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Aims and Objectives : The Indian Journal of Commerce, started in 1947, is the quarterly publication of the All India Commerce Association to disseminate knowledge and information in the area of trade, commerce, business and management practices. The Journal focusses on theoretical, applied and interdisciplinary research in commerce, business studies and management. It provides a forum for debate and deliberations of academics, industrialists and practitioners.

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Performance Analytics of Selected MID Cap Mutual Funds

JEELAN BASHA.V AND SHRAVANI

Abstract: Domestic capital formationthrough household savings plays an important role. Only a small portion of the household savings is channelized into the capital market in India. Efficient intermediation is indispensable to attract more household savings to the capital market. One of the important classes of financial intermediaries is mutual funds which cater to the needs of retail investors. Mutual funds have become an important vehicle for mobilization of savings particularly from the household sector. Objectives of the Study are to evaluate performance of selected mid-cap regular growth option funds based on various measures and to select the mon ranking.The study makes a comprehensive evaluation of nine most trusted and preferred mid-cap regular growth option fund over period of ten years from April 2011 to April 2021(ten years). For this purpose, random sampling technique has been adopted to carry out the captioned study. The research is empirical and analytical in nature. Hypotheses are formulated and tested.For this present study, performance analytics package of 2.0.4is used in R program. DSP mid-cap mutual fund has the first ranking all measures except Relative risk performance measures. It is followed by HDFC, TATA, UTI, SBI, L&T,SR,ICICI and AB mid-cap funds respectively.

Key words: Risk Adjusted measures, Regression Analysis measures, Drawdown measures, Relative Risk measures and Downside Risk measures/ models

Introduction

Domestic capital formation through household savings plays an important role. Only a small portion of the household savings is channelized into the capital market in India. Efficient intermediation is indispensable to attract more household savings to the capital market. One of the important classes of financial intermediaries is mutual funds which cater to the needs of retail investors. Mutual funds have become an important vehicle for mobilization of savings particularly from the household sector.

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One of the most favoured investment routes for the small and medium investors across the world is mutual funds. Ideally, small investors get opportunities to participate in the capital market with the help of mutual funds without assuming a very high degree of risk. Diversified portfolio cannot be maintained by small investors mainly due to paucity of resources and sometimes by lack of knowledge. However, a mutual fund pools together the savings of such small investors and invests the same in the capital market and passes the benefits to the investors. Thus, investors by subscribing to the units of mutual funds can indirectly participate in the capital market. Professional fund managers are employed to manage mutual funds. Therefore, investors get multiple benefits of professional expertise of these managers.

The estimation of the mutual fund organization relies upon the exhibition of the protections it chooses to purchase. In contrast to stock, funds do not give its holders any democratic rights. A portion of mutual funds speaks to interests in various stocks (or different protections) rather than only one holding. That is the reason the cost of a mutual fund is alluded to as the net asset value (NAV) per unit.

With a rise in the benefits of investments in mutual funds, there is a necessity of developing new approaches for evaluating funds and their managers' performance and hence, ranking are brought in forefront of consideration. As a result, the multitude and complexity of formulae and approaches for performance evaluation of mutual funds as a base forranking funds in terms of Risk performance measures, Regression analysis measures,Relative risk performance measures, Drawdown performance measures and Downside risk performance measures. The employment of simple formulae to complicated mathematic techniques has been continued until now(Islami, 2003).

Funds performance analysis can provide an insight to managers over timeto know their future directions. Such type of analysis is useful in recognizing the past and present conditions and of vital value for future strategies. Performance should be evaluated in a way that to recognize useful managerial information and provide some guidelines to direct future operations. In order to carry out performance analysis, various approaches are chosen as analysis framework.

Significance of the Study

Evaluating historical performance of mutual funds is important both for investors as well as portfolio managers. This research on evaluation of the performance of mutual funds using various approaches will enable investors to have valuable information as it provides an in-depth analysis on mutual fund industry as a whole. Through such information potential investors and

other interested parties can make informed decisions on their investment choice amongst them.

Literature Review

Nicolescu et al; (2020) analysed the young financial markets of Central and EasternEurope with the focus on three selected cases: Romania, Slovakia and Hungary. The capitalmarkets were studied through the assessment of performances and risks associated with mutualfunds by comparison with stock exchanges. It concludes that mutual funds performed better(both in terms of returns and risks) than stock exchanges in the periods of economic turmoil. Kurniawan et al; (2020) showedthat majority of the actively managed mutual funds hardly able to outperform the index benchmark. 94% of the actively managed equity mutual funds underperform IDX Composite (HSG) and 97% of actively managed fixed income mutual funds underperform Indonesia CompositeBond Index(ICBI). Kaur, (2018)revealed his findings that investors having betterknowledge of mutual funds access impersonal sources of information and performance of fundaffecting their choice, whereas investors having lesser knowledge of mutual fund take advice ofexperts and select funds based on fund characteristics. Investors with better return perception formutual funds ignore performance as selection criteria, whereas investors having poor riskperception tend to reduce their bias by accessing personal sources of information. Education andincome of investor affect knowledge and perception of mutual funds.

Nguyen et al; D.(2018) investigated the impact of investor confidence on mutualfund performance in two relatively vulnerable but leading emerging markets, India and Pakistan. The study finds that the returns of mutual funds are positively associated with investorconfidence and an interaction effect exists between investor confidence and persistence inperformance. It also confirms that returns from mutual funds are associated with differentfund characteristics such as fund size, turnover, expense, liquidity, performance persistence andthe fund's age.

Gandhi and Perumal (2016) analysed certain mutual fund schemes of selected banks by using statistical parameters like standard deviation, beta and alpha and ratio analysis. Based on the findings, Canara bank had outperformed its peers and was suggested worth considering by investors. Ayaluru (2016) made a comparative study of top 10 performing mutual funds of the reliance group and identified funds with moderate and high risk. NSE-Nifty and BSE-Sensex were benchmarking index. 91- day treasury bills were considered as risk-free rates. Sharpe ratio, Jensen ratio and Treynor ratio were also used to identify the risk and return of the selected mutual funds.

Ferson and Mo (2016) examined the performance measurement of selected mutual funds. Performance of portfolio managers, who may engage in market timing behaviour, depends on market level and timing as well as security selection. This study indicated versions of the new model (that focused on asset allocation) to be consistent with previous studies, findings weak negative market. Adhav and Chauhan (2015) investigated the performance of 390 schemes covering equity, debt and hybrid schemes of mutual funds, based on Sharpe ratio and comparing with benchmark. As per the study equity, debt and hybrid schemes performed better than those of sector funds. The hypothesis that the schemes outperformed the benchmarks indices was successfully accepted allowing the investors to believe in mutual funds as a considerable option for savings and investment.

Naz, et al; (2015) analysed five balanced schemes of Pakistan mutual funds from 2010 to 2013. They proved that the average returns of selected funds were less than that of market returns. Overall, the results indicated underperformance of most of the schemes during the span of the study.

According to MSA and Gupta (2013) Equity mutual fund schemes were found to be performing better than debt funds. The latter were found to be performing good so far as capital appreciation and risk parameters were concerned. Roy and Ghosh (2013) examined the NAV performance of the selected open-ended mutual fund schemes in India. with a view to examine the consistency in return performance of the selected mutual fund schemes, auto-regressive model was applied, and it was also observed that only 34 schemes out of 56 open-ended income schemes consistently influenced the returns performance. Cuthbertson and Nitzsche (2013) investigated the performance of the German equity mutual fund industry for the time period of 20 years (monthly data 1990-2009) using the false discovery rate (FDR) to examine both model selection and performance measurement using the Fama French model. These results were largely invariant to different sample periods, alternative factor models to the performance of the funds investing in German and non-German funds.

Nimalathasan et al. (2012) conducted comparative study on equity diversified and equity mid-cap. Schemes, found that among the Open ended – Tax Saving schemes, the CanaraRobeco Equity Diversified fund was preferred and was ranked the top most; whereas among the open-ended mid-cap schemes, HDFC asset management company is the preferred and ranked top.

Rasheed et al; (2012) in their study, investigated the performance of twenty-five open-ended mutual fund schemes in Pakistan and managers ability of stock selection and the diversification. The study revealed that overall performance of the funds remains the best as compared to market but

mismanagement observed in mutual fund industry during the study period. Further, study also revealed that portfolio was not completely diversified and contains unsystematic risk. Garg (2011) inspected the performance of the top ten mutual funds that were chosen based on earlier year's return. The examination dissected the performance based on return, standard deviation, beta just as Treynor, Jensen, and Sharpe index. The examination additionally utilized Carhart's four-factor model to investigate the performance of mutual funds. The outcomes uncovered that Reliance Regular Saving Scheme Fund had accomplished the most noteworthy and CanaraRobeco Infra had accomplished the least last score in the one-year class. Agarwal (2007) provides an overview of mutual fund performance in emerging markets and analyzed prevailing pricing mechanism, their size and asset allocation. Rao (2006) studied the financial performance of selected 419 open-ended equity mutual fund schemesfor the period 1st April 2005 - 31st March 2006 pertaining to the two dominant investment styles and tested the hypothesis whether the differences in performance are statistically significant. The analysis indicated that growth plans have generated higher returns than that of dividend plans but at a higher risk. Sapar& Narayan (2003) examines the performance ofsample of 269 open ended schemes Indian mutual funds(out of total schemes of 433). in a bear market through relative performance index, risk-return analysis, Treynor's ratio, Sharp's ratio, Sharp's measure, Jensen's measure, and Fama's measure. The results of performance measures suggest that most of the mutual fund schemes in the sample of 58 were able to satisfy investor's expectations by giving excess returns over expected returns based on both premium for systematic risk and total risk.

Bahl and Rani (2012) made a comparative study of 29 open- ended growth equity-oriented schemes. Jensen ratio, Treynor ratio and Sharpe ratio were used to compare the returns of the selected funds. The study revealed that 14 out of 29 funds outperformed their benchmark. rankingwhich was done on the basis of risk, return and coefficient of determination. Certain funds were found to be underperforming due to diversification problem. Stopp (1998) revealed performance of mutual funds by regrouping the sample into the four broad categories and computed the percentage of growth during 5-year, 3-year, 2-year and 1-year ended on December 31, 1986. He suggested that choosing a scheme based on the outstanding performance might be a recipe for disaster as the sector, which tends to produce outstanding performance, may also carry the greatest risk. Gupta and Sehgal (1997) evaluated mutual funds' performance over a four- year period, from 1992-1996, with a sample of 80 mutual fund schemes. They suggested that the mutual fund industry faired reasonably well over the period of study. Sharpe (1996)in his study, compared the performance of 34 open-ended mutual funds from 1954 to 1963

with Dow-Jones industrial average in terms of the variability ratio, he concluded that only 11 out of 34 funds had posted better performance than market portfolio. Grinblatt and Titman (1989) found that abnormal performance of the funds based on the gross returns was inversely related to the size of net asset value for the period from December 31, 1974 to December 31, 1984. However, due to high expenses, the investors are unable to take advantage of their superior performance.

McDonald (1974) examined the performance of 123 mutual funds in the USA covering the period 1960-1969 using NYSE index as the market index. He found that 54% of the mutual funds had posted better performance than the market in terms of Treynor's measure; whereas, only 32% of the funds performed superior to NYSE index in terms of Sharpe's measure. Fried and Crockett (1970) made an extensive study of mutual funds by evaluating the performance from 1952 to 1958 with an annual data of 152 mutual funds. They revealed during their study period, that mutual funds earned 12.4% as an average annual return, while the market index earned a return of 12.6. Based on the results, the mutual funds in their sample are nearly close to the market index. It was concluded that the overall results did not recommend due to widespread inefficiency in the mutual fund industry.

Treynor (1965) suggested that the appropriate measure of portfolio performance is risk premium per unit of market risk generated by the portfolio. The portfolio performance of Treynor measure is a relative measure that the funds in terms of market risk and return. This was termed reward to volatility ratio.

On reviewing above literature, it is found that no comprehensive work has been found on mid- cap regular growth option funds using various performance measures of performance analytics package in R programme.

Objectives of the Study

- To evaluate performance of selected mid-cap regular growth option fund based on Risk Adjusted, Regression Analysis, Drawdown, Relative Risk and Downside Risk measures/ models; and
- To select them based on the ranks.

Research Methodology

The study makes a comprehensive evaluation of nine most trusted and preferred midcap regular growth option fund over period of ten years from April 2011 to April 2021. For this purpose, random sampling technique has been adopted to carry out the captioned study. The research is empirical and analytical in nature.

The required data are secondary and NAVs are collected from fact sheets of AMCs, published annual and periodical reports of the respective funds, official websites of SEBI.gov.in, rbi.gov.in, investing.com, amfiindia.com, BSEindia.com, NSEindia.com,mutualfundindia.com. 364 day T-bills rate is risk free rate of return incorporating 3.83%; minimum acceptable return is 5.5% being average range of more than one year term deposit rates and benchmark index return is Nifty fifty. The data is tabulated, analysed and interpreted to elicit meaningful results. For this present study, performance analytics package of 2.0.4 is used in R program. The outcome of the study depends on the selected period and tools used by the researchers which may differ from other analysis. The Selected Funds for the Study are: 1. HDFC Midcap regular growth option fund, 2. ICICI Midcap regular growth option fund, 3. UTI Midcap regular growth option fund, 4. TATA Midcap regular growth option fund, 5. SBI Midcap regular growth option fund, 6. DSP Midcap regular growth option fund, 7. Sundaram Midcap regular growth option fund, 8. Aditya Birla SunLife Midcap regular growth option fund, 9. L&T Midcap regular growth option fund, 10. Nifty Fifty (Benchmark index).

Hypotheses of the Study

H_0: There are no significant differences among the means of the selected midcap regular growth option funds

H_1: There are significance differences among the means of selected midcap regular growth option funds.

Results and Discussion

Analysis has been done by using following statistical tools.

Table 1: Descriptive statistics of selected mid cap mutual funds

Descriptive statistics	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T	Nifty
Mean	0.219	0.210	0.223	0.215	0.224	0.197	0.192	0.176	0.209	0.129
Standard Error	0.115	0.132	0.127	0.119	0.129	0.103	0.111	0.115	0.117	0.092
Median	0.108	0.083	0.089	0.077	0.101	0.070	0.091	0.070	0.105	0.124
Standard Deviation	0.365	0.417	0.403	0.377	0.407	0.325	0.352	0.365	0.368	0.291
Kurtosis	0.642	0.461	0.086	0.175	1.074	-0.422	-0.196	0.253	-0.572	2.985
Skewness	0.788	0.962	0.983	1.047	1.086	0.849	0.704	0.819	0.650	1.177
Range	1.265	1.376	1.259	1.119	1.388	0.981	1.100	1.206	1.118	1.094

Contd...

Minimum	-0.321	-0.347	-0.265	-0.246	-0.307	-0.207	-0.312	-0.349	-0.290	-0.293
Maximum	0.944	1.028	0.994	0.874	1.081	0.774	0.788	0.857	0.828	0.801
Sum	2.193	2.100	2.232	2.153	2.240	1.970	1.919	1.763	2.094	1.294
Count	10	10	10	10	10	10	10	10	10	10
CV	1.66	1.99	1.81	1.75	1.82	1.65	1.84	2.07	1.76	2.25

SBI has 22.4% average return being the highest among funds under study, followed by others with close variation. All of them outperform benchmark index- nifty fifty in terms of return as well as consistency with distant variation during the study period.

The CVs of the funds under study are in the range of 1.65 - 2.07. Hence, they are all inconsistent. Since majority of the variables under study have skewness in between 0.5 and 1, they are positively skewed and the data are moderately skewed. Skewness of Tata, SBI and Nifty has greater than 1; they are positively right skewed and hence highly skewed.

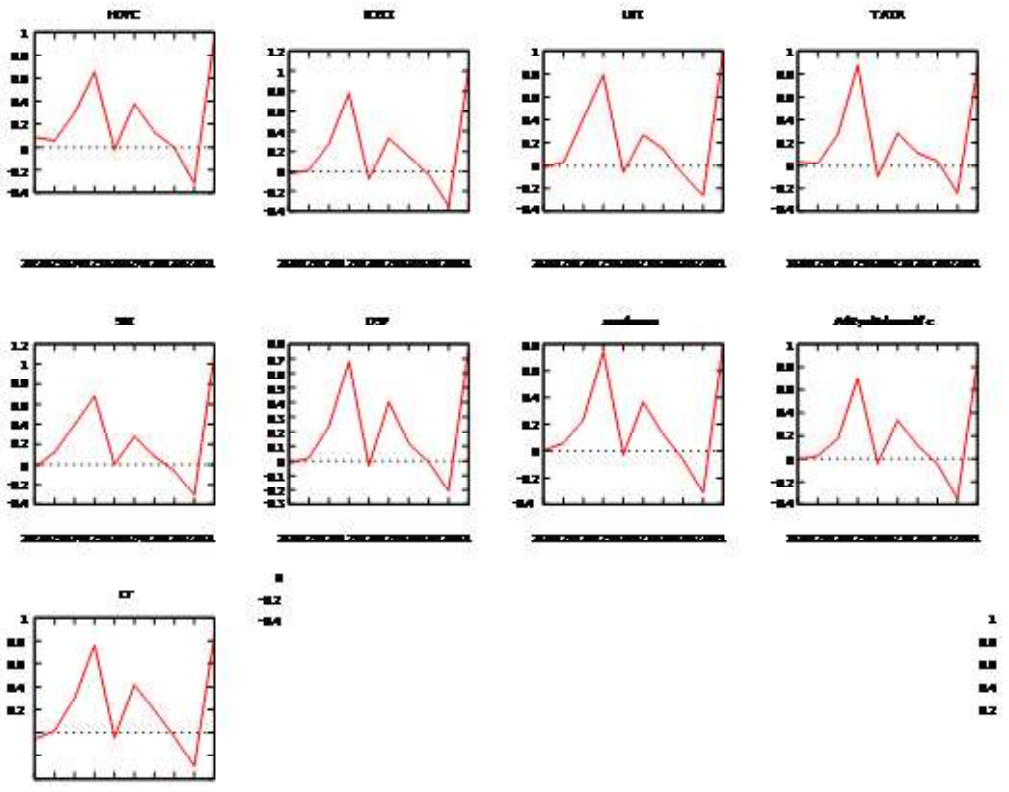


Chart 1:Time series of all individual selected funds

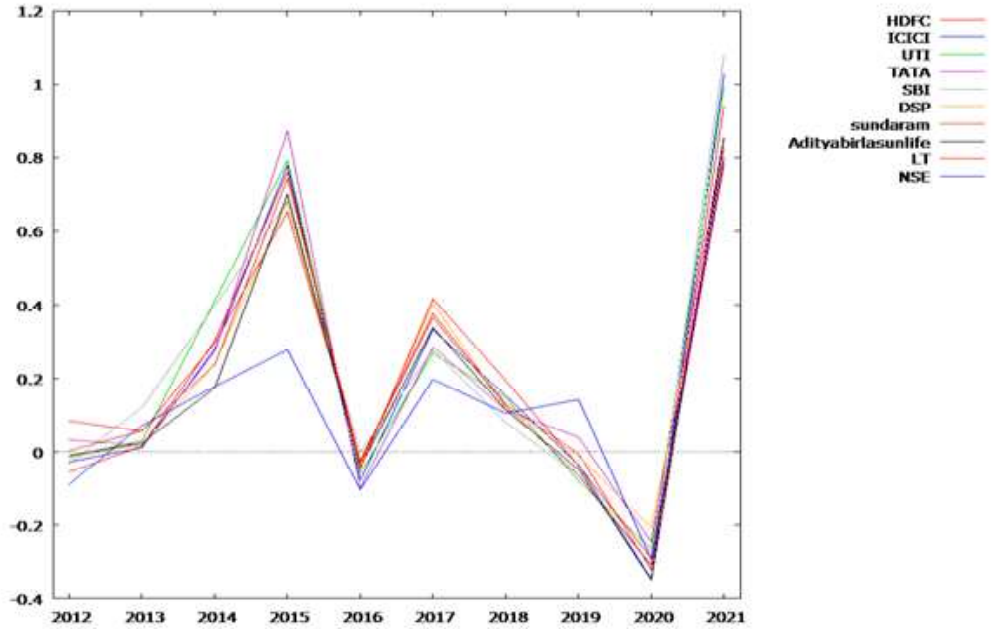


Chart 2:Single time series all selected funds

Kurtosis value of all variables under study have lesser than +3 or – 3. Their distribution is Platykurtic whose distribution is shorter tails or thinner than the normal distribution. The peak is lower and broader than Mesokurtic, which means that data are light-tailed or lack of outliers. The reason for this is that the extreme values are less than that of the normal distribution.

Table: 2 ANOVA

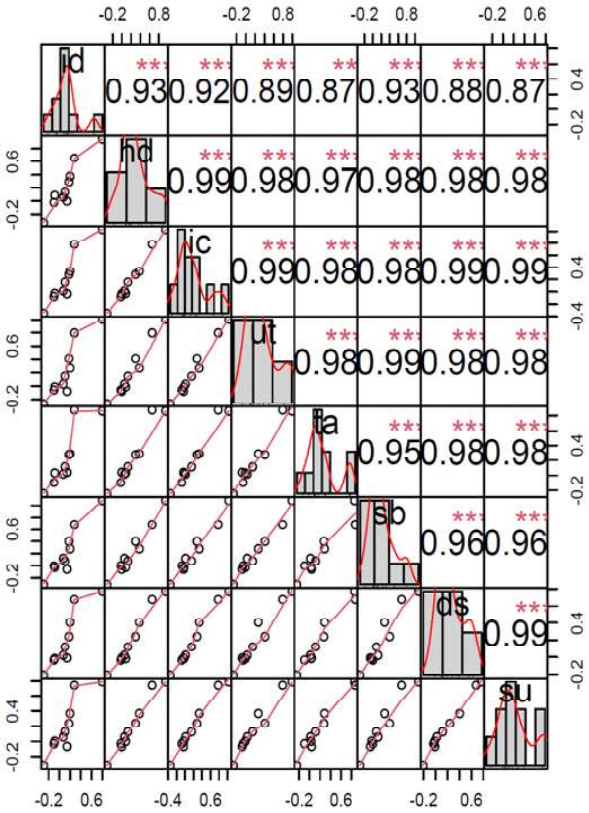
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.075269	9	0.008363	0.061462	0.999946	1.985595
Within Groups	12.2465	90	0.136072			
Total	12.32177	99				

It is evident from the F statistics that there are no significant differences among them as their p- value is 0.999946 at 5% level significance. Hence, null hypothesis is supported.

Table 3: Correlation of selected funds under study

Mid-cap mutual funds	HDFC	ICICI	UTI	TATA	SBI	DSP	SUND	ABSL	L&T	Nifty
HDFC	1									
ICICI	0.993	1								
UTI	0.980	0.990	1							
TATA	0.967	0.984	0.979	1						
SBI	0.982	0.983	0.987	0.952	1					
DSP	0.982	0.989	0.976	0.980	0.960	1				
SUND	0.984	0.989	0.978	0.983	0.963	0.993	1			
ABSL	0.991	0.995	0.976	0.980	0.970	0.991	0.995	1		
L&T	0.978	0.988	0.979	0.978	0.959	0.995	0.994	0.988	1	
Nifty	0.928	0.923	0.895	0.866	0.931	0.885	0.873	0.905	0.882	1

Id = Nifty Fifty Index, hd=HDFC, ic = ICICI,ut = UTI, ta = TATA, sb = SBI, ds = DSP, su = SUND, ab = ABSL, lt = L&T.



All the mutual funds selected for the study have strong positive relationship among each other.

Performance Evaluation Measures

A. Risk Adjusted Performance Measures

The risk-adjusted return measures the profit the investment has made relative to the amount of risk the investment has represented throughout a given period of time. If two or more investments delivered the same return over a given time period, the one that has the lowest risk will have a better risk-adjusted return. The risk is measured in comparison with risk-free investment—usually Treasury bills.

1) Sharpe Ratio: The Sharpe ratio is simply the return premium per unit of risk represented by standard deviation of the returns.

$$\text{Sharpe ratio} = \frac{(R_i - R_f)}{\sqrt{\sigma}\,(R_a - R_f)}$$

William Sharpe now recommends Information Ratio preferentially to the original Sharpe Ratio. The higher the Sharpe ratio, the better the combined performance of "risk" adjusted return. As noted, the traditional Sharpe Ratio is a risk-adjusted measure of return that uses standard deviation.

2) M Squared: M squared is a risk adjusted return useful to judge the size of relative performance between different portfolios. With this, portfolios can be compared with different levels of risk.

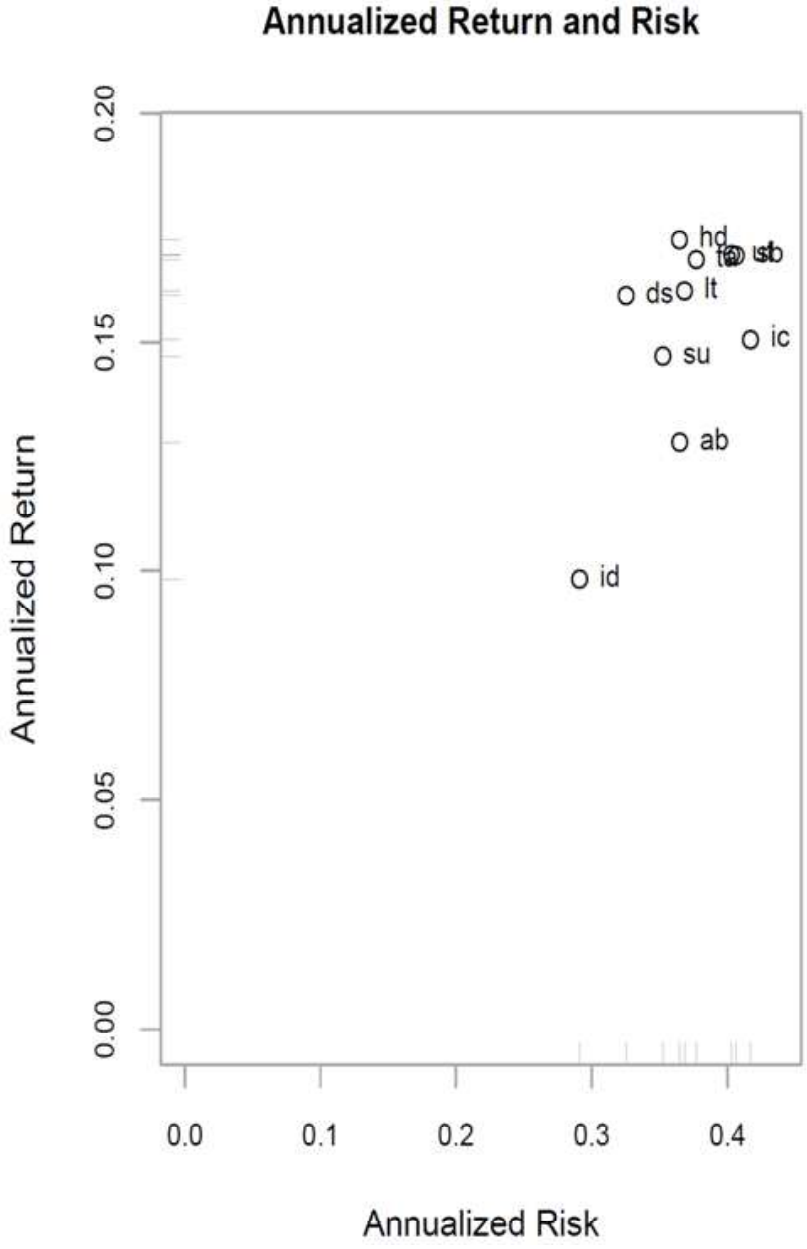
$M^2 = R_p + SR * (\sigma_m - \sigma_p) = (R_p - R_f) * (\sigma_m / \sigma_p) + R_f$

where R_p is the annualized portfolio return; σ_m is the market risk; and σ_p is the portfolio risk.

Table 4: Risk adjusted performance measuresof selected mid-cap mutual funds.

	1 Risk Measure									
MODELS	Nifty	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
Sharpe Ratio	0.313	0.496	0.412	0.459	0.469	0.457	0.488	0.436	0.378	0.464
Rank	10	1	8	5	3	6	2	7	9	4
M Squared	0.098	0.145	0.117	0.133	0.138	0.132	0.147	0.128	0.11	0.135
Rank	10	2	8	5	3	6	1	7	9	4
Grand total	0.411	0.641	0.529	0.592	0.607	0.589	0.635	0.564	0.488	0.599
Grand Rank	10	1	8	5	3	6	2	7	9	4

According to risk performance measures, HDFC secures the first rank registering 0.641, the highest excess return over risk free return for every one-unit of concerned risk. It is closely followed by DSP. Rest of them follows with slight distant variation. However, all nine selected mutual funds outperform benchmark index of Nifty- fifty.



B. Regression Analysis Measures

Regression analysis: is a way of mathematically sorting out which of those variables does indeed have an impact. *It* is a set of statistical methods used to estimate relationships between a dependent variable and one or more independent variables.*It* is a way to find trends in data.Independent variable is benchmark index (Nifty fifty) and dependent variable is selected mid-cap mutual funds.

Risk is the divergence from an expected outcome. It can be expressed as it relates to a market benchmark and can either be positive or negative. The level of volatility depends on the risk tolerance of the investor.

1) **Jensen's Alpha/Selectivity:** The Jensen's alpha is the intercept of the regression equation in the Capital AssetPricingModel and is in effect the excess return adjusted for systematic risk.

   α/ Selectivity = $R_p - R_f - \beta_p * (b - R_f)$

   WhereRf is the risk-free rate; â is the regression beta; Rp is the portfolio return; and bis the benchmark return.

2) **Specific Risk:** Specific risk is the standard deviation of the error term in the regression equation. The specific risk (regression epsilon) is an error term measuring the vertical distance between the return predicted by the equation and the real result.

3) **Appraisal Ratio:** Appraisal ratio is the Jensen's alpha adjusted for specific risk. The specific risk (regression epsilon) is an error term measuring the vertical distance between the return predicted by the equation and the real result. Alpha is divided by specific risk instead of total risk.

   Appraisal ratio = α/σ_e

   Where α(alpha) is the Jensen's Alpha; σ_e (epsilon) is the specific risk

4) **Modified Jensen's Alpha:** Modified Jensen's alpha is Jensen's alpha divided by beta.

   Modified Jensen's alpha = α/β

   Where á(alpha) is the Jensen's Alpha; β is the regression beta

5) **Systematic Risk:** Systematic risk as defined by Bacon (2008) is the product of beta by market risk. Market risk is the standard deviation of the benchmark. The systematic risk is annualized.

$$\sigma_s = \beta * \sigma_m$$

Whereó$_s$ is the systematic risk, α is the regression beta, and σ_m is the market risk.

6) Total Risk: The square of total risk is the sum of the square of systematic risk and specific risk. Specific risk is the standard deviation of the error term in the regression equation. Both terms are annualized to calculate total risk.

Total Risk = $\sqrt{SystematicRisk^2 + SpecificRisk^2}$

7) TreynorRatio: The Treynor ratio is similar to the Sharpe Ratio, except it uses beta as the volatilitymeasure (to divide the investment's excess return over the beta).

Treynor Ratio = $(R_i - R_f)/\beta_{a,b}$

8) Net Selectivity: Net selectivity is the remaining selectivity after deducting the amount of return required to justify not being fully diversified.If net selectivity is negative the portfolio manager has not justified the loss of diversification. Selectivity is the same as Jensen's alpha

Selectivity = $\alpha = R_p - R_f - \beta_p * (b - R_f)$

Net selectivity = $\alpha - d$

Where α is the selectivity; and d is the diversification

9) Fama Beta: Fama beta is a beta used to calculate the loss of diversification. It is made so that the systematic risk is equivalent to the total portfolio risk.

$$\beta_F = \sigma_P/\sigma_m$$

Where σ_P is the portfolio standard deviation and $\sigma_m$is the market risk

Table 5: Regression analysis measures of selected mid-cap mutual funds

S.L	MODELS	Nifty	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
1	Appraisal Ratio		0.500	0.216	0.332	0.350	0.376	0.436	0.279	0.149	0.340
	Rank		1	8	6	4	3	2	7	10	5
2	Modified Jensen's alpha		0.055	0.025	0.046	0.056	0.041	0.063	0.043	0.019	0.050
	Rank		2	7	4	9	6	1	5	8	3
3	Jensen's alpha		0.190	0.086	0.157	0.192	0.139	0.218	0.148	0.066	0.172
	Rank		3	8	5	2	7	1	6	9	4

Contd...

