems relating to supply, demand and price in the agriculture sector should be looked into especially in the context of institutional factors and WTO. The issue of diversification of agriculture is also significant from the point of view of policy perspective regarding agrarian development, economic development, employment and poverty.

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Impact of Computer Based Payments on Growth of Online Business

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Abstract
Over the past few YEARS, IT has drastically changed the business efficiency by automating the calculations used in transactions and account management. But as these powerful devices continue to change the way we do business. The benefits of computers in an organization extend beyond just operational efficiency. Owner-customer trust in IT transactions has expanded local business globally. Currently there are many applications like Paytm and BEM that support offline operation very effectively. Customers no longer have to ensure cash availability. These apps make the difference here. Therefore, understanding the ever changing use of computers payments for more sustainable growth is especially important for offline businesses. The survey was conducted by selecting 50 samples respondents to use payment to purchase product online. Based on age, purpose of use, frequency of use and benefits of electronic payment. The main aspects and interpretations are then explained in more detail in this white paper to clarify the results and draw conclusions based on them.

Keywords: Computer based transactions, Sustainability, Customer Needs, E-Payments.

Introduction

All of us are obsessed with buying goods and services online at least once and paying by cheque or cash, either electronically. Naming them differently, electronic or online payment systems offer several payment methods such as credit and debit cards, online banking and IMPS. The development and growth of electronic payment system has emerged over the past decade and may be due to the evolution of internet speed and technology which has been driven consumers to shop and bank online on internet. With a steady increase in the number of consumers who prefer online bank transfers and retailers who prefer to sell online and phasing out of cash payments, will certainly lead the way in the future. The future of globalization where money is a thing of the past. Everyone knows that traditional means of payment have been replaced by fast and efficient electronic means of payment. In the electronic payment process buyers and sellers use digital methods of receipt and payment of money. This is an automated process that can prevent sellers and buyers from going to the bank and get rid of physical money that can be risky to manage. Today, consumers can make payment electronically using cards and other platform offered by all types of smart devices. The acceptance of certain payment by merchants and business has a significant impact on customers to choose the appropriate payment methods. Cell phones have filled extensively as of late because of the openness and accessibility of the web. Versatile wallet suppliers like Paytm, PayPal and Mobikwik has expanded enormously in the recent past. Trade programs progressively use installment. Strategies to help quickly developing associations. Computerized wallets additionally set aside cash for a credit only economy. E-wallets and versatile wallets are additionally advanced adaptations of actual money wallets with more highlights. Electronic installments wallets diminish the expense of holding and dealing with cash for retailer. Online retailer have presented savvy limits and cashback offer to get installment orders for every single credit only installments. Online retailers urge numerous clients to pick an installment strategy other than money down. It additionally assists organizations with holding their clients. The customer gets back to similar site where the information to make an installment is put away. This abbreviates the exchange cycle and makes the web based shopping simpler.

Application for E-Payments and Mobile Wallets

Source: (https://webcache.googleusercontent.com)

These are the payment services that operate under financial regulation and are carried out using mobile devices. The concept of paying by cash, cheque, debit card or credit card has become obsolete these days. New payment mechanisms are taking hold including paying for transactions via mobile wallets or mobile transfers. The mobile payment concept is gradually being accepted and adopted around the world in various ways. The first proprietary patent called “mobile payment system” was filed in 2000. In some developing countries mobile payment mechanisms are being used as a means of profiling financial services to people who lack or do not have a bank account. According to the 2009 Financial

accessibility report, 'Half of the Word is Unbanked'. They are mainly used micropayments.

Paytm: Paytm Founded in August 2010 in Noida, an area adjacent to the Indian Capital New Delhi, by the founder Vijay Shekhar Sharma with an initial investment of 2 million dollars. It started as a mobile top –up and prepaid DTH platform, then added bill payment with data cards, postpaid and landline and mobile phones in 2013.

Amazon Pay: Amazon pay is an online installment preparing administration possessed by Amazon. Dispatched in 2007, Amazon Pay centers around utilizing the Amazon.com shopper base to enable clients to pay with their Amazon account on external merchant sites.

Freecharge: Freecharge is the subsidiary of Axis bank Limited. It is a number 1 payment app which is used by millions of customers across the country to make payment of prepaid, postpaid or DTH etc. type of services.

Airtel Money: Airtel installment Bank was established in January 2017 by Bharti Airtel, India's biggest broadcast communication specialist co-op, to help the credit only upheaval drove by the Public authority of India. Airtel Installments Bank is separated bank that furnishes clients with fundamental monetary administrations.

JIO Money: This is a safe and secure way to pay via physical and online channels. You can make instant cashless payments, charge mobile/DTH, or send money to family and friends.

