Gavesana

Journal of Management

Editorial

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About the Journal

The Gavesana Journal of Management is a bi-annual refereed journal of the Vignana Jyothi Institute of Management. Its objective is to disseminate knowledge of contemporary issues related to management and development. The journal seeks to serve as a platform for intellectuals to share the rapid strides made in contemporary research. The Research Journal has been registered with the Registrar of Newspapers for India (RNI) vide No. 108534/2010 dated 1/3/2011.

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Editorial

EDITORIAL

Human Resource function (HR), in any organization, has to be that of a strategic or business partner, by developing the talent in the entity through job rotation, job enrichment etc., involving expert teams, business leaders and line management. Such a partnership is a long-term relationship to achieve objectives common to the partners, as also the organization's financial success. In the process, the HR employees, as partners, should perform their assigned roles, and also support the activities of those in other functional areas. This needs a strategic plan which dovetails the HR Vision and Mission into that of the organisation.

HR, as a Strategic Partner - increases employee productivity and thus the organization's profitability; enhances competency and talent management; uses the technology and knowledge to formulate, implement and review strategies; copes with the changes in the business environment arising from unforeseen business situations, and globalization; and serves the internal and external customers well. This is done through efficient and effective delivery of human resource services. For this, the HR needs to spend more time in the organization's planning, design and development. It must become part of the business team, involved in planning at the highest level. HR Managers and HR professionals are strategically suited to provide the necessary leadership in change management, which is a challenging task.

The Human Resource Information System (HRIS) has to be effectively used to handle daily administrative HR tasks. Employees can make use of the self-service facility online, to support business strategy development and implementation, which saves time and costs. There should be an HR Head who understands well the strategic partnership/relationship between organizational strategy and human resources. He should be an expert in all HR functions. Someone from within the organization can be groomed for this role.

Research has shown that the HR function will be effective in achieving the business objectives when it assumes the role of a strategic business partner. The top management should ensure this. The administrative reactive approach in people management can no longer support the organization in a competitive business environment. If the HR function is decentralised fully, the Line managers and supervisors will eventually put the blame on HR when problems arise. If this happens, it interferes with the effective use of line managers' and supervisors' time in the operations of the organization on daily basis. The line managers and supervisors need to be supported to make them more proficient in managing their subordinates in the performance of daily tasks. Complete participation of HR people in strategy development and implementation promotes HR as a strategic partner. The HR Manager and HR professionals should contribute to business decisions; develop business acumen to understand how a profitable business is run; be customer-centric; and learn how to link HR practices to the organizational business strategy.

The expectations from HR as Strategic Partner include: recruiting the right employees;

align corporate values to the recruitment strategy; well developed competencies of the workforce, and their relevance to organizational core business; participative culture where HR initiatives fully support the overall strategic plan; discard ineffective HR practices that do not contribute to the success of your organization. HR management requires continuous improvement i.e. Kaizen to ensure and retain its relevance as strategic partner. For this, capable and committed people are needed at every level, supported by senior management. Change has to be managed well to avoid or minimize disruption in the organization's activities, and for its success.

The effectiveness of the HR people as a strategic partner is also dependent upon the corporate policies and practices, structure, types of activities carried out, location, effective communication, leadership and motivating employees to keep moving in the right direction as per plan. Every aspect of HR has to be reviewed in the process of implementing the necessary changes and reorganization. Having the right is crucial to help them succeed and engage their full attention with the view to ensure HR truly becomes strategic partner. The HR Scorecard shows whether the organisation is making good progress on making HR as strategic partner. The competitive advantage of the organisation can be enhanced by aligning the HR strategies to the overall business plan. To ensure that HR truly becomes a strategic business partner, adequate financial backing is necessary. One needs to take measures to eliminate or minimize risks to HR, and it should be ensured that HR plays a meaningful role and not necessarily a major role, particularly during financial crises. It cannot also be a trial and error approach.

In fact, in a business landscape that is changing fast, there is an imminent need for HR to be an active strategic partner. By aligning itself with strategic plans of the business, it needs to foster a stronger relation between the executive team and the workforce. Externally, it can make valuable contribution to branding and the tone of communication. By leveraging customised, more personalised metrics and deep analytics, it can vastly improve organizational learning, training and improve decision-making. Consequently, the human capital programmes will lend more impact, thereby encouraging and enhancing collaboration between various functions across the organisation. HR can no longer be just a functional arm, a distant participant, but will have to assume the role of strategic partner, integral to organizational well-being and growth.

Dr. Ch.S. Durga Prasad

Determinants of Mutual Fund Products' Performance in India

Dr. Gurmeet Singh*

Abstract

The investment industry in India is unique as compared to the rest of the world. Many studies have been conducted in analyzing the various mutual fund products. This paper examines the determinants of the mutual fund product returns in India using data for the period of 5 years. The analysis covers the ten mutual fund companies and their six categories of products i.e. large cap equity funds, diversified equity funds, small & mid-cap equity funds, ELSS funds, debt long term funds and balanced funds. The empirical estimates show that a long-run relationship exists between fund returns of mutual fund products and the independent variables. Further the results of regression analysis reveal that the fund family size, fund size, fund age, management experience, and management tenure significantly influence the returns of mutual fund products under the study.

Keywords: Mutual Fund, Financial Planning, Asset Management Company, AUM

Introduction

The Indian mutual fund industry has come a long way since entry loads were banned in 2009; when many stakeholders were skeptical on the way forward. The industry has matured by introducing best practices, increasing the transparency levels and raising the bar on investor friendliness. Exogenous factors such as regulatory changes, increased consolidation, market volatility and varying risk appetite amongst investors have all contributed to its metamorphosis. The way ahead clearly involves steps to making mutual funds a part of the common man's portfolio.

Mutual funds' AUM so far has been mainly dominated by institutional investors and HNIs. Retail investors have been largely conspicuous by their meager presence as the share of mutual funds in household savings continues to be less than 5%. Only the 'knowledgeable' or 'qualified' investors know what to choose from. For example, corporate go for liquid and ultra short term funds. HNIs, on the other hand, have used debt-oriented funds such as FMPs, long term income funds, gilt funds to their advantage. In contrast, retail investors have mostly invested in equity funds, but have done so intermittently and not in a secular manner. Except for the equity linked saving schemes (ELSS) category which is utilized for tax benefits under section 80C (includes a 3-year lock-in period), retail investors largely exited equity funds in a bear phase (outflows) and entered in a bull phase (inflows) instead of the other way round. The only category where retail interest has grown exponentially is in gold ETFs, mainly due to the long bull-run in gold prices and general awareness about gold as an asset class.

AMCs thus need to sharpen and focus their product positioning for retail investors but at the same time keep it simple. Products must be positioned clearly based on risk-reward potential. Investors, in turn, should take the help of financial planning specialists or refer to independent rankings to select the right funds as well as periodically monitor their performance. In this direction, SEBI has allowed allocation of 2 bps of AUM for investor education.

The Indian mutual fund industry has about 1,250 unique funds across 44 AMCs, which further have around 8,000 options (growth, dividend, re-investment with multiple frequencies - daily, monthly, quarterly, etc) . In a country where financial literacy is low, choosing among the vast expanse of funds is a major challenge. Investors need to choose from funds with similar or slight variation in investment objective and funds whose names do not indicate much about their characteristic.

Mutual funds in developed markets have a higher penetration through innovative products which offer long-term wealth creation options such as life cycle and target maturity funds. Investors must be aware that information on funds such as portfolio composition, return comparison with the stated benchmark and fund management details are available on AMC sites. Transparency and easy access to funds will increase investor confidence.

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The future of the mutual fund industry rests in the twin-power of increasing financial literacy and showcasing the suitability of mutual funds in an investor's portfolio. AMCs and product distributors need to work closely to achieve the target of higher penetration of mutual funds in household savings. Quintessentially, a more investor-friendly approach in product development, communication and distribution would go a long way in making mutual funds a pull product.

The present study is undertaken with a view to give an insight into the determining factors for fund returns of mutual fund products in India.

Review of Literature

As far as a comparative study of mutual fund products is concerned, a number of researches have been carried out on its diverse facets by the researchers, economists, academicians in the sub continent and overseas. Different researchers have accomplished research on mutual funds from different perspectives. An attempt to incorporate literature review of empirical work on different aspects of mutual funds has been made in this section.

Athma & Kumar in an analysis of Mutual Funds from investors' perspective concluded that there is no association between the satisfaction level of the investors and the length of service of the MF Company. Panda & Panda have made a comparative study of factorial analysis of Mutual Fund Investment and Insurance Fund Investment and found that for stock option (mutual fund schemes), Risk and Expectation are higher, whereas Return , Knowledge level and rate of volatility are lower in each case. But in case of insurance fund investment, the investors are self-conscious, get right information at right time along with the proper investment. They have also suggested that before making any investment decision, evaluate how it affects the current asset allocation plan. As time passes by, life stage changes with the needs as well as income change. So one should need to monitor and review investment periodically. Shanmuganathan & Muthian have done a comparative analysis on standing of ULIPs in an individual investment portfolio and concluded that Investment in ULIP with equity investment options is better than that of traditional investment. If investment horizon is long, equity should generate decent returns in the long run. Simultaneously, if we can think of investing in Mutual Funds, ULIPs are the smart choice for people who want to enjoy market returns and keep the controls in their hands. Added to that it gives insurance cover with the flexibility to adapt changing lifestyle needs. This is a viable option for those who want a convenient, economical, one-stop solution.

Jaiswal & Nigam have found that Mutual Fund's are able to provide better return than any return on risk free securities but unable to outperform the benchmark portfolio in terms of average return. The correlation between fund return and fund risk justify the fact that higher the returns, high the risk. There is also positive association between fund return and market return. The sample funds are not adequately diversified with a diversification of about 60.3%. Due to inadequate diversification, a substantial part of the variation in fund return is not explained by market and the fund is exposed to large diversification risk. Das et al., have conducted a behavioral analysis of retail investor on Mutual Fund vs. Life Insurance. They have concluded with some important findings that will be valuable for both the investors and the companies having investment opportunities in both Mutual Fund and Life Insurance. Kavitha analyzed the fund selection behavior of individual investors toward MF in Mumbai city during the period July-December 2004. It was found that there is a fair opportunity to mutual investment in Future. Keli is of opinion that Past performance and Fund's Investment Strategy continued to be the top two drivers in the selection of a new fund manager. Lynch & Musto were of opinion that this decade will belong to mutual funds because the ordinary investor does not have the time, experience and patience to take independent investment decisions on his own.

In his study Black & Skipper observed that in recent years, investors' attitudes towards the securities industry plummeted, in reaction to both the conflicted research and the mutual fund scandals. He concluded that the most optimistic assessment is that the SEC has plenty of unfinished business to attend to. Chakrabarti & Rungta stressed the importance of brand effect in determining the competitive position of the AMCs. Their study reveals that brand image factor, though cannot be easily captured by computable performance measures, influences the investor's perception and hence his fund/scheme selection. Lexington & Harrison found that majority of investors who invest in MF themselves are not clear with the objective and constraints of their investment but in addition to this most

important critical gap that exists in this process is lack of awareness about presence of risk elements in MF investment. The new marketing philosophy and strategies place special emphasis on recognition of customer needs in an effort to provide high level of quality services. Shanmugham conducted a survey of 201 individual investors to study the information sourcing by investors, their perceptions of various investment strategy dimensions and the factors motivating share investment decisions, and reports that among the various factors, psychological and sociological factors dominate the economic factors in investment decisions. Khorana & Servaes had experimented that the decision to introduce a new type of fund is affected by a number of variables, including investor demand for the fund's attributes.

Sundar conducted a survey to get an insight into the mutual fund operations of private institutions with special reference to Kothari Pioneer. The survey revealed that agents play a vital role in spreading the Mutual Fund culture; open-end schemes were much preferred, then age and income are the two important determinants in the selection of the fund/scheme; brand image and return are the prime considerations while investing in any Mutual Fund. Goetzman & Peles established that there is evidence of investor psychology affecting fund/scheme selection and switching. Bernstein found that risk averse behaviour of investor reflects the choice of investor to avid risk or take negligible risk that means whenever an individual investor is given option to go for guaranteed return with probability one which are comparatively less than gambling return with probability less than one, chances are that he may go for guaranteed return. Gupta & Sehgal evaluated mutual fund performance over a four year period, 1992-96. The sample consisted of 80 mutual fund schemes. They concluded that mutual fund industry performed well during the period of study. The performance was evaluated in terms of benchmark comparison, performance from one period to the next, and their risk-return characteristics. Gupta & Sehgal in another study (Conference, December) concluded that Mutual Fund Industry had performed reasonably well during their period of study.

Jambodekar conducted a study to assess the awareness of MFs among investors, to identify the information sources influencing the buying decision and the factors influencing the choice of a particular fund. The study reveals among other things that Income Schemes and Open Ended Schemes are more preferred to Growth Schemes and Close Ended Schemes during the then prevalent market conditions. Jaydev evaluated performance of two schemes during the period, June 1992 to March 1994 in terms of returns/benchmark comparison, diversification, selectivity, and market timing skills. He concluded that the schemes failed to perform better than the market portfolio (ET's ordinary share price index). Diversification was unsatisfactory. The performance did not show any signs of selectivity and timings skills of the fund managers. Shankar pointed out that the Indian investors do view Mutual Funds as commodity products and AMCs, to capture the market, should follow the consumer product distribution model. Sikidar & Singh carried out a survey with an objective to understand the behavioural aspects of the investors of the North Eastern region towards mutual funds investment portfolio. The survey revealed that the salaried and self-employed formed the major investors in mutual fund primarily due to tax concessions.

Sarkar & Majumdar evaluated financial performance of five close-ended growth funds for the period February 1991 to August 1993, and concluded that the performance was below average in terms of alpha values (all negative & statistically not significant) and funds possessed high risk. No reference was provided about the timing parameters in their study. Gupta made a household investor survey with the objective to provide data on the investor preferences on Mutual Funds and other financial assets. The findings of the study were more appropriate, at that time, to the policy makers of mutual funds to design the financial products for the future. Kulshreshta offered certain guidelines to the investors in selecting the mutual fund schemes. Ippolito states that fund/scheme selection by investors is based on past performance of the funds and money flows into winning funds more rapidly than they flow out of losing funds. Kon in his paper evaluated performance in terms of selectivity and timing parameters over a period, January 1960 to June 1976. The sample was 37 funds. The study concluded that individually few funds have shown positive selectivity and timing skills but collectively mutual funds failed to perform satisfactorily.