4	specific risk	0.129	0.153	0.171	0.179	0.140	0.144	0.163	0.147	0.165
	Rank	2	6	8	9	3	4	7	5	1
5	systematic risk	0.339	0.385	0.361	0.327	0.379	0.288	0.308	0.330	0.325
	Rank	6	9	7	4	8	1	2	5	3
6	Total risk	0.362	0.414	0.399	0.372	0.404	0.322	0.348	0.362	0.364
	Rank	4	9	7	6	8	1	2	4	5
7	Treynor Ratio	0.145	0.111	0.134	0.147	0.127	0.159	0.136	0.110	0.142
	Rank	3	8	6	2	7	1	5	9	4
18	Net Selectivity:	0.059	0.026	0.048	0.052	0.047	0.055	0.036	0.015	0.046
	Rank	1	8	4	3	5	2	7	9	6
9	Fama Beta	1.253	1.433	1.384	1.295	1.397	1.118	1.211	1.253	1.265
	Rank	4	9	7	6	8	1	2	4	5
	Grand total	-1.134	-1.921	-1.598	-1.376	-1.590	-0.941	-1.388	-1.733	-1.369
	Grand rank	2	9	7	4	6	1	5	8	3

In regression analysis measures, the top score is secured by DSP mid-cap fund having the first in maximum number of its measures. It is succeeded by HDFC. Rest of them follow in distant variation with different ranks of its different measures.

Benchmark index nifty-fifty is not considered for its calculation since it is a independent variable for which there is no dependent variable.

C. Relative Risk Performance Measures

The relative risk (RR) or risk ratio is the ratio of the probability of an outcome in an exposed group to the probability of an outcome in an unexposed group. Together with risk difference and odds ratio, relative risk measures the association between the exposure and the outcome.

Assuming the causal effect between the exposure and the outcome, values of relative risk can be interpreted as follows:

- RR = 1 means that exposure does not affect the outcome
- RR < 1 means that the risk of the outcome is decreased by the exposure, which is a "protective factor"
- RR > 1 means that the risk of the outcome is increased by the exposure, which is a "risk factor"

1) Information Ratio: Information Ratio = Active Premium/Tracking Error

This relates to the degree to which an investment has beatenbenchmark

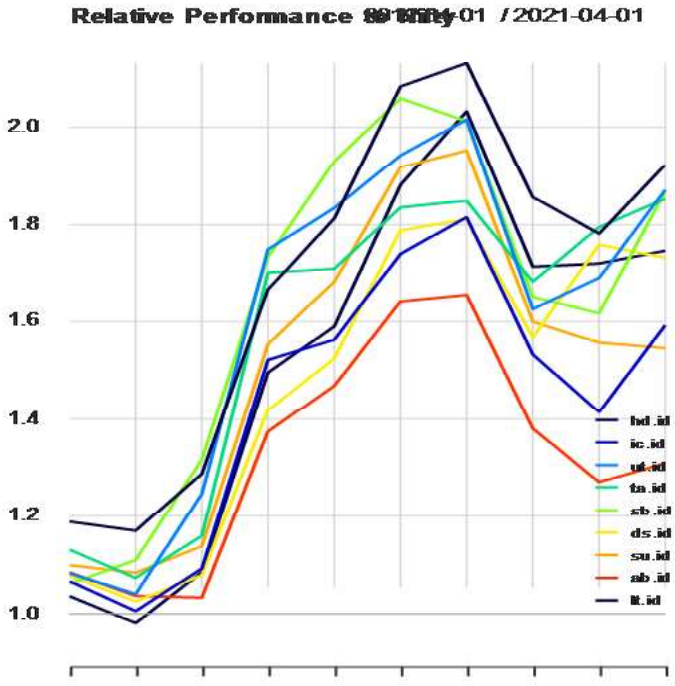
index with respect to return.. William Sharpe now recommends Information Ratio preferentially to the original Sharpe Ratio.

2) Tracking Error: Tracking error is calculated by taking the square root of the average of the squared deviationsbetween the investment's returns and the benchmark's returns, then multiplying the result by the square root of the scale of the returns.

$$\text{Tracking Error} = \sqrt{\sum} \frac{(Ra - Rb)^2}{\text{Len}\,(Ra)\sqrt{\text{scale}}}$$

Table 6: Relative risk measures of selected mid-cap mutual funds

		3 Relative Risk								
MODELS	Nifty	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
Information Ratio	0	0.516	0.281	0.368	0.364	0.412	0.409	0.283	0.187	0.356
Rank	10	1	8	4	5	2	3	7	9	6
Tracking Error:	0	0.144	0.186	0.193	0.192	0.172	0.152	0.173	0.16	0.177
Rank	10	9	3	1	2	6	8	5	7	4
Grand total	0	0.66	0.467	0.561	0.556	0.584	0.561	0.456	0.347	0.533
Grand Rank	10	1	7	3.5	5	2	3.5	8	9	6



In both relative risk performance models, the highest degree of 0.66 with which HDFC is beating benchmark index (Nifty Fifty). It is followed by 0.584 of SBI, 0.561of DSP and UTI, 0.556 of TATA, 0.533 of L&T, 0.467of ICICI, 0.456 of SR, 0.347 of AB respectively.

D. Drawdown Performance Measures

Drawdown *or Drawdown risk* measures how long it takes for a portfolio or fund to recoup its losses from trough to peak price. It is a common principle used to measure the volatility of an investment. It is heavily relied on by all types of investors, to demonstrate the potential risk associated with an investment.It is an investment term that refers to the decline in value of a single investment or an investment portfolio from a relative peak value to a relative trough.

Two key elements must be looked at in relation to a drawdown. The first is money, and the second is time. The element of money refers to the monetary amount of the drawdown. The time element refers to how long the drawdown lasts – that is, what period of time elapses before the value of an investment recovers the drawdown amount, rising to a new relative peak value

1) **Pain Ratio:** Pain ratios divide the difference of the portfolio return and the risk-free rate by the Pain index

$$Painratio = \frac{r_P - r_F}{\sum_{i=1}^{n} \frac{|D_i'|}{n}}$$

where R_p is the annualized portfolio return;R_f is the risk-free rate; n is the number of observations of the entire series; and Di is the drawdown since previous peak in period i

2) **Calmar Ratio:** Calmar is the ratio of annualized return over the absolute value of the maximum drawdown of an investment. It is traditional to use a three-year return series for these calculations, newer measures such as Sortino'sUpsidePotentialRatio or Favre's modified Sharpe Ratio are both "better" measures, and should be preferred to the Calmar or Sterling Ratio.

3) **Sterling Ratio:** Sterling ratio is another method of creating a risk-adjusted measure for ranking investments similar to the Sharpe ratio.

4) **Burke Ratio:** Burke ratio is used to take the difference between the portfolio return and the risk-free rate and divide it by the square root of the sum of the square of the drawdowns. It is excess of portfolio return over risk free return for every one-unit square root of the some of the squares of

drawdown. To calculate the modified Burke ratio, we just multiply the Burke ratio by the square root of the number of data's.

$$BurkeRatio = \frac{r_P - r_F}{\sqrt{\sum_{t=1}^{d} D_t^2}}$$

Where n is the number of observations of the entire series; d is number of drawdown; R_P is the portfolio return,R_f is the risk-free rate and $D_t$is the t th drawdown.

5) **Pain Index: T**he pain index is the mean value of the drawdown over the entire analysis period. The measure is similar to the Ulcer index except that the drawdowns are not squared. Also, it is different from the average drawdown; here the numerator is the total number of observations rather than the number of drawdowns.

$$Painindex = \sum_{i=1}^{n} \frac{|\ D_i' \ |}{n}$$

Where n is the number of observations of the entire series, Di is the drawdown since previous peak in period i

6) **Martin Ratio:** Martin ratios divide the difference of the portfolio return and the risk-free rate by the Ulcer index.

$$Martinratio = \frac{r_P - r_F}{\sqrt{\sum_{i=1}^{n} \frac{D_i'^2}{n}}}$$

Where R_P is the annualized portfolio return;R_f is the risk-free rate; n is the number of observations of the entire series; and D_i is the drawdown since previous peak in period i.

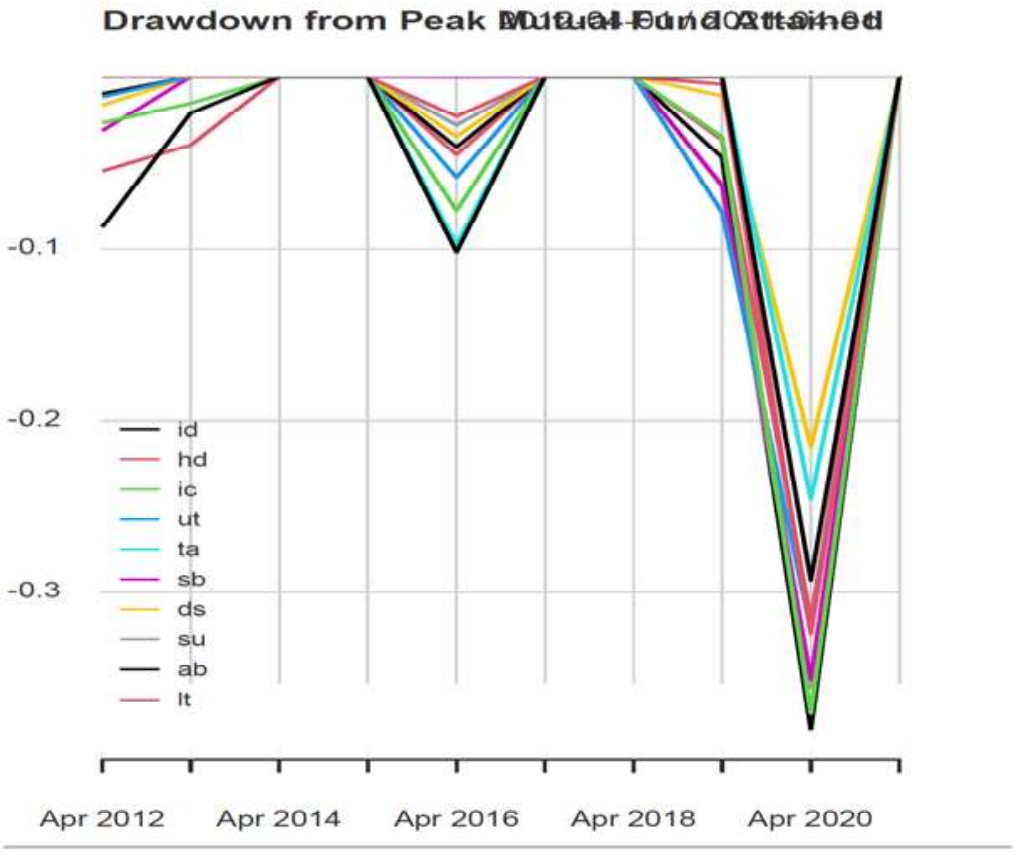
Table 7: Drawdown measures of selected mid-cap mutual funds

MODELS	Nifty	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
Pain Ratio:	1.211	3.809	2.1	2.672	3.793	2.826	4.373	2.339	1.828	2.457
Rank	10	2	8	5	3	4	1	7	9	6
Calmar Ratio	0.336	0.532	0.407	0.525	0.684	0.482	0.744	0.414	0.338	0.51
Rank	10	3	8	4	2	6	1	7	9	5
Sterling Ratio	0.25	0.406	0.32	0.401	0.486	0.375	0.508	0.323	0.267	0.388
Rank	10	3	8	4	2	6	1	7	9	5

Contd...

Burke ratio	0.317	0.528	0.386	0.487	0.637	0.458	0.727	0.391	0.322	0.489
Rank	10	3	8	5	2	6	1	7	9	4
pain index	0.05	0.035	0.054	0.049	0.034	0.046	0.028	0.047	0.049	0.05
Rank	8	3	10	6	2	4	1	5	7	9
Martin Ratio	0.59	1.301	0.906	1.163	1.556	1.101	1.746	0.904	0.711	1.151
Rank	10	3	7	4	2	6	1	8	9	5
Grand total	2.654	6.541	4.065	5.199	7.122	5.196	8.07	4.324	3.417	4.945
Grand Rank	10	3	8	4	2	5	1	7	9	6

Under drawdown measures, DSP takes its portfolio or fund to recoup its losses from trough to peak at the lowest price/value. It is followed by TATA, HDFCrespectively. Rest of them are closely related in the range of 5.199 -3.417 with different ranks at different individual drawdown measures.



Downside Risk Performance Measures

Downside risk/ Downside deviation/ semi deviation measures the possible loss from that decline and eliminates positive returns when calculating risk. It is the risk of the actual return being below the expected return, or the uncertainty about the magnitude of that difference. Specifically, downside risk can be measured either with downside beta or by measuring lower semi-deviation.

Evaluating *downside risk* helps investors to avoid focusing solely on performance statistics. It also helps them to plan for the worst and navigate difficult markets with less emotion or fear.The downside variance is the square of the downside potential.

$$DownsideDeviation(R, MAR) = \delta_{MAR} = \sqrt{\sum_{t=1}^{n} \frac{min[(R_t - MAR), 0]^2}{n}}$$

$$DownsideVariance(R, MAR) = \sum_{t=1}^{n} \frac{min[(R_t - MAR), 0]^2}{n}$$

$$DownsidePotential(R, MAR) = \sum_{t=1}^{n} \frac{min[(R_t - MAR), 0]}{n}$$

Where n is either the number of observations of the entire series or the number of observations in the subset of the series falling below the MAR(minimum acceptable return).

1) **Prospect Ratio:** Prospect ratio is used to penalise loss since most people feel loss greater than gain.

$$ProspectRatio(R) = \frac{\frac{1}{n} * \sum_{i=1}^{n}(Max(r_i, 0) + 2.25 * Min(r_i, 0) - MAR)}{\sigma_D}$$

Where n is the number of observations of the entire series; MAR is the minimum acceptable return; and óD is the downside risk

2) **Skewness - Kurtosis Ratio:** Skewness-Kurtosis ratio is the division of Skewness by Kurtosis. It is used in conjunction with the Sharpe ratio to rank portfolios. The higher the rate; the better the performance.

$$SkewnessKurtosisRatio(R, MAR) = \frac{S}{K}$$

Where S is the skewness; and K is the Kurtosis

3) **Sortino Ratio:** Sortino proposed an improvement on the Sharpe Ratio to better account for skill and excess performance by using only downside semi variance as the measure of risk.

$$SortinoRatio = \frac{(\overline{R_a - MAR})}{\delta_{MAR}}$$

WhereWMAR is the Downside Deviation

4) **UpsidePotentialRatio:** Sortino contends that this is a more accurate and balanced portrayal of return potential. It can reward managers most at the peak of a cycle, it adequately penalize managers reward them for past mediocre performance. Others have used the full series, and this is provided as an option by the method argument.

$$UPR = \frac{\sum_{t=1}^{n}(R_t - MAR)}{\delta_{MAR}}$$

5) **BernardoLedoitRatio:** To calculate BernardoLedoitratio,we take the sum of the subset of returns that areabove 0 and we divide it by the opposite of the sum of the subset of returns that are below0

Table 8 :Downside risk measures of selected mid-cap mutual funds

S.L	MODELS	NSE	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
20	Prospect Ratio:	0.503	1.401	1.040	1.439	1.577	1.369	1.727	1.098	0.850	1.246
	Rank	10	4	8	3	2	5	1	7	9	6
21	Skewness Kurtosis Ratio:	0.240	0.236	0.299	0.331	0.346	0.299	0.323	0.253	0.265	0.257
	Rank	9	10	4.5	2	1	4.5	3	8	6	7
22	Sortino Ratio:	0.608	1.375	1.141	1.480	1.540	1.396	1.582	1.126	0.917	1.299
	Rank	10	5	7	3	2	4	1	8	9	6
23	Upside Potential Ratio	0.868	1.400	2.364	2.878	2.861	1.993	3.021	1.703	2.007	2.619
	Rank	10	9	5	2	3	7	1	8	6	4
24	Bernardo Ledoit Ratio	3.687	7.297	5.319	6.410	7.283	6.587	8.342	5.764	4.949	5.916
	Rank	10	2	8	5	3	4	1	7	9	6
	Grand total	5.906	10.308	10.163	12.538	13.607	11.644	14.995	9.944	8.988	11.337
	Grand Rank	10	6	7	3	2	4	1	8	9	5

In all downside risk measures, among the selected mid-cap funds during the study period, DSP is able to earn the highest excess return over minimum acceptable return (5.5% being average range of more than one year term deposit rates) for every one unit of downside risk. It is followed by SBI with inconsistent ranks and distant variation. Rest of them are with close variation. However, sample funds outperforms greatly benchmark index of nifty-fifty.

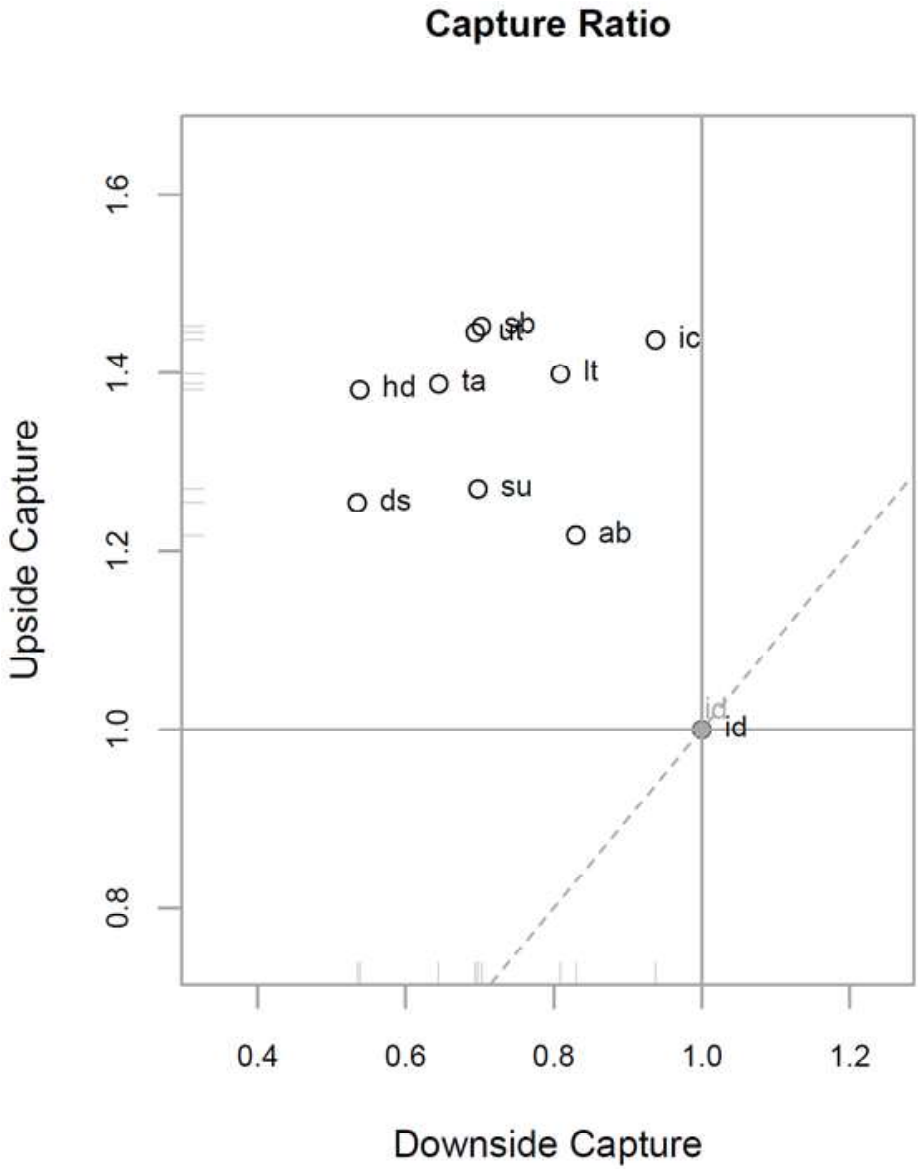


Table 9: Overall rank performance of selected mid-cap mutual funds

Performance Measures	Nifty	HDFC	ICICI	UTI	TATA	SBI	DSP	SR	AB	L&T
RiskAdjusted Measures										
Grand total	0.411	0.641	0.529	0.592	0.607	0.59	0.635	0.564	0.488	0.599
Grand Rank	10	1	8	5	3	6	2	7	9	4
Regression Analysis Measures										
Grand total		-1.13	-1.921	-1.598	-1.376	-1.59	-0.941	-1.388	-1.733	-1.369
Grand rank		2	9	7	4	6	1	5	8	3
Relative Risk Measures										
Grand total	0	0.66	0.467	0.561	0.556	0.58	0.561	0.456	0.347	0.533
Grand Rank	10	1	7	3.5	5	2	3.5	8	9	6
Drawdown Measures										
Grand Rank	9.67	2.83	8.17	4.67	2.17	5.33	1	6.83	8.67	5.67
Grand	10	3	8	4	2	5	1	7	9	6
Downside Risk Measures										
Grand total	5.906	10.31	10.163	12.54	13.607	11.6	15	9.944	8.988	11.34
Grand rank	10	6	7	3	2	4	1	8	9	5
Overall performance Ranking	10	2	8	4	3	5	1	7	9	6

In all performance measures under study,DSP mid-cap mutual fund has the first rank in all measures except Relative risk performance measures. It is followed by HDFC, TATA, UTI, SBI, L&T, SR,ICICI and AB mid-cap funds respectively.

Hence, DSP mid-cap Mutual Funds is considered to be the best in Regression analysis, risk adjusted, drawdown risk and downside risk models. There is negligible difference between HDFC and DSP in case of Risk adjusted measures for awarding rank. It reveals that DSP mid-cap is the best in riskand consistent measures, whereas HDFC is only in return measures.

Implications

Historical performance of mutual fund is important both for the individual investors as well as funds managers. This study depicts how much returns have been generated by a particular fund and its fund manager efficiency and what risk level has been assumed in generating such returns to the investors.

Subsequently, the investors can appraise the comparative performance of different funds and its fund managers. Similarly, fund managers would also be able to know their performance over the time period and also that of other competitors in the mutual fund industry. Risk Adjusted, Regression Analysis, Drawdown, Relative Risk and Downside Riskperformance evaluation provided a mechanism for identifying the strength and weaknesses of fund and its fund manager in the investment processes, which would help them to take corrective actions in the future.

Conclusion

At the outset, all selected mid-cap regular growth option funds under study outperform benchmark index- nifty fifty in terms of return as well as consistency with distant variation during the study period. DSP mid-cap mutual fund has the first rank in all performance measures except relative risk performance measures. It is followed by HDFC, TATA, UTI, SBI, L&T, SR, ICICI and AB mid-cap funds respectively. Despite SBI, UTI, TATA, ICICI and L&T are better in terms of return than DSP and HDFC, they failed in managing risk. DSP mid-cap mutual fund is considered to be the best in Regression analysis, risk adjusted, drawdown risk and downside risk models. This is because, it fared well in minimizing risk and consistent measures, whereas HDFC is only in relative risk measures (return) measures.

Limitations of the Study and Scope for Further Research

For this study purpose, only open-ended, regular growth option mid-cap equity funds are selected which are popular and are in operation since the last ten years. Comparative performance among them has been considered.The outcome of the study depends on the selected period and tools used by the researchers which may differ from other analysis. Return Distribution,Return adjusted for downside risk, Standard Errors of Risk and Performance Estimators,Risk estimators (including the standard deviation, semi-standard deviation, value-at risk and expected shortfall), and performance estimators (such as the Sharpe ratio, Sortino ratio, and expected shortfall ratio) are scope for further research. Chen and Martin [2018], (CM), have developed a method to compute accurate standard errors for risk and performance estimators for serially correlated or uncorrelated returns using a sophisticated method based on the spectral density of the influence-function (IF) transformed returns and fat-tailed and skewed non-normality of returns distributions, like estimation of the Co-skewness and Co-kurtosis matrices: Plug-in estimation, Structured estimation, Shrinkage estimation and other estimation techniques which can be used in future to analyze mutual funds within the family performance and out of the family performance and also strategy level.

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The Pricing and Performance of IPOs for Small and Medium Enterprises: An Evidence from Indian Financial Market

SHRI NARAYAN PANDEY, SAURABH PANDEY, AMRITKANT PANDEY

Abstract: The paper analyses the short term and long-term performance of IPOs floated by small and medium enterprises along with it attempts to investigate those factors which can explain the listing day performance i.e., underpricing and long-term performance. During the period under study, average underpricing of 7.90% has been reported for these SME IPOs. So far as long run performance is concerned, these IPOs have generated 43.21% and 146.97% respectively for one years and three years of holding periods. Through regression analysis, it is inferred that Subscription Rate, Age of the Company, Floatation timing of the IPOs are the variables which can explain underpricing significantly. It is also found that long run performance is negatively related with Underpricing and is statistically significant.

Key Words: Financing, IPO, SME Exchange, Underpricing

Introduction

Since independence, MSME sector has played vital role in economic development of India. MSME sector requires low capital but provides employment opportunities to large number of people in the country. Because of its employment potentiality, it has always been in limelight while policy making by the government. As per a report, approximately eight crore people are engaged in this sector and contribution of MSMEs in GDP and exports is 8% and 40% respectively. Similar to the large-scale enterprises, the issue of easy access to the finance remains constant for the MSMEs too. Financial constraint poses even greater challenge for the MSMEs given their small capital size. Financial issue is a 'key growth constraint' for SME (Beck & Demirgüç - Kunt, 2006).

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Underpricing is defined as difference between issue price and listing price. Usually, closing price of listing day is taken as listing price. This initial return on listing gives us the raw return which should be adjusted against market return so as to arrive at real return on listing. Scholars are unanimous across globe on the evidence of underpricing, though the magnitude of underpricing differs across the country and time period. (Rock, 1986; Ritter, 1998 Krishnamurti & Kumar, 2002; and Sehgal & Singh, 2008). SEBI, from time to time has liberalized the pricing mechanism of IPOs in India with an objective to reduce the level of underpricing. It is expected that free pricing system for IPOs will mitigate the magnitude of underpricing, though will not eliminate it completely. Mathematically, underpricing can be calculated as log difference of listing price and issue price:*Underpricing = Ln (Listing Price/ Issue Price).*

Many studies have been undertaken globally analysing long run performance of IPOs but the scholars are not unanimous on the findings. A bunch of studies suggest that IPOs underperform the broad market in long run (for at least 36 months) while other scholars are of opinion that IPOs outperform the broad market in long run. We can candidly say that, by now, long run performance of IPOs could not have been generalized unlike universality of underpricing i.e., listing gain. We can candidly say that, by now, Long run performance of IPOs could not have been generalized unlike universality of underpricing i.e., listing gain. (Ritter, 1991) shows that IPOs floated in U.S. during 1975-1984, underperform by 29% when compared with the similar firms. (Loughran & Ritter, 1995) attempts to validate these finding and reports that U.S. IPOs issued during 1970-1990 have been poor performer. For the U K, (Levis, 1993) reports that IPOs floated during 1980-1988 underperform by 8% to 23% when compared with market indices for three year holding period. Long-run performance here means return generated by the IPOs after listing and during a specified period of time. To measure the long run performance Buy-and-Hold, current analysis calculates the abnormal return for one and three years of holding periods. It is assumed that if the amount is invested and held for a specified period, what amount investors would have earned on the invested money during the holding period. This method is consistent with (Sahoo & Rajib, 2010) and (Dhamija & Arora, 2017).

Review of Literature

There is ample amount of analysis that calibrates the performance of IPO by applying the various method of studies. (Ibbotson, 1975) studied listing as well as long term performance of IPOs which were brought in 1960s in the capital market of USA. The author reports listing gain of 11.40%. The finding is in line with after market hypothesis. Positive return on listing evidently reports new issues are generally underpriced. On the other hand,(Ritter, 1984)studied listing

gains of IPOs in USA during a hot period of 15 months from January 1980 to March 1981 and reports it to be at 48.40%. During a cold period of market that comprises of all rest of the IPOs floated between 1977-1982, average underpricing of 16.3% has been reported. The author opines that this hot market phenomenon is related with only natural resources issues. IPOs which belong to other sectors, barely witnesses hot market mispricing.Furthermore, (Kumar, 2007) conducted a study for the period from 1999 to 2006 and investigated those new issues that were floated through the book building process in India. Total 156 companies offered new issues and offered positive returns (market adjusted) to investors on listing day. Buy and Hold return for long run offered favourable return up till twenty-four months but could not outperform the market thereafter. However, author is not confident about the later finding as sample size comes down substantially because majority of the IPOs in the sample were issued in the last three years hence, they do not have a five-year track record. The excess buy and hold return from IPO is not positive both in the short term as well as in the long run. Additionally, (Sahoo & Rajib, 2010)examine the post listing performance as well as underpricing of 92 IPOs that were floated during a period of five years between 2002-2006. Based upon their study, authors present evidences of underpricing and underperformance. Authors find mean underpricing of 46.55% on listing day. This high listing gain may be because of high post listing expectations by investors. For the assessment of long-term performance of IPOs, authors have used Buy and Hold Abnormal Return (BHAR) and Wealth Relatives (WR) and report significant underperformance up to the period of at least twelve months; thereafter this underperformance disappears which is contrary to the international experiences where mostly IPOs underperform up to 3 years to 5 years. Authors find IPO timing, leverage, underpricing, issue size and ex-ante uncertainty as determinants of long run performance. But, variables namely age of the company, subscription rate, retentions by promoters and price to book value are not able to significantly explain long run performance. Many empirical analysis, cogitate the performance of public issues in short term and in long term of all those IPOs which were floated via the Euro New Markets (EuroNMs) sine 1996-97. Authors report that underpricing on listing and long run performance may be studied in three different ways. Firstly, such small IPOs are 2-3 times more underpriced than main stream IPOs. Secondly, the frequency of IPOs fetching negative return is relatively much higher. Lastly, long run performance is also strongly negative and are greater in magnitude if compared with main IPOs. Last, Authors find that the difference in performance can be explained to some extent by the nature of firm and industry characteristics(Goergen, Khurshed, McCahery, & Renneboog, 2003). On the other hand, (Burrowes & Jones, 2004) examine the stock prices of 125 IPOs on Alternative Investment Market of London Stock Exchange (LSE) to assess the

amount of mispricing. Consistent with international evidence, Short-run underpricing is prevalent on AIM too and the extent of underpricing experienced is comparable with that experienced by the New York and London Stock Exchanges. The main benefit of listing on AIM is access to an equity market for smaller companies, which would not have been possible with the existence of only the main exchange of the LSE. It can also be concluded that long run under performance is prevalent on AIM too.The pragmatic analysis of(Bradley, Cooney, Dolvin, & Jordan, 2006)deliberate the small IPOs for underpricing, long-run performance in USA for the period of nine years from 1990 to 1998. The authors report that these small IPOs generate higher listing day return than the main IPOs but their performance is significantly worse in long run. Furthermore,(Banerjee, 2006)emphasizes the importance of SME sector in any economy and further suggests to establish a platform where SMEs can list their IPOs so as to raise equity capital. Authors also cites other similar experiences in the US and Europe namely AIM & NASDAQ and advocates in favour of an equity platform for SMEs which will result in wealth creation and employment for the nation. On the other hand,(Jiming & Xing, 2012)undertake a study to investigate whether the dominant shareholders of small and medium firms utilize their inside information and reduce their shareholdings in the firm before any decline in operational performance of such firms. The authors use data of SME companies listed on Shenzhen Stock Exchange, from 2004 to 2006. The findings clearly indicate that the companies with higher ownership concentration face more severe setbacks in operational performance which further indicate that such companies deliberately window dress their book profits before flotation of IPOs with the objective of increasing issue prices and enhance the amount of capital raised. The investigation of (Chorruk & Worthington, 2013)on the performance of IPOs issued by SMEs on Thai Market for Alternative Investments (MAI) between Sep, 2001 and Oct, 2008. Monthly cumulative abnormal return, buy and hold return and wealth relatives methods have been applied to calculate long term performance. The findings report that underpricing stands at 12.69%, 5.01%, 4.74% and 11.40% for different measures. These figures are relatively low if compared with main stream IPOs listed on Stock Exchange of Thailand (SET). It is also reported that after listing performance of SME IPOs is encouraging but it is able to hold only up to 2nd year. The recent examination of (Bhattacharya, 2017)includes 106 SME IPOs listed BSE SME platform between 2012-15 that those SME IPOs which are either market timed or command significant allocation to market makers; generate higher return on listing day. It is found that allocation to market makers and retail subscription enhance liquidity. Market timing and the prestige of the underwriters are able to significantly explain the long-term Buy and Hold return of SME IPOs. Author suggests to the regulators that they should very minutely watch the international evidences before making any change in regulatory

framework in India. Investors are advised to consider market timing and underwriter's prestige, if they are interested in long run return.