Google Pay: This is a digital wallet platform and online payment system developed by Google that allows users to make online contactless payments directly on their mobile devices through the application app allowing users to pay on Android mobile phones, tablets and watches.

PayUMoney: It is Gurgaon based company that provides online payment solutions that allow users to save money and pay for various transactions, goods and services. There are a lot of benefits, such as one click payment and cashback refunds offers on all transactions to differentiate you from other players.

Literature Review

In his article, S Fatonah, A Yulandri and FW Wibowo, the authors of "Review of EPayment Systems in E-Commerce", explain step by step instructions to assemble trust in electronic installment frameworks, client interest when utilizing electronic installments frameworks and electronic installments referenced the significance of safety in the framework. They influence client trust and can impact investigation into the fate of electronic installment frameworks. How computerized development is driving unique changes in the business climate. Deals keep on moving from money to electronic exchanges. (Source: iopscience.iop.org)

In this article, Burhan UI Islam Khan, Rashidah F. Olanrewau, Asifa Mehraj Baba, Adil Ahmad Langoo and Shahul Assad, author of "Comprehensive study online payment systems: Past developments, Current Impacts and Consideration for the Future", mentioned that with adoption of online payment methods, the number of costumers transacting online continue to increase and online payment systems are forever accepted not only by industry but also by universities. However, the adoption and implementation of number of new technologies pose new opportunities and challenges in implementing and designing secure online payment system now and in the near future.

Source: Webcache.googleusercontent

In this article, author of "Research on digital payment in India from a customer recruitment perspective", Smashbury and Hema Divyacites important policies that allow the county to increase cashless payments. The results show that the implementation of digital payment technology can improve the operational efficiency of the banking sector and reach a motivated cashless county. The study looked at the perceived rate of getting the most out of technology.

Source: https//acadpubl.eu/

In this article, Professor, author of " Research on the use of electronic payments for the sustainable growth of online business", Sana Khan and Ms. Shreya Jain said that the organization is doing its best to encourage consumer to use e-commerce and payment platforms to improve their business, but security and confidentiality issues. There are always limits to the consumer's mind about. For sustainable growth, it is important for organizations to consider different technologies to address consumer concerns.

Source: http://www.met.edu/uploadfile/documents/

Objectives

1. To explore preferences for the use of electronic payments in different categories of business
2. To explore the contribution of computer transactions to the growth of offline business.

Survey Method:

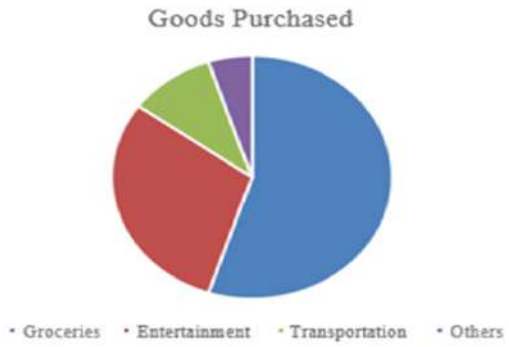
Descriptive Survey: This is a descriptive survey conducted using primary data after interviewing 50 customers to

understand their adoption, use and business impact of online payments.

OBSERVATION:

Reasons for using E-Payments

Goods/ services purchased using e-payments



Groceries - 55%
Entertainment - 30%
Transportation - 10%

Which mode of E-payment is most popular?

Paytm – 80%
Others – 20%

Growth of Business

Without Electronic Payments – 50
With Electronic Payments – 80

The results of the survey show that the use of online payments is becoming more and more popular due to the popularity of various applications available on smart phones. Over time, users trust electronic payments more and more. Discounts and amenities let them see their maximum purchase. The advantages of electronic payment methods are often linked to the advantages that smartphones bring, such as independent payments, easy access to services anytime and anywhere, home services, easy tracking, avoiding queues waiting and paying in cash. Therefore, from the above, keeping sustainable growth in mind, organizations should consider finding ways to build confidence in safety and privacy issues, rather than just focusing on discounts and offers.

Conclusion

At the point when we talk about electronic (or "coming up") installment here at CCV, we are alluding to installments in physical stores, eateries, bistros, or other in-person actual areas. These are commonly made utilizing credit and charge cards, advanced (portable) wallets, wearable gadgets, or QR codes.

Furthermore, with various social, cultural and innovative patterns converging, we are presently seeing the interest for electronic installments and credit only.

While chip and PIN stays a mainstream strategy, the boundless accessibility of cell phone gadgets and the developing acknowledgment of contactless cards and with the COVID-19 pandemic has made shoppers rethink how they like to make installments.

All in all, what are the upsides of tolerating electronic installments? We should investigate how it benefits you and your clients.

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