The survey of the existing literature reveals that no specific work has been carried out to examine the determinants of fund returns of mutual fund products in India. The present study is an attempt in this direction.

Data & Methodology

The aim of this paper is to investigate the determinants of fund returns of mutual fund products in India by finding

the relationship between the returns of mutual fund products with independent variables- fund family size (FFS), fund size (FS), fund age (FA), management experience (ME) and management tenure (MT). To accomplish the research objective following mutual fund companies and their six categories of products i.e. large cap equity funds, diversified equity funds, small & mid-cap equity funds, ELSS funds, debt long term funds and balanced funds are selected on the basis of their past performance for the period of 5 years i.e. 2010 to 2015. The study is mainly based on secondary data. Secondary data has been collected from the published broachers and key information memorandums (KIM) of mutual fund products. Descriptions of variables and data sources are presented in Table 1.

1. Birla Sun Life Mutual Fund	6. Kotak Mutual Fund
2 DSP Black Rock Mutual Fund	7. Reliance Mutual Fund
3. Franklin Mutual Fund	8. SBI Mutual Fund
4 HDFC Mutual Fund	9. TATA Mutual Fund
5. ICICI Prudential Mutual Fund	10. UTI Mutual Fund

Table 1: Description of Variables

Acronyms	Construction of Variable*
FR	Fund Return of selected Mutual Fund Products (since inception)
FFS	Fund family size (AUM of AMC)
FS	Fund size in AUM
FA	Fund age in days (since inception)
ME	Management experience
MT	Management tenure

* For all these, the source of data is Broachers &
Key information memorandum (KIM).

In order to examine and analyze the relationship between the independent variable of fund returns of mutual fund products with independent variables, multiple linear regression analysis is used and following hypothesis and regression model is formulated. The null hypothesis is H_0 - There is no significant relationship between the dependent variable and the independent variables.

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \varepsilon$$

Where,

y = Dependent Variable - Fund Return of selected Mutual Fund Products (Since inception) (FR)

x_1 = Independent Variable - Fund Family Size (AUM of AMC) (Rs. crores) (FFS)

x_2 = Independent Variable - Fund Size in AUM (Rs.crores) (FS)

x_3 = Independent Variable - Fund Age in days (since inception) (FA)

x_4 = Independent Variable - Management Experience (total experience of Fund Manager in years) (ME)

x_5 = Independent Variable - Management Tenure (total days of fund management by current Fund Manager) (MT)

β_0 = y intercept of the regression surface

$\beta_1, \beta_2, \beta_3, \beta_4$ & β_5 = Slope of the regression surface

ε = Error term

Findings & Analysis

Table 2: Descriptive Statistics of Variables

		Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
Large Cap Equity Funds	FR	19.032	6.9582	-0.2341	1.6203	0.8845	0.6426
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	4659.907	4282.18	1.0665	2.9258	1.8981	0.3871
	FA	3760.3	1175.064	0.0472	1.786	0.6178	0.7343
	ME	13.1	4.5326	0.2258	1.7463	0.7399	0.6908
	MT	1699.2	888.5386	0.8922	2.5635	1.4062	0.495
Diversified Equity Funds	FR	17.654	5.9166	0.1518	1.5527	0.9112	0.6341
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	3665.114	3022.057	1.2618	3.7136	2.8656	0.2386
	FA	3917	1467.881	-0.0455	1.8088	0.5947	0.7428
	ME	13.8	4.2374	0.876	2.3307	1.4655	0.4806
	MT	2436.5	1217.708	1.0051	3.8879	2.012	0.3657
Small & Midcap Equity Funds	FR	20.538	6.0181	0.5545	2.9255	0.5148	0.7731
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	2816.432	3097.496	1.9066	5.7572	9.226	0.0099
	FA	3645.1	1443.256	0.5667	1.7674	1.1683	0.5576
	ME	9.9	1.6633	0.3176	2.2015	0.4338	0.805
	MT	2198.9	1566.774	1.706	4.9664	6.4619	0.0395
ELSS Funds	FR	16.036	4.3851	1.0044	2.6375	1.7362	0.4197
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	2167.197	1602.61	0.7626	2.3666	1.1365	0.5665
	FA	3697.4	1054.908	-0.1326	1.5172	0.9454	0.6233
	ME	14.7	4.4485	-0.3891	2.9685	0.2527	0.8813
	MT	1801.6	704.1001	-0.0867	1.7374	0.6768	0.7129
Debt Long Term Funds	FR	8.879	0.5262	0.4504	2.4316	0.4727	0.7895
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	3431.25	959.7291	0.2904	1.423	1.1767	0.5552
	FA	4249.7	681.7795	-0.6568	2.3406	0.9	0.6376
	ME	16.2	2.3944	-0.3501	2.4354	0.3372	0.8449
	MT	1796.8	890.1015	1.061	3.0794	1.8789	0.3908
Balanced Funds	FR	15.797	2.4883	1.4058	4.6339	4.4063	0.1105
	FFS	95362.44	50205.93	0.0671	1.584	0.843	0.6561
	FS	2894.925	1391.27	0.3941	2.1061	0.5918	0.7439
	FA	4391	849.5167	-0.5828	2.6999	0.6037	0.7395
	ME	17.1	2.9231	0.0934	2.4019	0.1636	0.9215
	MT	2358.3	1415.404	1.1248	2.9756	2.1088	0.3484

Note: For each variable, the number of observations is 10.

The descriptive statistics for all the variables under study, namely, fund return, fund family size, fund size, fund age, management experience and management tenure are presented in Table 2. The value of skewness and kurtosis indicate the lack of symmetry in the distribution. Generally, if the value of skewness and kurtosis are 0 and 3 respectively, the observed distribution is said to be normally distributed. Furthermore, if the skewness coefficient is in excess of unity it is considered fairly extreme and the low (high) kurtosis value indicates extreme platykurtic (extreme leptokurtic). From the table it is observed that the frequency distributions of underlying variables are normal. The probability value of more than 0.05 of Jarque-Bera statistics also indicates that the frequency distributions of considered series are normally distributed.

Table 3: Karl Person's Correlation Co-efficient Matrix

	Large Cap Funds	Diversified Equity Funds	Small & Midcap Funds	ELSS Funds	Debt Long Term Funds	Balanced Funds
FR	1.000	1.000	1.000	1.000	1.000	1.000
FFS	0.399	0.780	0.435	0.646	0.137	0.353
FS	0.622	0.619	0.856	0.704	0.437	0.871
FA	0.399	-0.446	0.712	0.406	0.698	0.223
ME	0.116	0.292	0.031	0.486	0.817	0.374
MT	0.481	0.705	0.672	0.005	-0.020	0.786

Source: Author's Estimation

Table 3 shows summary of Karl Person's correlation co-efficient matrix of mutual fund products during the study period between dependent variable – fund return (FR) and fund family size (FFS), fund size (FS), fund age (FA), management experience (ME) and management tenure (MT). The correlation matrix highlighted that there is positive or negative correlation between dependent variable and independent variable. Except, there is low degree of correlation between fund return (FR) and management experience (ME) in case of large cap funds and fund family size (FFS) in case of debt long term funds. While there is no correlation between funds return (FR) of small & midcap fund and management experience (ME), and fund return (FR) of ELSS funds and debt long term funds and management tenure (MT). Therefore, null hypothesis H_0 - there is no relationship between the dependent variable and the independent variables is rejected in all the categories of selected mutual fund products.

Table 4: Result of Regression Analysis

No.	Regression Equation	R Square	Regression	
			F Stat.	Prob.*
1	**(Large Cap Funds)** FR = 18.29405 + (-9.42E-05) (FFS) + 0.001725 (FS) + 0.00806 (FA) + (-2.667953) (ME) + 0.00372 (MT)	0.959	18.698	0.007
2	**(Diversified Equity Funds)** FR = 7.399224 + 9.20E-05 (FFS) + (-0.001103) (FS) + (-0.002613) (FA) + 0.859513 (ME) + 0.001601 (MT)	0.962	20.040	0.006
3	**(Small & Midcap Funds)** FR = 10.46603 + 6.87E-06 (FFS) + 0.003336 (FS) + 0.001209 (FA) + 0.505334 (ME) + (-0.004271) (MT)	0.958	18.368	0.007
4	**(ELSS Funds)** FR = 6.825524 + 1.22E-05 (FFS) + 0.003419 (FS) + 0.00598 (FA) + (-1.195223) (ME) + (-0.002164) (MT)	0.962	20.731	0.006
5	**(Debt Long Term Funds)** FR = 5.094751 + (-4.20E-06) (FFS) + 0.000202 (FS) + (-0.000636) (FA) + 0.380987 (ME) + 1.16E-05 (MT)	0.947	14.290	0.011
6	**(Balanced Funds)** FR = 10.75608 + (-8.92E-06) (FFS) + 0.001382 (FS) + (-0.004054) (FA) + 1.09709 (ME) + 3.95E-04 (MT)	0.959	18.789	0.007

* Each of the concerned Null hypothesis is rejected as the p-value is less than the level of significance of 0.05.

Table 4 shows result of multiple linear regression analysis of selected mutual fund products at a 0.05 level of significance. Coefficient of determination - R^2 is > 0.5, which is very good, it shows that the models are fit within the sample in all the categories of selected mutual fund products, also the regression F value is > F significance value, it shows that the models are fit within the population in all categories of selected mutual fund products. Therefore, the independent variables of fund family size (FFS), fund size (FS), fund age (FA), management experience (ME) and management tenure (MT) significantly influence the fund return (FR) of all categories of selected mutual fund products.

Conclusion

This study investigates the determining factors of fund returns of six categories of mutual fund products in India by finding the relationship between the fund returns and fund family size, fund size, fund age, management experience, and management tenure, using multiple regression analysis. The analysis used the data over the period 5 years i.e. 2010 to 2015 obtained from the published broachers & key information memorandums of mutual fund products.

Based on the regression analysis it can be concluded that, the model is fit within the sample and the population. The independent variables of fund family size, fund size, fund age, management experience, and management tenure significantly influence the returns of mutual fund products under the study. The main implications of the results of the present study are for investors and mutual fund companies. Fund size and total assets under management by the mutual fund house with total tenure of the fund plays an important role in deciding the returns of mutual fund products. A fund with higher fund size and AUM with long experience can generate better returns for investors. Fund managers' total years of experience and his/her experience in managing the current fund are the significant determinants of fund performance. Investors may decide about the suitable mutual fund product in which they should invest to fulfil their financial needs.

However, the limitations of the study should not be over looked. The present study is limited to only five variables and six categories of mutual fund products. Inclusion of more variables and products with a longer time period may improve the results. A logical extension of the study can be done by including more variables and products and analyzing it.

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Corporate Perception Regarding Management Graduates in Gujarat

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Abstract

Objective: To study role, challenges and opportunities faced by management institutes in order to meet the corporate expectations with specific focus on Self Finance Institutes of Gujarat.

Purpose: The purpose of this study is to understand and analyze the corporate expectations and competences of management graduate in SFIs of Gujarat.

Methodology: The methodology applied is exploratory followed by descriptive research, by reviewing the relevant literature on the subject and by interviewing, senior professionals of corporate.

Findings: The gap of corporate's expectation from management students is yet to match. Although the gap is reduced as management institutes have put lot of efforts to survive but more focused approach is required to bridge this gap completely.

Research Limitations: This study is limited to the vicinity of Gujarat and it contains view point of corporate of Gujarat only. The views are limited to management programme conducted by Self-Financed Institutes.

Implications: This study will give an insight on the improvement areas of management education in Gujarat. It will help to define the role of management institutes from corporate's perspective.

Originality / Value: Management education has been discussed by past researches. However there is hardly any research which indicates the real problems faced by management graduates in meeting corporate expectations with special reference to Gujarat.

Keywords: Management Education, Business School, Gujarat, SFIs, Industry Demands.

Introduction

Management education is always considered to give lucrative jobs to management graduates. They are under strong pressure of linking this programme with corporate's expectations. Management institutes have to run need-based programme so that business education can be connected with industry demands. Management education has given inputs from time to time to solve the issues like smoothly conducting mergers and acquisitions, change process implementation, formulating strategies, slowdown of business and so on. For many years, Management Institutes have enjoyed very dominant position and they offer one of the best professional courses in the World (Ivory, 2006; and Mintzberg, 2004). In spite of that, role and value of Management Institutes has continuously been under sharp discussion (Mintzberg,2004; Pfeffer and Fong,2002; Ghoshal,2005; Khurana,2007). Lot of radical changes have happened in management education by globalization, technology, demographics and social imperatives (Global Foundation for Management Education, 2008).

There are basically three types of Institutions:

1. "Private-Self Financing Institution" means an Institution started by a Society/Trust/Company and does not receive grant/fund from Central and/or State Government and/or Union Territory Administration for meeting its recurring expenditure.

2. "Government Aided Institution" means technical Institution that meets 50% or more of its recurring

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expenditure out of the grant received from Government or Government organizations.

3. "Government Institution" means technical Institution established and/or maintained by the Government (AICTE Handbook 2015-16).

Challenges for Management Education

Corporates recruit management graduates as they are considered to have strong communication skills, good analytical skills, decent work ethics, leadership skills and appropriate business understanding(Porter, 1988).Management institutes focus on quantitative and analytical skills, but human skills are overlooked. This results in assembly of inefficient managers (Elliot and Goodwin, 1994).