There are many vital questions that emerge with regard to factors which precisely impact theperformance of IPOs in Indian stock and financial market. Are all the factors which previous analysis considers have homogeneous impact or there is heterogeneity on the impact on the IPO of SME in Indian perspective? The answer to such relevant question will facilitate the policymakers for effective economic planning and also expedite the retail investors for effective investment planning. There is undeniably a limited examination, which examined the potential factors which impact the performance of the IPO in the short run as well as long run. But, there is dearth of analysis on such initiative in Indian context with special reference of SMEs. Moreover, those available research papers which prudently examined the above issue belongs to western and developed financial markets. Consequently, the present pragmatic research proposes an addition to the prevailing perception of the above emerging issue. We assure and are optimistic about the contribution of current analysis of the above issue in two ways. First of all, by reconnoitering the impact of vital factors on the performance of IPOs of SMEs, this has not been done in previous literatures pertaining to our knowledge in Indian perspective. Moreover, this examination, also strives to gradually augment the comprehensive analysis, by expanding it to underpricing of SME IPOs, long run performance of SME IPO (1 Year) and Long run performance of SME IPO (3 Years) simultaneously.On the other hand, extensive amount of preceding investigation, in this perspective, is persuaded towards western and European nations, to be specific with application large cape IPOs in their approach. We are very sanguine about the outcome of exploration in terms of policy making, not only in Indian perspective, but other Asian countries as well because of vitality of Indian financial market in south Asia. Additionally, current analysis aspires to abridge gap of such relevant examination by considering the Underpricing and Long Run Performance of SME IPOs in India, and also investigatesthe variables which can explain Underpricing and Long Run Performance of SME IPOs.

Research Methodology

This study is solely based on Secondary data which has been sourced from capitaline data base of CMIE, ACE data base and Bloomberg data base accessed through the library of IIM, Lucknow. Besides, websites like SEBI, NSE, BSE and Chittoregarh.com have been visited to collect market related data. Some of the publications of the SEBI and RBI have also been consulted. For the purpose of studying the performance of SME IPOs, data have been collected for the period, 2012 to 2017 as the concept of SME IPO was introduced in

2012 itself. It can be presented as follows:

Table-1: Period of the study

Purpose	Period	No of observations
Underpricing of SME IPOs	2012-2017	330
Long run performance of SME IPO (1 Year)	2012-2017	327
Long run performance of SME IPO (3 Years)	2012-2015	124

Description of the Variables

Table 2: Description of variables

Variables	Description
Underpricing (UP)	Underpricing is defined as difference between issue price and listing price. Usually, closing price of listing day is taken as listing price.
BHR	Buy and hold return have been calculated for one year and three years for SME IPOs.
Method of Pricing	Fix Price method or Book Building method. Dummy variable 1 has been used as proxy for IPO issued via book building process and 0 for fix-priced IPOs. This variable has been used only for SME IPOs because almost all of the main stream IPOs were priced via book building method.
Issue size	The maximum sum which issuer wants to raise i.e. product of issue price and number of shares to be issued.
Age of the Company	Total life of the company, since its incorporation to the date of issue in terms of number of years.
Subscription Rate	Number of times issue is subscribed against the security available for allotment.
Timing of Issue	Time of issue means mood of the market, whether it's hot market or cold market. If in a quarter, more than 5 IPOs have been issued, then the quarter has been treated as 'hot period', otherwise a cold period. Dummy variable 1 has been used as proxy for IPO issued during hot period and 0 for cold IPOs. This methodology of dichotomizing as hot/cold period is consistent with (Helwege & Liang, 2004) and (Sahoo & Rajib, 2010)

Hypotheses

Ho_1: Underpricing of SME IPOs depends on age of the company, issue size, pricing method, subscription rate & market condition.

Ho_2: Long run performance of SME IPOs is caused by underpricing, age of the company, issue size, issue price, pricing method, subscription rate and market condition.

The above two vital hypotheses have been framed on the basis of theory and, after the consideration of various empirical analysis on the related domain.

Econometric model

Multivariate regression (OLS) has been applied to analyse the variables which can explain underpricing and long run performance. Based on extant literature, researchers made an attempt to establish cause and effect relationship through regression. The regression analysis is based on certain assumptions. All the assumptions of a multivariate regression analysis namely No Perfect Multicollinearity, Limited Magnitude of Autocorrelation / Serial Correlation, Homoscedasticity and Normality of Residuals have been validated. For this purpose, tests like, VIF, Durbin Watson Test, White Test, Breusch-Pagan Test, Jarque-Bera tests have been applied. Softwares like MS Excel, SPSS and E-views have been used to run these test.

With the help of following regression model an attempt has been made to find out the variables which can significantly explain the occurrence of underpricing:

$$UP = \alpha + \beta_1 lnAge + \beta_2 lnSize + \beta_3 lnSR + \beta_4 D_{Method} + \beta_5 D_{Period} + e_i \quad (1)$$

$$BHR\_1 = \alpha + \beta_1 lnAge + \beta_2 lnSize + \beta_3 lnSR + \beta_4 D_{Method} + \beta_5 D_{Period} + e_i + \beta_6 UP + e_i \quad 2)$$

$$BHR\_3 = \alpha + \beta_1 lnAge + \beta_2 lnSize + \beta_3 lnSR + \beta_4 D_{Method} + \beta_5 D_{Period} + e_i + \beta_6 UP + e_i \quad 3)$$

The above regression model demonstrates the impact of various stimulus variables on the response variables such as underpricing, Buy and Hold return. The first equation of the above model reveals that underpricing (UP), is influenced by the issue size of IPO (Size), the subscription rate (SR), method of pricing (D_{method}), time of issue (D_{Period})and disturbance term. On the other hand, equation two reveals the impact of IPO (Size), the subscription rate (SR), method of pricing (), time of issue (), Underpricing (UP) on the Buy and Hold return for one year time period (. Similarly, equation (3) reveals the impact of IPO (Size), the subscription rate (SR), method of pricing (), time of issue (), Underpricing (UP) on the Buy and Hold return for three year time period (.The above three equations are in the form of lin log model, which reveals the impact percentage change of independent variables on the absolute change in response variables. () and () are the dummy variables which represent themethod of pricing and time of issue of IPO. The current analysis takes value of () = 1, when IPO issued via book building process and 0 for fix-priced IPOs. Similarly,() takes value 1, in case, when IPO is issued during hot period and 0 for cold IPOs. This methodology of dichotomizing as hot/cold period is consistent with (Helwege & Liang, 2004) and (Sahoo & Rajib, 2010).

Analysis

SME IPOs in India

In India, SME platform was introduced to serve as a medium of equity financing for small and medium enterprises which are not eligible to get listed their securities on the main board of stock exchanges. Since its inception in 2012, it has been actively serving its rationale. By the end of the calendar year 2017, 330 companies floated the SME IPOs using the separate platform created with the sole propose of listing of such IPOs.

Table 3: Frequency of SME IPOs and capital raised

Year	Capital Raised	No. of IPOs	Average Issue Size
2012	102.29	13	7.87
2013	353.08	31	11.39
2014	302.06	41	7.37
2015	266.52	42	6.35
2016	531.36	66	8.05
2017	1720.24	130	13.23
Total	3275.55	330	9.92

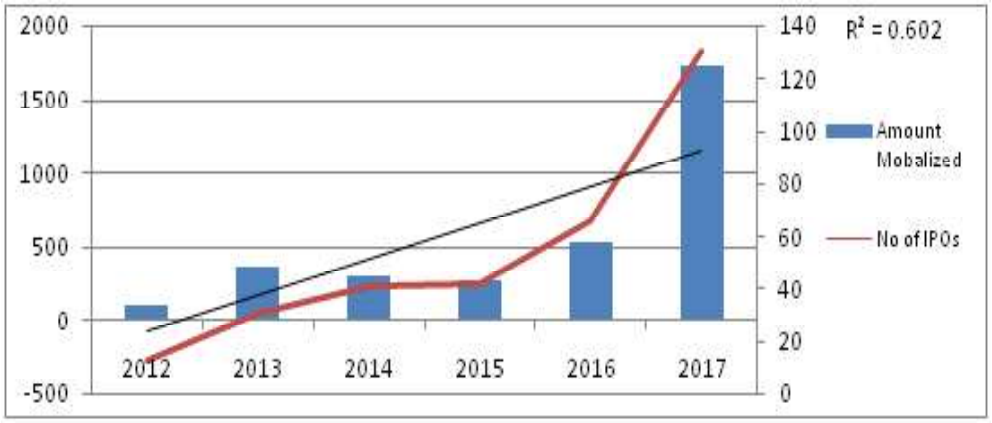

Figure-1: SME IPOs activities

During these six years, Rs. 3275.55 crore was raised on the two platforms. Figure 1 depicts that over the years, number of IPO issues are growing to broaden the base of this market. During the period, average issue size ranges between 8 crores to 13 crores approximately.

Underpricing of SME IPOs

It is established knowledge now that underpricing is a universal phenomenon and this study finds that SME IPOs are no exception. Following table and chart presents the descriptive statistics of underpricing of SME IPOs.

Table 4: Listing gains of SME IPOs

Descriptive Statistics

Year	N	Minimum	Maximum	Mean	Std. Deviation
2017	138	-20.000	48.333	7.50269	11.841073
2016	64	-51.667	20.000	4.33937	12.359622
2015	41	-28.000	54.000	6.35876	14.789654
2014	41	-10.125	76.000	8.89768	16.950581
2013	33	-19.667	241.250	14.73336	43.674726
2012	13	.000	146.250	14.18285	39.843487
2012-2017	330	-51.667	241.250	7.90662	20.044780

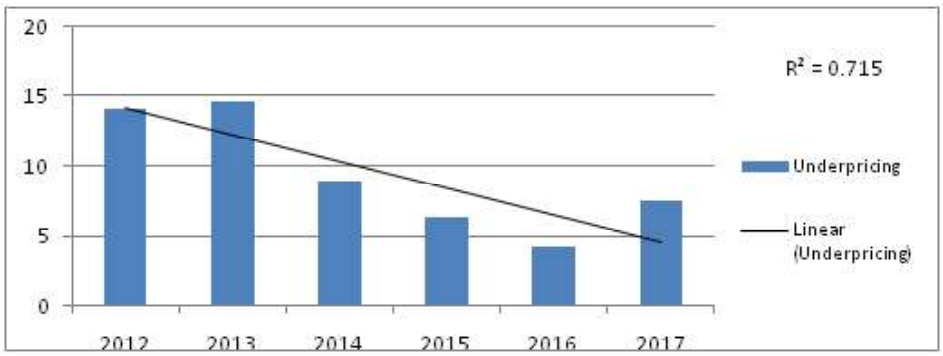

Figure-2: Underpricing of SME IPOs

For the period under study, average underpricing stood at 7.91%. This outcome could not reject our hunch that on an average SME IPOs are underpriced during the period of study. Figure 2 reveals on interesting fact that magnitude of underpricing is decreasing over the years since 2013.

Determinants of Underpricing for SME IPOS

With the help of following regression model an attempt has been made to find out the variables which can significantly explain the occurrence of underpricing:

Table-5: Regression result

Variable	Coefficient	Std. Error	t-statistics	Prob
C	0.096700	0.025945	3.727157	0.0002
Ln_Age	-0.015268	0.007575	-2.015557	0.0447
Ln_Size	0.000137	0.006574	0.020803	0.9834
Ln_SR	0.039389	0.005217	7.549701	0.0000
Method	0.003427	0.016566	0.206878	0.8362
Period	-0.040911	0.020588	-1.987098	0.0478
	R-squared		0.117639	
	Adjusted R-squared		0.103981	
	F-statistic		8.612697	
	Prob (F-statistic)		0.000000	

Age of the company, Subscription rate and Period are able to significantly explain the underpricing of SME IPOs. Period is negatively related with underpricing. Issue size has no significant impact on underpricing. Method of pricing is also not significant. Overall model is significant with R-squared of 11.70%.

Long Run Performance of IPOs

The long run performance of IPOs has been calculated as Buy and Hold Return Long run performance has been studied for one year and three years of holding period.

Long –Run Performance for One Year

Buy and Hold Return (in percentage) has been calculated for one year holding period. The descriptive statistics for the same have been presented below:

Table-6: Buy and hold return for 1 year (BHR_1)

Descriptive Statistics

Year	N	Minimum	Maximum	Mean	SD
2017	137	-80.32	571.29	22.8543	93.60699
2016	62	-71.83	1144.02	87.1179	208.46366
2015	41	-82.49	852.38	37.8260	144.19690
2014	41	-66.71	299.47	17.9344	80.15116
2013	33	-70.23	632.00	60.2519	170.30718
2012	13	-36.65	518.45	101.8416	172.45676
2012-2017	327	-82.49	1144.02	43.2134	140.92402

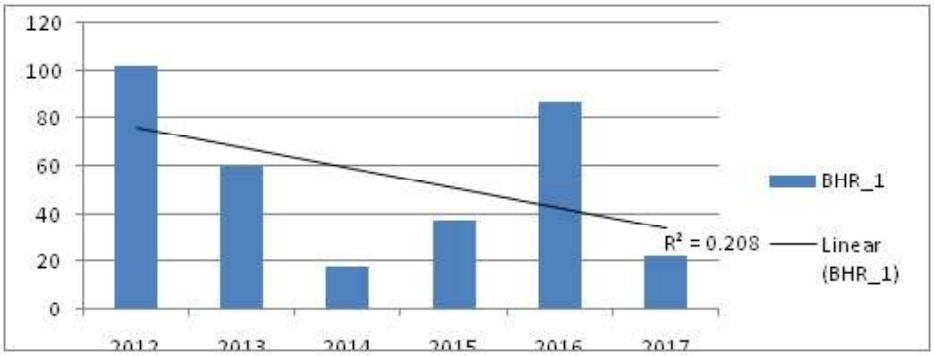

Figure-3: Buy and Hold Return for One Year (BHR_1)

During the six years' period i.e. from 2012-2017, total 327 SME IPOs were issued which generated 43.231% average return for one year holding period The trend line with negative slope reveals deceasing performance over the years.

Determinants of Long-Run performance (One Year)

Attempt is to use following regression model to find out the variables which may drive long run performance.

Table-7: Regression result

Variable	Coefficient	Std. Error	t-statistics	Prob
C	0.157597	0.518278	0.304079	0.7616
Ln_Age	-0.185351	0.081223	-2.282006	0.0243
Ln_Size	0.074875	0.100563	0.744560	0.4580
Ln_SR	0.508769	0.298202	1.706125	0.0907
Method	0.261783	0.362418	0.722324	0.4715
Period	-0.196776	0.206391	-0.953415	0.3424
UP	-0.507656	0.246771	-2.057194	0.0419
	R-squared	0.102799		
	Adjusted R-squared		0.056392	
	F-statistic		2.215159	
	Prob (F-statistic)		0.046377	

Based upon Table 7, it can be laid down that initial underpricing can significantly explain Buy and Hold performance for one year (BHR_1). Age of the company is negatively associated with BHR_1 which is a surprise. As expected, Subscription rate is positively associated with BHR_1 though significant only at 10% level.

Long –Run Performance for Three Years

The raw return for three years holding period has been calculated and presented in Table 8.

Table-8: Buy and hold return for 3 years (BHR_3)

Descriptive Statistics

Year	N	Minimum	Maximum	Mean	SD
2015	41	-93.267	1532.653	145.02557	318.842967
2014	37	-92.188	2254.851	179.04650	415.521368
2013	33	-91.222	2182.123	152.78599	442.233710
2012	13	-67.005	407.389	47.09337	127.575207
2012-2015	124	-93.267	2254.851	146.97517	370.724494

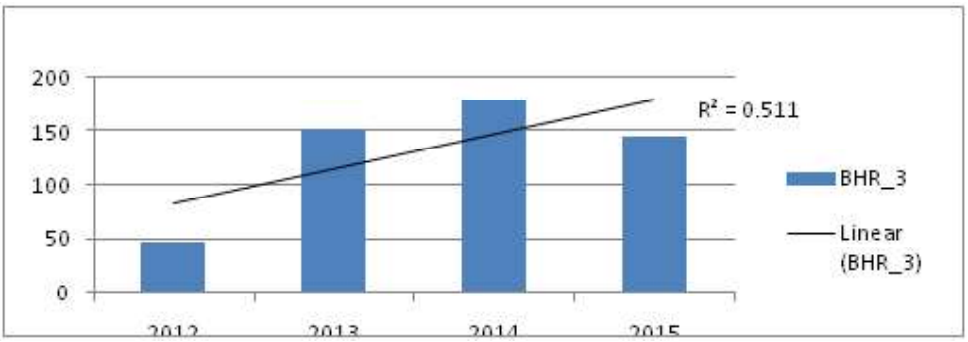

Figure-4: Buy and hold return for three years (BHR_3)

During four years i.e. from 2012-2015, total 124 SME IPOs got listed and yielded 146.97% buy and hold return for three years holding period which can said to be lucrative one. The trend line depicts that the return generated by SME IPOs are increasing over the years.

Determinants of Long-Run performance (Three Years)

Attempt is to use following regression model to find out the variables which may affect long run performance (Table 9).

Table-9: Regression result

Variable	Coefficient	Std. Error	t-statistics	Prob
C	-0.353059	0.503942	-0.700594	0.4842
Ln_Age	0.109116	0.110248	0.989733	0.3233
Ln_Size	-0.076624	0.117011	-0.654847	0.5132

Contd...

Ln_SR	0.208340	0.394661	0.527896	0.5981
Method	0.425316	0.231087	1.840500	0.0669
Period	0.052292	0.246434	0.212194	0.8321
UP	-0.695673	0.200110	-3.476462	0.0006
	R-squared		0.047050	
	Adjusted R-squared		0.023126	
	F-statistic		1.966675	
	Prob (F-statistic)		0.071162	

Based upon the coefficients of explanatory variables, it can be clearly said that underpricing is negatively related with Buy and Hold return of three years which is again consistent with Divergence of Opinion and Impresario Hypotheses. Method of price is also significant at 10%. But none of the other variables, is able to significantly explain the variation in Buy and Hold performance for three years of holding period.

Conclusion and Policy Implications

A considerable amount of literature discovers the impact of various factors such as IPO Size, the subscription rate, method of pricing, time of issue, underpricing on the performance of large IPOs for the short and long holding period. Additionally, there are many empirical analyses that reveal the influence of such variables on IPOs of SMEs, however such analysis is considerably inclined towards the western counties. On the other hand, there is absence of examination on such initiative in Indian context with special reference to IPOs of SMEs. Moreover, those available research papers which prudently examined the above issue belongs to western and developed financial markets. Consequently, the present reasonable research proposes an addition to the prevailing perception of the above emerging issue. We assure and are optimistic about the contribution of current analysis of the above issue in two ways. First of all, by reconnoitering the impact of vital factors on the performance of IPOs of SMEs, this has not been done in previous literatures pertaining to our knowledge in Indian perspective. Moreover, this examination, also strives to gradually augment the comprehensive analysis, by expanding it to underpricing of SME IPOs, long run performance of SME IPO (1 Year) and Long run performance of SME IPO (3 Years) simultaneously. The relevant empirical insights from this empirical study can be summarised as follows. To begin with, on the basis of examination it can be concluded that SME IPO, though of recent origin, has gotstable place in this market and have performed well, be it listing gains or long run performance. The study finds that with the passage of time, this platform is gaining momentum as number of issues listed on such

platforms is increasing over the years; a sum of Rs. 3275.55 cr. was raised during the period of six years ranging from 2012-2017 via 330 IPOs and average issue size of the individual IPO stands around 9.92 crore. On the other hand, it can be surmised that, listing gain generated by SME IPOs stands at 7.90% which is consistent with universally accepted phenomena of initial underpricing in India. Age of the company, subscription rate and timing of SME IPOs have ability to significantly explain the variation in underpricing.Additionally,return for one year holding period stands at 43.21% which is encouraging. On the other it can also be inferred that Age subscription rate and underpricing seems statistically significant explanatory variables. On the other hand, outcome also documents that, for three years holding period, SME IPOs generated 146.21% return which is very attractive. Method of pricing is significant at 10% level of significance. As expected, Underpricing is negatively associated and is significant at 1% significance level.In specific terms of policy implications, the ultimate result gently suggests that the investor must consider subscription rate while putting money in SME IPOs; both for listing gains and long run performance. If the investor is interested only in the listing gains market time along with subscription rate must be contemplated. If investor's risk appetite is higher, then he may prefer SME IPOs over main steam IPOs for long term buy and hold return.

Despite the promising results, this empirical study undoubtedly suffers from some specific limitations. In the beginning, the ultimate inferences of the above findings have been made merely on the basis of comprehensive analyses of 6 years of study. Further comprehensive analyses can be typically done by carefully increasing the duration of study.

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Price Discovery and Volatility Spillover in Indian Commodity Futures Market: An Analysis of Energy Commodities

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Abstract: The current study aims to explore the price discovery and volatility spillover mechanism in spot and futures prices of energy commodities traded on MCX during the time period from January 2011 to March 2020 by utilizing stationarity, Johansen's cointegration, vector error correction model, Granger causality and GARCH model. Based on the daily data of commodity prices, results of the study confirm that price discovery occurs in the futures market of both energy commodities. The results of the study also show volatility spillover from futures market to spot market is dominant for both sampled commodities.

Key words: Crude oil, Natural gas, Energy market, VECM, GARCH, JEL Classification: G13, G14, C51, Q13

Introduction

The previous literature has conventionally claimed that the prices of the futures market discover the prices of the spot market as they assimilate the recent information more quickly in comparison to the spot market due to higher liquidity, flexibility of short positions, low trading cost and lower margin requirement. However, there is still a inconclusive debate on spot and futures price relations in the literature (Purohit et al., 2015; Bahera, 2016). Undoubtedly, the lack of conclusive statement induces the researchers for the further examination on dynamics in price discovery. Further, most of the previous research work on price discovery concentrated on developed countries and well matured commodity markets for instance, the UK and USA (Bhattacharya and Das, 2002). In emerging markets like India where commodity derivatives markets are in their nascent stage, have somewhat different characteristics as compared to developed countries. Emerging markets are distinguished from developed markets by small sample size, thin trading volume, lower liquidity, higher

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volatility of returns, policy restrictions, less developed spot markets and other market frictions. Although futures trading in India have a long history but organized futures trading started in 2003. In 2003, three national commodity exchanges were established with professional management. With the commencement of these exchanges, there is a tremendous growth in value and volume of futures trading and number of commodities to be traded on exchanges. Despite this tremendous growth, trading in futures market is subject to many regulations and has been criticized for their excessive speculation and manipulative practices.

Therefore, the present research work aims to explore the price discovery and volatility spillover mechanism of Indian commodity derivatives market. The current study derives the motivation from the following two observations. First, the studies on this phenomenon are rather limited in context to emerging countries like India. Second, the existing studies on this phenomenon have reported mixed and contradictory results. The present study explores the price discovery and volatility spillover in context of energy commodities namely, crude oil and natural gas by utilizing cointegration test, vector error correction (VECM), Granger causality and GARCH model.

Literature Review

Moosa (2002) examined the crude oil market to find out whether the futures market of crude oil perform the function of risk transfer and price discovery by utilizing the Garbade and Silber model (1983). The results of the study revealed that around 60 percent of price discovery function is performed by the crude oil futures market. Mozhi and Priya (2008) investigated the volatility spillover process in energy and bullion markets by applying Exponential GARCH (EGARCH) model. The authors indicated that volatility spillovers from spot to futures market for crude oil and gold while futures to spot market for silver. Shihabudheen and Padhi (2010) studied the price discovery process as well as volatility spillover considering a sample of six commodities including crude oil and observed that futures market lead to the price discovery process in case of crude oil. This study also showed that volatility spillover from crude oil futures returns to crude oil spot returns. Sehgal et al. (2013) examined the price discovery and volatility spill-over effect for commodity market covering a sample of eight commodities and four indices. The outcomes of the study indicated that futures market has dominant role in price discovery for MCX energy and natural gas whereas volatility spillover from spot market to futures market in case of natural gas. Shrestha (2014) analyzed the price discovery in energy commodities considering three energy commodities namely crude oil, natural gas and heating oil. The findings indicated that price discovery occurs

in the futures market of heating oil and natural gas, whereas price discovery occurs in both futures and spot markets of crude oil.

Gupta *et al.* (2018) examined the market efficiency and price discovery considering a sample of eight commodities including natural gas and crude oil. Analyzing the data from 2004 to 2014, they showed that future market is efficient in price discovery of both crude oil and natural gas. Inani (2018) examined the relative efficiency of crude oil market and indicated that futures market of crude oil is efficient in price discovery. Minimol (2018) explored the long run and short run relationship between futures and spot prices of crude oil using VECM, granger causality and regression model. Their results demonstrate that futures and spot markets are cointegrated and evidenced a long run relationship between futures and spot prices of crude oil. Kaura and Rajput (2021) analyzed the futures and spot price relationship for Indian commodity market taking a sample of thirteen actively traded commodities of MCX (Multi Commodity Exchange of India) and showed futures market is efficient and mature for energy commodities. Seth and Sidhu (2021) explored the price discovery and volatility spillover in energy futures market by utilizing the VECM, ARDL and GJR-GARCH model. Analyzing the data from 2007 to 2018, they showed that in case of price discovery, futures market lead to the price discovery for most of the sample periods and in case of volatility spillover also, futures market is dominant.

The above discussion show that a very few studies have investigated the price discovery process and volatility spillover aspect for energy market regarding India. Further, the available studies have contradictory findings. Therefore, in order to bridge this gap, the current study aims to analyze price discovery and volatility spillover mechanism between futures and spot market of crude oil and natural gas.

Research Methodology

The present study analyzes the data from January 2011 to March 2020 to accomplish the above stated objective of the study. The data of futures prices of near month contracts and spot price has been extracted from the official website of MCX (www.mcx.com).

Price discovery process follows a two step procedure as outlined in Quan (1992). In first step long run relationship is investigated between variables by analyzing whether the price series are cointegrated. If long run relationship exists in the first step, then causality is to be tested to assess the price discovery role of futures markets in second step. For testing long run relationship between markets, we have used the Johansen's cointegration test. The vector error correction model

(VECM) is conducted to examine the price discovery between futures and spot markets.

Before the utilization of any econometric model, it is imperative to determine if price series are stationary for all sampled commodities. To determine the stationarity of data, Augmented Dickey-Fuller (ADF) test is administered. The following ADF model is used to test the stationarity of the variables.

$$\Delta X_t = \beta_1 + \beta_2 t + \beta X_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta X_{t-i} + \varepsilon_t \quad (1)$$

Johansen co-integration test is very sensitive to the lag lengths utilized in the model. VAR model is administered for the appropriate lag length selection. Lag length is decided by the Akaike Information Criteria (AIC). The prices series must be integrated at I(1) for the application of Johansen cointegration analysis. Johansen and Juselius (1990) have suggested the two likelihood ratio tests i.e., trace test and maximum eigen value test to test the co-integration between series.

The null hypothesis of "at most r cointegrating vectors" is tested against the alternative hypothesis of "more than r cointegrating vectors" by $ë_{trace}$ statistic:

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \quad (2)$$

The null hypothesis of "r cointegrating vector" is tested against the alternative hypothesis of "r + 1" by $ë_{max}$ test statistic:

$$ë_{max} = T \ln (1-\hat{\lambda}_{r+1}) \quad (3)$$

If r=0, then in case of trace test statistic, the null hypothesis can not be rejected. In this case, it can be concluded that there is no cointegration. In case of maximum eigenvalue statistic, if r=1 then null hypothesis is not rejected. If r=0 then null hypothesis for maximum eigen value is rejected. In this case, we will conclude that there exists a cointegration relationship.

Cointegration analysis confirms the long run equilibrium relation between the markets and allows the divergence of respective markets from log run equilibrium in the short run. The short run dynamics and disequilibrium among the series can be expressed as VECM. VECM shows the long-run equilibrium relationship between prices by inducing a short-run dynamic adjustment mechanism that describes how the variables adjust when they are in disequilibrium. The presence of a short run dynamic adjustment mechanism confirms the price discovery process. When two series tend to exhibit cointegration, then the vector error correction model (VECM) proposed by Johansen (1988) can be applied according to equation (5) and (6).

$$\Delta S_t = \alpha_S + \sum_{i=1}^{m} \beta_{Si} \Delta S_{t-i} + \sum_{j=1}^{m} \gamma_{Fj} \Delta F_{t-j} + \lambda_S Z_{t-1} + \varepsilon_{St} \quad (4)$$

$$\Delta F_t = \alpha_F + \sum_{i=1}^{m} \beta_{Fi} \Delta F_{t-i} + \sum_{j=1}^{m} \gamma_{Sj} \Delta S_{t-j} + \lambda_F Z_{t-1} + \varepsilon_{Ft} (5)$$

$$Z_{t-1} = S_{t-1} - F_{t-1} (6)$$

In the above equations, Z_{t-1} denotes the equilibrium error that measures how the S_t or F_t adjusts to the previous period's deviation from the long run equilibrium from equation (5) or (6). The magnitude of λ_S and λ_F determines the speed of adjustment back to long-run equilibrium. When S_t and F_t are cointegrated, the coefficients of Z_{t-1} will capture the direction of long run causality.

Granger causality approach proposed by Granger (1969) is used to understand the short run lead-lag relationship between both markets of sample commodities. The model of Granger causality is as follows:

$$\Delta S_t = \sum_{i=1}^{m} a_{1i} \Delta S_{t-i} + \sum_{j=1}^{m} b_{1j} \Delta F_{t-j} + \varepsilon_{1t} \quad (7)$$

$$\Delta F_t = \sum_{i=1}^{m} a_{2i} \Delta F_{t-i} + \sum_{j=1}^{m} b_{2j} \Delta S_{t-j} + \varepsilon_{2t} \quad (8)$$

The null hypothesis in Equation (8) is $b_{1j} = 0$, which indicates that futures prices do not Granger cause spot prices. Similarly, the null hypothesis in Equation (9) is $b_{2j} = 0$ which states that spot prices do not granger cause futures prices.

The current study administers the generalized autoregressive conditional heteroscedasticity (GARCH) model to examine the volatility spillover between spot and futures returns of selected commodities. For this, residuals of ARMA model conducted on the futures and spot return series of sampled commodities are investigated. The majority of financial time series display volatility clustering, which demonstrates that small changes in these series are usually followed by small changes, and large changes are usually followed by large changes. Autoregressive conditional heteroskesdasticity (ARCH) is the technical term used for this behaviour. ARCH LM test is utilized to examine the evidences of volatility clustering in the ARMA model's residuals. The GARCH model was developed by Bollerslev in 1986 and this is an extension to ARCH (Autoregressive Conditional Heteroskedasticity) econometric model. The specification of GARCH (1,1) model is:

$$\sigma_t^2 = \text{Ꞷ} + \alpha_1 u_{t-1}^2 + \beta\, \sigma_{t-1}^2 \quad (1)$$

The squared lagged residuals of ARMA model conducted on the spot and futures return series are estimated to capture the volatility spillover effects as the squared residuals are assumed to be the proxy of volatility in the futures or spot market and included as an exogenous variable in the GARCH equation. The new equation of GARCH model with exogenous variable can be constructed as follows:

$$\sigma_t^2 = \text{GO} + \alpha_1 u_{t-1}^2 + \beta_1 \sigma_{t-1}^2 + \beta_2 \varepsilon_{t-1}^2 \quad (2)$$

In the above equation, the last term â$_2$ represents the squared lagged residual of other variable. The significant value of this coefficient indicates the volatility spillover effect from one variable to another variable.