Industry demands competent managers who can work dynamically (Spender, 1995). Course curriculum of business schools is not designed as per corporate requirements (Randall, 1999). Management institutes will collapse if the gap between management graduates and corporate is not filled (Grey, 2002). New strategies need to be developed against drivers of change like recession, technological advancement, globalization, government policies etc. (Friga, Bettis and Sullivan,2003). Management education programme is the only global degree wherein its model of education is more or less similaracross the world (Mintzberg,2004; Hatchuel and Glise,2003). Basic management skills and leadership skills are not imparted to students, this is a big blame on business schools (Bennis and O'Toole,2005). Being an academic institution it is the prime responsibility of business schools to excel in the field of knowledge (Starkey & Tempest, 2005). Many researchers have verified about the diminishing quality of management education (Mintzberg, 2004; Ghoshal2005; Khurana, 2007). Quality movement and benchmarking of problem solving skills with world standards has been the dire need of today and therefore it is the prime responsibility of management institutes to teach handling professional challenges (Klimorski, 2008). Indian business schools adopted case study method from Harvard Business School but they could not implement it properly (M.S. Rao, 2010). Global leadership positions can only be successfully handled by management professionals who can efficiently solve and bench mark skills to take care of cross functional problems (Jayanthi & Khalil, 2007). Society should be aware of role of business schools (Bradshaw,2009). Course curriculum of management institutes must be as per the industry demands (Srikant Datar, David A Garvin and Patrick G Cullen,2010). Many problems like inefficiency in developing future leaders, incapability in understanding organizational responsibilities, lack of global perspective etc must be handled properly by management institutes(Datar, Garvin, & Cullen, 2010). Knowledge collection, knowledge creation and knowledge sharing between corporate and academicians are the areas where drastic transformation is required amongst all management institutes (Kaul, 2011).

Self-Finance Institutes

Rise of self-finance institutions in Gujarat was very interesting. Initially, Government of Gujarat thought that private entrepreneurs could play meaningful role in setting up colleges which offer higher education like BE, BCA and other professional courses. It was a welcome measure because 12th Five year plan stated the need of graduates and postgraduates per thousand population of India. The policy makers in India felt that the enrolment ratio in graduate and postgraduate courses had fallen down in India as compared to other developed countries like China and America. The Government felt incapable to fulfill the need of higher education on its own and SFIs were brought in. Since the Government felt that it is difficult to find Higher Education so there is a need of Self Finance Institute.

Fluctuations in Management Education in Gujarat

One can broadly classify the phase of Management education into two phases:

Phase 1 - up to 2006, when number of MBA colleges in Gujarat was less than 40

Phase 2 - after 2006, when number of MBA colleges was more than 150

The demand for Management graduates instigated after liberalization, as lot of industries demanded MBA graduates to handle their specialized departments like Marketing, Finance, HR, Production etc. As a result of this massive

demand for Management graduates, many Self Finance Institutes started with the objective of providing skilled manpower to the industries. Most of the degree courses like Pharmacy, Engineering, Medical etc, had very high operating cost. As they had to set up laboratories, supporting infrastructure, well equipped library etc, while the operating cost for starting the MBA programme was comparatively less. Therefore, number of entrepreneurs entered into setting up of MBA Institutes in Gujarat. AICTE inspected only the basic criteria and gave grants for opening MBA Institute. Due to substantial increase in the demand for MBA graduates their employability was very high and unemployment among MBA was a less known phenomenon in 2005-06 therefore, more and more students were willing to take MBA programme after their Engineering, Pharmacy, BCA and other professional courses. Management institutes mushroomed after the year 2005 and intake of students increased many folds. Various Institutions started management education without required infrastructure, less faculties, poor library etc and so the quality of management education faded. Such institutions could not produce good quality of managers, as demanded by industries. These institutes failed to provide skill-based education. Post 2005, the objective of management institutes was merely profit making. The institutions which were established in 90s were able to create a brand name for themselves and so they survived. The demand for management graduates dropped after 2010 due to recession. So the institutes without good infrastructure facility, good faculties, and good students faced admission problem. As a result, from 2010 - 2014 approximately 50 Management Institutes shut down or they reduced their intake.

Nowadays Industries are not hiring MBAs because they are not up to the mark. In spite of hiring MBAs industries are now hiring graduates or post graduates of required area, give them short term training and make them skilled for their work. For example: Textile industry will hire a person who has done either graduation or post-graduation in Textile Engineering as industry can give related training to the textile graduate and then that person will become expert of his area. Similarly Insurance companies, Banks have established their skill-based training centers. So now companies are not demanding MBAs like before and there is a shift from Management to specialized subject.

Placements in Management Institutes

Students' search for a suitable college is based on two main criteria: Fees and Placements. Management Institutes present a fake picture and somehow manage to present 100 percent placement and fees less than of other Institutes. Students do not have clear understanding of the system and so they are trapped. Many Institutes have tie up with Corporates. Students are absorbed by Corporates and then they are fired within three months. Such placements cannot be considered as placements. If a student is placed and remains in the corporate for a year only then it can be considered as placed. For instance if some company offers very low salary package, a student will definitely not accept that offer but institute's records will say that the student is placed. So this is a flaw in the system. Simply offering does not mean that the student is placed. Management institutes are not employment agencies.

Research Methodology

The study is exploratory followed by descriptive in nature, where the researcher has identified major issues of management education by past researches. Closed ended questionnaire was formulated based on the views taken from in-depth interviews of senior corporate professionals and past researches;130 corporate professionals who regularly recruit students from SFIs across Gujarat were taken as sample. Data was collected through questionnaire.

Analysis and Findings:

The questionnaire was prepared to understand the roles, challenges and opportunities of management institutes from corporate's perspective. It also measured the required skills in management graduate. Questionnaire was made on Five-point Likert scale which measured questions on scale of 1 to 5, where 1 is Strongly disagree and 5 is Strongly agree. Reliability of questionnaire was checked by measuring Cronbach's Alpha. First, Cronbach's alpha coefficients were used to measure the internal consistency of each identified dimension of construct, and items with adequate Cronbach's alpha were retained for the scales. The general criteria for the Cronbach coefficient alpha should be greater than 0.6. Reliability is 0.909 (Table 1) which means questionnaire is reliable.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.909	.912	28

To determine the important factors, the Principal Component Factor Analysis (PCA) with varimax rotation was performed for the 28 items measuring adoption. The result indicated that the Bartlett's Test of Sphericity (Bartlett, 1954) was significant (Chi-Square 3174.61, p-value <0.0001). The Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy was high at 0.801 (Table 2). This KMO value of 0.801 is excellent since it exceeded the recommended value of 0.6 (Kaiser, 1974). The two results of (KMO and Bartlett's) suggest that the data is appropriate to proceed with the factor analysis procedure (Malhotra 2010).

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	3174.610
	Df	406
	Sig.	.000

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was performed and only those factors were retained which had an eigen value more than 1 as only they were considered significant. An eigen value shows the amount of variance associated with the factor. The result was that there were a total of 5 factors, which explained for 64.212% of the total variance. The factors considered should together account for more than 50% of the total variance (Malhotra, 2010).Factor analysis indicated that five factors were critical for corporates. Corporate thinks that a business school must excel in those five areas for better functioning. This indicated corporate's perception about student's attributes, skills, attitude, faculties and overall business school.

Table 3:Factor 1 - Skills and Attributes

Factor No.	Variables	Eigen Value	Mean
F1a	Students have Analytical ability	.717	**3.46**
F1b	Students have effective Communication skills - written and verbal	.745	**3.32**
F1c	Students have Information and Communication technology skills- ICT skills	.774	**3.50**
F1d	Students have Initiative taking ability	.838	**3.44**
F1e	Students have Leadership skills	.577	**3.46**
F1f	Students have Planning and Organizational skills	.798	**3.33**
F1g	Students have Problem solving and Conflict Resolution Skill	.862	**3.62**

Factor 1 loaded on seven variables and shall be labeled as "Skills and Attributes"as it comprises of dimensions related to analytical ability of students, ICT skills, initiative taking ability, leadership skills, planning and organizing skills, problem solving and conflict resolution skills. The items received mean ranging from 3.32 to 3.62 on a scale of 1 to 5.

Table 4:Factor 2 - Corporate's Perception of MBA Programme

Factor No.	Variables	Eigen Value	Mean
F2a	Most B Schools work on enhancing student knowledge by sending students to companies for live case studies and company projects	.622	**3.64**
F2b	Most B Schools actively collaborate with corporate for summer internship programme and ensures that it is done in a professional manner	.771	**3.72**
F2c	Most B Schools focus on professional development of their students	.790	**3.41**
F2d	Most B Schools focus on developing KSA (Knowledge, Skills and Attitude) in students	.616	**3.52**
F2e	Faculties have diversified Industry experience	.554	**3.00**
F2f	Students are Creative	.632	**3.67**
F2g	Students are Honest and Responsible	.659	**3.54**

Factor 2 loaded on seven variables and shall be labeled as "Corporate's Perception of MBA programme"as it comprises of dimensions related to B schools responsibility of enhancing student's knowledge by sending them for live case studies, company projects, summer internships, professional development of students, KSA development, creativity of students and about experience of faculties. The items received a mean ranging from 3.00 to 3.72 on a scale of 1-5.

Table 5:Factor 3 - Corporate perception of students' attitude

Factor No.	Variables	Eigen Value	Mean
F3a	Students have Enthusiasm and Willingness to learn	.792	**3.62**
F3b	Students indicate good team work and cooperation ability	.693	**3.79**
F3c	Students are Adaptable and Flexible	.716	**3.63**

Factor 3 loaded on three variables and shall be labeled as Corporate perception of students' attitudeas it comprises of dimensions related to students' enthusiasm, willingness to learn, team work, cooperation ability, adaptability and flexibility. The items received mean ranging from 3.62 to 3.79 on a scale of 1-5.

Table 6:Factor 4 - Corporate Perception about Faculty

Factor No.	Variables	Eigen Value	Mean
F4a	Faculty play a major role in overall development of students	.786	4.00
F4b	Faculty play role of facilitators between students and corporate	.809	3.83

Factor 4 loaded on two variables and shall be labeled as Corporate Perception about Facultiesas it comprises of dimensions related to faculty's role in student development. The items received a mean of 3.83 and 4.00 on a scale of 1-5.

Table 7:Factor 5 - Corporate Expectations from B School

Factor No.	Variables	Eigen Value	Mean
F5a	Most- B-Schools are currently running industry specific courses that totally understand industry requirement and dynamics	.837	2.92
F5b	Most B Schools seek corporate advice to design the academic curriculum / activities	.543	3.10
F5c	Most B Schools take mentors or experts from corporate for guiding students through expert lectures, projects etc.	.522	3.64

Factor 5 is loaded on three variables and shall be labeled as Corporate Expectations from B School as it comprises of dimensions related to current scenario of business school, industry requirements, corporate advice in curriculum designing and mentors from corporate. The items received a mean ranging from 2.92 to 3.64 on a scale of 1-5.

Cluster Analysis

Cluster analysis was done to understand clusters among the data set. Based on measured characteristics, relatively homogenous clusters were identified and measured. The researcher carried out hierarchical cluster analysis using Ward's method applying squared Euclidean Distance as the distance or similarity measure. It gave the ideal number of clusters one should work with. Optimum number of clusters was identified based on the number of dendrogram formed after running hierarchical cluster analysis. In hierarchical cluster analysis, a hierarchy of clusters was formed which was represented in a tree like structure, known as dendrogram. Roots of the tree represent single cluster with all the observations while leaves represent individual observations. Algorithms for hierarchical clustering are generally either agglomerative, in which one starts at the leaves and successively merges clusters together; or divisive, in which one starts at the root and recursively splits the clusters. Any valid metric is used as a measure of similarity between pairs of observations. The choice of which clusters to merge or split is determined by a linkage criterion, which is a function of the pairwise distances between observations [wikipedia]. Figure 1 shows that there are two distinct clusters based on variables studied. Then K means clustering method was used on the data. Originally known as Forgy's method (Forgy, 1965), the Kmeansis one of the famous algorithms for data clustering and it has been used widely in several fields including datamining, statistical data analysis and other business applications. The K-means clustering algorithm builds clusters by RFM attributes (R: Recency, F: Frequency, M: Monetary). The K-means algorithm suggested by MacQueen (1967) for describing an algorithm assigns each item to the cluster with the nearest centroid i.e. mean. The k-means clustering method produces exactly k different clusters of largest possible distinction and the best number of clusters k leading to the largest separation is not known as a priori and must be computed from the data. The present study indicates that corporate is segregated into two clusters. Cluster 1 (C1= 48 corporates) and Cluster 2 (C2= 42 corporates). C1 is positively associated with all the variables which indicates that corporate strongly believe that all these variables are important for management institutes. C2 is indifferent and they believe that although these variables are important but business school has to pay more attention in these areas. Corporate consider that students have enthusiasm and willingness to learn (Value = 3.62), good team work and cooperation ability (Value = 3.79) and they are adaptable and flexible (Value = 3.63)
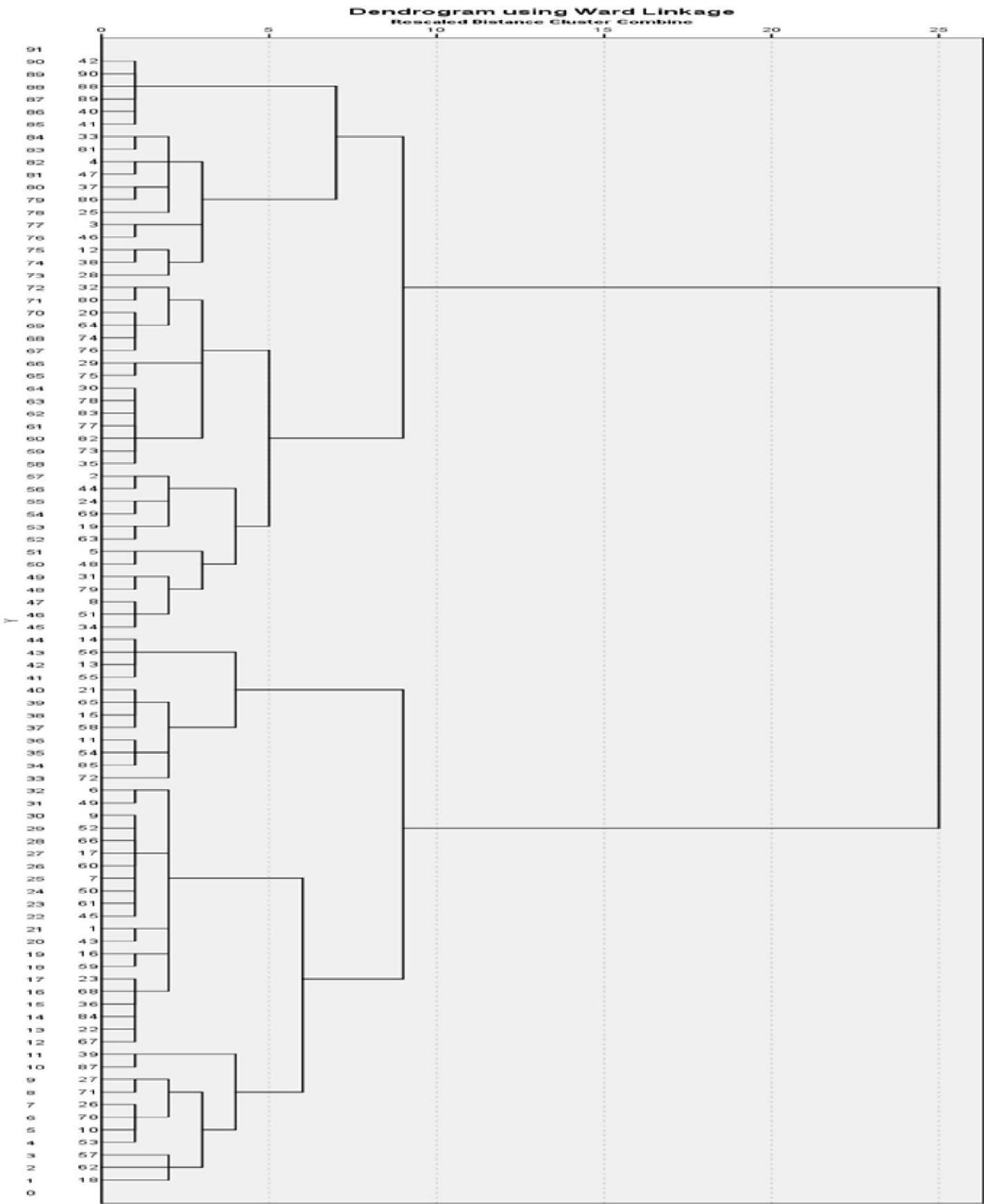
Figure 1: Dendrogram