Results and Discussion

Descriptive Statistics

The outcomes of descriptive statistics are depicted in Table 1. From the following table, it can be observed that price series are negatively skewed except natural gas spot price series. All the series are leptokurtic. Further, the Jarque-Bera statistic suggests that the spot and futures price series are not normally distributed.

Table 1: Descriptive statistics

	Crude oil		Natural gas	
	FP	SP	FP	SP
Mean	8.3441	8.3399	5.2419	5.2398
Median	8.3538	8.3513	5.2402	5.2364
Maximum	8.9297	8.9174	5.9564	8.1149
Minimum	7.3663	3.8258	4.6072	4.5951
Std. Dev.	0.2578	0.2744	0.2090	0.2178
skewness	-0.2753	-2.0645	-0.0854	0.8512
Kurtosis	2.5124	32.1779	3.4791	15.4185
Jarque-Bera	54.7865	87961.5000	26.4013	16032.3800
Probability	0.0000	0.0000	0.0000	0.0000

Stationarity Test

Table 2 exhibits the outcomes of stationarity test using trend and intercept. The results of ADF test reveal that all spot and futures price series are non-stationary at level at 5% significant level. However, the series becomes stationary

after their first difference. This implies that variables are integrated at order one which is the prerequisite of Johansen's cointegration test.

Table 2. Results of ADF test

	At level	At first difference
Crude oil		
Futures Price	-1.85(0.6799)	-13.12**(0.0000)
Spot Price	-2.14(0.5215)	-23.39**(0.0000)
Natural gas		
Futures Price	-2.75(0.2178)	-50.46**(0.0000)
Spot Price	-2.97(0.1419)	-25.28**(0.0000)

Johansen cointegration test

Table 3 highlights the outcomes of Johansen cointegration test using two methods: trace statistics and maximum eigen value test statistic. The outcomes of the test indicate that the null hypothesis of no cointegration is rejected for both commodities. The rejection of null hypotheses confirm the presence of cointegration between futures and spot prices of both sampled commodities.

Table 3. Outcomes of Johansen's Cointegration Test

	Trace Statistic		Max Eigen Statistic	
Commodities	λ_{trace}	*p*-value	λ_{Max}	*p*-value
Crude oil				
H0: r = 0	447.0908**	0.0001	446.9998**	0.0001
H0: r $\leq$ 0	9.09E-02	0.763	0.090919	0.763
Natural gas				
H0: r = 0	441.0093**	0.0001	433.8664**	0.0001
H0: r $\leq$ 0	7.142894**	0.0075	7.142894**	0.0075

Notes: (**) shows significance at 5% significant level. Trace test and Max-eigen value test for crude oil indicate 1 cointegrating eqn(s) at the 5% level. Trace test and Max-eigen value test for natural gas indicate 2 cointegrating eqn(s) at the 5% level.

Vector Error Correction Model Results

The results of the VECM have been shown in Table 4.The outcomes of the VECM show that the coefficients of error correction term which measures the speed of adjustment are negative and significant only in spot equation of both commodities. It indicates that spot market makes adjustment towards the long

run disequilibrium and hence futures market leads to the spot market. Price discovery occurs in the futures market of both commodities.

Table 4: Vector error correction model outcomes

	Crude oil		Natural gas	
	ΔSpot	ΔFutures	Δspot	Δfutures
ECT_{t-1}	-0.98845**	0.023677	(-)0.985213**	-0.000503
$\Delta Spot_{t-1}$	-0.00651	-0.022429	-0.005941	5.91E-05
$\Delta Spot_{t-2}$	0.003071	-0.013749		
$\Delta Spot_{t-3}$	0.00657	-0.006891		
$\Delta Spot_{t-4}$	0.003	-0.010052		
$\Delta Spot_{t-5}$	0.014295	0.006479		
$\Delta Spot_{t-6}$	0.008893	0.004659		
$\Delta Spot_{t-7}$	0.010859	0.005339		
$\Delta Spot_{t-8}$	-0.001161	-0.000896		
$\Delta Futures_{t-1}$	-0.106571	-0.184268**	0.046475	-0.020013
$\Delta Futures_{t-2}$	-0.16961	-0.177543**		
$\Delta Futures_{t-3}$	-0.10561	-0.132425		
$\Delta Futures_{t-4}$	0.009571	-0.008667		
$\Delta Futures_{t-5}$	0.208049**	0.201337**		
$\Delta Futures_{t-6}$	0.065456	0.056638**		
$\Delta Futures_{t-7}$	0.115973	0.067276**		
$\Delta Futures_{t-8}$	-0.124697	0.004943		
Constant	-0.000418	-0.000419	-0.000194	-0.000221

Source: Author's calculations based on data collected from MCX. Note: ** shows significance at 5% confidencelevel.

Table 5 indicates the results of Granger causality test. The results show that bi-directional causality exists between spot and futures prices of both commodities. However, futures market with high F-statics lead to the spot market in short-run. The outcomes of Granger causality test supports to the outcomes of VECM model.

Table 5: Results of Granger causality test

	Crude oil	Natural gas
FR of does not Granger cause SR	58.968**(4E-88)	728.9**(1E-140)
SR of does not Granger cause FR	5.657**(0.0000004)	8.93**(0.0028)

GARCH Model

The ARCH test results, as shown in Table 6, reveal that there exist heteroskedasticity in the spot and futures return series of both commodities. The presence of heteroskedasticity in the return series validates the application of GARCH Model. The results of GARCH model are presented in the Table 7. The coefficients of $\hat{a}_2$ indicate the volatility spillover effect from spot (futures) to futures (spot) markets. The coefficients of $\hat{a}_2$ are significant in case of both futures and spot return series of sampled commodities which indicate the presence of bi-directional volatility spillover effect between spot and futures returns of crude oil and natural gas. On the basis of magnitude of the coefficients, volatility spillover effect from futures return to spot return is more than the spot to futures return. The coefficient value of the Squared lagged residual in spot returns of crude oil and natural gas is greater than the Squared lagged residual in futures return of crude oil and natural gas which implies that volatility spill over is greater in degree from futures to spot market. The diagnostic test results demonstrated in the Table 8 reveal that no heteroskedasticity and serial correlation problem exist in the residuals of GARCH model.

Table 6: ARCH test

Returns	Constant	AR(1)	MA(1)	ARCH Test
Crude oil				
FR	-0.0003(0.4551)	0.364**(0.0000)	-0.595**(0.000)	43.049**(0.000)
SR	-0.0003(0.4210)	0.298**(0.000)	-0.567**(0.000)	81.797**(0.000)
Natural gas				
FR	-0.00005(0.6192)	0.207(0.5772)	-0.2474(0.4993)	86.653**(0.000)
SR	-0.0002(0.8402)	-0.0063(0.1076)	-0.729**(0.000)	19.503**(0.000)

Table 8: Diagnostics test results

D. V.	ARCH Test	Correlogram of squared residuals (Q^2 at 4 lag)
Crude oil		
FR	1.6803(0.1949)	5.7295(0.220)
SR	0.0365(0.8486)	6.4316(0.169)
Natural gas		
FR	0.0727(0.7874)	0.7262(0.948)
SR	0.0058(0.9394)	0.137(1.000)

Notes: ** shows significance at 5% level.

Table 7: Volatility spillover results

	Mean Equation			Variance Equation			
D. V.	Constant	AR(1)	MA(1)	ω	α_1	β_1	β_2
Crude oil							
FR	-0.0003(0.1395)	0.289**(0.000)	-0.59**(0.000)	0.0002**(0.000)	-0.001(0.9392)	0.04**(0.0002)	0.74**(0.000)
SR	-0.00004(0.8557)	0.25**(0.000)	-0.565**(0.000)	0.00008**(0.000)	-0.002(0.8838)	0.17**(0.0000)	0.79**(0.000)
Natural gas							
FR	-0.0003**(0.001)	-0.45**(0.033)	0.397(0.0698)	0.00001**(0.000)	0.087**(0.000)	-0.009(0.641)	0.013**(0.000)
SR	-0.003**(0.000)	0.005(0.8284)	-0.67**(0.000)	0.0002**(0.000)	4.192**(0.000)	0.005(0.5923)	8.42**(0.000)

Notes: ** indicates significance at 5% level.

Conclusion, Policy Implications and Futures Research Directions

The current study explores the price discovery and volatility spillover for crude oil and natural gas utilizing co-integration test, vector error correction (VECM), Granger causality and GARCH model.The results of the study indicate that price discovery occurs in the futures market of both commodities in the short run as well as in the long run. The dominant role of futures market can be attributed to fewer transactions cost, more liquidity and ease of short-selling etc. These findings are consistent with the findings of Kaura and Rajput (2021) and Inani (2018). The results of volatility spillover show that volatility spillover from futures to spot market is dominant in case of both commodities.The results of volatility spillover are in line with the Seth and Sidhu (2021).

The evidence of price discovery and volatility spillover interlinkages between futures and spot markets of energy commodities is enormously useful for investors, traders, policymakers and portfolio managers due to several reasons: First, enabling the traders and investors to know whether the futures markets or spot markets dominate the price discovery process in selected commodities which will help them to decide their arbitrage strategies and investment policies. Second, the better understanding of the relationship between the futures and spot markets would be advantageous for the policy makers who are indulged in formulating policies for the financial market stability.Our results help traders and investors to know about nature of the volatility spillovers among spot and futures market for energy commodities. Portfolio managers can estimate the diversification benefits exist between two markets through the knowledge of volatility spillover between the two markets of various commodities. Moreover, knowledge of volatility spillover between two markets helps the policy makers to bring down the volatility spillover effects during excessive price movements in underlying markets.

The current study explores the price discovery and volatility spillover aspects of commodity market. Another important aspect, which is, hedging effectiveness, is not included within the scope of the present study. Therefore, the future research may focus on the other aspects of commodity market.The current study has administered only GARCH model. Further research can be conducted by applying more advanced methodology, for example EGARCH, PARCH, TARCH and Copula-GARCH etc.

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An Impact of Capital Structure on Profitability of Selected Hotel Chains in India

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Abstracts: Hospitality sector is one of the fastest growing service sectors of India. The growing economy, growing prosperity of people, higher disposable incomes, a growing middle class and ambition of people to explore something new have boosted the demand of hotel industry in India. In today's verycomplex business world, it is essential to understand the factors that affect the profitability and performance of the company. Therefore, an attempt has been made here to analyze the relationship between the debt – equity mix and profitability. The study of capital structure of selected hotel chains i.e. IHCL, HLVL, EIHL and ROHL is undertaken for a period of thirteen years beginning from 2007-08 to 2019-20.The analysis is carried out with the help of descriptive statistics and correlation analysis. The hypotheses are tested by applying ANOVA and regression analysis. It is identified that hardly any regression model is significant. It is concluded from the data analysis and several statistical tests conducted that HLVL has to improve its financial health by managing its capital structure effectively. Continuous losses suffered by HLVL show its poor performance. It needs to reduce debt proportion to manage its liquidity. The financial position of IHCL and ROHL was also found weak but this situation lies for a short period. EIHL has observed a good financial condition during the study period. Still, it requires giving more weight to trading on equity to maximize return to the owners.

Key Words: Capital Structure, Hospitality Sector, Profitability, Descriptive Statistics, Correlation analysis, ANOVA and Regression Analysis

Introduction

It is the universal truth that 'No business can be run without money'. In the area of Financial Management, the word money is usually termed as 'Capital' or 'Funds'. So the biggest challenge in front of a businessman or a manager is to get finance for his business. The funds required for starting and running the business can be raised either through ownership securities i.e. equity shares and preference shares or creditor ship securities i.e. debentures and/or bonds.

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Thus decision to choose a debt-equity mix is termed a capital structure decision whereas financial structure is the combination of short-term debt, short-term liability, long-term debt and shareholders' fund that a firm uses to finance its assets. Capital structure is a part of financial structure.(Maheshwari, 2006)

According to Gesternberg, "Capital structure refers to the make-up of a firm's capitalization."(Maheshwari, 2006)

Review of Literature

(Singh & Bagga, 2019) undertook a study to evaluate the effect of capital structure on profitability. 50 companies listed on NSE were selected as samples. The time period considered was from 2008 to 2017. The data has been analyzed by using descriptive statistics, correlation and multiple panel data regression models. To explain the relationship between profitability and capital structure 4 different regression models were applied. These models have studied the individual effect of total debt and total equity ratios on profitability with the help of ROA and ROE. It is concluded that there is a significant positive impact of capital structure on firm's profitability.

(M & Souza, 2018) aimed at establishing the relationship between capital structure and profitability. ROCE was taken as a DV and Debt to Equity and debt to market cap were taken as IV. Nifty50 companies for five years from 2013 to 2017 were considered for analysis. The study employed Panel Data Regression analysis through panel econometric techniques. The results of the study revealed that capital structure was not very significant in determining the profitability of the firm. However, there exists a weak negative relationship between capital structure and profitability.

(Aggrawal & Chandra, 2017)explained the effect of capital structure and firm quality on the firm value of selected BSE-listed Indian hospitality firms for a time period from 2001 to 2015. Panel data technique is applied for data analysis. The findings of the study show a significant relationship among firm value with firm quality, leverage, liquidity, size and economic growth. It has proved wrong the theory of Modigliani and miller for Indian hospitality sector.

(Mazumder, 2017) observed that infrastructure companies have a very bright future in India as India is the fastest-growing economy. So the author decided to study the effect of capital structure on the overall value of the firm. The sample selected for this study is infrastructure companies listed on the Indian Stock Exchange. The study provides a mixed result on the relation between capital structure and the performance of the firm. Ratio Analysis and Correlation Matrix are used to analyze the data.

(Kalyani & Mathur, 2017)wrote this paper to find out the impact of capital structure on the overall profitability of a firm. 7 firms dealing in oil and natural gas listed in NSE and BSE were taken as samples. The period considered for the study was from 2005 to 2015. Samples were selected by using a non-random technique. NPM and ROA were calculated to measure profitability and Growth of assets, log sales, DOL and DFL were found to measure capital structure. The test applied to test hypotheses is correlation and regression analysis. The study witnessed that a significant relation was found between DV and IV of selected oil and natural gas firms.

(V.Devaki & Saravanan, 2015)wrote a research paper to establish the hypothetical relationship between capital structure and its impact on the profitability of the 12 paper industries in India. The research was carried out for 10 years from 2003-04 to 2012-13. The criteria decided for selecting the company was Net Sales of 150 crores. The study is based on secondary data collected from annual reports, books, journals and other relevant sources. The results indicate that capital structure has a significant impact on the profitability of selected firms.

(Ahmad, 2014) examined the impact of capital structure on the profitability of the cement sector of Pakistan. With the help of the panel data sampling technique, 16 firms listed on Karachi Stock Exchange were selected for a period of 6 years from 2005 to 2010. To indicate capital structure, Debt/Equity Ratio, Debt Ratio, Interest Coverage Ratio, Short term debt to asset, and Long term debt to assets are used and for Profitability, Return on Equity is used. The data analysis was carried out by using STATA 11 and fixed and random effect methodology. The results implied that profitability is significantly related to capital structure. Precisely speaking, profitability was inversely related to the amount of liability in a company.

(Mawanza & Mugumisi, 2013) conducted research to investigate the relationship between capital structure and firm performance in the tourism and hospitality sector of Zimbabwe. Four listed companies in the tourism and hospitality sectors were selected for research from 2009 to 2013. Stata 10 and simple multiple regression are applied for data analysis. The findings of the study showed that the performance of firms is significantly affected by their capital structure and their relationship is negative in nature.

(Ramchandran & Candasamy, 2011)wrote an article to analyze how far the capital structure affects the profitability of corporate firms in India. 102 IT firms are selected as samples by following the Multi-Stage Sampling Technique. The data for a period of 8 years ranging from 1999–2000 to 2006–2007 have been collected and considered for analysis. Regression Analysis in addition to

descriptive statistics such as Mean, Standard Deviation, and Ratios has been used. The study proves that there has been a strong one-to-one relationship between capital structure variables and Proûtability variables and the capital structure has a signiûcant inûuence on Proûtability and an increase in use of debt funds in capital structure tends to minimize the net proût of the IT ûrms listed in Bombay Stock Exchange in India.

(Abor, 2005)pursued research to evaluate the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange for five years. Regression analysis was used for data analysis. The research suggested that profitable firms prefer debt to procure funds to finance investments. In the Ghanaian case, 85% a very high proportion of debt was presented by the short-term debts.

Research Gap

This research study seeks to evaluate the capital structure of leading hotel chains of India to examine an impact of capital structure decisions on the profitability of companies. It aims to analyze the debt-equity structure of these hotels, try to discover the industry benchmark and scrutinize how capital structure plays a momentous role in the company's overall growth. In foreign countries, many research studies have been conducted till now in the field of hospitality with reference to its capital structure, but in India, very few studies is carried out by taking into consideration the debt-equity mix of leading hotel chains of the country. Since huge investment is required and made in this hotel business, the study would give answer to the question "Being huge means always being better?"

Research Methodology

Problem Identification

The hotel industry, being one of the fastest growing service sectors in the world, plays an important role in the growth and development of any country. What is the state of capital structure in hotel companies? Does the debt-equity mix create any impact on the profitability of the selected units? Which company manages its capital structure effectively? etc. Answers to such questions give an idea to explore "*An Impact of Capital Structure on Profitability of Selected Hotel Chains in India*".

Objectives of Study

The objectives of the research study are as follow:

- To study the various aspects of capital structure.

- To analyze and examine the impact of capital structure on the profitability of selected hotel chains.
- To analyze and examine the impact of capital structure on the liquidity of selected hotel chains.
- To measure the impact of financial risk, trading on equity and interest rates on capital structure of hotel chains.

Formulation of Hypotheses

Based on the survey and objectives, the following hypotheses have been identified for the study:

H_{01}: There is no significant difference in the debt-equity structure of selected hotel chains.

H_{01a}: There is no significant difference in debt-equity ratios of selected hotel chains.

H_{01b}: There is no significant difference in the equity-asset ratio of selected hotel chains.

H_{01c}: There is no significant difference in the debt-asset ratio of selected hotel chains.

H_{01d}: There is no significant difference in STDR and LTDR of selected hotel chains.

H_{02}: There is no significant difference in the profitability ratios of selected hotel chains.

H_{02a}: There is no significant difference in the net profit margin of selected hotel chains.

H_{02b}: There is no significant difference in the return on capital employed of selected hotel chains.

H_{02c}: There is no significant difference in the return on equity and return on assets of selected hotel chains.

H_{03}: There is no significant difference in the liquidity ratios of selected hotel chains.

H_{03a}: There is no significant difference in the current ratio of selected hotel chains.

H_{03b}: There is no significant difference in the quick ratio of selected hotel chains.

H_{04}: There is no significant relation in debt-equity mix and profitability of selected hotel chains

H_{05}: There is no significant impact of leverage and financial risk on profitability of selected hotel chains.

Significance of the Study

This study contributes to the literature by examining the impact of capital structure on the profitability specifically for the hospitality industry in Indian context. It will also be helpful to various stakeholders such as selected hotels for the study, the hotel industry as a whole, other sector companies, researchers, investors, government and the general public, etc.

Scope of the Study

This research covers different aspects and concepts of capital structure of selected hotel chains from financial years 2007-08 to 2019-20.It also evaluates the effect of capital structure on the profitability of above mentioned selected hotel chains. The research work also includes inter-firm comparison as it takes into account the comparison of the performance of selected hotel chains.

Research Design

Types of Data

The study is completely based on secondary data which is available in published form.

Nature of the Research Study

The said research work is descriptive in nature.

Time Period

The study of capital structure of selected hotel chains i.e. IHCL, HLVL, EIHL and ROHL is undertaken for a period of thirteen years beginning from 2007-08 to 2019-20.

Sources of Data

Annual reports of hotels, article published in the newspapers, magazines and journals, etc.., different books on Financial Management have been used as a means of data collection. Websites of companies are also referred for the same.

Data Analysis

The collected data has suitably been classified in the form of tables, graphs and charts. Ratio analysis and other statistical methods are used to analyze data. To measure the effect of capital structure on various aspects of profitability of a company, ratios like Return on Assets, Return on Capital Employed, Net Profit Margin, Return on Equity, Debt-Equity Ratio, Debt-Asset Ratio, Interest Coverage Ratio, etc are calculated.

Sample Selection

a) **Purposive or Deliberate** Sampling Method is followed to carry out the research study

b) Out of 22 India originated hotels chains, the following four hotel chains are selected as samples for the study. (Wikipedia The Free Encyclopedia, 2021)

   1) Taj Group of Hotels (IHCL) (The Indian Hotels Company Limited)
   2) The Leela Palaces, Hotels and Resorts (HLVL) (Hotel Leela Venture Limited)
   3) Oberoi Group of Hotels (EIHL) (East India Hotels Limited)
   4) Royal Orchid Hotels (ROHL) (Royal Orchid Hotels Limited)

c) The following are the reasons for the selection of above-mentioned Group of Hotels.

   1) They are among the top 50 hotel chains in India. (Yatra, 2022)
   2) The annual turnover of selected hotel chains during the study period is more than Rs.75 crores. (The Economic Times, 2021)
   3) The annual net worth of selected hotel chains is more than Rs.135 crores. (The Economic Times, 2021)

Testing of Hypothesis (at 5% level of significance)

The statistical tools applied for this research work are Descriptive Statistics, Correlation, Multiple Regression and ANOVA. The results obtained are mentioned below:

$H0_1$: There is no significant difference in the debt-equity structure of the selected hotel chains over the period of study.

Variable	P value	Hypothesis	Test
Equity Ratio	0	Rejected	Significant
Debt Ratio	0	Rejected	Significant
STDR	0.08	Fail to Reject	Insignificant
LTDR	0	Rejected	Significant
Debt to Equity Ratio	0	Rejected	Significant
ICR	0.067	Fail to Reject	Insignificant
FL	0	Rejected	Significant

$H0_2$: There is no significant difference in profitability ratios of selected hotel chains over the period of study.

Variable	P value	Hypothesis	Test
NPM	0	Rejected	Significant
ROA	0	Rejected	Significant
ROCE	0.002	Rejected	Significant
ROE	0	Rejected	Significant

$H0_3$: There is no significant difference in the liquidity ratio of selected hotel chains over the period of study

Variable	P value	Hypothesis	Test
CR	0.107	Fail to Reject	insignificant
QR	0.006	Rejected	Significant

H04: There is no significant relation in debt-equity mix and profitability of selected hotel chains

Correlation with		Debt Ratio	Equity Ratio	STDR	LTDR	D-E Ratio	ICR	FL
NPM	r	0.671	-0.479	0.584	0.601	-0.574	-0.594	-0.289
	p value	0	0	0	0	0	0	0.019
	Hypothesis	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected
ROE	r	-0.682	0.727	-0.313	-0.55	-0.812	0.367	0.561
	p value	0	0	0.012	0	0	0.004	0
	Hypothesis	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected
ROCE	r	0.564	-0.446	0.439	0.507	-0.422	-0.234	-0.318
	p value	0	0	0.001	0	0.001	0.047	0.011
	Hypothesis	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected
ROA	r	0.642	-0.405	0.388	0.465	-0.276	-0.332	-0.455
	p value	0	0.001	0.002	0	0.024	0.008	0
	Hypothesis	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected	Rejected
CR	r	0.23	-0.204	0.267	0.185	-0.054	-0.278	0.09
	p value	0.051	0.074	0.028	0.094	0.353	0.023	0.263
	Hypothesis	Fail to reject	Fail to reject	Rejected	Fail to reject	Fail to reject	Rejected	Fail to reject
QR	r	0.358	-0.229	0.239	0.228	-0.212	-0.218	-0.108
	p value	0.005	0.051	0.044	0.052	0.065	0.06	0.224
	Hypothesis	Rejected	Fail to reject	Rejected	Fail to reject	Fail to reject	Fail to reject	Fail to reject

H05: There is no significant impact of leverage and financial risk on profitability of selected hotel chains.

Ratio	Key Regression Analysis output	
NPM	r Square	0.68
	ANOVA (Sig. Value)	0
	Hypothesis	Rejected
ROE	r Square	0.72
	ANOVA (Sig. Value)	0
	Hypothesis	Rejected
ROCE	r Square	0.456
	ANOVA (Sig. Value)	0
	Hypothesis	Rejected
ROA	r Square	0.529
	ANOVA (Sig. Value)	0
	Hypothesis	Rejected
CR	r Square	0.293
	ANOVA (Sig. Value)	0.024
	Hypothesis	Rejected
QR	r Square	0.226
	ANOVA (Sig. Value)	0.105
	Hypothesis	fail to reject

Major Findings

1. The trends observed for various aspects of capital structure indicate that all selected hotel chains do not have a flat track record during the period of study. The parameters i.e. net profit margin, return on capital employed, return on equity and return on assets selected to study profitability show a significant difference for all the selected hotel chains over the period of study. All the selected hotel chains are not capable enough to maintain current assets twice to current liabilities throughout the study period.

2. NPM of all the selected hotel chains is highly affected by capital structure parameters such as ICR, FL, D-E ratio and equity ratio and also the variability is found more than 60%.The impact generated by capital structure variables such as ICR, FL, D-E ratio and equity ratio on ROE is significant but the value is less than 50%.

3. It is observed that indicators used for liquidity such as current ratio and liquid ratio are not at all affected by capital structure variables.
4. There is a negative correlation among financial leverage, ROCE, D-E ratio and equity ratio. The quick ratio is positively connected with LTDR and debt ratio while with other capital structure parameters such as financial leverage, equity ratio, D-E ratio, interest coverage ratio; it doesn't carry any significant correlation. The relationship observed between profitability and capital structure is positive for some variables and negative for other variables. Also, some of the profitability variables are strongly related to capital structure ratios while others are having a strong negative relationship with capital structure.

Conclusion

Profit earned by the firm is closely connected with and largely dependent on the capital structure or investment decisions.This interdependency of profit on debt-equity mix stimulated the researcher to check the hypothetical correlation between CS and the profitability from 2007-08 to 2019-20 regarding the hotel industry, the fastest-growing service sector in India.It is concluded from the data analysis and several statistical tests conducted that HLVL has to improve its financial health by managing its capital structure effectively. The financial position of IHCL and ROHL was also found weak but this situation lies for a short period. EIHL has observed a good financial condition during the study period.

Suggestions

1. All selected hotel chains are hereby suggested to work upon to improve their profit as explained by profitability ratios.
2. Especially HLVL does not have consistency in its as continuous losses incurred in the company from 2010-11 to 2019-20 during the study period by effectively managing its debt-equity structure.
3. IHCL should reduce debt content specifically for the years 2012-13, 2013-14 and 2014-15 from its capital structure because the higher amount of debt has led the company towards negative ROCE, ROE, ROA and NPM for these years.
4. ROHL has been exceptionally doing well during the period of as revealed all the capital structure and profitability measure compared to other selected units except the year 2012-13 where it has suffered a loss. Hence, it is advised to improve its performance.
5. EIHL is advised to increase debt capital to an acceptable limit to get the benefit of trading on equity.

Limitations of the Study

1. This study is based on four hotel chains only i.e., IHCL, HLVL, EIHL and ROHL.
2. The study is undertaken only for a duration of thirteen years beginning from 2007-08 to 2019-20.
3. The study discusses only the capital structure which comprises only a small part of the financial structure which includes only long-term sources of funds.
4. The entire research work is based on the secondary data of hotels collected through websites, annual reports, magazines, journals, articles, newspapers and different books on Financial Management. So there is a limitation of using only secondary data.

Further Scope of the Research

1. Instead of the time period of only thirteen years, the researcher can expand the time duration for better research work.
2. The financial structure can also be chosen as a research problem for further research.
3. Various other hotel chains can be linked with the study for making more reliable and comprehensive.
4. Instead of measuring impact of capital structure only on profitability, the other measures of financial performance can be selected for quantifying impact.
5. The similar study can be conducted for other service industry viz., tourism, banking, etc.

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Liasion Between Workplace Ostracism and Job Performance with the Mediation of Negative Emotions: A Study of Higher Education Institutions

SANDEEP TANDON AND POOJA GUPTA

Abstract: The objective is to investigate the idea of workplace ostracism and evaluate its effects on the job performance along with the intervention of negative emotions on the said impact on the employees of educational institutions in India. The primary data has been gathered from 947 employees of chosen higher education institutions through the distribution of a well-structured questionnaire. The data were analysed, and the formulated hypotheses were put to the test using structural equation modelling and confirmatory factor analysis. The findings show that workplace exclusion has a negative and significant impact on an employee's ability to perform their job and mediation of negative emotions was not revealed in the relationship. The paper, thus, provides useful suggestions regarding reduction of workplace ostracism or enhancement of job performance for the higher education institutions which make them capable to produce a workplace conducive for the employees. The data was collected from five universities in Jammu division only. There might be some region-specific characteristics. As such, the results are not generalisable across the country. The paper makes a valuable contribution in the context of the workplace as it is the best of the class of domain.

Keywords: Workplace Ostracism, Job Performance, Exploratory Factor Analysis, Confirmatory Factor Analysis, Structural Equation Modeling

Introduction

As a result of ostracism's frequent occurrence and obvious effects, research into the behaviours that isolate or exclude people from social interaction has expanded in recent years. Particularly important concepts include ostracism (Williams, 1997, 2007, 2009; Williams et al., 2000), social exclusion (Twenge et al., 2002), rejection (Prinstein & Aikins, 2004), abandonment (Baumeister et al., 1993), (Jones et al., 2009; Jones & Kelly, 2010). Rendered all the probable stresses and minor hurdles

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a person could face on a regular basis, the practice of ostracism which includes a feeling of being ignored, left out from some activity or conversation, or unseen at workplace, are an ordinary and an influential experience (Ferris et al., 2008; Fox & Stallworth, 2005; Hitlan et al., 2006) and the episodes of ostracism might seem trivial on the airfoil particularly at the workplace.One of the "social aches," workplace ostracism, is when people feel ignored, left out, or treated disrespectfully by others (Eisenberger et al., 2003; Ferris et al., 2008). Ostracism is a common occurrence in all forms of exclusion in significant social contexts, including at work (Fox and Stallworth, 2005). Through social interaction, avoiding eye contact, leaving the room as he or she enters, or failing to acknowledge greetings, a person may feel alone or separated from his or her coworkers at work (Williams, 2007; Robinson et al., 2012; Zhu et al., 2017).

Review of Literature and Research Gap

Up until the last three decades, social scientists did not recognise ostracism as an adverse social behaviour (being ignored and left out) (Gruter & Masters, 1986; Williams, 1997, 2001, 2007, 2009). Given its enormous impact and likely prevalence in organisations, it is important that we devote more scholarly attention to ostracism in the workplace. With extant literature review, we come to the conclusion that studies have focused on its occurrence and importance (Zadro & Williams, 2006; Gruter & Masters, 1986; Haymann et al., 2015; Hartgerink et al., 2015; Mlika et al., 2017; Wesselman et al., 2019; Sultana & Chechi, 2019; Sommer et al., 2001; Morin, 2018; Carter et al., 2008; Scott & Duffy, 2015; Ali Al-Atwi, 2016). Further, this specific construct 'Workplace ostracism' and its relationship with Job performance has been researched/studied mostly outside India like China, U.K., U.N., U.S., Australia (Sydney), Hongkong, Africa, Germany, Romania and Turkey, Pakistan (Robinson et al., 2012; Lustenberger & Jagacinski, 2010; Wu et al., 2011; Haq, 2014; Ferris et al., 2015; Wan et al., 2015; Ali Al-Atwi, 2016) and two studies (by Khanna, 2016 and Anand P., 2016)were found exhibiting the relationship ofworkplace ostracismwithwork engagement and loneliness respectively in India. Therefore, research on workplace exclusion and its impact on performance in India is urgently needed. Despite growing research on the concept of "workplace ostracism" in the manufacturing, banking, nursing, and hospitality industries (Gkorezis et al., 2016a; Hitlan et al., 2006; O'Reilly & Robinson, 2009; Wu et al., 2012), there is a dearth of studies examining the relationship between workplace ostracism and job performance on employees in the higher education sector. This study's goal is to look at the connection between workplace exclusion and worker performance in J&K's higher education sector.