Dendrogram using Ward Linkage
Rescaled Distance Cluster Combine

Table 8: Final Cluster Centers

Variables	Statements	Cluster	
		1	2
V1	Most- B-Schools are currently running industry specific courses that totally understand industry requirement and dynamics	3	3
V2	Prime responsibility of a business school is to generate work sincerity and sense of responsibility among its students	4	4
V3	Most B Schools seek corporate advice to design the academic curriculum / activities	4	3
V4	Most B Schools take mentors or experts from corporate for guiding students through expert lectures, projects etc.	4	3
V5	Most B Schools work on enhancing student knowledge by sending students to companies for live case studies and company projects	4	3
V6	Most B Schools actively collaborate with corporate for summer internship programme and ensure that it is done in a professional manner	4	3
V7	Most B Schools focus on professional development of their students	4	3
V8	Most B Schools focus on developing KSA (Knowledge, Skills and Attitude) in students	4	3
V9	Faculty have practical knowledge of the subject	4	2
V10	Faculty have diversified Industry experience	4	2
V11	Faculty play a major role in overall development of students	4	4
V12	Faculty play role of facilitators between students and corporate	4	4
V13	Faculty are limited to books only	3	3
V14	Students have Enthusiasm and Willingness to learn	4	3
V15	Students indicate good team work and cooperation ability	4	4
V16	Students are Adaptable and Flexible	4	3
V17	Students have Analytical ability	4	3
V18	Students have Commitment and Dedication	4	3
V19	Students have effective Communication skills -written and verbal	4	3
V20	Students are Creative	4	3
V21	Students are Honest and Responsible	4	3
V22	Students have Information and Communication technology skills- ICT skills	4	3
V23	Students have Initiative taking ability	4	3
V24	Students have Leadership skills	4	3
V25	Students have Planning and Organizational skills.	4	3
V26	Students have Self Control.	4	3
V27	Students work with positive attitude	4	4

Number of Cases in each Cluster		
Cluster	1	48.000
	2	42.000
Total		90.000

Table 9: Top Five Mean Scores amongst all the factors

Sr. No.	Top Five variables with mean values in ascending order	Mean
1	Most- B-Schools are currently running industry specific courses that totally understand industry requirement and dynamics	2.92
2	Faculty have diversified Industry experience	3.04
3	Most B Schools seek corporate advice to design the academic curriculum / activities	3.10
4	Faculty have practical knowledge of the subject	3.14
5	Students have effective Communication skills -written and verbal	3.32

Interpretation and Conclusion

In the above discussion, corporate perception regarding management graduates of Gujarat is being studied. On running factor analysis, five factors were generated which a business school must consider for its development. These factors are as follows:

F1:**Skills and Attributes**

F2:**Corporate's Perception of MBA programme**

F3:**Corporate perception of students' attitude**

F4:**Corporate Perception about Faculty**

F5:**Corporate Expectations from B School**

Analysis of factors indicated that **Factor 1: Skills and Attributes**directed towards corporate opinion about skills and attributes that a management graduate shall possess. F1b has a mean value of 3.32 which showed average response of corporate on communication skills of management graduate. Similarly other factors F1c **(Value = 3.50)**, F1d **(Value = 3.44)**, F1e**(Value= 3.46)**, F1f **(Value = 3.33) and** F1g **(Value = 3.62)** showed similar response where corporate were not very appreciative about the skills of management graduate and showed very mediocre response.**Factor 2:Corporate's Perception of MBA programme** revealed that Faculty lack diversified industry experience **(Value = 3).** Although they consider that B-Schools work on enhancing student knowledge by sending students to companies for live case studies and company projects **(Value = 3.64)**, they collaborate with corporate for summer internship programme**(Value = 3.72)** and they must focus on developing KSA (Knowledge, skills and attitude) in students **(Value = 3.52)**. All the variables in this factor showed average response from corporate. If a business school has to flourish then they will have to convince corporates that they are progressive, then only corporates will look forward towards prolific relation with management institutes. **Factor 3: Corporate perception of student's attitude**inspected that students have enthusiasm and willingness to learn **(Value = 3.62)**, good team work and cooperation ability **(Value = 3.79)**, adaptability and flexibility **(Value = 3.63).** Corporate rated all the variables between average to good but to be the best performer more focus on improving these areas is required. **Factor 4 - Corporate Perception about Faculties** reflects corporates strongly consider that faculties play

a major role in overall development of students **(Value = 4)** and they act as facilitators between students and corporate **(Value = 3.83).** Management institutes hence should pay a very close attention towards faculty development. They are the stepping stone behind the success of any business school. Their correct guidance to students will help not only in development of students but entire ecosystem of business school.**Factor 5: Corporate Expectations from B School** points towards what a company desires from a business school. F5a has a mean value of 2.92 which indicates neutrality of corporate towards business school standing on their expectation. Further implications are that business schools need to work towards fulfilling corporate expectation if they want to create quality workforce for the corporate world. Corporate expects B-School to run industry specific courses that totally understand industry requirement and dynamics **(Value = 2.92)**and they must seek corporate advice to design the academic curriculum / activities **(Value = 3.10),** although they consider that B Schools take mentors or experts from corporate for guiding students through expert lectures, projects etc. to some extent**.**In order to understand corporate perception, cluster analysis was run and the output indicated two Clusters: **Cluster 1 (n=48) – Positives**, wherein majority of corporates believe that management institutes are considering all these factors important and they are working on it whereas, **Cluster 2 (n=42) – Neutrals,** believe that management institutes must focus on all these factors.Despite their differences, both the clusters expressed common opinion on some variables. Both the clusters mutually agreed that prime responsibility of a business school is to generate work sincerity and sense of responsibility among its students **(V2)**, which means that a business school must focus on student development. Students must be taught to become accountable and reliable for the task assigned. They agreed that faculty play a major role in overall development of students **(V11)** and faculty play a role of facilitators between student and corporate **(V12)** which points towards the role of faculty in a management institute. Emphasis on faculty development should be given so that they can act as competent and resourceful mentors to the students. Both corporate clusters indicated that most management institutes are not running industry specific courses which totally understand industry requirement and dynamics **(V1).** So management institutes must work in collaboration with corporate to understand industry demands and they must work on designing of management course as per the current market needs. Cluster 1 agreed that faculty at business schools have diversified industry experience while Cluster 2 disagreed and conveyed that facultydo not have industry experience **(V10).** Both clusters differed in the opinion that faculty have practical knowledge **(V9).** Faculty act as mentors at management institutes; they can guide, facilitate and mold students as per the industry requirement. Therefore for a management institute to work appropriately, it is a must that they very carefully select the faculty and train them so that they can guide students in correct direction. All other variables reflected difference in opinion of both clusters. Cluster 1 was positive on all the variables and cluster 2 was neutral. This further indicates that corporate thinks that management institute will have to go under major transitions to convert these neutral opinions into positives then only a business school can be sure of its success.

The study clearly indicates that the gap between corporate's expectation from management students is yet to match. Although the gap is reduced as management institutes have put lot of efforts to survive but more determination is required to bridge this gap completely. Majority of management students of Gujarat face difficulty in effective communication skill both written and verbal (Table 9), this is because most of them have their graduation in local language (Gujarati). Also, they need to be polished in other skills like planning and organizing, analytical ability, problem solving, decision making and so on. Traditional teaching will not be able to make them face the real professional world. There must be some out-of-the-box methods with which students can be trained. Faculty with corporate experience can help to some extent but management institutes need faculty who have the understanding of corporate expectations which can come only if one is constantly connected with corporates. Findings of this study suggest that most business schools are not running industry-specific courses that totally understand industry requirement and dynamics. Self-finance institutes have this limitation that they are affiliated to university and they cannot design their own course curriculum. They have to follow rules and regulations laid by universities. So basically it is a vicious circle and management institute alone cannot bridge this gap. Management institutes must suggest modifications in their current set up as per the industry requirements and universities must check the feasibility and implement the changes. University must adapt an open-door policy with which the execution shall be easier. Management institutes are established since years now but one has to change as per market demands. So to meet the expectations stakeholders shall be involved and more inputs shall be taken to improve the overall system.

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An Analysis of the Twin Pillars of the Banking in India: Financial Literacy and Financial Inclusion

Tarun Agarwal*

Abstract

The need for financial literacy (both, educational theory & practice) and its importance for financial inclusion (relationship and results) have been widely recognised. Based upon literature review and various research studies on financial literacy initiatives, this research paper is an attempt to bring to the fore a dimension/correlation between Financial Literacy and Financial Inclusion and how customising financial literacy programmes in India according to the stage of life of targeted individuals is crucial for their effectiveness in order to achieve greater penetration of Financial Inclusion.

Key words: Financial inclusion, Financial literacy, Financial education, Banking, Educational theory & Practice

"The future of our country depends upon making every individual, young and old, fully realize the obligations and responsibilities belonging to citizenship...The future of each individual rests in the individual, providing each is given a fair and proper education and training in the useful things of life…Habits of life are formed in youth…What we need in this country now…is to teach the growing generations to realize that thrift and economy, coupled with industry, are necessary now as they were in past generations." Theodore Vail, President of AT&T and first chairman of the Junior Achievement Bureau (1919, as quoted in Francomano, Lavitt and Lavitt, 1988)

"Just as it was not possible to live in an industrialized society without print literacy—the ability to read and write, so it is not possible to live in today's world without being financially literate… Financial literacy is an essential tool for anyone who wants to be able to succeed in today's society, make sound financial decisions, and—ultimately—be a good citizen." Annamaria Lusardi (2011)

Introduction

Government agencies around the world today are recognising the benefits to individuals and national economies of having a financially literate population that has access to appropriate financial products with relevant consumer protection in place. In recent years, the G20 (World Bank) has endorsed upon three sets of principles in this regard i.e. financial consumer protection, financial inclusion and national strategies for financial education, indicating firm commitment towards financial integration, thus bringing out the importance of educational theory & practice, relationship and importance of results. A measure of financial literacy can be used to indicate the need for level of financial education across population and more detailed analysis can be useful to identify aspects related to it that need the targeted support.

Financial Literacy (Education)

Financial literacy is an understanding of the most basic economic concepts education needed to make saving, borrowing and investment decisions. Financial Literacy is the base and primary step for financial inclusion (education and the results). It provides knowledge on merits and demerits of financial products and services, based on that an individual can select the right product which suits his/her needs. In the words of Pranab Mukherjee, (2013) "Financial literacy and education play a vital role in financial inclusion, inclusive growth and sustainable prosperity". Financial education ensures that financial services reach the weaker sections of the society. In order to improve the awareness around financial literacy, several schemes have been implemented by the Reserve Bank of India (RBI), the Security and Exchange Board of India (SEBI), Insurance Regulatory Development Authority, and

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Pension Fund Regulatory and Development Authority (PFRADA).

An efficient financial market depends upon its participants, making rational and prudent decisions. Financial literacy is an effective tool for financial inclusion, as they both go hand in hand. Accordingly, the need for FL and its importance for FI have been acknowledged by most of the stakeholders - policymakers, bankers, practitioners, researchers and academics – across the globe.

Financial Inclusion:

Financial Inclusion has become the buzzword. Rangarajan committee on financial inclusion defines it as:" the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost."The financial services include the entire gamut - savings, loans, insurance, credit, payments etc. People who are financially excluded are mostly poor and financially illiterate.

So far, the focus has only been on delivering credit and has been quite successful. Similar success has to be seen in other aspects of finance as well. Accordingly, the first question that comes to mind is why can't financial inclusion happen on its own? Why do we need to make a policy to increase the same? Like any other product or service, why can't it find a market of its own? The reasons could be:

Financial exclusion in general, high cost of financial services, Non-price barriers(access to formal financial services - distance between the bank and their residence, poor infrastructure etc., proof regarding a person's identity, income etc.), and Behavioural aspects (missing comfort of using formal financial services, difficulty in understanding language, various documents and conditions applicable). These reasons go on to show that financial inclusion will not happen on its own.

2. Objectives of the Study: To study the correlation between Twin Pillars of Banking in India Financial Literacy (Education Theory) and Financial Inclusion (Practice) and importance of the same.

3. Literature Review

As per the literature review, it is seen that the status of financial literacy is not satisfactory in India, especially in rural areas. According to a survey conducted by Standard & Poor's, over 76% Indian adults lack basic financial literacy and they do not understand the most basic and key financial concepts. In rural area people keep their saving in their homes which fetches them no interest and is risky too. They borrow from local money lenders charging them high interest rates. Moreover, traditional methods of availing financial services are more popular in rural areas. Some of the steps initiated by various leading institutions in India for increasing financial literacy are as follows.

a. Reserve Bank of India (RBI) under its Financial Initiative programmes has undertaken a project titled 'project financial literacy'.The objective of this project is to provide information about RBI and general banking concept to its target people especially villagers, women, students of schools & colleges, senior citizens, defence people etc. These informative projects disseminate information regarding RBI, basic banking, micro finance and benefits of availing services of self-help groups (SHGs), risk capacity analysis etc.

b.Securities and Exchange Board of India (SEBI)runs securities market awareness campaign (SMAC) under the motto "an educated investor is a protected investor". Under this campaign SEBI conducts various workshops across the country. To undertake financial education to various target segments viz. school students, college students, working executives, middle income group, home makers, retired personnel, SHGs etc.,programmes/workshops on various aspects viz. savings, investment, financial planning, banking, insurance, retirement planning etc. are organised.

c. Insurance Regulatory and Development Authority (IRDA) organises awareness programmes on television and radio and simple messages about the rights and duties of policyholders, channels available for dispute redressal etc. in English, Hindi and other Indian languages.

d. The Pension Fund Regulatory and Development Authority(PFRDA) has been engaged in spreading social

security messages to the public. It has developed FAQ on pension-related topics on its web and has been associated with various non-government organizations (NGOs)in India in taking the pension services to the disadvantaged community.

e. Commercial Banks: In view of the national emphasis on electronic benefit transfer the commercial banks have initiated various measures for creating awareness through Financial Literacy and Counselling Centres and Rural Self Employment Training Institutes on financial literacy. The objective of these centres is to advise people on gaining access to the financial system including banks, creating awareness among the public about financial management, counselling people who are struggling to meet their repayment obligations and help them resolve their problems of indebtedness, helping in rehabilitation of borrowers in distress etc. Some of these credit counselling centres even train farmers/women groups to enable them to start their own income generating activities to earn a reasonable livelihood.

f. Similarly, Stock Exchanges, Broking Houses and Mutual Funds have initiated efforts in the field of financial education like conducting seminars, issuance of do's and don'ts, and newspaper campaigns.

Financial literacy is rapidly being recognised as a core skill, essential for consumers operating in an increasingly complex financial landscape. It is therefore no surprise that governments around the world are interested in finding effective approaches to improve the level of financial literacy amongst their population and that many are in the process of creating or leading a national strategy for financial education to provide learning opportunities throughout a person's life (OECD/INFE, 2013b). The OECD defines financial education as "the process by which individuals improve their understanding of financial products and concepts; and through information, instruction and/or objective advice develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being and protection (OECD 2005a)".

It is stated that (Economic Times, Financial Inclusion) "No matter how many banks you open and how many boots you have on the ground, if a person does not know about the financial options that are open - policies, schemes and financial instruments will mean little. It is important for a person to firstly know what to look for and only then think of the benefits that he can obtain from it."

Methodology

In the absence of not much of data being available on the subject yet and in order to draw an inference about the relationship between Financial Literacy and Inclusion, two pronged methodology has been adapted here – First it is an assumptive approach - studying the life cycle financial services needs of a normal human being, keepingthe financial-cum-social status as constant. Secondly, secondary data collection from the RBI website on state-wise statistics published related to education and practice.

 4.1 Analytical Research: Financial Literacy and Financial Inclusion: assumptive approach:

In the life cycle of an individual, children initially stay with parents and go to school. Following studies, they may move out of the parents' house and begin to live on their own. They then get married, form a couple and start their own family. By this stage, the parents are old, with reduced income levels because of lower physical capacity to work. They seek support from their children who have just been endowed with new responsibilities of a family, with children of their own to raise. The cycle continues with these children getting educated, moving out to find a job and then eventually raising their own families, while assisting their parents.

Figure 1. Life cycle of an individual/ household
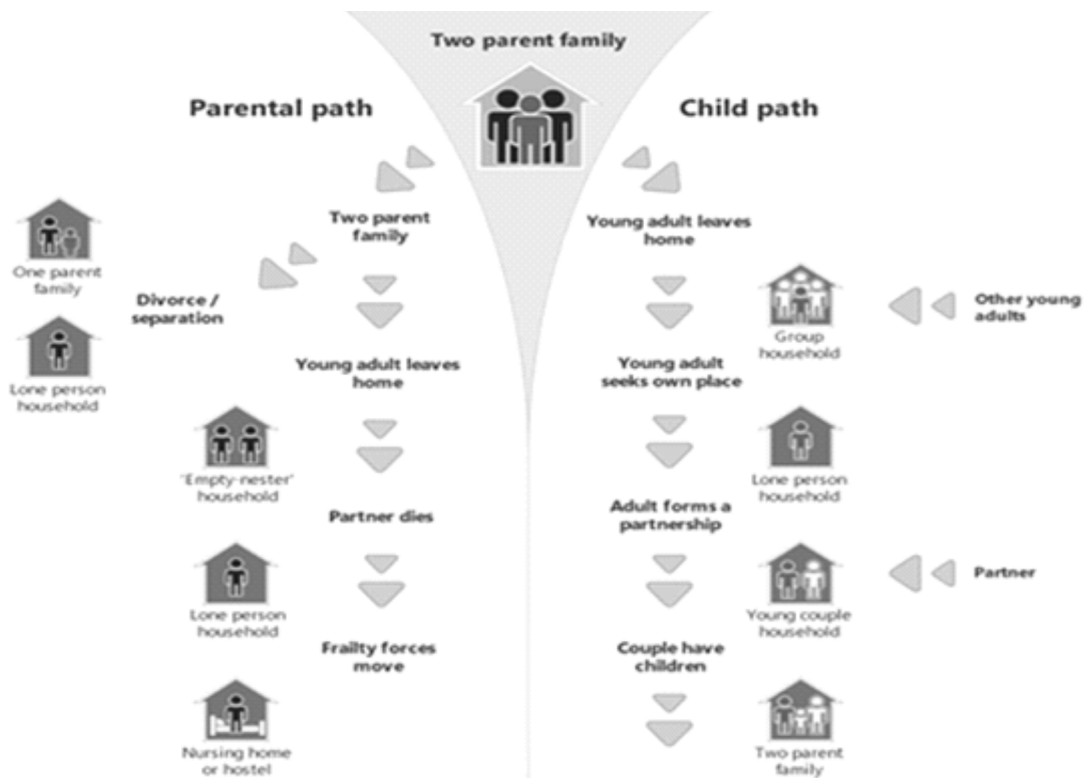
Credits: This figure is based upon studies conducted by IFMR on the subject of financial literacy

Story of a typical household involves an exchange of dependency and responsibilities at each stage. Considering just the financial services' needs of the household over its life cycle, we observe that both are specific to the stage that the household or individual is in at a given point of time. For instance, as a school going kid (in his/ her teenage), an individual might require know-how of savings so that he/ she can save pocket money or scholarship and utilise it effectively. A young person who has just started working and receiving a salary, would require a banking service, complex investment products (given that youth are more inclined to risk-taking and are open to experimentation) and remittance services that would enable him/ her to send a portion of earnings to parents who are not able to do as much physical labour as they could earlier. As time progresses and the individual gets married and starts a family, he/ she is required to think about safer financial products and longer term investments. His/ her dependency ratio is highest at this point – both children and parents are dependent on the individual. As the individual becomes older, simple banking services are required to access remittances transferred by children, and welfare transfers from the government.

Considering these specific financial services' requirements at various junctures in life, we find four educational/teachable moments: school-going child (grown up enough to understand money and saving), youth (stepping into employment), middle-aged (married, and starting a family), and old age. These are the specific stages of transition in one's life, when the need for financial products/ services takes a leap highlighting the importance of understanding aspects related to these stages and to make the right financial decisions.

Understanding the above mentioned stages of one's life cycle – various efforts have been made by Government, RBI, commercial banks, NGO's, NBFC's, MFI's, Business Correspondents, IRDA, PFRDA, Mutual Funds and other relevant bodies in the space of Financial Education. The theory and the practice has brought about the following appreciable/noticeable results: that as of 31st March, 2016 financial inclusion (Result) in the country stands at more than 67%,thus proving that there is a high correlation between the two. This approach has been examined through a set of data as below.

4.2. Data Collection, analysis and Hypothesis: Financial Literacy and Financial Inclusion

4.2.1 Data Collection: Secondary data has been collected from the RBI website – statistical section.

4.2.2. Data Analysis:

As per 2011 census the average literacy (both, men and women taken together) rate of all states &Union Territories (UTs) taken together is 78% (Table 1), Kerala being the highest literate state & Bihar having lowest scores of 63% in the data analysed. Similarly in terms of 'Number of Saving accounts per 100 population' is highest in Puducherry having 183 accounts per 100 population and lowest in Nagaland with 53 accounts per 100 population.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
Literacy	78.3042	8.26601	36
Deposit	1.3790E2	65.64117	36

Table 2 shows that there is a positive correlation between literacy and saving accounts, in other words 'literacy' with 'financial inclusion'.

Table2: Correlations

		LITERACY	DEPOSIT
Literacy	Pearson Correlation	1	.452[**]
	Sig. (2-tailed)		.006
	N	36	36
Deposit	Pearson Correlation	.452[**]	1
	Sig. (2-tailed)	.006	
	N	36	36
**. Correlation is significant at the 0.01 level (2-tailed).			

N: Number of cases

Table 2 shows there is a45% correlation between literacy (Theory) and financial inclusion (Practice) and the result is statistically significant as the level of significance is 0.006 .

4.2.2.1 Scatter plot between Dependent Variable – Deposit and Independent Variable –Literacy

From the scatter plot (Chart 1) the following observations are made:

1. Delhi, Chandigarh & Goa are among the top states with number of deposit accounts, however, the literacy rate is not highest in these states. This may be due to availability of labour, employment, industries, and various income generation activities.

2. Excluding the 3 states mentioned earlier, there is seems to be a perfect linear relationship between the variables.

3. Though Manipur & Nagaland have literacy rate more than 80%, however the number of saving accounts is lowest. This may be due to geographical reasons, unavailability of infrastructure, poor connectivity, migration etc.

Chart1: Relation between Savings Accounts and Financial Literacy

RELATION BETWEEN SAVINGS ACCOUNTS AND LITERACY
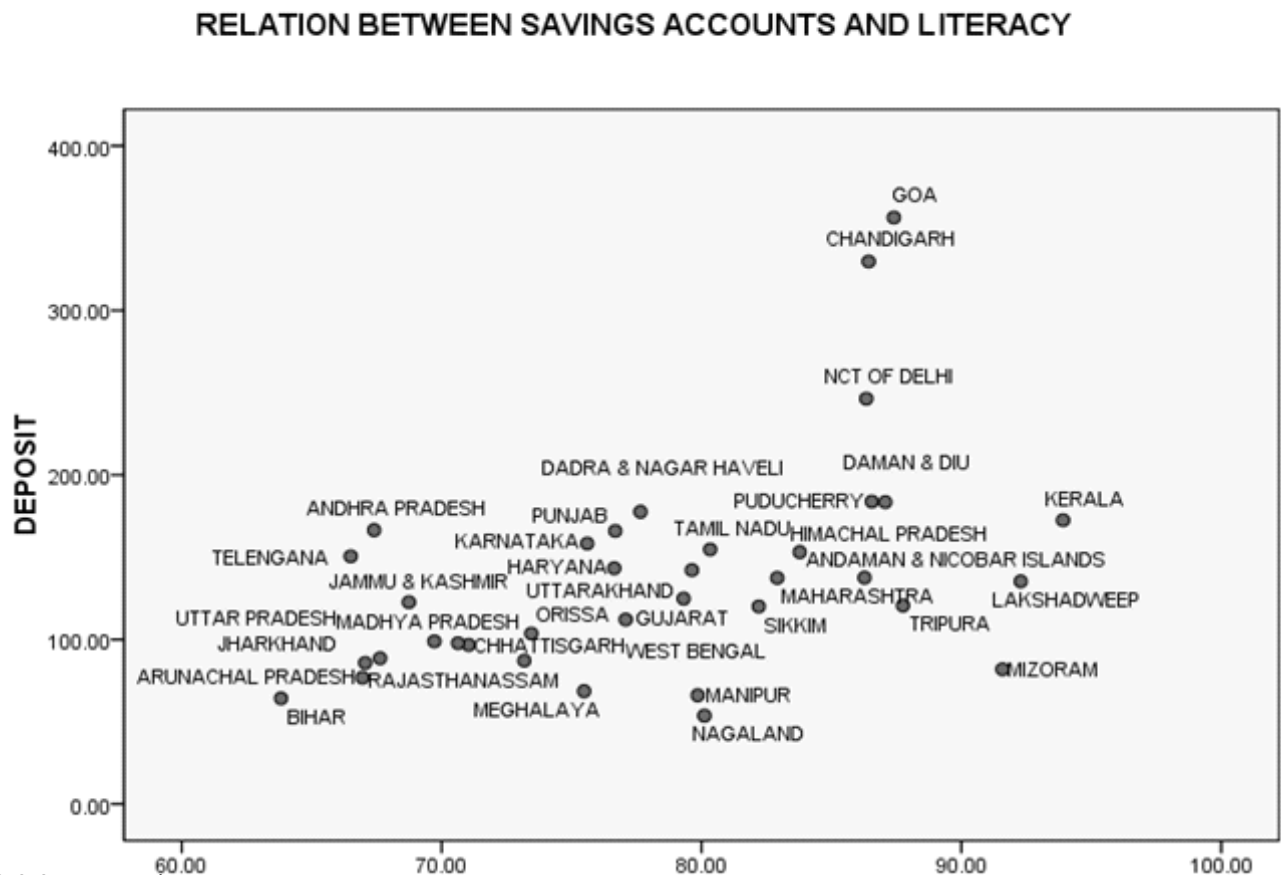
4.2.2.2. Regression:

SPSS output of bivariate linear correlation between financial literacy and inclusion states that both variable are positively correlated and are independent variables – literacy explains 18% of the variation in the dependent variable (adjusted R^2) and the result is significant with level of significance 0.006 (Tables 4 and 5).