Conceptual Framework and Hypotheses Development

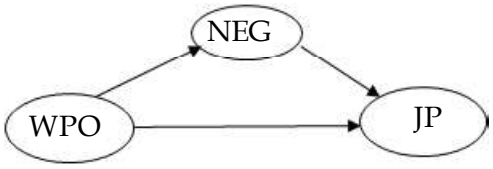

Figure 1: Conceptual model

Objectives of Study

The objectives are:

- To examine how workplace ostracism affects job performance.
- To examine the mediating role of negative emotions in the relationship between workplace ostracism and job performance.

Hypotheses Formulation

Workplace Ostracism and Negative Emotions

According to a review of the literature, ostracism can have a psychological impact in the form of negative consequences, such as need threat and low mood (Hermann et al., 2014; Williams et al., 2000; Zadro et al., 2004), which can affect managerial roles (Buelow et al., 2015), and the same effects can be seen in cases of cyber-ostracism (Sultana & Chechi, 2019). When considering the psychological effects of negative emotions, it was noted that these feelings can either be positive or negative and that they are temporary, movable behaviours, careful experiences, and states of sentiment. Hatred, rage, jealousy, and grief are examples of emotions that can turn negative. Negative emotions can be defined as an equal and reciprocal reaction (other than fear) to something that threatens a person's ability to act for survival, as well as his or her personal needs. In relation to this, Wolfer & Scheithauer (2013) said that after being ignored and rejected, people were forced to behave negatively, anti-socially, and even brutally. Ostracism has been found to significantly affect the emotional response of hurt feelings (anger and sadness) which affects risk taking (Waldeck et al., 2015). (Svetieva et al., 2015). Studies have repeatedly shown that even a brief experience with ostracism caused people to express anger and have lower moods (e.g. feeling sad) (Williams et al., 2000 and Zadro et al., 2004).

H_1: Workplace ostracism significantly influences negative emotions.

Negative Emotions and Job Performance

WPO exhausts valuable resources that are necessary to help employees in the workplace (Leung et al., 2011). A person's defense system might be activated in such an instance. Personnel may experience constant stress and increased resource deficit in an effort to protect against more resource loss, which could have a variety of negative work-related effects. COR theory, according to Hobfall et al. (2018), begins with the premise that people work to acquire, hold onto, nurture, and safeguard the belongings that are most important to them. Health, a sense of belongingness, wellbeing, family, self-esteem, and a sense of purpose and meaning in life are some of these universally appreciated resources.The level of a person's personal and social resources is determined by their sense of belonging, social control, self-esteem, and meaningful existence. The threat to these resources could trigger a tend-and-befriend reflex and stress (Williams, 2007) (Hobfall et al., 2018). Additionally, according to the COR theory's principles, individual, contextual, and other positive resources like self-control and confidence may be useful in reducing the negative effects of resource loss that could ultimately result in subpar performance. On the basis of reviewed literature, it can be hypothesised that

H_2: Negative emotions significantly influence Job Performance.

Workplace ostracism and Job performance

Human beings, because of their social character, treat the feeling of being acceptedin groups as one of their fundamental needs. Due to this very nature of human beings, it can be painful and unpleasant when they think that they are being ostracised. This is pretty true in workplaces, where a climate of teamwork has been developing now-a-days, presentingstrong urge to converse with other colleagues (Sundstrom et al., 2000). In addition to other work related attitudes and behaviours,workplace ostracism is also found to undercut thejob performanceof employees (Liu & Xia, 2016, Wu et al., 2011, Ferris et al., 2015, Lustenberger & Jagacinski, 2010). Accordingly, the study's findings revealed that empowerment structures support the association between rejection and both in-role and out-of-role performance (Ali Al-Atwi, 2016). Haq (2014) also looked at the connections between psychological capital, job performance, and workplace exclusion. Additionally, the purpose of the study by Hawes et al. (2012) was to investigate how social exclusion affects children's cognitive development and found that Girls expressed that they were felt ostracized while the boys did not. Cognitive performance was better when they were included and it was poorer when they wereexcluded by their co-players. Thus, it is hypothesized that

Hypothesis H_3: Workplace ostracism significantly influencesjob performance.

Mediation Effect

Ostracism at work has a psychological impact, and this psychological impact motivates people to participate in either positive (pro-social or engagement-oriented) behaviour or negative (withdrawal or other anti-social) behavioural reactions. The research has provided evidence of the psychological impact of ostracism and its detrimental behavioural effects (Robinson et al., 2012). Here, the likelihood that positive or negative behaviours will manifest depends on the action that must be taken during a specific time period and also on the significance that an individual attaches to a particular domain, i.e., when do they prefer to self-verify and when do they believe they should self-enhance. People with high self-esteem, for example, who naturally perform well in both favourable (free of abuse) and unfavourable (the presence of workplace ostracism) situations, believe in developing their potential and capabilities, and they exhibit positive behaviours, whereas those with low self-esteem typically confirm their negative self-perceptions in unfavourable circumstances and translate them into negative behaviours.

Hypothesis H_4:Negative emotions mediate the relationship between workplace ostracism and job performance.

Research Design and Methodology

Workplace ostracism is a phenomenon of exclusion and is found prevalent in our society. Employees of the higher education sector, both teaching and non-teaching, made up the study's participants. Despite covering five universities in Division Jammu—University of Jammu (JU), Central University of Jammu (CU), Shri Mata Vaishno Devi University of Katra (SMVDU), Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), and Baba Ghulam Shah Badshah University (BGSBU)—we only screened for employees with at least three years of work experience. A total of 1000 employees were decide to be contacted after pilot testing on 83 employees of JU and CU. About 1230 questionnaires were distributed and the valid response rate was 76.50% (941 respondents) after deleting illegible responses, non responses and incomplete responses during analysis.

A well structured questionnaire was framed on a likert scale (5 point)and thus, was used to extract out responses of the employees regarding workplace ostracism, negative emotions and job performance.Workplace ostracism was measured by utilizing the scales developed by Ferris et al. in 2008 and Hitlan et al. in 2006, 20 items were used to quantify workplace ostracism. Examples of such statements are: "My co-workers give me the silent treatment", "My co-workers dislike my company" and "My co-workers do not invite me for a coffee or lunch break". The construct 'negative emotions' was measured by

the scales of Treynor et al., (2003) and Spielberger, (1983) and the sample items are "I feel fatigued and tired at the office", "I feel passive and demotivated most of the times" and "It is very difficult to concentrate on my work".Job performance was measured by using the scale given by Williams & Anderson (1991) which is a 10-item scale to evaluate employee effectiveness. The sample items include: "I adequately complete assigned duties", "My attendance at work is above average" and "I adhere to casual rules devised to maintain order at the workplace".

Analysis and Findings

Outliers from the data have been identified for the analysis's first step. Eight outlier observations are removed from the dataset because they are anomalous. The data were then evaluated for normality graphically using a QQ plot, and numerically using Skewness and Kurtosis in SPSS (Mardia, 1970). Generally speaking, when Skewness and Kurtosis have values between -1 and +1 or close to zero, the data are considered to be normal (Gao et al; 2008). The Skewness and Kurtosis tests are run using SPSS (17.0 version), and the results are Skewness =.270 and Kurtosis = -.241, respectively, which fall within the range of -1 to +1. This demonstrates the normal distribution of the data.

About 290 respondents are from JU, 99 are from CU, 280 are from SMVDU, 177 are from SKAUST, and 95 are from BSGBU out of the 941 total respondents. The majority of respondents is females (52.5 percent), 50 years of age or older (47 percent), highly qualified (48.5 percent), has no more than 15 years of work experience (31.5 percent), make between $50,000 and $75,000 per year (37.5 percent), are J&K residents (23.4 percent), and are assistant professors.

The common method variance for all the constructs (independent, dependent and mediating variables) have been studied with the help of Harman's -1 factor test where all the independent, dependent and mediators are loaded on one factor with varimax rotation.The findings showed that 20% of the total variance could be explained by just one factor, which is less than 50%, proving that common technique bias is not a problem in the field.

To check workplace ostracism among employees with a peculiar regard to their group-wise perception towards workplace ostracism, independent sample t-test and ANOVA has been given.There was found no substantial deviation in the perceptual experience of employees towards workplace ostracism with respect to age, gender, qualification, working experience, income, designation, institution and nationality.To test the perception of female and male managers towards workplace ostracism, Independent sample t-test has been applied.The results revealed that there is insignificant difference in workplace ostracism

present amongst male and female managers (t = 0.568, p > 0.05).

Results of Scale Validation

Data must first be properly validated and purified with relation to each study variable using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the construct-wise details of which are provided below:

Workplace ostracism

Principal Component Analysis (PCA) has been run on the construct in order to frame the factors. The construct initially consists of 20 items and the EFA procedure took place over the course of two rounds. Two factors were emerged, namely Social exclusion (Cronbach alpha value = 0.957 and variance explained = 51.270%) and Linguistic ostracism (Cronbach alpha value = 0.771 and variance explained = 21.068%)(table 1).Workplace ostracism is the process by which a person is feeling excluded or ignored at the workplace. The employees have below average level of WPO (M=2.61) and the same is true for the two dimensions of WPO i.e. SE (2.68) and LO (2.53) (Ttable 1).

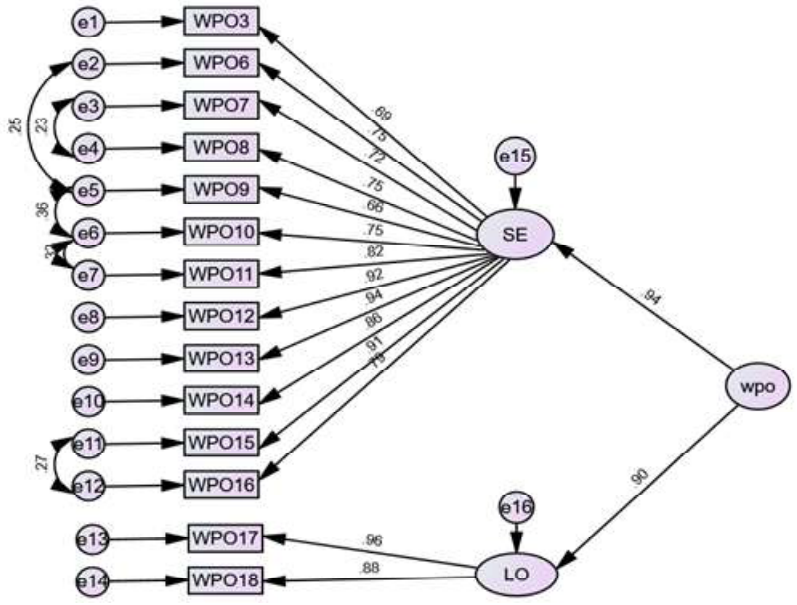

Figure 2: Second Order Factor Model of Workplace ostracism

Keywords: WPO = Workplace ostracism, SE = Social exclusion, LO = Linguistic ostracism, WPO3, WPO6-16 = Manifest Variables of SE, WPO17-WPO18 = Manifest Variables of LO and e1-e14 = Error term of Manifest Variables., e15-e16= Error terms of first layer latent constructs.

Table 1: Results from scale purification of constructs using rotated component method

Factor - wise Dimension	Items	Mean	Standard Deviation	Factor Loading	Variance Explained	Alpha (α)	Communality Value (CV)
Workplace ostracism							
F1: Social Exclusion					51.270	.957	
My head/boss does not invite me to participate in work-related activities.	WPO3	2.97	1.339	.696			.596
My co-workers give me the ‘‘silent treatment’’.	WPO6	2.80	3.224	.818			.684
My co-workers keep me out of their conversations.	WPO7	2.96	1.357	.712			.599
My co-workers dislike my company.	WPO8	2.80	1.334	.760			.633
My co-workers interact with me only when they are required to do so.	WPO9	2.89	1.370	.814			.663
My feelings are not recognised by other employees in this . department	WPO10	2.66	1.297	.847			.726
My co-workers do not update me about important work-related activities.	WPO11	2.50	1.330	.807			.716
My co-workers ignore me at work.	WPO12	2.56	1.318	.799			.824
My co-workers refuse to talk to me.	WPO13	2.54	1.411	.815			.860
My greetings are not answered.	WPO14	2.53	1.378	.670			.767
My co-workers do not invite me for a coffee or lunch break.	WPO15	2.62	1.324	.782			.844
My co-workers make me feel as if I am not a part of this department.	WPO16	2.43	1.355	.657			.695
F2: Linguistic Ostracism	21.068	.771					
My co-workers speak to one another in a language, I do not understand.	WPO17	2.55	1.278	.648			.794
I feel uncomfortable to interact with other co-workers due to language diûculties.	WPO18	2.52	1.247	.762			.809
I feel as if I am being ostracised by my head/boss.	WPO20	3.21	1.305	.828			.709

Contd...

Contd...

Negative Emotions							
F1: Anger							
I feel passive and demotivated most of the times.	5	2.92	1.258	.800	34.117	.807	.640
I think I won't be able to concentrate even on a single activity if I keep feeling this way.	6	2.89	1,325	.862			,748
I am always aware of all my shortcomings, failures, faults and mistakes.	7	3.09	1.283	.661			.537
I am angry with myself most of the times.	8	2.93	1.304	.755			.672
F2: Sadness					33.633	.834	
I feel isolated many a times at the workplace.	1	2.82	1.283	.798			.637
Many a times, I think about a recent stressful situation and wish it had gone better.	2	2.76	1.234	.899			.819
I feel fatigued and tired at the office .	3	2.64	1.103	.806			.717
It is very difficult to concentrate on my work.	4	2.57	1.207	.623			.649
Job performance							
F1:Task Performance	54.290	.943					
I adequately complete assigned duties.	1	3.76	1.268	.777			.635
I fulfill formal performance requirements of the job.	2	3.62	1.318	.884			.807
I perform tasks that are expected from me.	3	3.57	1.247	.902			.863
I engage in activities that directly affect my performance evaluation	4	3.61	1.269	.869			.794
I help others who have heavy workloads.	5	3.64	1.261	.875			.794
I take time to listen to the problems and worries of co-workers.	6	3.56	1.260	.862			.768
My attendance at work is above average.	7	3.50	1.333	.749			.609
I fulfill responsibilities specified in job description.	8	3.67	1.174	.595			.611
F2:Contextual Performance					20.531	.779	
I conserve and protect departmental property.	9	3.78	1.107	.893			.823
I adhere to casual rules devised to maintain order at the workplace.	10	3.79	.976	.867			.778

A second order factor model was prepared in order to assess the dimensionality of the construct 'workplace ostracism'. It consists of two latent factors viz., Social exclusion having 12 indicators and Linguistic ostracism having 2 indicators after deletion of one of the indicators of the second latent factor (Figure 2). The Social exclusion is reflecting workplace ostracism the most (SRW = 0.94, p<0.001) followed by linguistic ostracism (SRW = 0.90, p < 0.001). Initially, the model fit was not at all good (÷2/df = 15.172,GFI= 0.833, AGFI = 0.769, NFI = 0.912, CFI = 0.917, RMR = 0.083, RMSEA = 0.123) but after ascertaining certain modifications (e6-e5, e7-e6, e5-e2, e3-e4 and e11-12),the model yielded good fit with the values (÷2/df =3.959, GFI = 0.900, AGFI = 0.891, NFI = 0.946, CFI = 0.951, RMR = 0.069, RMSEA = 0.081) (Table 2). The reliability and validity values of the construct were found established in the study and can be depicted in table 3. The discriminant validity stood established and values were given in tables 4a,b,c and Table 5.

Table 2: Model summary of confirmatory factor analysis

Scales	χ2/df	GFI	AGFI	NFI	CFI	RMR	RMSEA	
Workplace Ostracism (WPO)	2nd order model	3.467	.948	.918	.966	.973	.050	.068
Negative Emotions (NEG)	2nd order model	2.823	.918	.903	.949	.962	.033	.054
Job Performance (JP)	2nd order model	3.950	.938	.937	.992	.942	.037	.099

Table 3: Reliability and validity analysis

Scales	Standardised Regression Weight	Average Variance Extracted	Composite Reliability	Cronbach's Alpha
Workplace Ostracism		.67	.99	.96
1. Social Exclusion	.99			
2. Linguistic Ostracism	.85			
Negative Emotions		.62	.85	.84
1. Anger	.67			
2. Sadness	.83			
Job Performance		.67	.99	.92
1. Task Performance	.68			
2. Contextual Performance	.68			

Table 4a: Discriminant Validity analysis of workplace ostracism factors

SE	SE	LO
SE	.60	
LO	0.77** (0.59)	.85

Note: Values on the diagonal axis represent Average Variance Extracted and values in parentheses represent squared correlation between the constructs. The values with an asterisk represent correlation values. ** Correlation is significant at the 0.01 level

Table 4b: Discriminant validity analysis of negative emotions' factors

	ANG	SAD
ANG	.51	
SAD	0.45**	.73
	(0.20)	

Note: Values on the diagonal axis represent Average Variance Extracted and values in parenthesis represent squared correlation between the constructs. The values with an asterisk represent correlation values. ** Correlation is significant at the 0.01 level

Table 4c: Discriminant validity analysis of job performance factors

	TP	CP
TP	.68	
CP	0.42** (0.17)	.64

Note: Values on the diagonal axis represent Average Variance Extracted and values in parenthesis represent squared correlation between the constructs. The values with an asterisk represent correlation values. ** Correlation issignificant at the 0.01 level

Table 5: Discriminant validity analysis (construct-wise)

	WPO	NE	JP
WPO	.67		
NE	0.64** (0.41)	.62	
JP	0.21** (0.04)	0.14** (0.02)	.67

Note: Values on the diagonal axis represent Average Variance Extracted and values in parenthesis represent squared correlation between the constructs. The values with an asterisk represent correlation values.

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Any feeling which makes an individual prone to sadness and miserability and also makes oneself the enemy of him/her as well as others can be classified as negative emotions. The scale originally consisted of eight items and as no item was deleted during purification, it was completed in one round only. Two factors were emerged consisting of four items each. The KMO value (0.799) gives the required adequacy of data for factor analysis. A second order CFA is performed on the construct 'negative emotions' and the respective model is prepared. All the manifest variables are loaded significantly on the latent constructs as SRW values were above .60 and therefore, no item was deleted.

It is being reflected highly by Sadness (SRW=0.83, p < 0.001) followed by Anger (SRW = 0.67, p < 0.001). The model yielded good fit (÷2/df =2.714, GFI=0.927, AGFI=0.922, NFI=0.913, CFI = 0.953, RMR = 0.032, and RMSEA = 0.050, Table 2). Moreover, the reliability and validity of the construct was established as they meet the threshold criteria (table 3, 4a,b,c and table 5).

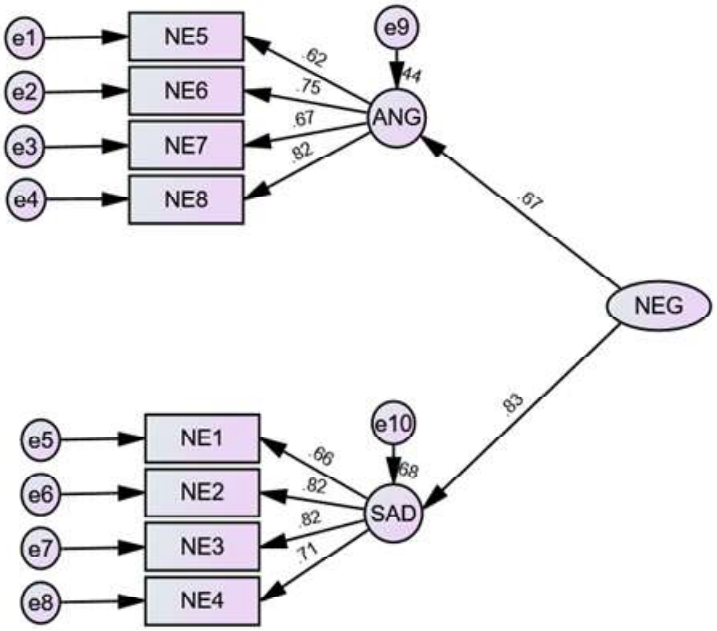

Figure 3: Second order factor model of negative emotions

Keywords: NEG = Negative Emotions, ANG = Anger and SAD = Sadness. NEG1-4 = Manifest variables of Sadness, NEG 5-8 = Manifest Variables of Anger, and e1-e8 = Error term of Manifest Variables, e9, e10 = Error terms of first layer latent constructs.

Job performance

The measure comprises of ten items and the process is completed in a single round without any deletion. A total of two factors were emerged namely Task Performance (Cronbach alpha value = 0.943s and variance explained = 54.290%) and Contextual Performance (Cronbach alpha value = 0.779 and variance explained = 20.531%). The data are suitable for factor analysis, according to the KMO value of 0.927 and BTS measure (chi-square= 7687.048, df= 45, and p= 0.000).Two factors namely, Task performance and Contextual performance which were emerged after EFA, have been used to develop a second order model of the construct 'job performance' (Figure 4). Both the factors are equally reflecting the scale (SRW= 0.68 each). No item was deleted and the model

yielded good fit (÷2/df = 4.050, GFI = 0.938, AGFI = 0.901, NFI = 0.902, CFI = 0.942, RMR = 0.034, and RMSEA = 0.068, Table 2). Further, the comparison of AVE values and squared correlations of the latent constructs revealed that these two are distinct from each other (table 5).

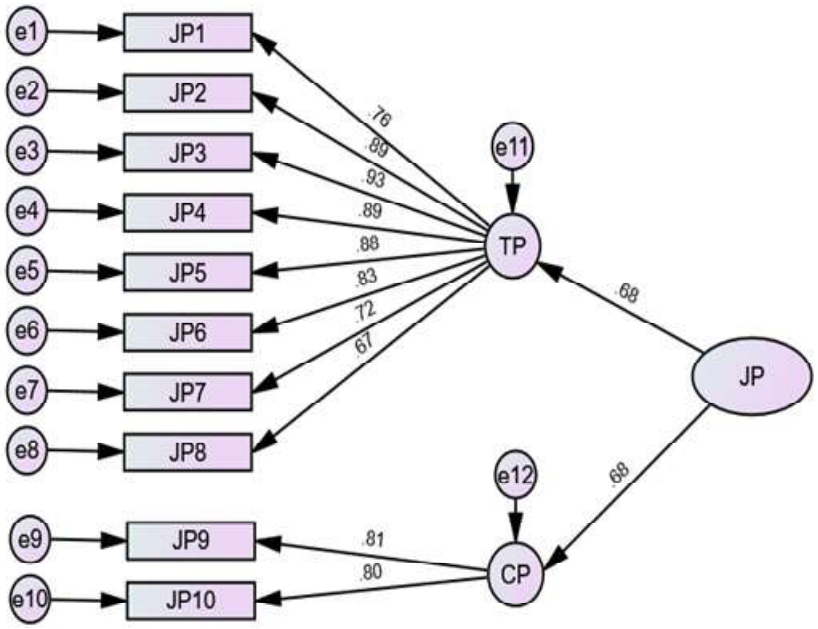

Figure 4: Second order factor model of job performance

Keywords: JP = Job Performance, TP = Task performance, CP = Contextual performance, JP1-8 = Manifest Variables of TP, PD9,10 = Manifest Variables of CP, and e1-e10 = Error term of Manifest Variables, e11,12 = Error terms of first layer latent constructs.

Hypotheses Testing

Finally, structural equation modelling (SEM) by baron and kenny, the most advanced and frequently utilised method of data analysis, was employed. It evaluates the concurrent fitness of both measurement models and the structural model and combines measurement theory and structural theory. The Goodness of Fit indices are also looked at in order to evaluate the fitness of the SEM model. In order to evaluate fitness and examine the model's hypothesised relationships, SEM was performed using AMOS (16.0).The direct relationships were examined and found significant (table 6). However, by entering NEG as mediator between WPO and JP, the direct relationship between the two got increased and became insignificant (SRW = -.24'!-.03, p > .005, figure 5a, table 7). So, it can be concluded that there is no mediation of NEG between WPO and

JP. Further, Sobel test also evidenced the insignificancy of the indirect relationship. WPO positively impacts NEG and NEG negatively impacts JP (WPO'!NEG = .87; NEG'!JP = -.04, figure 5b). The indirect effect of WPO on employee's JP is found to be insignificant through NEG (Sobel statistic (WPO'!NEG'!JP) = 0.99, p > 0.001). Thus, the hypothesis stands rejected (table 7).

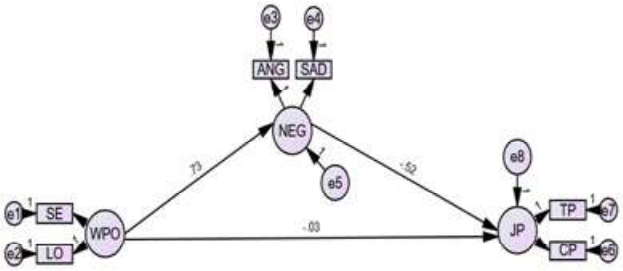

Figure 5a: Mediation of NEG between WPO and JP (Baron & Kenny method)

Keywords: WPO=Workplace ostracism, SE=Social exclusion, LO=Linguistic ostracism, NEG=Negative emotions, ANG=Anger, SAD=Sadness, JP=Job performance, TP=Task performance, CP=Contextual performance, e1-e8 = error terms.

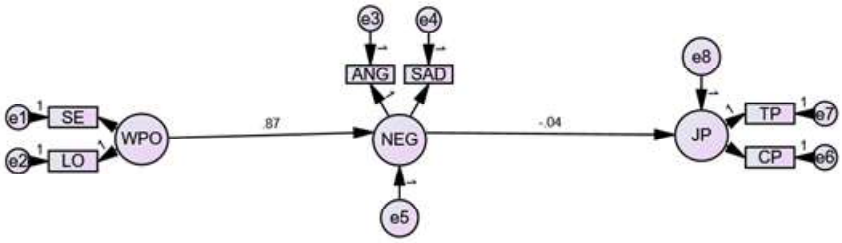

Figure 5b: Mediation of NEG between WPO and JP (Sobel statistics method)

Keywords: WPO=Workplace ostracism, SE=Social exclusion, LO=Linguistic ostracism, NEG=Negative emotions, ANG=Anger, SAD=Sadness, JP=Job performance, TP=Task performance, CP=Contextual performance, e1-e8 = error terms.

Table 6: Results of Hypotheses testing

Hypothesis	SRW	P value	Supported/ Not supported
H1: Workplace ostracism significantly influences negative emotions.	0.73	<0.001	Supported
H2: Negative emotions significantly influences Job Performance	-0.52	<0.001	Supported
H3: Workplace ostracism significantly influences job performance	-0.03	<0.001	Supported
H4: Negative emotions mediate the relationship between workplace ostracism and job performance.		No mediation	

Table 7: Mediation effect

Mediation of NEG between WPO and JP (Baron and Kenny method)

Relationship	P value	SRW	Interpretation
WPO'!JP	Sig	-.24	
WPO'!NEG	Sig	.73	SRW increase
NEG'!JP	Sig	-.56	P value insig
NEG			NO mediation
WPO JP	Insig	-.03	
Mediation of NEG between WPO and JP (Sobel's Test)			
Workplace ostracism '! Negative emotions '! Job performance			0.99 p>.001

Conclusion

Our results lend credence to the notion put forth regarding the link between workplace exclusion, negative emotions and job performance. Ostracism at work has been proven to be strongly correlated with job performance. Similar to earlier studies' conclusions that there is a strong correlation between social exclusion and poor job performance (Wu et al, 2011; Wu et al, 2015; Ferris et al., 2015), our findings support that when employees were ostracized/facing exclusion at the workplace, it will lead to decreasein job performance.There is seen no effect of negative emotions as a mediator in the said relationship and this indicates that the immediate responses to the pain of ostracism expressed in the form of sorrow and grief do not make the indirect effect significant. This provides the conclusion that when employees are not invited for a cup of coffee nor they are updated about the important work related issues, they show a negligible interest in performing their job because they are not made to feel as an important asset to the department.The winding up of these findings is that ostracism at workplace is a painful experience and detrimental to job performance.

Implications

This study suggests a number of implications. It argues that there is an emergent and immediate need to deal with workplace ostracismas. It is a budding and significant issue for the practitioners in the present experiential economy, in order to overcome its deleterious effects.

Although strategies were being implemented by educational institutions to stop abuse (physical and verbal) among peers, Even if the effects of exclusion may be just as harmful as those of other types of conflict, this study will facilitate them to implement some voluntary measures to educate students about these

potential consequences. Since ostracism has undoubtedly been lately included in introductory and social psychology texts (e.g., Myers, 2005).

The conceptualisation suggests that physical surroundings and employee relationship at the workplace were found as two main factors based on which HR managers should manage and design excellent experiences for employees that aid in creating favourable employee experiences. To add, HR professionals must do enough research to compile info on detailed employee profiles to understand their features and tastes.Employees must observe his fellow actor.Backbiting is considered strictly unprofessional and must be debarred for a healthy workplace culture.One gains nothing out of fights and nasty politics at workplace. Bosses should be more like mentors to the employees. The squad leaders should be a source of divine guidance for the underlings.The masters are expected to supply a sensory faculty of direction to the employees and guide them whenever required.The squad members should possess an easy entree to their boss's cabin.Team building activities should be encouraged to hold the employees together.Training programs, workshops, seminars and presentations should be conducted to upgrade the living skills of the employees.Make them for the bad times. They should be so prepared that they will always get ready under any odd circumstances or change in the work culture. In all, our findings suggest that managers can take action to reduce workplace ostracism in order to reduce conflict among employees who experienced ostracism in the past. Also, by launching an increase in employee psychological resources,mangers can decrease ostracism. In order to enhance psychological capital for both managers and employees, training could be a helpful tool of decliningworkplace ostracism. In training, the manager can offerthe employee various recommendations regarding the dangerous consequences of workplace ostracism.

Limitations

Though the study provides useful insights for scholars, academicians, organisation members and other authorities, but at the same time, it suffers from various drawbacks or pitfalls. The first limitation is that the study is sector specific. It is also replicable in other industries, including banking, telecommunications, insurance, and so forth. The second drawback is that the study only examines the effect of workplace exclusion on one job related behaviour, namely job performance, and ignores other behavioural outcomes, both positive and bad. Thirdly, faulty assumptions can be made on the part of respondents.

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Determinants of Customers'Trust in Online Shopping During COVID – 19 Pandemic

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Abstract: The market share of online shopping is increasing day by day. Customers find online shopping more convenient than brick-and-mortar/traditional shopping. This study explores the online shopping dimensions and their effects on customers' trust in online shopping. For this, the researcher takes responses from college-going students and runs Exploratory Factor Analysis (EFA) using Statistical Package for Social Sciences (SPSS) to derive the underlying determinants of customers' trust in online shopping. The study found that online factors such as Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV) are affecting Customers' Trust (CTRT) in online shopping. Later, Analysis of Moment Structures (AMOS) is used to examine these online factors' significant effect/importance on the customers' trust. Results show that Consumer Reviews (CRV) influence customers' trust most in online shopping. Between the Perceived Ease of Use (PEOU) and Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) affects customers' trust in online shopping more. The findings of this study will help online sellers to improve trust generating online shopping factors. This study suggests online vendors to prioritize their online shopping factors as per the nature of their business operation and use them strategically to attract customers for online shopping.

Keywords: Online Shopping, Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV).