Table 4: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.452[a]	.204	.181	59.40538

a. Predictors: (Constant), Literacy

b. Dependent Variable: Deposit

Where, R: Coefficient of correlation

R Square: Coefficient of determination

4.2.2.3. ANOVA[b]

We have a null hypothesis that 'the literacy rate has no impact on 'number bank accounts', however the ANOVA (Analysis of Variance) provides a F value of 8.73 which is higher than the 'F Critical value' i.e. $F_{(0.05, 1, 34)} = 4.13$ with a probability level 0.05, hence we reject the null hypothesis and accept the alternative hypothesis 'Literacy has impact on the number of Bank Accounts.

Chart 5: Regression Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	30820.736	1	30820.736	8.734	.006[a]
	Residual	119985.990	34	3529.000		
	Total	150806.726	35			

a. Predictors: (Constant), Literacy

b. Dependent Variable: Deposit

The predictive value of the dependent variable 'Number of Saving Bank Account per 100 population' can be calculated by the equation 'Number of Saving Bank Account per 100 population' = 3.59 * Literacy % + (-143) where -143 is constant of equation and 3.5 is the slope of equation(Table 6).

4.2.2.4. Coefficients

Table 6: Coefficients of the Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-143.211	95.636		-1.497	.143		
	Literacy	3.590	1.215	.452	2.955	.006	1.000	1.000

a. Dependent Variable: DEPOSIT

4.2.2.5. Result: Nature of Educational theory and practice has strong relationship and has great importance, thus, bringing in excellent results: The above research goes on to explain the same in terms of Financial Literacy & Financial Inclusion - one of the important major agendas of the Government, policy makers and various other stakeholders in Indian Sub-continent . Financial Literacy and Inclusion go hand in hand, complement each other and are highly correlated proving themselves as the twin pillars of banking in India.

Limitations:

The effectiveness of the relationship so presented between theory and practice is heavily determined by the quantity and quality of data that flows into it. Since the parameters were carefully chosen on the basis of the kind of data that is available in the States and with various other stakeholders, the scope of this research is perforce restricted at the moment to assess the level of financial literacy and financial inclusion at the geographical level. As and when more varied, reliable data becomes available, the scope of the above study can be expanded to measure the contribution towards financial inclusion by each city/district/village and even banks and non banking financial companies, as well as accommodate more parameters and refinements and encompass other forms of lending (such as by non-banking financial companies) and other financial services (including insurance and pension). The conclusions of the study are critically dependent on data received at the State level. Another limitation is that the data used in the analysis is granular in nature, and therefore, is available only with a lag. This study, for instance, assesses the extent of financial inclusion as on March 2016 along with Literacy rates as available both for males and females separately as per 2011 census data. Dimensions like cost of transaction and ease of doing transactions have not been considered due to non-availability of the reliable data. Data related to various other aspects of financial inclusion, like

insurance, payment and remittances etc. have not been considered on account of non-availability of consistency and authenticity.

Conclusion:

Financial literacy is a key factor to financial inclusion and a necessary pre-condition for success in its drive. Both, financial literacy and inclusion need to be treated as twin pillars (theory and practice go hand in hand and understanding of each other is mutually dependent). Without increased financial literacy, people will be increasingly at risk of making poor financial decisions which leave them to confront financial hardship, including an insecure old age. Financial literacy is making people aware of what they can and should expect from the banking sector, as their right. In this context, financial literacy and inclusion are a win-win opportunity for the poor, for the banks and for the nation as a whole. There is urgent need for concerted efforts, focus and improvement in the space of education. Whatever products available today are not known to the majority of the population especially, in the rural areas. The situation can be improved by banks / Government by opening a number of inclusive banking innovative outfits, wherein staff can explain rural people about different financial products and their benefits. Efforts should be made to make the poor people confident in coming to the bank branches and connecting with main GDP streamline of the country. Even the staff of rural branches needs to be trained to deal with rural people. Various IT tools can be used for providing financial services at their door – steps to build their confidence. Savings account opening and loan sanction / disbursement process should be kept simple as far as possible. Thus, financial literacy is a must for financial inclusion. Population should have proper knowledge, behaviour and attitude then only successful implementation of financial inclusion plan can be achieved. Financial service providers need to focus on financial literacy, simple and flexible products and speedy transactions.

Even though there is no blueprint to a successful financial literacy programme as yet, the efforts that are being put in by stakeholders to empower people while making them financially literate are commendable (in order to achieve the objective of greater Financial Inclusion) but need to be more focused and customised as the rule of 'one size fits all' does not seem to apply. Providing the right advice at the right time and with the right approach is the key and hence the vast scope for work and innovation.

Financial inclusion focuses on volume or quantity whereas financial literacy is more about quality. While financial inclusion emphasises on creating more accounts in order to make the common banking facilities easily accessible to all, financial literacy emphasises on expanding the knowledge on financial matters and products so that one can: understand how to use and manage money and minimize financial risk; manage personal finance quite efficiently; identify the benefits and facilities offered by banks and boycott the dodgy moneylenders; and derive the long-term benefits of savings. And eventually, it will further the financial inclusion movement in India.

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Working Capital Management and Financing of Units at Vitthal Udyognagar, GIDC Anand: An Empirical Perspective

Dr. Bindiya Kunal Soni* & Dr. Jigna Trivedi**

Abstract

Fundamental financial health and operational success of any enterprise depends upon the sound management of working capital. Adequate amount of working capital is very critical for the smooth running of any business. The innovations in the financial sector have led to the contemporary practices and instruments of financing the working capital requirement. The study is an attempt to empirically understand the current practices followed by the units of Vitthal Udyognagar, GIDC, Anand with respect to management of working capital and it's financing. The findings revealed that the units are mostly relying upon conventional sources for funding the working capital requirement such as retained earnings, trade credit, income received in advance, bank loan and overdraft facility. The awareness towards the contemporary sources was observed to be less. There is a scope for enhancing the working capital management and financing practices followed by such units in Anand.

Key Words: Working capital, Inventory Management, Current Assets, Cash flow

JEL Classification: *F65, G3*

Introduction

Working capital is the blood for the business. It is a significant facet of financial management. Two major components of working capital comprise of current assets, which represents the major portion of total investment. Purchase of current assets represents cash outflow. To run the business smoothly cash outflow should be matched with cash inflow. Investment in current assets and the level of current liabilities have to be geared quickly to cast change in sales and thereby assuring cash inflow in the business. Capital-intensive companies require good level of working capital to be maintained to bring attractive earnings to shareholders. Optimization of working capital balance means minimizing the working capital requirements and realizing maximum possible revenues (Kala, 2011). The efficient working capital management is the most crucial factor in maintaining survival, liquidity, solvency and profitability of the concerned business organization.

The short-term funds required to run the business operations are referred as working capital, circulating capital, or current capital. In other words, it refers to the firm's investment in short-term assets. There are two schools of thought that advocate the concept of working capital as quantitative and qualitative. Quantitative concept advocates the total of all current assets, which is often referred as gross working capital. Qualitative concept explains the difference of current assets over current liabilities, which is treated as net working capital. If the objective is to measure the size and extent to which current assets are being used, 'Gross concept' is useful; whereas in evaluating the liquidity position of an undertaking 'Net concept' becomes pertinent and preferable. Managing working capital cycle is a circular, consistent and repetitive process (Chandra, 2001).

Tools of Working Capital Financing:

There are various tools to finance the working capital need. The tools can be categorized as fund based, non-fund based, direct or indirect and internal or external. Some of the conventional internal tactics adopted by the firm to fund the working capital needs are reinvestment of profits, availing instalment credit, delaying payment to suppliers, insisting on receipt of advance money from customer, sale of fixed assets, borrowing from family members, friends or relatives and sell partial equity. Table 1 describes the fund based and non-fund based sources of working capital.

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Table-1 Sources of Working Capital

Sources of Working Capital	Description
Fund Based	
Accruals	Businesses owe wages and taxes but are not paid. Its payment is weekly, fortnightly, quarterly or monthly. Until it is actually paid, the cash could be diverted for other payments. The wages may be demanded higher and tax authority may rai se the tax rates in the case of postponement of payment. It is indirect, external and interest free in nature.
Trade Credit	It represents the credit extended by the supplier of goods and services. It would not be an easy task for new company or one with financial problems. Existing company if fails to pay on time then erodes its image for future dealings. It is direct, external and interest free in nature.
Cash Credit/ Bank Overdraft	A pre-determined limit for borrowing is specified by the bank. The borrower can withdraw money based on his requirement provided the outstanding does not exceed the specified limit. It is difficult for new business. It is direct, external and interest is p ayable on outstanding balance.
Loan	It is the advances of fixed amount, which is credited to the current account of the borrower. It is direct, external and interest is payable on entire loan amount.
Purchase/ Bills Discounting	The seller offers the acce pted/signed bill drawn on buyer, to the bank for discount/purchase. Bank offers the money to the vendor before the stipulated period (mentioned in the bill) guaranteed by the seller to the buyer at the time of sales execution. It is direct, external and discount charges are applicable.
Public Deposits	It refers to soliciting unsecured deposits from the public. It is direct and external source.
Inter- Corporate Deposits	A deposit made by one company with another; normally for a period up to six months, i s referred to as an inter -corporate deposits. Such deposits are of three types viz., call, three months and six months. It is direct and external source.
Short-Term Loans from Financial Institutions	Borrowing from a financial institution for a short period. It is generally availed by the companies with an excellent track record. It is direct and external source.
Rights Debentures	Public limited companies can issue "rights" debentures to their shareholders with the object of augmenting the long-term resources of the company. It is direct and external source.
Commercial Paper	It is short-term unsecured promissory notes issued by firms which enjoy a fairly high credit rating. It is direct and external source.
Factoring	A 'factor' is a financial institution which offers services relating to management and financing of debts arising from credit sales. The factor assumes responsibility for collecting the debts and pays to the client at the end of credit period or when the account is collected, whichever is earlier. It also advances 70% to 80% of the debt's face value to the client in case of not-yet-collected and not-yet-due. It is direct and external source.
Post Shipment Credit/Finance	It is any loan or advance granted or any other credit provided by a bank to an exporter of goods or services from India from the date of extending credit after shipment of goods or rendering of service s to the date of realization of export proceeds as per the period of realization.

Pre-Shipment/ Packing Credit	It is any loan or advance granted or any other credit provided by a bank to an exporter for financing the purchase, processing, manufacturing or packing of goods prior to shipment, on the basis of letter of credit opened in his favour or in favour of some other person, by an overseas buyer.
Non-Fund Based	
Letter of Credit	It is an arrangement whereby a bank helps its customer to obtain credit from its suppliers. Credit is provided by the supplier but the risk is assumed by the bank, as it undertakes the responsibility to honour the obligation of its customers, if the customer fails to do so. It is indirect and external in nature.
Bank Guarantee	A bank guarantee is a guarantee issued by a banker that, in case of an occurrence or non-occurrence of a particular event, the bank guarantees to make good the loss of money as stipulated in the contract. It is indirect and external in nature.
Suppliers Credit Inland-Import and Export	A financing arrangement under which an exporter extends credit to a foreign importer to finance his purchase. Usually, the importer pays a portion of the contract value in cash and issues a Promissory note or accepts a draft as evidence of this obligation to pay the balance over a period of time. The exporter thus accepts a deferred payment from the importer, and may be able to obtain cash payment by discounting the draft or promissory notes created with his bank.
Buyer's Credit Inland-Import and Export	Buyer's credit is the credit availed by an importer (buyer) from overseas lenders i.e. banks and financial institutions for his imports on due date. The overseas banks usually lend the importer based on the letter of credit issued by the importer's bank. Importers bank is a broker between the importer and the overseas lender for arranging buyers credit by issuing its Letter of Comfort for a fee. Buyers credit helps local importers access to cheaper foreign funds.

(Source: Authors' Compilation from Chandra, 2011 and other websites)

Literature Review:

Working capital management is the oldest theory of finance. Various research scholars have contributed in the field of working capital management through the case-based research, conceptual research, empirical research based exclusively on secondary data. The concept of working capital is a time-tested and well-researched topic. Majority of the scholars have concluded their research by providing useful suggestions to manage working capital in the firm or a particular sector.

Joshi & Ghosh (2012) opined that Cipla's performance in selected ratios could act as a trend setter. Motaals test showed significant improvement in liquidity performance. Maintenance of excess liquidity was a primary reason for negative realtionship between liquidity and profitability. Gayathri(2015) made a comprehensive effort to compile the scholarly work of various researchers on working capital and critically commented on the tools used by them in the analysis. Proper management of various components of working capital cycle like cash, marketable securities and receivables was noted in Indian leather industry. Time reduction of accounts receivable, time enhancement in accounts payable, inventory management and better cash management cycle were suggested by researchers (Babu&Chalam, 2014).

Based on the determinants of working capital variables the study of selected steel firms highlighted that efficient working capital management does impact the cost and profitability of the firm(Yadav & Kumar, 2014).Kovelskiy (2015) suggested that maintaining adequate level of working capital casts a positive impact on the solvency and goodwill of the business. Proper assessement of working capital requirement would avoid the problem of shortage of the same. Indian industry by far and large failed to change its pattern of working capital financing,in connotation with the norm suggested by the Chore Committee. Working capital management was improvised in the year 1975-

79 and 1979-83, but industries did not succeed in widening the base of long-term funds to the desired extent (Kaveri, 1985). With respect to the case-study of Lupin Ltd., researcher discovered that there existed a positive relationship between profitability measures of the company and degree of conservativeness of working capital investment and financing policies. The company tends to yield positive return if it followed a conservative working capital policy i.e. used more short-term funds(Panigrahi, 2014).The study of 19 Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) listed cement companies with respect to 9 years time horizon and 15 variables such as net working capital, monthly net working capital, operating working capital, monthly sales etc were used in the background of a cross sectional data. The discriminant analysis (Z-score analysis) was performed on the data to classify the practices adopted by companies in managing working capital. It was noticed that when compared to the benchmark current ratio of 1.5:1, many firms had surplus idle cash. Higher current ratio was due to either higher quantum of inventory or debtors, in which case both may prove dangerous in the long run (Trivedi, 2015).