Introduction

Online shopping is getting popular worldwide. India is not the exception of it. In the year 2021, the worldwide retail e-commerce sale, as per "statista.com", is accounted for approximately 4.9 trillion U.S. dollars, and it is projected that by 2025 it will go to about 7.4 trillion dollars. For India, in the year 2021, online shopping sales were approximately 67 billion U.S. dollars. It is expected that it will exceed 145 billion U.S. dollars (statista.com) by 2025. The main reason behind this is the nature of the Indian population. Composition in Indian total population

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youth is more compared to its eldest population. Past research has observed that youth prefer to buy goods and services online than the most aged. Second, in India, the Internet and smartphones are easily accessible. According to the report by "datareportal.com", approximately 658 million Indian users were using the Internet in January 2022. During the COVID-19 pandemic, all were inside the home, and people started online shopping platforms to buy goods and services.

Literature Review and Development of Hypotheses

The study takes the help of past literature to explore the various online shopping dimensions that advocates their influence on customers' trust in online shopping.

Customers' Trust (CTRT)

With the help of empirical evidence, the importance of trust in online purchasing is demonstrated by Pavlou (2003). Nikhashem et al. (2011) conducted a study on online ticketing in Malaysia and found that customer trustfulness positively impacts consumer perception about e-ticketing. Hoffman et al. (1999) also advocated trust as an essential element for the success of e-commerce activities. McKnight and Chervany (2002) pointed out that customers have a high level of trust generally willing to become more dependent on internet vendors and make the online purchase. Thus, it can be said that in online shopping, customers' trust plays an important role.

Perceived Service Quality (PSQ)

Online shopping does not allow customers to make conversation face to face. It creates barriers to buyers in the way of online shopping. Because customers cannot have detailed discussions about the products with the sellers. According to Grazioli & Jarvenpaa (2000), perceived quality includes warranties, whereas as per Pennington et al.; (2003-2004), it contains guarantees. According to Doney & Cannon (1997), perceived service quality comprises customized services and delivery performance. However, Gefen (2002) and Kim et al.; (2004) stated that perceived service quality is the general concept of a company's service quality. Daignault (2001) noticed that trust in online shopping is affected by the customers' perceptions concerning a company's service quality. It is evident from past literature that customers' perception of online sellers' service quality influences his/her purchases and trust. Thus it is hypothesized that:

H_1: Perceived Service Quality (PSQ) positively affects the Customers' Trust (CTRT) in online shopping

Perceived Ease of Use (PEOU)

Online shopping depends on technology. Hence, perceived Ease of Use means online sellers must design their website in a way that would be easy to use by all categories of buyers, such as youngers and elders. Koufaris and Hampton-Sosa (2004) pointed out a significant relationship between the perceived ease of use of a website and customers' trust in the vendor/online sellers. Luhmann (2003) suggested online sellers achieve customers' trust in online shopping by implementing features or functions of a system through the trusted party. It is observed that Perceived Ease of Use is one of the critical elements that influence the customers' trust in online shopping. Thus it is hypothesized that:

H_2: Perceived Ease of Use (PEOU) positively affects the Customers' Trust (CTRT) in online shopping

Consumer Reviews (CRV)

In online shopping, customers can not touch, smell, and taste to evaluate the goods and services. In such cases, customers take the help of customer reviews to make a purchase decision. Chatterjee (2001) pointed out that a customer's reviews significantly influence product purchase intention. Cheung and Lee (2008) concluded that between the positive and negative customer reviews, positive customer reviews have a substantial impact on the relationship between trust and intention to shop online compared to negative online consumer reviews. Pavlou (2002) pointed out that online consumer reviews partially enhance sellers' credibility. Consumers' reviews about the goods and services influence the customers' trust in online shopping. Thus it is hypothesized that:

H_3: Consumer Reviews (CRV)*positively affects the Customers' Trust (CTRT) in online shopping*

Proposed Research Model

Based on the past literature, the study takes the online trust generating factors, namely Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV) and examine their influence on Customers' Trust (CTRT) in online shopping.

Figure 1 represents the proposed research model of study. Here, the dependent variable, Customers' Trust (CTRT), is predicted by the three independent variables as Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV).

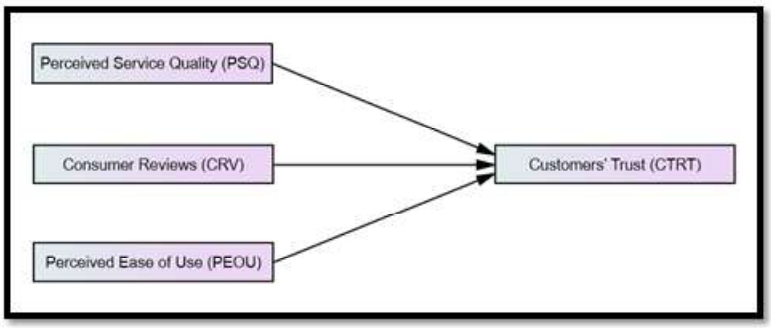

Figure 1 represents the proposed research model.

Methodology

To explore the online trust generating shopping dimension and their impact on customers' trust in online shopping, the study uses the following research methodology:

Development of Questionnaire

A structured questionnaire is developed to obtain the demographic profile of the online buyers and the customers' trust in online shopping. Four items are adopted from McKnight et al. (2002) to assess Customers' Trust (CTRT) in online shopping. To measure the Consumer Reviews (CRV) online factor, three items were adopted from the Park & Lee, (2009). The study took three items suggested by Gefen et al. (2003) to evaluate the Perceived Ease of Use (PEOU). Perceived Service Quality (PSQ) is assessed with the help of three items, the First item suggested by Doney& Cannon (1997), the second item from Grefen et al; (2003) and the third item from the Grefen (2002) are adopted in the study. Hence, thirteen items (after partial modification per current research demand) were employed (Appendix I) to evaluate the underlying dimension of customers' trust in online shopping. All the items are measured on a five-point Likert Scale, where 5, 4, 3, 2, and 1 represent strongly agree, agree, neither agree nor disagree and strongly disagree, respectively.

Demographic Profile of Respondents

Table 1 indicates the demographic profile of the online buyers. Descriptive statistics are used to analyze the demographic profile of online buyers. The numbers of male and female respondents are 89 and 98, respectively. Approx. It shows the maturity levels of respondents to analyze the online shopping information. Sixty per cent of respondents' age is "above 20 years", and about 40 per cent of respondents' age falls "between 18 years to 20 years". More than 42 per cent of respondents are studying in graduation 3rd semester& 4th

semester. About 55 per cent of respondents' annual family income (in) falls between 2, 50, 001 to 5, 00 000. Respondents having shopping experience "between 6 months to 1 year" and "between 1 year to 2 years" and "2 years and above" are 71, 49 and 40, respectively, which is accounted for approximately 86 per cent of total respondents.

The study analyses the online buyers' demographic profile so that the online sellers can design their marketing strategy accordingly. It indicates that most online buyers fall under the middle-class income level. For instance, about 55 per cent of respondents' family income (in [1]) is between 2, 50, 001 to 5 00, 000. Thus online sellers must fix prices for their products and services that could be affordable for the middle-class level of the family.

Descriptive Statistics of Customers' Trust Constructs

To test the proposed hypothesis of the study with the help of Factor Analysis and SEM (Structural Equation Modelling), it is advised by eminent researchers such as Hair Jr et al. (2010) to check the data normality. In this study, statistical tools such as, Mean, Standard deviation, Skewness and Kurtosis are used to check the data normality of the online shopping factors (Table 2) namely Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), Consumer Reviews (CRV), and Customers' Trust (CTRT).

Table 2 indicates that the "mean value" and "standard deviation" of online shopping parameters range "from 3.81 to 3. 47" and "from 1.06 to 1.02", respectively. It shows that data are normally distributed. Because it is suggested that data close to mean (here mean is 3) and calculated data value relative to standard deviation, i.e. one is regarded as the normal distribution of data. In addition, the computed value of skewness and kurtosis ranges "from -1.00 to -0.58" and "from -0.528 to -0.076", respectively. This value also falls under the data normality suggested by Kline (2011).

Exploratory Factor Analysis

This study uses the Exploratory Factor Analysis (EFA) to explore the underlying dimension of online shopping that generates trust in customers' minds. EFA includes the following steps:

KMO and Bartlett's Test

KMO test is used to examine the sample adequacy. The calculated value of KMO is 0.892, which permits the researcher to analyze the data using the Factor analysis method.

Table 1: Illustrate the demographic profile of the respondents.

Sl. No.	Parameters	Description	Frequency	Percentage	Total
1	Gender	Male	89	47.6	187
		Female	98	52.4	
2	Age (in Year)	Between 18 to 20	75	40.1	187
		20 on words	112	59.9	
3	Educational Qualification	Graduation 1st Semester& 2nd Semester	66	35.3	187
		Graduation 3rd Semester& 4th Semester	79	42.2	
		Graduation 5th Semester& 6th Semester	42	22.5	
4	Annual Family Income(in ¹)		Up to 2, 50, 00	31	16.6 187
		2, 50, 001 to 5, 00, 000	102	54.5	
		5, 00, 001 and above	54	28.9	
5	Online Shopping Experience	Up to 6 months	27	14.4	187
		Between 6 months to 1 year	71	38.0	
		Between 1 year to 2 years	49	26.2	
		Two years and above	40	21.4	

Sources: Calculation is based on primary data with the help of descriptive statistics.

Table 2 descriptive statistics of online shopping parameters

Factors	Items	N	Min.	Max.	Mean	Overall Mean	Std. Deviation	Overall Std. Deviation	Skewness	Overall Skewness	Kurtosis	Overall Kurtosis
Perceived Service Quality (PSQ)	PSQ1	187	1	5	3.87	3.81	1.152	1.02	-0.975	-1.00	0.127	-0.076
	PSQ2	187	1	5	3.77		1.153		-0.768		-0.277	
	PSQ3	187	1	5	3.79		1.124		-0.928		0.219	
Consumer Reviews (CRV)	CRV1	187	1	5	3.63	3.63	1.248	1.05	-0.662	-0.84	-0.544	-0.136
	CRV2	187	1	5	3.79		1.090		-0.755		-0.026	
	CRV3	187	1	5	3.48		1.188		-0.630		-0.441	
Perceived Ease of Use (PEOU)	PEOU1	187	1	5	3.43	3.47	1.213	1.06	-0.411	-0.58	-0.710	-0.528
	PEOU2	187	1	5	3.53		1.202		-0.539		-0.601	
	PEOU3	187	1	5	3.44		1.183		-0.403		-0.652	
Customers' Trust (CTRT)	CTRT1	187	1	5	3.66	3.73	1.163	1.05	-0.737	-1.00	-0.272	-0.127
	CTRT2	187	1	5	3.64		1.194		-0.828		-0.173	
	CTRT3	187	1	5	3.72		1.168		-0.848		-0.060	
	CTRT4	187	1	5	3.91		1.142		-0.918		-0.019	

Source: Calculation is based on primary data with the help of SPSS.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.892	
Bartlett's Test of Sphericity	Approx. Chi-Square	1721.420
	df	78
	Sig.	.000

Source: Based on primary data &analyzed by SPSS

In addition, Bartlett's Test of Sphericity value of this study is significant (see Table 3). It indicates that there is a correlation among the trust generating online shopping factors, which is essential for performing Factor Analysis.

Communalities

Communality explains the presence of common Variance in a particular online shopping construct. It helps the researcher to decide concerning retaining or excluding the specific items. Beavers et al.; (2013)stated that a communality value between 0.25 and 0.40 is considered better communality.

Table 4: Communality value of each item

Items	Initial	Extraction
PSQ1	1.000	.839
PSQ2	1.000	.789
PSQ3	1.000	.806
PEOU1	1.000	.710
PEOU2	1.000	.833
PEOU3	1.000	.831
CRV1	1.000	.853
CRV2	1.000	.845
CRV3	1.000	.719
CTRT1	1.000	.826
CTRT2	1.000	.833
CTRT3	1.000	.803
CTRT4	1.000	.793

Source: Calculated with the help of SPSS based on primary data

In this study, Principal Component Analysis is used to draw the communality of each item. The calculated communality value falls under the threshold limit (ranging from 0.845 to 0.710) (Table 4). Hence study retains all the things for further analysis.

Rotated Component Matrix

After obtaining the communality value, the study extracted the component of customers' trust in online shopping using Principal Component Analysis (PCA) method and rotated with Varimax with Kaiser Normalization. As a result, Rotated Component Matrix (RCM) appears before the researcher containing four factors (Table 5), namely Customers' Trust (CTRT), Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV).

Table 5: Rotated component matrix

Items	1	2	3	4
CTRT1	.833			
CTRT4	.810			
CTRT2	.794			
CTRT3	.784			
PSQ1		.875		
PSQ3		.851		
PSQ2		.844		
PEOU3			.844	
PEOU2			.840	
PEOU1			.755	
CRV2				.849
CRV1				.796
CRV3				.759

Source: Calculated with the help of SPSS Using primary data

Table 5 indicates that the first factor, "customers' trust (CTRT)", loads with its respective four items, and the other three factors, namely second-factor "Perceived Service Quality (PSQ)", third-factor "Perceived Ease of Use (PEOU)", and last fourth-factor "Consumer Reviews (CRV)" loads with their respective three-three items each.

Total Variance Explained

To see the variances explained by each individual online shopping factors and later, cumulative Variance explained by all of these factors together, Eigenvalue criteria (Appendix II) is used. Table 6 reveals that the cumulative per cent of Variance explained by all four online shopping factors together is 80.624.

Table 6 Total variance explained

Factors	Measurement Items	Factor Loading	% of Variance	Cumulative % of Variance
Perceived Service Quality (PSQ)	PSQ1	0.875	19.218	19.218
	PSQ2	0.844		
	PSQ3	0.851		
Consumer Reviews (CRV)	CRV1	0.796	18.447	37.665
	CRV2	0.849		
	CRV3	0.759		
Perceived Ease of Use (PEOU)	PEOU1	0.755	18.711	56.376
	PEOU2	0.840		
	PEOU3	0.844		
Customers' Trust (CTRT)	CTRT1	0.833	24.248	80.624
	CTRT2	0.794		
	CTRT3	0.784		
	CTRT4	0.810		

Source: calculation is based on primary data with SPSS

Out of this, Perceived Service Quality (PSQ),Consumer Reviews (CRV), Perceived Ease of Use (PEOU), and Customers' Trust (CTRT) explain 19.128, 18.447, 18.711 and 24.248, respectively.

Confirmatory Factor Analysis (CFA)

Exploratory Factor Analysis (EFA) helps the researcher to explore the underlying factors associated with customers' trust in online shopping. In other words, CFA helps the researcher to examine the relationship between observed variables and their underlying latent constructs. As per the proposed research model, customers' trust (CTRT) in online shopping is the dependent variable and Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV) are the independent variables. However, a researcher must use Confirmatory Factor Analysis to test the hypothesis. Here, the researcher uses CFA to examine the relationship between dependent constructs of customers' trust in online shopping and their independent constructs in the following steps which has been prescribed in SEM techniques.

Measurement Model

In SEM, the measurement model explains the relationship between the latent constructs and their indicators. Figure 2 states that customers' trust, Perceived

Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV) are the latent constructs of the measurement model of customers' trust in online shopping.

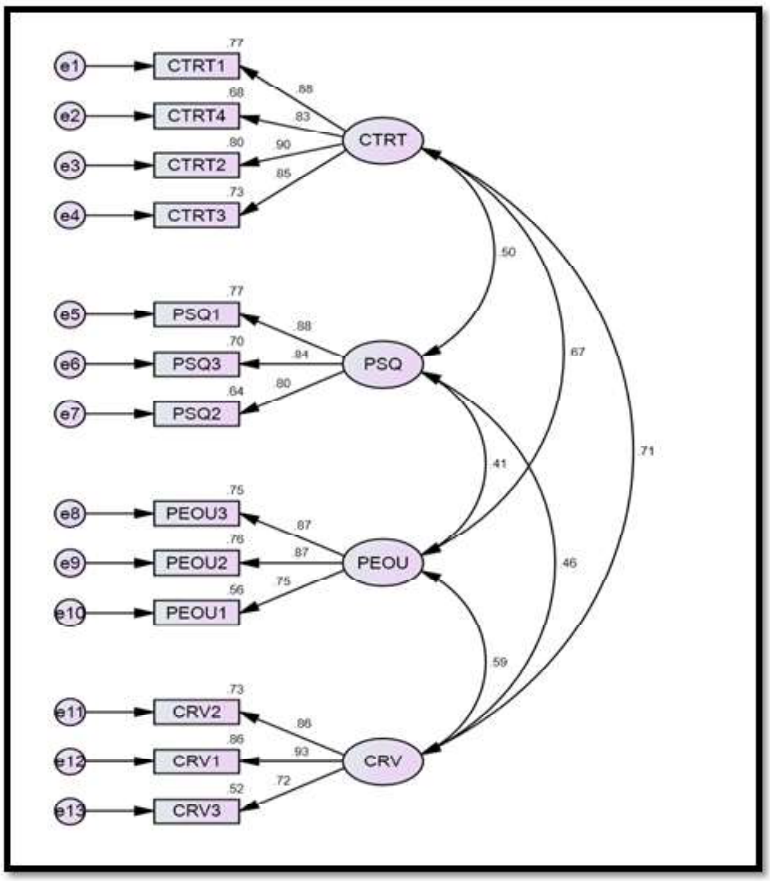

Figure 2 depicts the measurement model of customers' trust in online shopping.

Customer trust has four indicators, namely, CTRT1, CTRT2, CTRT3 and CTRT4. Likewise, Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), and Consumer Reviews (CRV) each have three indicators.

Reliability

Reliability indicates the internal consistency among the scale items. The Cronbach alpha (á) values of Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU), Consumer Reviews (CRV), and Customers' trust (CTRT)are 0.877, 0.866, 0.870 and 0.922, respectively (see Table).According to Taber (2018), Cronbach's alpha value equal to or greater than 0.7 is considered the internal consistency among the scale items.

Table 7: Indicates constructs reliability

Factors	Measurement Items	Standardized Regression Weight	Cronbach alpha (á)	Composite Reliability (C.R.)
Perceived Service Quality (PSQ)	PSQ1	0.879	0.877	0.878
	PSQ2	0.800		
	PSQ3	0.839		
Consumer Reviews (CRV)	CRV1	0.930	0.870	0.876
	CRV2	0.855		
	CRV3	0.719		
Perceived Ease of Use (PEOU)	PEOU1	0.749	0.866	0.870
	PEOU2	0.872		
	PEOU3	0.867		
Customers' Trust (CTRT)	CTRT1	0.878	0.922	0.922
	CTRT2	0.897		
	CTRT3	0.855		
	CTRT4	0.827		

Sources: Based on primary data with the help of AMOS

The composite reliability of the scale items ranges from 0.870 to 0.922 (Table 7). According to Hair et al.; (2011), a composite reliability value ranging from 0.80 to 0.90 is fine. Hence, both reliability tests establish the reliability of constructs' scale items.

Validity

Convergent validity is established in the value of Average Variance Extracted (AVE) is greater than or equal to 0.50 (Hair et al.; 2011). The Table 8 indicates that AVE's value is between 0.691 and 0.478.

Table 8: Indicates the constructs validity

Factors	AVE	PEOU	CTR	PSQ	CRV
PEOU	0.691	0.831			
CTRT	0.748	0.666	0.865		
PSQ	0.706	0.413	0.503	0.840	
CRV	0.704	0.588	0.709	0.457	0.839

Sources: Based on primary data with the help of AMOS

To validate discriminant validity, the value of the square root of each AVE belonging to each latent construct (Table 8) must be greater than any correlation

among any pair of the latent construct(Fornell and Larcker criterion, 1981). Thus, convergent validity and discriminant validity are established.

Model Fit Indices

The model fit indices are assessed through various fit indices prescribed in SEM. Overall Model Chi-square (÷2),Absolute Fit Measures,Incremental Fit Indices, and Parsimony Fit Indices.

Table 9 indicates that Absolute Fit Measures are measured by GFI, RMSEA, RMR, SRMR and Normed chi-square. The calculated value of all Absolute Fit Measures indicators are within the prescribed standard value. CFI assesses incremental Fit Indices, and CFI's computed value also falls within the specified typical value. The calculated value of AGFI that measures Parsimony Fit Indices of an SEM model is 0.888, which is very close to the prescribed standard value. Hence, it can be said that the defined SEM model, used in the study to determine the customers' trust in online shopping, established the fit indices of SEM.

Structural Model

In Structural Equation Modelling (SEM), a structural model is developed with the help of AMOS to examine the causal relationship among the various constructs. It is also used to test the research hypothesis. Figure 3 shows the structural model.

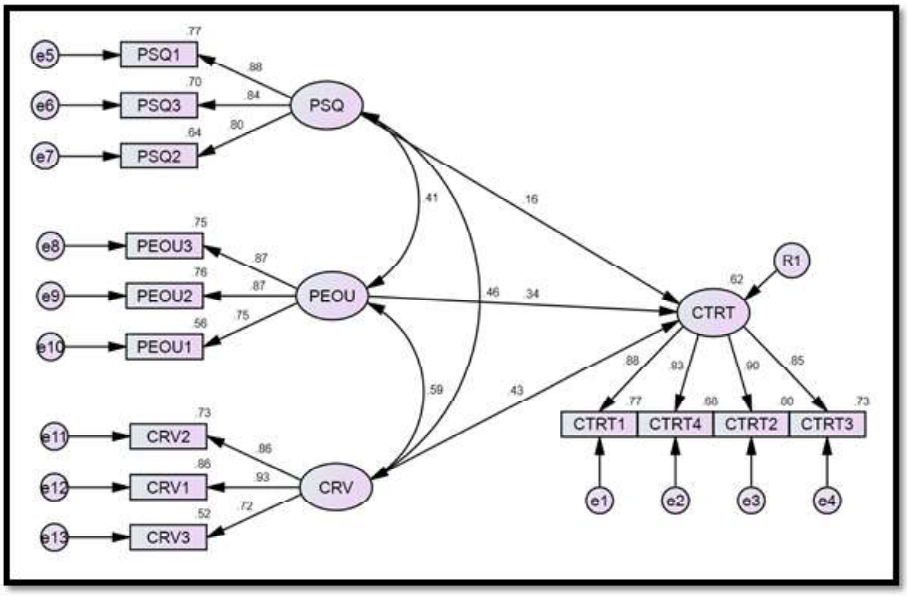

Figure 3: Structural model

Source: Developed based on primary data with the help of AMOS

Table 9: Indicates the model fit indices

Fit Indices	Particulars	Recommended value	References	Obtained Value
Overall Model Chi-square (÷²)	Chi-square (÷²)	—	—	95.158
	Degrees of freedom (*df*)	—	—	59
	p - value	≥" 0.05 i.e. Insignificant	Joreskog&Surbom (1996)	*p* = 0.002
Absolute Fit Measures	Goodness-of-fit index (GFI)	1 = perfect fit ≥ 0.95 = excellent fit ≥ 0.9 = acceptable fit	Kline (2005); Hu &Bentler (1998);	0.927
	Root mean square error of approximation (RMSEA)	≤ 0.05 = reasonable fit	MacCallum et al (1996);	0.057
	Root mean square residual (RMR)	≤ 0.05 = acceptable fit ≤ 0.07 = acceptable fit	Diamantopoulos &Siguaw (2000); Steiger (2007);	0.053
	Standardized root mean residual (SRMR)	≤ 0.05 = acceptable fit	Diamantopoulos &Siguaw (2000);	0.0389
	Normed chi-square (χ^2/df = 95.158/59)	≤ 3 = acceptable fit ≤ 5 = reasonable fit	Marsh &Hocevar (1985);	1.613
Incremental Fit Indices	Comparative fit index (CFI)	1 = perfect fit ≥ 0.95 = excellent fit ≥ .90 = acceptable fit	West et al. (2012); Fan et al. (1999);	0.979
Parsimony Fit Indices	Adjusted goodness-of-fit index (AGFI)	≥ 0.90 = acceptable fit	Tabachnick&Fidell (2007);	0.888

Source: Calculation is based on primary data with the help of AMOS.

Figure 3 depicts that customers' trust in online shopping during COVID – 19 pandemic is influenced by the three major online shopping factors, namely, Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV). The squared multiple correlations of customers' trust (CTRT) is 0.62 (see Figure 3). This indicates a 62 per cent variance in customers' trust in online shopping during the COVID – 19 pandemic is accounted by Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV).

Testing of Hypotheses

The proposed research hypotheses are tested with the help of AMOS software. The study assesses the impact of Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV) on Customers' Trust (CTRT) in online shopping during the COVID – 19 pandemic. Table 10 shows the results of the hypotheses.

Table 10: Testing of hypotheses

Hypothesis	Hypothesized Path	Standardized Parameter Estimate	Standard Error	t - Value	p-Value	Decision
H_1	PSQ ——>CTRT	0.163	0.067	2.454	0.014	Supported
H_2	PEOU ——> CTRT	0.344	0.076	4.504	***	Supported
H_3	CRV ——> CTRT	0.432	0.870	5.445	***	Supported

Source: calculation is based on primary data with the help of AMOS.

Note: * p < .05; **p < .01; ***p < .001.

- The impact of Perceived Service Quality (PSQ) on Customers' Trust (CTRT) in online shopping is positive and significant (b = 0.163, t = 2.454, p<0.05), supporting H_1 (Table 10).
- Perceived Ease of Use (PEOU) is impacting the Customers' Trust (CTRT) positively (b = 0.344, t = 4.504, p<0.001) in online shopping and supports the underlying study's hypothesis H_2 (Table 10).
- Customers' Trust (CTRT) in online shopping during the COVID – pandemic is also positively influencing (Table 10) by the Consumer Reviews (CRV) (b = 0.432, t = 5.445, p<0.001) and supports the hypothesis H_3.

Findings

This study explores the factors influencing customers' trust in online shopping. Study results suggest that Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV) are important online factors that

influence customer trust in online shopping (CTRT) during the COVID-19 pandemic. Customers try to read reviews before making a purchase decision in online shopping. This is why consumer reviews (CRV) influence customer trust (H_1) more than other online trust-generating factors. Between Perceived Service Quality (PSQ) and Perceived Ease of Use (PEOU), the findings of this study suggest that Perceived Ease of Use (PEOU) has a more significant impact on customer trust (H_2). It means that customers adopt an online shopping channel if online sellers provide customer friendly website. An attractive, personal touch, entertaining, easy navigation and well organized online shopping websites increase the customers' trust. According to this research finding, customers' trust is least affected by customer perception about the quality of service provided by online sellers (H_3). However, the researcher suggests that online sellers maximize customers' perception of service quality. Because the minimum gap between customer perception and expectation about the quality of service increases customers' trust in online shopping.If the difference is high, customers tend to avoid online purchases in their subsequent purchases.

Conclusion

Online sellers need to meet the customers' expectations to create trust in the minds of online buyers. Online sellers must provide the same quality of service which they promise to their online customers. Online sellers are expected to design their web store/website as pleasant and customer friendly. This will attract customers to purchase goods and services online, allowing online sellers to maximize their objectives (for example, improving the bottom line by offering goods and services).

Limitations

The study explores the determinants of online shopping and their effects on customer trust. However, the study faces the following limitations: The research areas of study are confined only to the North Bengal region of the state of West Bengal, India and college-going students. Therefore, the researcher hopes that upcoming researchers and academics will improve the study's results and generalize findings by including different categories of online buyers (such as housewives, professionals and eldest) spread across the country. The study takes into account factors that build online customer trusts, such as Perceived Service Quality (PSQ), Perceived Ease of Use (PEOU) and Consumer Reviews (CRV). Thus, exploring other online factors and examining their effects on customer trust in online shopping is needed.

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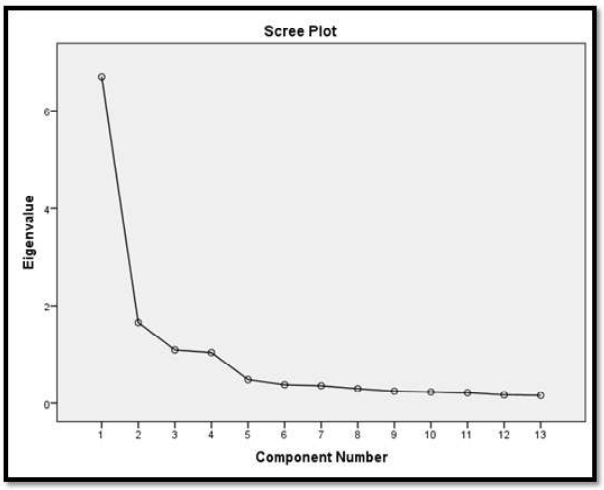
Appendix

Appendix I online shopping factors and their measurement.

Factors	Items	Description	Adapted
Perceived Cannon Service Quality (PSQ)	PSQ1	Online website has fast delivery speed. Doney& Cannon (1997)	Doney& (1997), Grefen, Karahanna, & Straub (2003) Grefen (2002)
	PSQ2	Online website provides guarantees.Grefen, Karahanna, & Straub (2003)	
	PSQ3	Online website provides good after-sales services. Grefen(2002)	
Consumer Reviews (CRV)	CRV1	I am influenced by online consumer reviews when I choose a product.	Park, C., & Lee, T. M. (2009).
	CRV2	I rely on online consumer reviews when I purchase products.	
	CRV3	Online consumer reviews crucially affect my choice of product.	
Perceived Ease of Use (PEOU)	PEOU1	Online website is easy to use.	Gefen et al. (2003)
	PEOU2	Online website is flexible to interact with.	
	PEOU3	My interaction with online website is clear and understandable.	
Customers' Trust (CTRT)	CTRT1	Online vendor is trustworthy.	McKnight et al. (2002)
	CTRT2	Online vendor evidently intends to keep its promises and commitments to customers.	
	CTRT3	I trust online vendor for keeping my best interest in mind.	
	CTRT4	Online vendor's behaviour meets my expectations.	

Appendix II underlying online shopping dimensions.



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Role of Experiential Learning in Skill Development: A Study of Rural Vocational Students of VET Institutions

S. L. Gupta, Shilpa Singh and Arun Mittal

Abstract: Vocational Education (VE) is the need of hour. NEP 2020 has highlighted that the VE should be provided by the Higher Educational Institutions and the efforts can be seen taking reality in this context. The present study is descriptive in nature. The data were collected from 168 rural students studying in Vocational Education and Training (VET) institutions of Delhi-NCR. As per the results, significant causal relationship was found between experiential learning and skill development. The Experiential Learning was measured with two factors – Role of Experiential Learning Activities and overall role of Experiential Learning. The skill development was measured with four factors namely Interpersonal Skills (IPS), Workplace Skills (WS), Professional Practice and Standards (PPS), and Integration of Theory and Practice (ITP). Statistical techniques used were "Exploratory Factor Analysis" and "Multiple Regression".

Keywords: Vocational Education, Experiential Learning, Vocational Education and Training, Skill Development, Rural Students

Introduction

India has one of the largest pools of technically educated people in the world. Though the country boasts about this huge talent pool, the quality of this pool remains questionable. The prime objective of Vocational Education and Training (VET) is to provide employment to the trainees; hence VET is more focused on the training and learning of employability skills (Agrawal, 2012). Kumar et al., (2019) found that vocational education has given substantial rise to the wages of workers in India. However, there is a huge skill gap prevailing in the current VET set-up which has resulted in an increase in unemployment.VET has been generally considered inferior to mainstream

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education and generally considered the last decent resort to mainstream education. As a result, VET has been in the back seat of the Indian education system for a long time. However, it is an important fact that the future of education rests more on creativity. There has been adequate advocacy for experiential learning in vocational education as a process of enhancing critical skills (Pamungkas et al., 2020). Scholars have recommended VET as more effective driver of employment and a source of earning better wages as compared to traditional education (Attanasio et al. 2011; Kahyarara & Teal, 2008). In case the student dropout of higher secondary or college education, he has a good career after attaining vocational education (Scholten&Tieben, 2017). Vocational Education through experiential learning ensures better cognitive, emotional, and psychological aspects in the students and as a result, the students participate in the learning process more actively (Benecke & Bezuidenhout, 2011). Vocational learning comes out with the utmost effectiveness when it follows the cycle of experiential learning as laid down by Kolb & Kolb (2005), active experimentation, concrete experience, reflective observations, and abstract conceptualization (Pamungkas et al., 2019).Some of the studies have clearly highlighted the role of experiential learning in vocational education by mentioning practical experience as an integral part of VET (Metthews &Arulsamy, 2019). When the students learn by doing and reflecting upon their experiences, the learning is more in-depth and makes the students more confident and future-ready. Experiential learning in this way varies from traditional forms of learning, it is more about experiencing whatever is learned (Kumar et al., 2019).

Experiential Learning

Experiential learning in simple terms can be defined as a method where you learn by doing or experiencing the theoretical concepts in the real work environment. So, it is a scholastic method where students participate in professional and constructive learning activities in a non-classroom set-up. John Dewey in his book 'Experience and education' very famously stated that "all genuine education comes about through experience." (Dewey, 1938, p. 25). Contrary to the 'behavioural learning theory' which focuses on the learning of behaviour being influenced by the external environment; the 'experiential learning theory' puts 'life experience' as the centrifugal element of the learning process, where "knowledge is created through the transformation of experience" (Kolb, 2015, p. 49). Experiential learning is highly valued in educational domains involving interdisciplinary and practice-oriented education. The main focus of experiential learning is on learning through structured activities which emphasize interaction and participation of the learners (Chen et al., 2020). Therefore, participants of the experiential learning programs directly build on

the knowledge through experiences outside a traditional classroom environment and get involved in activities where the learners have to critically evaluate their learning. So, EL essentially imparts a very active learning style experience to its participants where they learn the integration and application of theories and principles in real life and new situations. (Feinstein et al., 2002). Although experiential learning has been moderately studied in the industrial setup, this domain is still underexplored empirically in Social Sciences (Falloon, 2019; Jarvis, 2012).

Kolb Model of Experiential Learning

Kolb's (1984) experiential learning theory (ELT) is one of the most widely studied models in the field of experiential learning (Armstrong & Mahmud, 2008). Kolb's ELT primarily focuses on the cognitive learning process of individuals. There are two main components of this theory comprising four types of learning styles and four stages of the learning cycle. The learning cycle as described by Kolb (1984) comprises four different stages. Stage one comprises 'active listening', 'reading', and 'discovery'. In the next stage, the learner contemplates and assesses his experience of stage one. The third stage comprises the utilization of the learner's creativity to generate theoretical insights. In the last stage, based on the experience they had in previous stages, the learners reflect upon their problem-solving skills and the ability to apply concepts in real-life situations (Chen et al., 2020). Teachers could incorporate the concepts of Kolb's ELT to assess the current learning styles prevalent amongst the students and could possibly use them to develop a more efficient and effective learning system for the students. While designing the activities for the students' educators need to be mindful of students preferred learning styles and they can use the ELT to make this assessment. This could help in engaging the students in more efficient manner which can result in better learning. Preferably while finalising the teaching pedagogy involving ELT the educators should take into account that it should be designated in such a way that it should incorporate all the stages of Kolbe's EL cycle (McLeod, 2017).

Evolution of Experiential Learning

The conventional education system which has been prevalent over the years comprised theoretical lectures with little or no exposure to practical knowledge of implementing these theoretical concepts inreal-life situations. However, over a period of time with increased industrialization and a dynamic work environment, there is a requirement of students who are able to perform well in a volatile, uncertain, complex and ambiguous (VUCA) work environment. Especially there has been pressure on higher education institutions to handle the demand for students capable of handling complex situations in a professional set-up as they act as a reservoir pool for industry (Delaney et al., 2017; Longmore

et al., 2017; Mishra & Mehta, 2017). With this growing need and increased focus on 'industry ready' graduates the education industry has been trying to tackle this challenge by incorporating methods to increase their practical exposure, so that they are better equipped to handle work-related scenarios (Baldwin, 2015). Higher education institutions have tried to address this demand of industry graduates by incorporating blended teaching methodologies which have a solid theoretical foundation on one hand and practical exposure to standard industry practices on other. The focus of the new pedagogical tools has been on increasing the engagement and involvement of students in the learning process, so that it can result in superior learning. The common methods which are employed to give practical exposure include case-based teachings, role plays, industry internships and workshops, industrial conferences and seminars etc. These methods are designed in such a manner so that can alleviate students retention and engagement in the learning cycle (Rodríguez & Morant, 2019). Therefore, in the last decade or so concept of experiential learning has gained popularity as a tool to produce work ready or industry ready graduates. Eventually, higher education institutions have been trying to incorporate ELT to increase the effectiveness of their teaching pedagogy (Kolb & Kolb, 2005).

Advantages of Experiential Learning

The unique attribute of EL is that it provides students the chance to ruminate and absorb from their mistakes, results, and success as they receive feedback from colleagues and supervisors. Involvement in EL has been credited with favourable academic performance along with refinement of various other skills like interpersonal skills, workplace skills, integration of theory and practice etc. Therefore, lots of universities have been aiming to provide these kind of EL opportunities to students so as to improve their output (Fede et al., 2018). Therefore, there is a realization in the academic space that the students need to taught not only the soft skills but laps should be exposed to practical situations which can prepare them to develop a futuristic outlook towards their career. Also, there has been focus on shifting focus in making students from being 'work ready' to 'career ready'. While being work ready deals with students developing skills which are needed to enter the work place, being 'career ready' presents much wider perspective where students are looking forward to developing skills which can shape up their career. Therefore, it would highlight and emphasise skills which focuses more on interpersonal and team building skills instead of focusing only on self-development and working in isolation. (Jantjies et al., 2018). Though one cannot undermine the importance of these soft skills as an important component to succeed in a professional environment. However, putting students in circumstances where they need to critically examine the situation and engage in immediate decision-making may prove to be more

beneficial in deciding how students' progress in their career. Employers do acknowledge that lots of students do not have clear picture of vocational courses options available at the time of completion of their studies. This clarity comes with time and hence the transition of the acquired skills from the classroom environment to the workplace surroundings is a long process which requires support of all the stakeholders in order to produce career ready students. Therefore, the progress of procured abilities from schooling to the work environment is a multi-layered process where there is shared liability from all partners to seek after the vocation prepared graduate (Jackson, 2013).Businesses will frequently move towards graduates who have been offered the chances to encounter the work environment in a practical setting well beyond the people who have not. It is finding this equilibrium showing the specialized abilities while simultaneously featuring the reasonable encounters and fostering those delicate abilities that will make graduates alluring to these businesses. Therefore, employers will always prefer students who will have realistic experiences of working in a professional setup as compared to those who only have classroom exposure (Stringfellow et al., 2006).

Therefore, it is important for the educators to strike a balance between teaching theoretical concepts in a classroom setup with service offerings, practical exposure to make the students more attractive to employers. Educators generally try to distribute these experiential activities across multiple roles spanning different areas. For example, in management domain, students can play activities where they can access customers or marketing professionals, etc. This kind of exposure provides valuable practical experience which is valued by the employers (Jantjies et al., 2018)

Usage of Experiential Learning in Higher Education

Experiential learning (EL) is tracking down a spot in an ever-increasing number of higher educational establishments. EL associates students to settings that draw them towards learning in contemporary and more valid ways. For teachers, the wizardry of experiential learning lies in the one-of-a-kind relationship that is made between the educator, the student, and the topic under study. The experiential methodology puts the subject to be learned in the middle to be capable by both the teacher and student. Utilizing the pattern of realizing, all members get data through substantial experience of the topic and change it through reflection and conceptualization and afterward change it again by acting to impact the world including what data is gone to the new experience. There are recipients of data and makers of data. This significantly affects connections, to the degree that all can straight forwardly encounter the subject. Everybody has a viewpoint regarding the matter. Those with various learning styles, for instance, will see the subject insight through their own particular manner of

handling experience. Addressing contrasts that emerge according to these numerous points of view is the fuel for learning and new experiences. Testing the master's perspective even becomes conceivable. This can be very disrupting to fledgling experiential instructors, however it likewise turns into a wellspring of eccentric new knowledge and learning for them. In turning into an experiential teacher with this methodology, the educator likewise turns into an experiential learner (Kolb & Kolb, 2017). Experiential learning programs add to students' accomplishment by further developing opportunity to graduation and improving the probability of going to vocational school seeking employment opportunities after graduation. Likewise, the students' own appraisals demonstrate that these projects impart various pragmatic abilities and give experiences that assist with getting ready students for progress in their future professions. One of the best ways of advancing dynamic learning is by offering students the likelihood to connect all the more straightforwardly with course material through experiential learning (Bradberry & De Maio, 2019).

Experiential exercises increment the allure of learning, specifically, they chiefly assist students with getting comfortable with issues and circumstances in actuality, then, at that point, tackle them and gain information all the more without any problem (Weinber et al., 2011; Davidovitch et al., 2014). Consequently, experiential schooling is a basic platform between classroom learning and real workplace environment. In addition, these exercises advance positive, imaginative reasoning for students since they need to have an independent perspective. Thus, experiential exercises will open the potential and assist students with moulding their propensities. This strategy for learning does not force students yet expands their innovativeness. After numerous years being stuck in a standstill, colleges have at last perceived the positive effect applied by experiential learning and have started to plan and incorporate some sort of involvement-based learning strategies inside their courses that come to supplement the customary learning approach, where lecture remains as the foundation of the educational experience (Rodríguez &Morant, 2019).

Experiential Learning in Vocational Education

The purpose of education lies in the essence where it gives independence and wisdom to the students to manage their interpersonal relationships at both personal and professional levels, which should be the same for the vocational training given at school. The more extensive point of vocational education training at the school level ought to give open doors to students to find out about the wide variety of work-related opportunities and grasp it; help students in developing conventional as well as working environment handling abilities; give students opportunities to engage in a gamut of business-related exercises, for

example, work insight, voluntary and compulsory work positions, and tutoring with working individuals.The prime objective of the VET is to employ the learners; hence VET is more focused on the training and learning of employability skills (Agrawal, 2012). Kumar et al. (2019) found that vocational education has given substantial rise to the wages of workers in India. There has been adequate advocacy for the experiential learning in vocational education as a process of enhancing the critical skills (Pamungkas, 2020). In case if the students' dropout from the higher secondary or college education he has a good career after attaining the vocational education (Scholten & Tieben, 2017). The Vocational Education through experiential learning ensures a better cognitive, emotional, and psychological aspects in the students and as a result the students participate in the learning process more actively (Benecke & Bezuidenhout, 2011). Vocational learning comes out with the utmost effectiveness when it follows the cycle of the experiential learning as laid down by Kolb & Kolb (2005) – active experimentation, concrete experience, reflective observations, and abstract conceptualization (Pamungkas, 2019).When the students learn by doing, and reflect their experiences, the learning is more in-depth long lasting and makes the students more confident and future ready. Experiential learning in this way varies from traditional forms of learning, it is more about experiencing whatever is learnt (Kumar et al., 2019).

Creating A Demand-Driven VT Program

To create ademand-driven VT program, a few significant perspectives must be considered. We need to guarantee the engagement of all important partners including possible students, companies,and VT suppliers, to comprehend the fluctuating VT needs that will understand the people's work, and professional objectives and further more address local employment needs (Billett, 2000). The basic proposition for these contentions is that the demand-driven approach can possibly resolve a local issue, be comprehensible, and straight forward, and have the effect of giving an outcome that is more receptive to the students. Cost of training, educational background, skill level, course timings, and accessibility to the training centre are basic components in a demand-driven approach and ought to be considered while anticipating and conveying VET especially for rural and backward populations. Also, regardless of the fact that local individuals have an exceptionally clear view of their VT needs, they generally couldnot relate their perspectives to a more extensive viewpoint beyond their local conditions. Therefore, it can be stated that to adjust the students'needs according to the prevailing local economic circumstances and the needs of the rural market, it is vital to include local, sectoral, and labour market specialists in the approval of the information that arises out of the local surveys. This information should be considered vital and should contribute

significantly to creating VT programs that are designed for the regional ecosystem. So, it is critical that the demand likewise considers the necessities and requirements of the local economy and work conditions (Ramasamy and Pilz, 2020).

Fostering Experiential Learning Strategies

Encouraging experiential learning procedures promotes the idea that students might interpret theoretical concepts better and this prompts the achievement of superior performance.Organizations are nowadays progressively requesting new learning approaches that are all the more plainly arranged or in accordance with skills procurement through preparing and experience. Such methodology includes from one viewpoint the people's full retention and responsibility (Kahwajy et al., 2005), and then again, the presence or accessibility of coaches, mentors or tutors that act as guides during the educational experience. As Salas et al., (2009) bring up, under this experience-based learning structure, people become prominently more liable for their own learning, and there exists a more powerful connection between the growth opportunity and reality (e.g., pretending, business games, PC based reproductions, computer generated reality, and so on.). This preparing approach is viewed as a considerably more effective technique while moving unsaid information than other more conventional types of learning (Rodríguez &Morant, 2019). Moreover, students typically feel profoundly energetic and driven about engaging in group working exercises and thus, advancing by doing. Along these lines, students can apply the hypothesis and ideas considered into training, in this way upgrading their singular outcomes in their academic performance, and thus, working on their overall grade. By carrying out professional development of students in schools that is experiential in nature, educators can coordinate imaginative guidance, for example, separation, constructivist hypothesis, revelation learning, request based learning, recreations, decisive reasoning, critical thinking, innovation-based learning, and execution-based appraisal through exhibition, perception, cooperation, hands on work, and reflection. Accordingly, furnishing students with more experience-based learning is valuable as these open doors to prompt better execution and abilities improvement. (Rodríguez &Morant, 2019). Further examination has additionally exhibited the significance of experiential advancement in helping various students from minority groups to meet civil rights and value needs. It can likewise encourage areas of strength for a personality, expected by the rapidly changing globalized world. In his book What happens when students are in the minority: Encounters that affect human execution, Hutchinson (2009) presents different contextual analyses. These examinations exhibit how significant minority learning experiences can be for teachers, and how they can move these encounters into the classroom environment.All in all, experiential learning transforms educating and learning into more significant learning circumstances. It changes the job

of the educator from being a transmitter of information to being a facilitator of information procurement, in this way empowering a more orderly, viable learning result. It incorporates the components of decision, voluntarism and casualness (Kahane 1997) to support dynamic students learning. Experiential learning can, consequently, give a comprehensive way to deal with instruction, subsequently meeting the genuine necessities of diverse students' gatherings, including disadvantaged students, students from multilingual and multicultural foundations and students with various strict and ethnic requirements (Gross and Rutland, 2017)

Research Methodology

The present study is descriptive in nature.The data were collected from 168 Rural students studying in Vocational Education and Training (VET) institutions of Delhi-NCR. The data collection in statement was structure questionnaire prepared using five-pointLikert scale. Statistical techniques used were "Exploratory Factor Analysis" and "Multiple Regression". The causal relationship between Experiential Learning and Skill development has been tested with the help of multiple regression. The two factors of Experiential learning - Role of Experiential Learning Activities and Overall Experiential Learning were taken as the independent or explanatory variables and Interpersonal Skills (IPS) Workplace Skills (WS) Professional Practice and Standards (PPS) Integration of Theory and Practice (ITP) were taken as the dependent variables.

Exploratory Factor Analysis (EFA)

In the present study two sets of EFA have been applied. The First is about the "Experiential Learning" and second is about the "Skill Development".

EFA for Experiential Learning

Sample adequacy was tested for EFA through KMO and found adequate (0.899). The"Bartlett's Test of Sphericity" is also significant, which confirmed the sufficiency of relation among variables to lead them for Factor Analysis. Table 1 shows the variance explained. The "principal component analysis" method was applied to extract the factors and it was found that 10 variables form 2 Factors, based on the Eigen values (>1). The factors explained the variance of 43.351% and 24.504% respectively. The total variance explained is 67.855%, which is sufficient for the requirements of Factor Analysis.

Table 2 "Development of Factors and Reliability", shows the factor loading values, reliability and items under the components. The first factor has been named "*Role of Experiential Learning Activities*" (Variance = 43.351%, Reliability = 0.905).

Table 1: Total variance explained

Component Sums of	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.656	56.564	56.564	5.656	56.564	56.564	4.335	43.351	43.351
2	1.129	11.291	67.855	1.129	11.291	67.855	2.450	24.504	67.855
3	.808	8.079	75.934						
4	.628	6.281	82.215						
5	.462	4.618	86.833						
6	.381	3.810	90.643						
7	.316	3.155	93.799						
8	.273	2.732	96.531						
9	.187	1.867	98.398						
10	.160	1.602	100.000						

Extraction Method: Principal Component Analysis.

Development of Factors

This factor is constituted by Experiential activities increase the attractiveness of learning, Experiential activities would promote positive and creative thinking, Experiential activities would help me to shape my habits, Experiential learning would provide me withwork readiness skills, Experiential learning would provide with career readiness insights, Experiential learning would add additional value to vocational education training, Employers would prefer graduates with practical experiences. The second factor has been named as ***"Overall Role of Experiential Learning"*** (Variance = 24.504%, Reliability = 0.810), This factor is constituted by the items namely 'Experiential education is a bridge between classroom teaching and practical application', Experiential learning would give a richer and meaningful understanding of course concepts, 'Experiential learning would enhance the quality of the course delivery'.

EFA for Skill Development

Sample adequacy was tested for EFA through KMO and found adequate (0.881) The "Bartlett's Test of Sphericity" is also significant, which confirmed the sufficiency of relation among variables to lead them for Factor Analysis. Table 3 shows the variance explained. The "principal component analysis" method was applied to extract the factors and it was found that 10 variables form 2

Factors, based on the Eigen values (>1). The factors explained the variance of 43.351% and 24.504% respectively. The total variance explained is 67.855%, which is sufficient for the requirements of Factor Analysis.

Table 2: Development of factors and reliability

Sl. No.	Statements	Factor Loading	Factor Reliability
I	*Role of Experiential Learning Activities*		0.810
4	Experiential activities increase the attractiveness of learning	.690	
5	Experiential activities would promote positive and creative thinking.	.746	
6	Experiential activities would help me to shape my habits	.756	
7	Experiential learning would provide me with work readiness skills.	.719	
8	Experiential learning would provide me with career readiness insights.	.786	
9	Experiential learning would add additional value to vocational education training.	.841	
10	Employers would prefer graduates with practical experiences	.731	
II	Overall Experiential Learning		0.905
1	Experiential education is a bridge between classroom teaching and practical application.	.905	
2	Experiential learning would give me a richer and meaningful understanding of course concepts	.807	
3	Experiential learning would enhance the quality of the course delivery.	.654	

Table 3: Total variance explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.276	48.684	48.684	3.504	20.611	20.611
2	1.896	11.150	59.834	3.202	18.833	39.444
3	1.422	8.362	68.197	3.130	18.410	57.854
4	1.047	6.160	74.356	2.805	16.503	74.356
5	.742	4.367	78.723			
6	.597	3.513	82.236			
7	.549	3.228	85.464			
8	.415	2.444	87.908			
9	.385	2.266	90.174			

Contd...

10	.299	1.757	91.931
11	.278	1.638	93.569
12	.240	1.410	94.978
13	.236	1.390	96.369
14	.199	1.172	97.541
15	.178	1.048	98.589
16	.131	.768	99.357
17	.109	.643	100.000

Development of Factors

Table 4 - "Development of Factors and Reliability"shows the factor loading values, reliability and items under the components. The first factor has been named "*Interpersonal Skills (IPS)*" (Variance = 20.611%, Reliability = 0.889). This factor is constituted by the items - Interact appropriately with people from different levels of management/ leadership/ seniority in a workplace, Show independence and initiative in identifying problems and solving them, Learn from and collaborate with people representing diverse backgrounds or viewpoints, Give clear instructions or advice to colleagues to achieve an outcome, Share information using various communication technologies, like voice mail, e-mail and computers. The second factor has been named as *"Workplace Skills (WS)"* (Variance =18.833%, Reliability = 0.864), This factor is constituted by the items namelyI am industry ready to commence work in my chosen field or discipline, I am able to identify the standards of performance or practice expected in the industry, I am capable of implementing concepts learned during the training in my workplace and I am likely to take responsibility. The third factor has been named as "Professional Practice and Standards (PPS)" (Variance = 0.18.410, Reliability = 0.869).This factor includes the items namely - Present myself effectively in selection interviews and processes, Acknowledge and praise another person work, Respect the thoughts, opinions and contributions of others and adapt to new circumstances or information. The fourth and last factor is Integration of Theory and Practice (ITP)(Variance = 0.16.503, Reliability = 0.898) which includes the items namely Understand the theories and principles in their discipline, Link together different theoretical perspectives while working in a workplace, Set goals, plan and manage my time, money and other resources to achieve my goals and become more innovative and resourceful.

Role of experiential learning in skill development

The causal relationship between Experiential Learning and Skill development has been tested with the help of multiple regression. The two factors of

Experiential learning - Role of Experiential Learning Activities and Overall Experiential Learning were taken as the Independent or Explanatory Variables and Interpersonal Skills (IPS) Workplace Skills (WS) Professional Practice and Standards (PPS) Integration of Theory and Practice (ITP) were taken as the Dependent Variables. The results have been presented in the Table 5.

Table 4: Development of factors and reliability

Sl. No.	Statements	Factor Loading	Factor Reliability
I	Interpersonal Skills (IPS)		0.889
1.	Interact appropriately with people from different levels of management/ leadership/ seniority in a workplace	.817	
2.	Show independence and initiative in identifying problems and solving them	.766	
3.	Learn from and collaborate with people representing diverse backgrounds or view points	.809	
4.	Give clear instructions or advice to colleagues to achieve an outcome	.799	
5.	Share information using various communication technologies, like voice mail, e-mail and computers	.650	
II	Workplace Skills (WS)		0.864
14	I am industry ready to commence work in my chosen field or discipline	.745	
15	I am able to identify the standards of performance or practice expected in the industry	.815	
16	I am capable of implementing concepts learned during the training in my workplace	.759	
17	I am likely to take responsibility	.720	
III	Professional Practice and Standards (PPS)		0.869
6	Present myself effectively in selection interviews and processes	.710	
7	Acknowledge and praise another person work	.727	
8	Respect the thoughts, opinions and contributions of others	.788	
9	Adapt to new circumstances or information	.830	
IV	Integration of Theory and Practice (ITP)		0.898
10	Understand the theories and principles in their discipline	.841	
11	Link together different theoretical perspectives while working in a workplace	.763	
12	Set goals, plan and manage my time, money and other resources to achieve my goals.	.651	
13	Become more innovative and resourceful	.559	

Table 5: Impact of experiential learning on skill development

Independent Variables	Dependent Variables	Overall Model Statistics	Unstandardised Coefficients	Standardised Coefficients	Significance Value
Role of Experiential Learning Activities	Interpersonal Skills (IPS)	R^2= .265	.242	.314	.000*
Overall Experiential Learning		Adj. R^2=.257	.315	.408	.000*
Role of Experiential Learning Activities	Workplace Skills (WS)	R^2 = .198	.307	.378	.000*
Overall Experiential Learning		Adj. R^2=.189	.189	.234	.001*
Role of Experiential Learning Activities	Professional Practice and Standards (PPS)	R^2 = .918	.822	.923	.000*
Overall Experiential Learning		Adj. R^2 = .917	.229	.258	.000*
Role of Experiential Learning Activities	Integration of Theory and Practice (ITP)	R^2 = .217	.387	.437	.000*
Overall Experiential Learning		Adj. R^2=.208	.143	.162	.016**

Table 5 presents the multiple regression analysis results. In this section, four different sets of regression models have been applied and two types of results have been obtained – Overall model statistics and coefficients as well as significance values for individual variables in the model. It is found from the table that all the causal relationships are significant, which means that experiential learning significantly affects the IPS, WS, PPS and ITP. However, referring the R Square values it is found that Professional Practice and Standards (PPS) are most affected by Experiential Learning (Adj. R^2 = .917), and Workplace Skills (WS) are least affected (Adj. R^2 = .917).

Conclusion

India is amongst the countries where there is a need to shift from theory-based learning to practical learning. Hence, for a skilled workforce, there must be an adequate supply of well-appropriate trainers (Mehrotra & Saxena, 2014). VT is a prominent tool to increase employment outcomes. It has the potential to inculcate capabilities in individuals for their career advancement. VT is now shifting towards a demand-driven approach and giving prime importance to what the learners and society want as they are the most important stakeholders of vocational and skill development, hence, their needs and requirements must be given the maximum priority (Ramasamy&Pilz, 2020). Demand-driven approach of VT is more relevant at the macro level. This study has been divided

into two parts. The first part belongs to the development of the factors for the experiential learning and skill development and the later part establishes the causal relationship between these two. It was encouraging to notice that the vocational education students understand the importance of the experiential learning as the causal results shows promising relationship between the various aspects of the experiential learning and skill development.

Managerial and Academic Implications

This study explorers the role of experiential learning in the context of vocational education by establishing the impact of experiential learning on skill development. The study put forwards suggestions for the vocational institutions that these institutions must formally implement the experiential learning and measure the impact of the same on regular basis. By establishing the causal relationship between experiential learning and skill development. The results indicate a few aspects of skill development namely, Interpersonal Skills (IPS), Workplace Skills (WS), Professional Practice and Standards (PPS), Integration of Theory and Practice (ITP). The future studies may add on to the other emerging skills which are relevant to the industry as per the changing business environment.

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Impact of 'RythuBandhu' Scheme on Farmers: Study of Telangana State

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Abstract: The Government of Telangana launched 'RythuBandhu' scheme for farmers on 10th May 2018. The scheme was aimed at relieving farmers of debt burden and protects them from falling into the debt trap. It is a farmer's welfare programme. Under the scheme, the state Government offered Rs. 4000 per acre per farmer per each crop for the purchase of inputs like seeds, fertilizers, pesticides, labour, etc. The total farming land is 1.42 crore acres and the number of farmers in the state is 58.33 lakhs. During 2018-19 budget, the Government has allocated Rs. 12000 cr. for the scheme. Further, Telangana Government decided to increase the amount under the scheme up to Rs. 5000 per acre during 2019-20 budget and allocated Rs. 12000 cr. Since, June 2nd 2019, the farmers were being given Rs. 5,000 per each acre in both Kharif and Rabi season. Therefore, the present study aims to evaluate the performance of RythuBandhu scheme. The study also focuses to evaluate the impact of RythuBandhu scheme on farmer's .

Keywords: RythuBandhu Scheme, Farmers, Telangana State, income

Introduction

The Government of Telangana launched 'RythuBandhu' which is an initial investment support scheme for the farmers on 10th May 2018. It is a welfare programme to support the farmer for two crops in a year. The scheme was aimed at relieving farmers of debt burden and protects them from falling into the debt trap. Under the scheme, the state Government offers Rs. 4000 per acre per farmer each crop for the purchase of inputs like seeds, fertilizers, pesticides, labour, etc. Farmer's empowerment is an objective of the RythuBandhu scheme. It is first ever scheme in India which provides initial investment support to the farmers. The farmers will be given Rs. 8,000 per each acre in both Kharif and Rabi seasons in a year. There is no limit on the number of acres as more than 97 percent of farmers have less than 10 acres per person. The total farming land is

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1.43 crore acres and the number of farmers in the state is 58.33 lakhs. During 2018-19 budgets, the Government has allocated Rs. 12000 cr. for the scheme. The money being distributed by two equal pay order cheques issued in front of the two crop seasons. Under the scheme, Telangana Government has also provided 'PattadarDharani' passbook to each and every farmer. This book helps in indentifying the ownership of the farming land. The payments under the scheme to the farmer made through a bank account only. Further, the Telangana Government decided to increase the amount under the scheme up to Rs. 5000 per acre during 2019-20 budget.

Importance of 'Rythu Bandhu' Scheme

Agriculture in Telangana state is an undeveloped sector. Farmers are suffering with different problems in farming process. Low productivity, stagnation and frequent occurrence of droughts and low level of public and private investments are the main problems of the agriculture sector in Telangana. In order to ensure that the farmers do not fall again into the debt trap, a new scheme called "RythuBandhu" (Initial investment support scheme) is planned to be implemented from the year 2018-2019 onwards in Telangana. A budget Rs. 12000 crore has already been provided for the financial years 2018-2019 and 2019-20 respectively.

Review of Literature

Nikita &Satya, etc. (2019) concluded that Odisha state Government has brought the KALIA Scheme which is closely related to RythuBandhu scheme in Telangana state. Further, concluded that the RythuBandhu Scheme has brought into the political dividend to KCR in the recent Assembly election but this is a short term solutions to turn aside a threatening crisis. The study suggested that Odisha government has to focus on three aspects namely Minimum Support Price (MSP), Loan waiver and Direct Benefit Transfer. Direct Benefit Transfer is likely to help the small and marginal farmers the most. *Ashok & Siraj (2018)*, concluded that RythuBandhu scheme is powerful scheme which protect the farmers from the debt burden. The Government of Telangana state has introduced the Direct Investment Support (RythuBandhu) which will carry investment at Rs 4000 per acre per farmer, per season, for purchase of inputs like fertilizers, pesticides, seeds and other investments in the field operations of farmers' choice, for the crop season. Broadly, it is presumed to take care of the initial investment needs of every farmer. *Parag (2015)* concluded that the capital formation, chronic poverty, illiteracy, poor agricultural marketing facilities flood and drought are the main problems of the rural farmers. The study suggested that the government has to take necessary steps to overcome the problems such as providing the employment opportunities to the farmers

in off forming period. The study further suggested that there is a necessity to provide the awareness programmes on usage of agriculture technology. *Salve and Frank, (2013),* India is suffering with large population, which is mainly dependent on the agriculture sector for their livelihood and survival, the economic reform led development process increased the divide between rural-urban and rich-poor. *Pankaj etc al; (2017),* concluded that lack of information on appropriate adaption option was the most prioritized problem as mentioned by the farmers. High cost of the technology was also another problem in the farming areas. The study pointed out that the Government has to take necessary steps to make agriculture profit in India. *Sonawane (2016)* concluded that the small farmer is an important person in the society. The government has to introduce various schemes for the development of small farmers in the country. Many of the small farmers have been facing investment problem, technology problem and marketing problems in the rural areas. Therefore, the Government has to lay down the necessary policies keeping in view of the small scale farmer's development. Investment is a major problem in the study area. Initial investment has to provide to the small farmers. *Lavanya et. al; (2018)* concluded that the digital initiative of the Government of India can be fruitfully implemented with the proactive approach and practical approach of the farmers, NGO's and Government authorities together. Apart from creating a well-designed web portal, accessibility of technology and ingenious personnel always should be the criteria for the flourishing implementation of Digital India Program.

The study has measured the impact of RythuBandhu Scheme on farmers' in Telangana state based on three parameters only as mentioned below.

Objective of the Study

The objective of the study is:

- To evaluate the impact of 'RythuBandhu scheme' on farmers' with identified parameters.

The study considered the following three parameters to evaluate the impact of RythuBandhu Scheme on farmers' in Telangana State.

a. Decrease in debts of the farmer
b. Growth of farmers annual farming income
c. Purposeful use of RythuBandhu scheme

Hypotheses

H_{01}: There is no impact of 'RythuBandhu' scheme on farmer debts.

H_{02}: There is no impact of 'RythuBandhu' scheme on growth of farmer's annual farming income.

H_{03}: Number of acres held does not have a significant impact on the purposeful use of the scheme.

Research Methodology

The study is based on both primary and secondary data. The *secondary data* was collected from the Agriculture Department, Telangana state and District Agricultural Office, Nalgonda. The *primary data* has been collected through structured questionnaire from the farmers who received the benefit under RythuBandhu scheme. In Telangana state, Nalgonda district occupied the top one place in respect of number of farmers availing the RythuBandhu benefit and 'Tungapahad Village' in MiryalagudaMandal has occupied top place in the district in respect of number of RythuBandhu beneficiaries. Therefore, the samples were drawn from the 'Tungapadu Village', Nalgonda District of Telangana state. The farmers are the sample units and the study adopted 'Simple Random Sampling technique'. The sample size of the study is 193 farmers based on the *Rabort V. Krejcie and DW.Morgan* formula as given below.

$$S = \frac{X^2 NP(1-P)}{d^2(N-1)+X^2P(1-P)}$$

S = required sample size

X^2 = The table value of chi-square for 1 degree of freedom at the desired confidence level i.e. 3.841(1.96x1.96).