Global literary work highlighted the sources of working capital, suggested measures to improvise the working capital management. Small-to-Medium Sized Enterprise (SME) in Mauritius faced difficulties in raising finance through traditional sources. Older firms with strong asset base procured the finance easily, whereas family business units used equity as means of raising finance. Informal sources such as shareholder loans, bootstrap finance, delaying payment to suppliers were also used by SMEs. Firms strongly stuck to the Pecking Order Hypothesis funding method (Padachi, Howorth, & Narasimhan, 2012). Cash flow from operations was depicted as the ultimate option of financing, respresenting that there was an urgent need to convert profits into cash. Use of short term financing did not create any operational inefficiency, on the contrary, it was created by longer time period involved in collection of receivables and high level of inventory(Padachi, Howorth, Narasimhan, & Durbarry, 2010). Kenyan manufacturing firms have large amounts of cash invested in working capital, negative correlation was witnessed between Return on Assets and firm's average collection period as well as cash conversion cycle. Positive correlation was depicted between inventory holding period and accounts payment period(Makori & Jagongo, 2013).Owolabi&Alayemi (n.d.) carried out company specific research based on secondary data to assess the impact of different variables of working capital management. Application of correlation and regression test revealed that if current ratio and collection days were reduced it lead to the significant increase in profit and return on capital employed respectively. They suggested that company must improvise on their working capital management because company's current ratio was found to be poor when compared with industry standard.

The scrutiny of available literature in working capital management is mainly assesement-oriented through the technique of ratio analysis. From the above mentioned studies, it may be noticed that vast number of studies in the field of working capital were found in Indian context. Scholars have contributed in the field of working capital manily by interpreting its determinant variables or anlaysis of time series secondary data or conceptual compiliation of fellow researchers. Infernetial statistics like Motaals test, Z-Score analysis, correlation and regression were applied to derive meaningful conclusions from the data. Empirical, region specific study based on the usage of instruments of working capital with respect to Gujarat is the foremost effort in this paper in order to fill the literary gap.

Research Objectives:

The study primarily analyses the working capital structure of the units located at Withal Udyognagar, GIDC, Anand. However, the specific objectives can be described as under:

1. To understand the existing business practices in relation to various components of working capital for the units in GIDC, Anand.

2. To analyse the use of various working capital sources for meeting working capital requirement.

3. To examine the awareness among these units for contemporary instruments of working capital financing.

4. To study the perceptions of the owners/ managers of the units in relation to financing of working capital requirements.

Research Methodology:

Table 2 represents the research methodology adopted in the empirical study on Working Capital Financing of Units at Withal Udyognagar, GIDC, Anand.

Table-2 Research Methodology adopted for Empirical Study

Parameters	Description of Methodology
Research Design	Descriptiveresearch design
Sources of Data	Primary and secondary data
Data collection Method	Structured questionnaire filled through personal visit.
Sampling Frame	The directory of units of Withal Udyognagar, GIDC,Anand
Population	319 units of Withal Udyognagar, GIDC,Anand
Sample size	75 units at GIDC,Anand.
Sampling Method	Convenience sampling
Sampling Element	Owners/ finance managers of these units
Research Approach	Survey
Data Processing and Management	Excel and SPSS 17
Data Analysis	Frequency Distribution, Descriptive statistics Mean and Standard Deviation, Mann Whitney U Test

(Source: Authors' Compilation)

Analysis and Findings:

The following section describes the analysis of the survey of 75 units located at GIDC, Anand.

Details related to Business

Table-3 Business Information

Sr. No.	Particulars	Variable	Frequency	Percentage (%)
1.	Type of Industry	Manufacturing	49	65.3
		Service	5	6.7
		Trading	20	26.7
		Other	1	1.3
		Total	**75**	**100**
2.	Size of Firm	Large	4	5.3
		Medium	33	44
		Small	38	50.7
		Total	**75**	**100**
3.	Demand for Product	Regular	65	86.7
		Seasonal	10	13.3
		Total	**75**	**100**
4.	Family Business	Yes	43	57.33
		No	32	42.7
		Total	**75**	**100**
5.	Area of operation	Textile	10	13.3
		Electronics	15	20
		Engineering	24	32
		Steel	5	6.7
		Others	21	28
		Total	**75**	**100**
6.	Involvement in	Export	21	39.62
		Import	7	13.20
		Both	24	45.28
		Total	**53**	**100**
		Min.	**Max.**	**Mean**
7.	**Operating Cycle(days)**	30	190	114.56
8.	**Cash Cycle(days)**	3	180	100.58

(Source: Primary Output)

Out of 75 units approached for the survey, majority of the units were engaged in manufacturing (65%) followed by trading (27%). Further, there were almost equal number of small and medium sized units; 87% of the firms were having regular demand for their products. There were 43 firm engaged into family business. The firms were also engaged in export as well as import (45%). There were firms running their businesses in various sectors such as engineering (32%), electronics (20%), textile (13%), steel (7%) and others (28%). The average operating cycle and cash cycle for the firms were observed to be average 115 days and 101 days approximately.

Details related to Working Capital Finance

In order to identify the source of working capital finance at initial stage, the respondents were presented with several sources and asked to identify those used by them when they started their business. As per the findings, majority of them relied upon personal savings (39%) at initial stage, followed by funding from family and friends (24.8%) and bank loan (15.6%) among others. There were only three firms that received subsidy or grant from the government and the maximum amount of subsidy or grant was reported to be Rs. 100000.

The study checked the awareness of the owners and managers of the units regarding the available sources of working capital financing on a five point likert scale (1=Never heard of and 5=Knows very well).

Table-4 Awareness for Various Sources of Working Capital Finance

Sources of Finance	Mean	Std. Deviation
Letter of Credit	2.43	1.47
Bills Discounting	2.95	1.24
Bank Loan for Working Capital	3.31	1.16
Trade Credit	3.04	1.05
Factoring	2.52	1.26
Public Deposit	2.85	1.00
Inter Corporate Deposit	2.75	1.00
Commercial Paper	2.34	1.36
Cash Credit/Bank Overdraft	3.71	.82
Packing Credit	2.99	.89
Post-Shipment Finance	3.01	.98

(Source: Primary Output)

As per table 4, mean values for most of the sources were between 2 and 3 including letter of credit, bills discounting, factoring, public deposit, inter corporate deposit, commercial paper and packing credit. Hence, for these sources, they did not have a fair idea but they have heard of and knew little bit about them. While for the rest of sources i.e. post-shipment finance, cash credit/bank overdraft, bank loan for working capital and trade credit, the mean values were higher than 3 indicating that they knew fair amount about these sources.

The study further examined the usage of various sources for meeting their day-to-day capital requirement at present. It was observed that majority of the firms (21.4%) were relying upon retained earnings followed by credit from supplier (22.4%), income received in advance (19.7%), bank loan (19.3%), bank overdraft (8.8%), commercial paper (2.2%), packing credit (1.4%), letter of credit (1.4%), factoring (0.4%) and post-shipment finance (0.4%). As we have observed earlier, the awareness for contemporary sources of working capital finance was less, the usage was also found to be less among the firms.

Further, those who were using bank loan to meet their working capital requirement, 57% were relying on secured loan. The average duration for such working capital loan varied from 10 to 12 months. The average interest rate for such loans was observed to be 11.38% and the maximum amount of loan for working capital was Rs .9600000.

Inventory Management and Control Practices

Apart from working capital financing, the study also checked upon various practices in relation to management of working capital. One of them is inventory management. The awareness as well as the usage for various inventory management practices such as Economic Order Quantity (EOQ), Always Better Control (ABC), Just-in-time (JIT) etc. were studied. As per the findings(table 5), the mean values for the awareness of such practices were found to be higher than 3.5 and close to 4, suggesting that they all had fair knowledge about such inventory management and control practices.

Table-5 Awareness for Inventory Management and Control Systems

Inventory System	Mean	Std. Deviation
EOQ system	3.89	0.89
ABC analysis	3.97	0.80
JIT system	3.89	0.91

(Source: Primary Output)

As far as the implementation of such techniques is concerned, it was observed that majority of the firms were following EOQ (43%), followed by JIT (15%) and ABC analysis (12%). However, there was a significant percentage (30%) of the firms, which were not using any formal and systematic method for inventory management and control.

Awareness for Float Management Practices

For conserving the cash balance available with the firm, many firms are speeding up the collection and delaying the disbursement and thereby increasing the net float, which is the difference between the book balance and the bank balance. For speeding up the collection, there are methods such as lock box system, concentration banking and electronic fund transfer facility. Again, the awareness for the same was being checked.

Table-6 Awareness for Float Management Practices

Alternatives	Mean	Std. Deviation
Electronic Fund Transfer	2.71	1.16
Concentration Banking	2.15	1.15
Lock Box System	1.92	1.25

(Source: Primary Output)

From table 6, it may be observed that the knowledge of the owners/managers was quite less with respect to such techniques as the mean values were less than 3. The respondents have just heard of these practices but not much about them.

Payment of Expenditure

There are certain spontaneous sources of finance and accruals are one of them. The study checked upon the time gap by which the payments for salary, electricity and telephone bills were made.

Table-7 Descriptive Statistics for Time Gap in Payment of Expenditure

Expenditure	Mean (days)	Std. Deviation
Payment of Salary	7.53	1.08
Payment of Telephone Bill	11.29	2.15
Payment of Electricity Bill	10.21	1.37

(Source: Primary Output)

As per table 7, there was an average gap of 8 to 11 days in payment of salary, telephone and electricity bills. The firms operating in VithalUdyognagarpaid the salary to their employees between 5th and 10th date of every month while telephone bill and electricity bills were paid between 7th and 15th of every month.

Perceptions regarding Working Capital Management

In order to check the perceptions of the firms operating in Withal Udyognagar regarding the working capital management, they were presented with three different statements and asked to rate them on five-point likert scale (1= Strongly Disagree and 5=Strongly Agree).

Table-8 Perceptions regarding Working Capital Management

Statements	Mean	Std. Deviation
It is better to be aggressive in managing working capital financing.	3.09	1.04
Availability of working capital affects the liquidity position of the company.	3.80	1.10
Instead of keeping the cash idle, it should be invested in marketable and liquid securities.	3.91	1.04

(Source: Primary Output)

From table 8, it may be observed that the respondents are almost neutral about being aggressive in financing of working capital. They further agreed that availability of working capital affects the liquidity position of the company, and the cash should be invested in liquid securities instead of keeping them in idle form.

Further, the differences in the perceptions of those who were availing bank loan and those who were not availing bank loan were tested with the help of Mann-Whitney U test, a non-parametric test, as the data was not normally distributed with the following null hypothesis.

Ho1: There is no significant difference in the perceptions regarding sources of working capital between those who are availing bank loan or not.

The results are as under.

Table-9 Test Statistics of Mann Whitney U Test

Perceptions regarding Sources of Working Capital	Asymp. Sig.	Null Hypothesis status
Informal sources of finance are cheaper than other sources of finance.	0.83	Not Rejected
Informal sources of finance are more convenient and easily accessible.	0.23	Not Rejected
It is difficult for SMEs to get finance from banks and financial institutions for their day-to-day operations.	0.01	Rejected
Getting funds for short term from banks requires lengthy and complex process.	0.16	Not Rejected

(Source: SPSS Output)

As per the test statistics of Mann-Whitney U test, the significance values for all the statements except one statement was found to be greater than 0.05 which means that the null hypothesis was not rejected for all the statements with exception of one statement.

Hence, it can be said that there is no significant difference in the perceptions regarding sources of working capital between those who are availing bank loan and those who are not availing bank loan for working capital. The owners/managers of both these categories believed that informal sources of finance were cheaper and more convenient than the formal sources. They also felt that getting funds from the banks for short-term requirements required complex process. However, SMEs who have not availed bank loan felt that it was difficult for SMEs to get funding from bank to manage their working capital.

Conclusion

Availability of the optimal level of working capital is critical for the success of any business. Any inefficiency in the management of working capital can cause the downfall of the enterprise. Considering the importance of the same, the paper seeks to study the existing working capital management practices including the funding patterns among the units of Withal Udyognagar, GIDC, Anand. The findings revealed that the small and medium units of this area covered under the study followed pecking order theory of finance. It means that they relied upon internal equity i.e. retained earnings first followed by debt (bank loan) to meet their working capital requirement.

Further, the awareness with respect to the contemporary sources of finance for working capital such as letter of credit, bills discounting, factoring, public deposit, inter corporate deposit, commercial paper and packing credit was observed to be significantly less among the owners/managers of such units. Hence, these units mostly relied upon

conventional sources for meeting their day-to-day requirement. Since majority of the units were involved in export as well as import transactions, they may utilise specific instruments of financing the international trade such as Working Capital Guarantee Programmes, Foreign Receivable Financing and Discounting, Foreign Buyer Financing etc. In a nutshell, there is a need to spread the awareness in this direction. The existing banks and financing institutions can take up this initiative and conduct workshops and seminars to create financial literacy among these units.

It is also noted that SMEs who have not availed bank loans, believed that it was very difficult to get loans from banks to meet their working capital requirement. Again, this perception needs to be changed. The representatives of the banks may simplify the process for such units and assist them in availing the bank loans.

Regarding inventory management and control, though there was awareness about use of various techniques, there was a significant number of units who were not following systematic and formal practices. For float management, the awareness and hence the usage was very less for these units. As Vallabh Vidynagar is an education hub, the academia fraternity can take up consultancy assignments for spreading the knowledge among the concerned people.

Overall, it is observed that there is a potential for enhancing the scope for the existing working capital management and financing practices and the relevant stakeholders should be capitalising the opportunities as suggested above.

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Experimental Observations on some Heuristic Methods for the Travelling Salesman Problem

Dr. Pritibhushan Sinha*

Abstract

We consider an insertion heuristic solution method of the travelling salesman problem. The method is applied with multiple random sequences. For the purpose of comparison, we also consider the nearest neighbor heuristic for the problem. This heuristic is applied with multiple initial cities. Some properties are shown for the insertion heuristic. A numerical experiment is done with benchmark and random instances. Based on experimental observations, we give some suggestions on the use of such heuristics to solve travelling salesman problem instances of some types.