N = Total farmers in 'Tungapadu Village' (Population: 387)

P = The population proportion (assumed to be .50 since this would provide the maximum sample size)

d = Degree of accuracy expressed as proportion (0.05)

$$\frac{3.841 \times 387 \times 0.50\ (1-0.50)}{(0.05)^2(387-1) + 3.841 \times 0.50(1-0.50)}$$

Sample size = 193.02

The primary data which was collected from the farmers is tested using various statistical tools like mean, standard deviation, *Regression Analysis* and *ANOVA* to present the results in a scientific way. The most suitable test for examining the reliability and consistency is Cronbach's alpha reliability coefficient and item to total correlation. The reliability test result of the instrument at the pilot study stage of this study secure Cronbach alpha value as 0.67 with 13 items which indicates acceptable reliability and consistency as it is above the threshold value of 0.60 (Nunnally, 1978).

Farmers benefitted under 'Rythu Bandhu'

The Government has recognised 58.33 lakhs farmers in Telangana through 'Pattadahar Pass Book' regularisation scheme and recorded about 1.43 lakhs cultivable land. The Government has distributed Rs. 5,260.94 cr. to 51.50 lakhs farmers in Kharif season and Rs. 5,224.26 cr. to 49.03 lakhs farmers in Rabi season during 2018-19 financial years. Table 1 shows the district wise farmers who benefitted under the RythuBandhu scheme in Telangana state. It is observed that the Nalgonda district has occupied top place with 4,19,723 farmers followed by Mahabubnagar district and Sangareddy district. It is observed that Warangal Urban district has very less number of farmers. Further, it is identified that there were no farmers registered from Hyderabad district. Out of 31 Districts, farmers have registered from 30 districts except Hyderabad district.

Table 1: District wise farmers' benefitted

Sl.No	District	No. of Farmers'
1	Nalgonda	419723
2	Mahabubnagar	334957
3	Sangareddy	316137
4	Khammam	264724
5	Nagarkurnol	263125
6	Siddipet	258306
7	Kamareddy	244920
8	Nizamabad	238909
9	Suryapet	232653
10	Vikarabad	224704
11	Medak	213316
12	Jagital	204906
13	Rangareddy	187718
14	Bhongiri	182455
15	Medchel	171256
16	Warangal rural	167452
17	Karimnagar	157970
18	Nirmal	157268
19	Bhupalli	155770

Contd...

20	Wanaparthi	152025
21	Gadwal	148512
22	Jangoan	145992
23	Mancherila	130641
24	Peddapalli	127528
25	Mahabubabad	123241
26	Adilabad	116927
27	RajannaSirisilla	105074
28	Kothagudam	99621
29	Asifabad	91812
30	Warangal	78228
	Total Farmers	5356896

Source: Agriculture Department, TS

Analysis

Demographic Profile of the Respondents

The demographic characteristics of the respondents are presented in Table 2. It is found that 57 percent of the respondents are male farmers and 43 percent female respondents. As per the results, 33.2 percent of the farmer's age is between 51-60 years, followed by 41-50 years. It is found that about 70 percent of the agriculture land is registered on the farmer's name whose age is above 40 years. Regarding education, 18.7 percent un-educated, 51.8 percent studied up to SSC. It may be seen that 87.6 percent of the farmer's annual income is up to 3 lakh. It is also found that 44.04 percent of the farmers come under the OBC category, 25.07 percent under OC category, 20.2 percent under ST and 8.29 percent under SC category.

Table 2: Demographic results

Variables	Range/ Characteristic	Number	(%)
Gender	Male	110	57 %
	Female	83	43 %
	Total	193	100
Age	20-30 years	20	10.4%
	31-40 years	34	17.6%
	41-50 years	58	30.1%
	51-60 years	64	33.2%
	61 years more	17	8.8%
	Total	193	100.0%

Contd...

Educations	Un educated	36	18.7 %
	Up to 10th class	100	51.8%
	Graduation	39	20.2%
	Post Graduation	18	9.3%
	Total	193	100.0%
Annual Income	Below Rs.1 lakh	73	37.8%
	Rs. 1 - 3 lakh	96	49.7%
	Rs. 4 - 6 lakh	15	7.8%
	Above 6 lakh	9	4.7%
	Total	193	100%
Social Class	OBC	85	44.04%
	SC	16	8.29%
	ST	39	20.2%
	OC	49	25.07%
	Others	4	2.07%
	Total	193	100.0%

Source: primary data

RythuBandhu Beneficiaries

Table 3 shows the number of beneficiaries of the 'RythuBandhu Scheme' under the study. It is observed that 100 percent of the respondents were received the amount Rs. 8000 under RythuBandhu scheme during 2018-19 financial year.

Table 3: Initial investment received

		Frequency	Percent
Valid	Yes	193	100
	No	0	0
	Total	193	100.0

Source: primary data

Number of Acres of the Respondents

Table 4 shows the number of acres of the farmers under the study. It is observed that 89.1 percent of the respondents have up to 10 acres. It is identified that 42.5 percent of the farmers have the farming land between 2.1-5 acres, 20.7 percent have between 5.1-8 acres, 15 percent have 8.1-10 acres and 10.9 percent have above 10 acres.

Table 4: Number of acres of the respondents

	Frequency	Percent	Cumulative Percent
Up to 2 Acres	21	10.9	10.9
2.1 - 5 Acres	82	42.5	53.4
5.1 - 8 Acres	40	20.7	74.1
8.1 - 10 Acres	29	15.0	89.1
Above 10 Acres	21	10.9	100.0
Total	193	100.0	

Source: primary data

Amount received under the RythuBandhu

Table 5 reveals the total amount received by the respondents under the RythuBandhu scheme. It is identified that 42.5 percent received between Rs.16001-40000, and 20.7 percent received between Rs. Rs. 40001-64000. Total of 89.1 percent received up to Rs. 80000. It is found that only 10 percent of the respondents received more that Rs. 80000.

Table 5: RythuBandhu amount received by the respondents

Income	Frequency	Percent	Cumulative Percent
Up to Rs.16000	21	10.9	10.9
Rs.16001-40000	82	42.5	53.4
Rs. 40001-64000	40	20.7	74.1
Rs. 64001-80000	29	15.0	89.1
Above Rs. 80001	21	10.9	100.0
Total	193	100.0	

Source: primary data

Usage of RythuBandhu benefit

Table 5 reveals the total allocation of initial investment received by the respondents. It is noted that 23.8 percent of the respondents were spent on seeds, 20.7 spent on fertilizers, 14.0 spent on pesticides and 11.9 percent on labour payments. Further, it is found that 29.5 percent of the respondents were spent on other than agriculture expenditure because of majority of the respondents in this category were assigned the land on rent basis to the tenant farmer.

Table 6: Inputs purchased by the respondents

Expenditure	Frequency	Percent	Cumulative Percent
Seeds	46	23.8	23.8
Fertilizers	40	20.7	44.6
Pesticides	27	14.0	58.5
Labour payments	23	11.9	70.5
Other than farming	57	29.5	100.0
Total	193	100.0	

Source: primary data

Increases in Farming income

Table 7 shows the respondents opinion on farming income. It is observed that 30 percent of the farmer's income is increased after the RythuBandhu scheme Implementation whereas about 70 percent of the respondents were opted 'No Increase' because of lack of MSP implementation, marketing problems, etc.

Table 7: Farmer's opinion on firming income increases

Expenditure		Frequency	Percent	Cumulative Percent
Valid	Yes	58	30.1	30.1
	No	135	69.9	100.0
		Total	193	100.0

Source: primary data

Testing of the Hypotheses

H_{01}: There is no impact of 'RythuBandhu' scheme on farmer debts decrease.

Table 8 shows the impact of the 'RythuBandhu' scheme on the decrease in farmer debts. As per the Liner Regression analysis results, 'F' value is 18.887 and 'p' value is .000.

Table 8: ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	26.482	1	26.482	18.887	.000[b]
Residual	267.798	191	1.402		
	Total	294.280	192		

a. Dependent Variable: Decrease in Farming Debts

b. Predictors: (Constant), Receiving RythuBandhu at every season

Source: primary data

It is noted that the 'p' value is less than the standard value 0.05 at 5% level of significant. Therefore, the null hypothesis is *rejected* and it is found that RythuBandhu scheme has a positive impact on decrease in farmers debts. Hence, it is concluded that the objective of the scheme is fulfilled.

H_{02}: There is no impact of 'RythuBandhu' scheme on farmer's annual farming income growth.

Table 9 shows the impact of the 'RythuBandhu' scheme on the farmer's income. As per the Liner Regression analysis results, 'F' value is 2.387and 'p' value is .124. It is noted that the 'p' value is greater than the standard value 0.05 at 5% level of significant. Therefore, the null hypothesis is *supported* and it is found that RythuBandhu scheme donot have the impact on the farmers annual agricultural income growth. It is suggested that the government has to focus to implement the Minimum Support Price and improve the marketing conditions to sell the paddy at profitable price.

Table 9: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.589	1	3.589	2.387	.124[b]
	Residual	287.188	191	1.504		
	Total	290.777	192			

a. Dependent Variable: Annual Farming Income

b. Predictors: (Constant), Receiving RythuBandhu at every season

Source: primary data

H_{03}: Number of acres held does not have a significant impact on the purposeful use of the scheme.

Table 10 reveals the significant difference between number of acres and purposeful use of the initial investment received by the farmer. The calculated 'p-value' is .000 at 5% level of significance.

Table 10: ANOVA test results

Model	Sum of Squares	Df	Mean Square	F	Sig.
Between groups	41.041	4	10.260	5.690	.000
Within groups	338.990	188	1.803		
Total	380.031	192			

Source: primary data

The 'p' value is less than 0.05. Hence, null hypothesis is *rejected* and it is found that there is a significant difference between number of acres and purposeful

usage of the initial investment. It is concluded that the farmers who have the agricultural land up to five acres have used the initial investment for agriculture purpose whereas no purposeful use of the scheme in case of more than 10 acres. It is suggested that the government has to introduce the slab system in payment under RythuBandhu scheme.

Conclusions

The study observed that there were 53.57 lakhs farmers benefited under the RY scheme in both Kharif and Rabi seasons. Nalgonda District has occupied top place with 4,19,723 farmers in respect of number of beneficiaries under RythuBandhu (RB) scheme in Telangana state. Further, it is also found that Warangal Urban district has at least with 78,228 farmers. The study noted that about 70 percent of the agriculture land in Telangana is registered on the farmer's name whose age is above 40 years. It is also observed that 87.6 percent of the farmer's annual income is up to 3 lakh and majority of the farmers come under OBC category. It is found that 24% of farmers spent RB benefit to purchase seeds followed by fertilizers. It is identified that 29.5% of the farmers spent RB benefits on other than farming activities.

The 'RythuBandhu' scheme has a positive impact on decrease of farmer's debts. *(H_{01}Rejected - Statistical tool: Regression Analysis - 'p' value is 0.00 which is less than 0.05).* RythuBandhu scheme was introduced with an objective of relieving the farmers from farming debt burden and protects him from falling into the debt trap. The study concludes that 'RythuBandhu' scheme protected the farmers from falling into debt trap. Therefore, it is suggested that the Government can increase the amount under the scheme and it is the right decision by the Government to increase the financial assistance from Rs. 4000 to Rs. 5000 per acre.

The RythuBandhu scheme don't have the impact on the growth of the farmers annual agricultural income. (*H_{01} Accepted - Statistical tool: Regression Analysis - 'p' value is 0.12 which is greater than 0.05*). Under the RythuBandhu scheme, farmers are protected against the initial investment problem only whereas growth of the farmer's income is depended on effective marketing conditions in the state. It is concluded that RythuBandhu scheme is meaningless without proper marketing conditions to sell the crop and supportive price mechanism. Therefore, It is suggested that the state Government has to focus in implementing the Minimum Support Price (MSP) and improving the market conditions to sell the crop at profitable price.

There is a significant difference between number of acres and purposeful usage of the initial investment. *(H_{01}Rejected - Statistical tool: ANOVA test - 'p' value is*

0.00 which is more than 0.05). It is concluded that the farmers who have the agricultural land up to eight acres have used the initial investment for agriculture purpose whereas there is no purposeful use of the scheme in case of more than 8 acres. Majority of the farmers who have more than 10 acres have given the land to tenant farmer on rent basis. Therefore, It is suggested that the Government has to introduce the slab system for providing financial assistance under RythuBandhu scheme and need to provide the financial assistance only to the cultivating farmers who registered by the Agriculture Extensions officer at village level.

Managerial Implications

Telangana Model 'RythuBandhu' scheme is substantial farmer's welfare scheme and it may be an alternative to Loan Waiver scheme. The scheme protected the farmers from falling into the debt trap whereas it has some defects in implementation. As per the results of the present study, objectives of the scheme are not fulfilled in case of the farmers who have more than 8 acres. Majority of the farmers who have more than 10 acres have given the land to tenant farmer on rent basis. Therefore, the estimated amount of 10 billions of people money is becoming unproductive. Hence, the Government has to implement the slab system keep in view of number of acres and number of farmers cultivating directly.

Scope for Further Study

RythuBandhu (RB) scheme is a substantial subject. There is a huge scope to conduct many studies in the area. The present study measured the 'RB' performance keeping in view of three parameters whereas there was a scope to conduct the study between RB and KissanSammanNidhi, changes in Consumption patron in village after RB scheme, etc.

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An Analysis of GST: Pre and Post Regime

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Abstract: With effect from 1st July 2017 there is a paradigm shift in the structure and functioning of Indirect Taxes in India. The present paper attempts to determine and compare the revenue efficiency of taxes subsumed into GST and new model of GST along with efficiency of gross direct and gross indirect taxes. The period of study is 2012-2013 to 2021-2022 and time series regression is modelled. The tax revenue series subsumed into GST reported efficiency of 0.81 whereas remarkable improvement in the collection of GST model which reported efficiency of 1.43. The study also found that despite more than seven decades since independence the tax base of indirect taxes is still not widening enough to remarkably beat the tax base of direct taxes. The Government should implement measures to increase the tax base of indirect taxes including GST. The Indian States need to move in line with the integration of many levies.

Key Words: Public Policy, GST, Tax Efficiency, Buoyancy, Tax Revenue collection

Introduction

The Constitution of India provides for three tier federal structure comprising of the Central Government, State Government and Local Government. The Constitution also empower them to levy taxes and duties. This resulted in complex structure of number of taxes and duties levied by all the level of government in their respective spheres. It all resulted in a disaster in the form of multiplicity of indirect taxes, multiple repetitive compliance procedures of different levies, hindrance in the free movement of goods from one state to another, non-availability of input tax credit of one levy against the other levy and so on. The Government of India implemented Goods and Services Tax (GST) Law with effect from 01 July 2017 into India. The rationality of GST model was to overcome the shortcomings of the earlier indirect taxes prevailing at the different stages of the State. The new model of GST has subsumed many of the Central and State Level indirect Taxes. The central levies subsumed into GST were central excise duty, additional excise duties, CVD & Special CVD, Central Sale Tax, Service Tax etc. The State levies subsumed into GST were VAT, Luxury Tax, Entertainment Tax, Tax on lottery, Octroi, Entry Tax Taxes

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on advertisement, Luxury Tax etc. The GST is dual GST taxation model wherein both Centre and State Government levy the tax on supply of goods and services. The model of GST prescribes four types of GST viz Central GST, Integrated GST, State GST and Union territory GST. The positives aspect counted in favor of the GST model were "Make in India" campaign, attracting FDI, transparency, uniformity in taxes all over India, Indirect taxes more buoyant, incentive to the industry, simplification of the compliances, mitigating the cascading effects of earlier tax regime, destination based taxation and so on. On the other side there were the corners; who attacked on the GST model with arguments that there would be loss to some industries, loss to some state government in their collection of tax revenue, high degree of inequality in the country, and would inevitably curb the fiscal autonomy of state governments significantly. Although the Goods and Service Tax (compensation to states) Act 2017 passed to address the loss of revenue to States due to new model of GST for the next five years. Taxation is one of the most effective measure that serves to collect the revenue for public spending, improvement of infrastructure, act as an economic stabilizer and can influence the allocation of resources in a country (Prammer, 2011). The responsiveness of tax to income changes is an important indicator used in projecting tax revenue and a simple criterion for assessing a good tax system. This responsiveness can be measured through determining the efficiency of the taxation system. There can be different parameters of measuring the efficiency of any time series but we have concentrated on calculating the buoyancy of the revenue series. The responsiveness of the tax revenue to changes in national income has also taken into account the change in the tax revenue due to all the factors which influence it, is referred to as 'Buoyancy. The paper is attempting to gauge the efficiency of the broad taxation heads viz direct tax, indirect taxes, taxes subsumed into GST , GST and Gross Taxes prevailing in India.

Rationality

The contemporary theme revolves around the sustainability of the systems. In the public policy management, every exchequer needs to balance the inflow and outflows. The outflows cannot be restricted or curtailed especially the developing nations. However the efforts needs to be augmented on the inflow side of the balance sheet. The developing nations including India in their attempt to increase growth have increased public expenditure but not been able to match it with revenue mobilization through taxation and has resulted in huge fiscal deficit. The new model of GST taxation after five years of implementation need a performance appraisal in terms of the basic objective enshrined in the roll out of the model. In fact all the major heads of taxation needs to be evaluated in terms of their performance and their respective efficiency.

Literature Review

Cevik et al. (2019) analyzed the impact of the shift into services on countries' efficiency in collecting the value added tax (VAT) and found that a higher share of services in aggregate value added reduces the VAT efficiency, and that this adverse effect is mainly a result of a rise of non-tradable services which in turn contributes to a narrowing of the VAT base. Chakravarty & Dehejia (2017) investigated extent of regional disparities in income per capita in India, considering both disparities amongst and within major states and concluded with a cautionary note on the goods and services tax, which, contrary to the optimists, is likely to further exacerbate, rather than ameliorate, regional income disparities, marking the need for a turn to "place-based" economic policies. Choodambigai (2011) found that Indian Income Tax System was operating in the prohibitive range of the Laffer curve during the period 1982-83 to 1999-2000. Creedy and Gemmell (2004) estimated individual and aggregate revenue elasticity of income and consumption taxes in UK over the period 1989-2000. The estimates of consumption tax revenue elasticity showed that changes in consumption pattern over time are important when the impact of consumer savings and transfers are recognized. It concludes that the income elasticity of income related deduction is variable over time. It fell significantly with the limitation and then the withdrawal of mortgage interest relief, then later on stabilized in the middle 1990's and has begun to increase again in later years with the rise in private pension schemes. While and David (2009) employed a long panel of income tax returns to examine trends in the wealthy taxpayers over a number of tax reforms spanning the years 1979 through 1995. The paper suggested that the wealthy are responsive to changes in tax rates. The wealthy are also sensitive to anticipated future changes in tax rates and short-run responses to such changes are larger than the longer-run responses. Hakim (2020) used generalized method of moments (GMM) estimation and found that direct taxes are significant and negatively correlated with the economic growth, while indirect taxes seem to have a positive but insignificant impact on the dependent variable for the panel of 51 countries. Also found a significant and positive contribution of direct taxes on the total tax revenue compared to indirect taxes. The paper concluded that tax structure based on direct taxes such as taxes on income, profit and capital gains is harmful to the economic growth, yet more efficient in terms of collecting the tax revenue in a country. Moscarola et al; (2020) analyzed the effects of a hypothetical tax reform in Italy, which makes current tax credits more generous and refundable, shifting the tax burden from labour to property. Nguyen et al; (2020) attempted a study on the performance of Tax administration across 44 Countries for the period 2008-2011 and 2012-2015. The paper found that that Tax agencies in these countries could

have increased tax revenue, on average, by about 58.7% and 34.2% for the two periods, respectively.

In Indian context few studies are found which discoursed on the Indian revenue series. Gupta (2009) examined the trends in personal income taxation in India during the period 1980-2008 and impact of tax reforms on personal income tax revenue. The period 1980-81 to 1993-94 revealed the inconsistent trend in personal income tax. The trends in personal income tax during the period 1994-95 to 2007-08 revealed a consistent increase along with the trend line, despite a few years when fluctuations were recorded. The buoyancy of personal income tax improved for the period under study attributing reasons to reforms undertaken. Another study which employed a long period study is conducted by Karki (2015) who measured elasticity for Indian Tax revenue series for the period 1981-2012 and found that income tax, corporate tax, gross direct taxes, excise duty and custom duty registered high elasticity of more than unity. The paper categorically highlighted that erstwhile excise duty which now subsumed into GST required attention as it was around unity for such a large period showing a lack of inherent response of excise revenue to change in national income. The paper also criticized the negative list of services which was ambit of the erstwhile regime of service tax which now have been subsumed into GST law. The paper also made recommendation of absorption of excise duty and service tax into GST law. Kumar (2019) pointed the inherent flaws in the structure of India's goods and services tax, which make its implementation inefficient and suggested new and simplified GST on final goods and services to resolve the problems currently plaguing the economy. Another reform required in the present GST is that provision needs to be made for the local bodies. Another learned paper by Nambiar and Joshi (1974) who have examined the elasticity and buoyancy of central taxes in India during 1960-1970. The results showed that the ratio of tax revenue to national income is substantially lower in the developing states than those in the developed states Rajni (2011) estimated buoyancy coefficient of various taxes comprising Indian tax structure over the period 1950-51 to 2009-10. The paper revealed that indirect taxes occupied dominant position in the total tax revenue mobilized by the central government. The paper further claimed that a trend towards increase in the share of direct taxes can be witnessed during the reform period. The paper suggested that emphasis should be shifted from indirect taxes to direct taxes because these are directly related to ability to pay and are also justified on equity grounds. It emphasized on improving the tax system of India requires stricter tax compliance and a well-diversified tax structure. The review gave us a glimpse of the work done in the area of taxation research including India, but the GST model is at nascent stage with five years of experiences need to be tested with time factor along with other revenue series in India.

Research Methodology

Objective

The primary objective of the present paper is to determine and compare the revenue efficiency of taxes subsumed into GST and GST model.

The Hypotheses developed for the study are:

H_1: Indian Subsumed Tax Revenue series is buoyant to change in its Base.

H_2: Indian GST Tax Revenue series is buoyant to change in its Base.

H_3: Indian Direct Tax Revenue series is buoyant to change in its Base.

H_4: Indian Indirect Tax Revenue series is buoyant to change in its Base

H_5: Indian Gross Tax Revenue series is buoyant to change in its Base

Modelling

The log linear model is constructed for measuring efficiency. The model followed is:

Log Y = Log a + bl log X1 + b2 log X2 + ...+ bn logXn + e

Where,

Y = dependent variable (Adjusted Tax Revenue),

Xl, X2.. .Xn = independent variables (Tax Base),

bl, b2 ..., bn = Tax Efficiency/Buoyancy of the corresponding variables, and

e = error term

The variables used in the estimation are:

LST Natural Log Subsumed Tax

LGST Natural Log GST

LDT Natural Log Total Direct Taxes

LIDT Natural Log Total Indirect Taxes

LGT Natural Log Gross Tax Revenue

LGDPMP Natural Log GDP at current Market Prices

The legal bases were not available for all tax categories, therefore proxy bases were borrowed for the study. The GDP at current price market cost constituted the proxy base for direct and indirect taxes. The growth in direct and indirect taxes is reflected in the gross domestic product. The data pertaining to direct taxes, indirect taxes and gross taxes are taken from Handbook of Statistic on

Indian Economy, Reserve Bank of India. The tax revenue data for GST and the aggregate taxes subsumed into GST model has been borrowed from Government of India portal https://www.gst.gov.in/download/gststatistics as on 29 May 2022. The data for tax bases are taken from Handbook of Statistic on Indian Economy, Reserve Bank of India.

Time Period

The time period selected for the study is from year 2012-2013 to 2021 -2022. A meaningful comparison is attempted to make between the revenue generating capacity before the introduction of the GST model and after the implementation of the GST model in India.

The first step for modeling any economic relationship for time series data is to ascertain the stationarity of the variables under study by testing their order of integration. The data was tested using Augmented Dickey Fuller (ADF) test and checked for the presence of unit roots. As shown in Table - I, all variables found to be stationary at first difference.

Stationarity Test: Using ADF Method

H_0: The variable has a unit root

Table 1: Stationarity test

Variable	P-value at first difference
LST Natural Log Subsumed Tax	0.05*
LGST Natural Log GST	0.05*
LDT Natural Log Total Direct Taxes	0.06**
LIDT Natural Log Total Indirect Taxes	0.06**
LGT Natural Log Gross Tax Revenue	0.04*
LGDPMP Natural Log GDP at current Market Prices	0.03*

*Significant at 5% level

**Significant at 10% level

Analysis and Findings

In order to determine if a State has made sustainable efforts for increasing tax revenue over a period - tax performance in the dynamic sense which measures the sensitivity and response of the tax system with respect to GDP. The testing of public policy especially with reference to the financing becomes more important in the context of developing nation like India where the economist always suggest to decrease fiscal deficit of the Government of India.

In the present paper the attempt is to evaluate performance and efficiency of the tax policy of Government of India. There were many apprehensions regarding implementation of the GST regime into India. We will try to answer the efficiency of the list of taxes which were subsumed into GST and the single indirect tax i.e GST being uniformly implemented into whole of India. There could be different parameters to judge the efficiency but we have tried to take a measure which is more comprehensive in nature. The buoyancy of a tax system shows the total response of tax revenue to changes in national income as well as discretionary changes in tax policies over time. The automatic response is of more importance and relevance for nation development and funding exchequer. If we talk of pre GST regime indirect taxes; the tax to base regression reflects the significance of GDP in the determination of taxes subsumed into GST revenue. The results are shown in Table 2. The P value is less than 0.05 and Prob (F-Statistics) also less than 0.05 signifying the fitness of the model selected. The buoyancy or efficiency reported at 0.81 signifying that 1% change in GDP would result in 0.81 % change in the Tax revenue series.

Table 2 Tax subsumed (Pre GST Regime) efficiency

	Coefficient	Std. Error	t-statistics	Prob.
Tax Subsumed	0.81	0.14	5.68	0.01
R-square	0.91			
Adj. R-Square	0.88			
F-Statistics	32.33			
Prob (F-Statistics)	0.01			

The Post GST regime started from 01 July 2017 and therefore the data from 2017-2018 to 2021-2022 is being analyzed for testing the GST model efficacy. The results are being reported with the Table 3. The dependent variable GST is significant to changes in the GDP at market price. In fact the changes in GDP at market price reflect the growth in economic activity and therefore there should be direct impact on the taxes which are levied on the economic activity so is the case with GST taxation. The result showed the remarkable efficiency or buoyancy of 1.43. That signifies that if there is 1 % increase in GDP there would be 1.43 % increase in the GST revenue collection. The P-Value and Prob (F-Statistics) are less than 0.05. The adjusted R-Square is 0.99 which provides exciting goodness of fit. The relevant question here would whether there is improvement in the tax revenue when the Government of India merged a number of indirect taxes and implemented the GST model. The answer is affirmative and impressive at least for the period of data. One can easily appreciate the buoyancy which was in the earlier regime stands at 0.81 and in the post GST regime it is at 1.43.

Table 3: GST efficiency

	Coefficient	Std. Error	t-statistics	Prob.
GST	1.43	0.04	31.27	0.00
R-square	0.99			
Adj. R-Square	0.99			
F-Statistics	978.30			
Prob (F-Statistics)	0.00			

It is economic principle that as the country progresses from developing nation to developed nation, the share of the direct taxes in tax revenue should decline and share of indirect taxes should increase. The major direct tax is Income Tax which is being levied by the Central Government. We have analyzed the buoyancy of direct taxes which are reported in Table 4. The buoyancy reported at 1.07 clearly signifying that direct taxes are still on the higher side as far as India is concerned. In other connotations it means if there is change of 1 % in GDP the revenue collected from direct taxes would change by 1.07 %. The results are significant as P-Value is less than 0.05.

Table 4: Direct tax efficiency

	Coefficient	Std. Error	t-statistics	Prob.
Direct Tax	1.07	0.15	6.77	0.00
R-square	0.86			
Adj. R-Square	0.84			
F-Statistics	45.91			
Prob (F-Statistics)	0.00			

The Indirect taxes are consolidated tax revenue series of all indirect taxes of Centre and State Government. The Indirect tax also reported significant to the base GDP. The buoyancy reported at 1.1. This signifies that if there is change of 1 % in GDP there would be 1.1 % change in the collection of indirect taxes as whole. The results are reported in Table 5.

Table 5: Indirect tax efficiency

	Coefficient	Std. Error	t-statistics	Prob.
Indirect Tax	1.1	0.16	6.63	0.00
R-square	0.86			
Adj. R-Square	0.84			
F-Statistics	44.07			
Prob (F-Statistics)	0.00			

The gross taxes are consolidated tax revenue series of all taxes of Centre and State Government. The gross taxes is sum total of direct and indirect taxes. The consolidated series reported significance to changes in GDP. The buoyancy reported at 1.09. It means if there is change of 1 % in GDP of India there would be 1.09 % change in the gross taxes collections. The P-Value and Prob (F-Statistics) are less than 0.05. The Adj. R –Square is also impressive which stands at 0.85.

Table 6: Gross taxes efficiency

	Coefficient	Std. Error	t-statistics	Prob.
Gross Taxes	1.09	0.15	6.86	0.00
R-square	0.87			
Adj. R-Square	0.85			
F-Statistics	47.19			
Prob (F-Statistics)	0.00			

Conclusions

There is significant improvement in the tax revenue collection. The results of the study directly reporting the significance. The earlier combined tax revenue series which were later submerged into GST reported buoyancy at 0.81 whereas there is impressive improvement in the collection efficiency of GST model wherein it stand at 1.43. The combined taxation revenue series were not able to achieve the efficiency which the new model of GST has achieved. The convincing reasons may be simplicity in the new model, one nation one tax model and removing the hurdles and number of compliances which very often deter the FDI to venture in India. In fact as per latest media reports GST revenue collection in May 2022 records 44 % rise YOY at Rs 140885 Cr. The complaint from the States regarding recurring delays in compensation payments to states, flouting the stipulated norm. The states are legally entitled to the compensation for the revenue loss occurring due to the implementation of the GST for a period of five years (2017–22), as per the GST (Compensation to States) Act, 2017, from the GST Compensation Fund. However relieving news as on 31 May 2022 is that Centre cleared entire GST compensation dues of states till May 31, 2022. One troubling argument would be despite more than seven decades since independence the tax base of indirect taxes is still not widening enough to remarkably beat the tax base of direct tax. The result proves that the buoyancy of aggregate direct tax and aggregate indirect tax are still at the same level. The buoyancy reported in the study if 1.07 for direct taxes and 1.1 for indirect taxes. The Government of India should focus on increasing the tax base of indirect taxes. In fact drastic changes are needed in the structure of other indirect taxes and their implementing agencies. The economic rationality

demands there should be more taxes on expenditure side and other economic activities rather than shouldering extra burden in the form of higher income tax rates to build sound public policy management system. Rosen and Gayer, (2010) & Salanie and Locker, (2003) advocates that the processing and collecting of taxes involve the incurring of administrative costs. Enhancing Tax Administration efficiency and effectiveness produces the improvement of tax compliance and enforcement, while also reducing administrative costs.

As the number of year of implementation of GST regime are not very good therefore we could not build a robust forecasting model. Another limitation is there is no data available for impact of discretionary changes by the Government of India, therefore the elasticity could not be found for GST model.

The Government should implement measures to increase the tax base of indirect taxes including GST. On the ground of struggling fiscal deficit of States due to slow economic growth aggravated by the sudden Covid-19 outbreak, the Compensation Act should further be extended beyond five year upholding the spirit of cooperative federalism. The modalities can be set on the round table with the Indian States. The Indian States need to move in line with the integration of many levies. At present there are number of State taxes operating in different States in one or the other name. The different Governments should attempt to merge them so that the complexities involved in the compliances should reduce to great extent that would automatically attract FDI and would save the resources of the Industry to concentrate on their respective business models. The small scale business operator also finding difficulties in compliances such as RCM, ITC, tight deadlines for compliances provisions of GST model. Therefore appropriate relaxation may be an area of discourse for the GST Council. Another recommendation is alike suggestion by Kumar (2019) that provision required for the local bodies in the present GST model as their levies were also subsumed and to protect their autonomy.

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