Keywords: Travelling Salesman Problem, Heuristics, Performance Evaluation

Introduction

The travelling salesman problem (TSP) is a well-known optimization problem, with substantial scope of application and high theoretical significance. The TSP is used in production planning, jobs scheduling, optimization of robotic movements, VLSI (very large scale integration) electronic chip designing, and so on. The problem may be stated as this. A travelling salesman has to visit n cities. He starts from one city, visits every other city exactly once and comes back to the city from where he started. The cost of visiting city j from city i is c_{ij}, $i = 1, 2, …, n$; $j = 1, 2, …, n$; $i j$. The total cost of the visits is to be minimized. On a digraph, the cities may be represented by vertices and the link between the cities as the edges. Edges have weights, which are the costs. The problem is to obtain a minimum cost Hamiltonian tour. It may be written as the following mixed integer linear programming problem (MILP) (see, e.g., Wagner 1969). Define the variables as,

$x_{ij} = 1$, if j-th city is visited immediately after the i-th city;

$= 0$, otherwise,

$i = 1, 2, ..., n$; $j = 1, 2, ..., n$, $i j$.

following mixed integer linear programming problem (MILP) (see, e.g., Wa

the variables as,

$x_{ij} = 1$, if j-th city is visited immediately after the i-th city;

$= 0$, otherwise,

$i = 1, 2, ..., n$; $j = 1, 2, ..., n$, $i \neq j$.

$$Minimize \sum_{i=1}^{n} \sum_{j=1, j \neq i}^{n} c_{ij}\, x_{ij}$$

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The objective function (1) gives the cost of the tour. Constraints (2) are the requirement that every city must be entered into from another city; constraints (3) ensure that, from every city another city must be visited. Constraints (4) are to eliminate solutions with sub-tours. Constraints (5) and (6) are integer and non-negativity constraints. Replacing the integer constraints (5) with the constraints $x_{ij} \geq 0$ gives a linear programming (LP) relaxation of the problem. An Assignment Problem (AP) formulation also sometimes is used, as a sub-problem, to solve the TSP. If $c_{ij} = c_{ji}, \forall i, \forall j$, then the instance is a symmetric TSP instance; otherwise, it is an asymmetric TSP instance. Given an asymmetric instance, it may be converted to a symmetric instance, using a transformation (Jonker and Volgenant 1983). However, this results into twice the number of vertices. If cij + cjk cik, , $\forall j, \forall k$, then the instance satisfies triangle inequality and is called metric. If an instance does not satisfy triangle inequality, a sufficiently large positive number may be added with all costs, so that triangle inequality is satisfied.

The TSP, being an NP-complete problem, is difficult to solve. Exact solution methods for the TSP often solve a MILP as in the preceding with a branch & bound or a cutting plane method. However, such methods may take exceedingly large computation time for some instances unexpectedly. As such, often, only heuristic methods are practically feasible, particularly for extremely large instances. We find in the literature many types of heuristic methods for the TSP. Performance of a heuristic method may vary considerably over instances and also sometimes may take large time. One type of fast heuristics for the problem is that of the insertion heuristics. Many variants of the insertion heuristics are possible. We consider the insertion heuristic, in which, starting with a 2-city sub-tour, cities are inserted one-by-one to get a tour finally. In every insertion, a position that gives the least increase of cost is selected for a city. The sequence of the cities for insertion is fixed randomly. The heuristic has been observed to perform quite well for 2-dimensional Euclidean instances, but that may deteriorate for other instances (Glover et al. 2001). In this article, we consider the insertion heuristic, but with multiple sequences of insertion. The method is denoted as INS* subsequently. As far as we are aware, the method has not been analyzed in this manner so far.

The rest of the article is organized as this. In the next section, we review some of the solution methods, as available in the relevant literature, for the TSP. In succession, we describe the numerical experiments and report the observations to evaluate the performance of INS*. For the purpose of comparison, we also consider the nearest neighbor heuristic, with multiple initial cities. We conclude discussing a few important points.

Solution Methods for the TSP

A way to solve the TSP exactly would be to use a LP relaxation and apply a branch & bound or a cutting plane method to derive an optimal solution. This approach has been remarkably successful for symmetric TSP. Such a method has been implemented in the computer program CONCORDE (e.g., Applegate et al. 2006). CONCORDE starts with an initial solution, given by an efficient heuristic method. Using the value of the solution as the initial upper bound, branch & bound steps of calculations are done to get an exactly optimal solution. Many problem-specific ideas have been implemented in CONCORDE. It has been able to solve many large instances, within practically feasible time limits, in spite of the fact that, the method does not have any provable polynomial time bound. The case when asymmetric TSPs are converted into symmetric TSPs and CONCORDE is used has not been investigated well till now, including oft-found instances.

Heuristic solution methods remain important for the TSP. The method given by Christofides (1976) is well-known for symmetric metric TSPs. The method gives a solution with cost, within 3/2 times of the cost of an optimal solution. The method first gets a minimum spanning tree and then works on a sub-graph consisting of this and some other edges. A possible type of heuristic methods, for both symmetric and asymmetric TSPs, is the k-opt methods. In a k-opt method, a TSP tour is divided into k paths, deleting k edges. Then combinations of joining the k paths to get a tour are verified and as a tour gives improvement, it is accepted. Again the process is repeated with the new tour. This continues till no improvement can be found, considering all combinations of the edges to be deleted and combinations of the paths so obtained. 3-opt or 2-opt is mostly used. Variations are possible of the method. Lin and Kernighan (1973) have proposed such a method, with intricate rules, for symmetric TSPs. It has been observed empirically that the method works quite well for some instances; but can be ineffective sometimes. Helsgaun (2000) modified Lin Kernighan method to achieve some improvements and the method has been successful to solve many large benchmark instances. However, time requirement increases with method mostly, relative to Lin-Kernighan method. A variant of Lin-Kernighan method is used to get an initial solution in CONCORDE.

The method by Karp and Steele (Karp 1979, Karp and Steele 1985) is a "patching" heuristic for the asymmetric TSP. First, the TSP is solved as an AP. If it results into a tour, an optimal solution is obtained. Otherwise, some sub-tours or cycles are obtained. Then, two shortest (in number of cities or vertices) cycles are patched, deleting one edge from each, so that increase in cost is the least. The process is continued till a tour is formed. Glover et al. (2001) have considered a modified version of Karp-Steele method in which the two cycles to be patched are selected after verifying all pairs of cycles and selecting the pair with the least cost increase. The method is implemented with some schemes to reduce the time requirement. They have also discussed some other heuristics for the asymmetric TSP. Frieze et al. (1982) have given a method for the asymmetric metric TSP. Here, first, minimum cost sub-tours are found with AP formulation. Subsequently (if no tour is obtained), one vertex is selected arbitrarily from each of the sub-tours. Cycles are found, with the original costs, for such vertices. This is repeated till it is obtained that all vertices are connected. Then shortcut edges are included and some other edges are dropped (suppose, there are edges u to v, and v to w; then u to w is a shortcut edge that can replace the earlier edges). A TSP tour is obtained in this manner, at the end. The method approximates an optimal tour within a factor of $\log 2(n)$. It has been shown by Sahni and Gonzalez (1976) that, the problem of getting a constant factor solution, of an optimal solution, for the general asymmetric TSP is NP-hard.

Insertion and nearest neighbor heuristics are some fast heuristics which may possibly be used for the asymmetric TSP. Glover et al. (2001) have found an insertion heuristic to be efficient, for a few instance types, including 2-dimensional Euclidean TSPs; for other types some other heuristics are found to be better. They, though, have used a single sequence for insertion. In this article, we consider the same insertion heuristic with multiple sequences and the nearest neighbor heuristic with a modification.

Observations on Insertion & Nearest Neighbor Heuristics

First, we describe the insertion heuristic and give two results.

3.1. Heuristic and some Results

The insertion heuristic considered by us may be described in this manner. Let $\{i1, i2, \ldots, in\}$ be a random sequence of the n vertices. First, a sub-tour as $\{i1, i2, i1\}$ is considered. Next, i3 is inserted in it, in a position such that cost increase is the least (breaking ties with least position). This is continued till all vertices are inserted. N of such random sequences are verified to obtain a solution for the TSP. Glover et al. (2001) have used N = 1. We use N = 1, 5n, 10n in three variations. Indeed, the time requirement increases, but the efficiency of the solutions should increase. Different sequence represents different lines of construction of the solution and solution value may fluctuate significantly over the sequences. The computational complexity (number of arithmetic & comparison operations) of the method is $N\,O(n^2)$. With N = 5n or 10n, the computational complexity is $O(n^3)$.

Before we present the numerical experiments, the following results are stated for the insertion heuristic. The results, though simple, describe some important properties of the method. As much as we are aware, such results are not discussed in the relevant literature.

Result 1: If the vertices of a TSP can be represented as the vertices of a convex polygon (with straight line distances) in the 2-dimensional plane, the insertion heuristic obtains the optimal solution with any single, arbitrary sequence.

Proof: For a convex polygon the perimeter only gives an optimal tour. Suppose, the statement is true for n = k. Consider an instance with n = $k + 1$. When k insertions have been made, we obtain the perimeter of the convex polygon with the k vertices, as the solution. For the $(k+1)$-th vertex, an insertion is possible so that the perimeter of $(k+1)$ vertices convex polygon is obtained. This is the optimal solution for the $(k+1)$ vertices convex polygon. Hence, the least cost increase insertion for the $(k+1)$-th vertex will be only this insertion and this insertion will be selected, resulting into an optimal solution for $(k+1)$ vertices convex polygon. Clearly, the statement is true for n = 3. Hence, the result is correct.
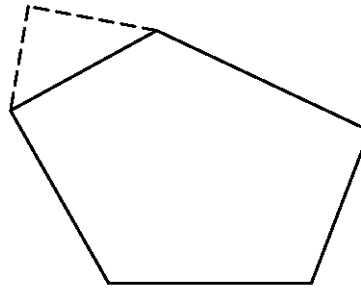
Figure 1 is a visualization of the proof.

Figure 1: A Visualization of the Proof of Result 1

Result 2: There may not exist any sequence of insertion that gives an optimal solution for some instances.

Proof: Examples can be constructed to see this.

Table 1 gives one such example. While $1 - 2 - 3 - 4 - 5 - 1$ is an optimal tour with cost 0, the insertion heuristic does not give any solution with cost less than 4, with any sequence of insertion. This is an undesirable property of the insertion heuristic.

3.2. Numerical Experiment

For INS*, best solutions have been seen after 1, 5 n and 10 n sequences, in the same trail of calculations. For comparisons, we have used a nearest neighbor heuristic. In this method, we start from a vertex and choose the/ a vertex nearest to it as the next vertex in the tour (least index vertex is chosen in case of a tie). Continue till a tour is obtained. In our implementation, we have

Table 1: Costs of a TSP Instance

From ↓ To →	1	2	3	4	5
1	--	0	100	1	1
2	1	--	0	100	1
3	1	1	--	0	100
4	100	1	1	--	0
5	0	100	1	1	--

used all the n vertices as the start vertex, in turn. The computational complexity of the method, thus, is O(n3). Let the method be denoted as NN*. It may be mentioned that, NN* gets an optimal solution of the instance as in Table 1.

The methods have been, first, used to solve some benchmark instances from TSPLIB (e.g., <elib.zib.de/pub/mp-testdata/tsp/tsplib>). Benchmark instances, mostly of asymmetric type, have been used up to n = 70. The results are shown in Table 2. From the 4th, the instances are asymmetric. The methods are applied to randomized instances also. In this case, two types of instances are used. In Type 1, the coordinates of vertices are generated randomly (with uniform distribution, independently) on a 10 × 10 square. These instances are Euclidean

TSPs, which satisfy both symmetry and triangle inequality. Here, we have used N = 10 n. We vary n = 100 & 200. The results are given in Table 3. The cost of the solution given by NN* is seen as a ratio of that of INS*. Higher this value, better is the solution by INS*, relative to that of NN*. In Type 2 of instances, the costs are generated with a uniform distribution in (0, 1], independently. We may note that, performance of both the methods would not change if any other uniform distribution were used. In each of the preceding cases, 15 instances are solved. The time requirement with INS* for 100 cities for Euclidean instances has varied in 8.9 – 9.5 seconds; for 200 cities in 71.0 – 72.6 seconds. For the asymmetric instances, it has varied in 8.2 – 8.9 seconds and 57.4 – 67.6 seconds. The same for NN* heuristic are 0.4 – 0.5 seconds, 3.1 – 3.3 seconds; 0.3 – 0.4 seconds, 2.5 – 3.0 seconds.

The numerical experiment has been done with a Pentium dual core processor T2390 personal computer. The processor has clock speed 1.86 GHz and RAM 1 GB. Operating system is Windows 7 Ultimate. The experiment has been done in MS Excel, writing the computer routines in Visual Basic.

From the experimental observations, efficiency of the solutions with INS* is improved considerably as multiple sequences are used. The minimum efficiency (1 – (Cost of the solution by the method – Cost of an optimal solution)/ Cost of an optimal solution) in the benchmark instances is more than 0.945 (with N = 10 n). There is, although, some indication that performance is decreased with larger n. For the benchmark instances, NN* performance is non-uniform and sometimes quite poor. For random instances (here, Performance Ratio = NN* cost/ INS* cost), INS* has a better performance in the Euclidean case. NN* performance is comparable. However, for the asymmetric case, INS* has considerably worse performance. For n = 200, for almost all the instances, it has yielded more than double the cost of NN*.

Concluding Remarks

For symmetric TSPs, CONCORDE is, perhaps, a good option, practically. We do not have, till now, such practically effective solution methods for the asymmetric TSPs. INS* may be used for such instances for up to n = 45, for a quick yet reasonably efficient solution. For larger n, INS* performance (even with N = 10 n) is non-uniform and sometimes very much poor. For such instances, INS* and NN* may both be used (these being fast methods). Exact solution methods may be used to improve such solutions, if required. The option of converting the TSP instance into a symmetric one and using CONCORDE may be considered, although converting to a symmetric instance increases instance size.

The efficiency of a heuristic for the TSP is very much dependent on the instance type and size. Research should persist to get better heuristics, customized to instance types, as much as possible, for the problem. The heuristic INS* may prove to be suitable for many practical applications.

Table 2: Performance of the Heuristics in Benchmark Instances

Instance	Size (n), Optimal Solution	INS* Solution			INS* (10 n) Efficiency	NN* Solution	NN* Efficiency
		$N = 1$	$N = 5\,n$	$N = 10\,n$			
GR17	17, 2085	2095	2085	2085	1.0	2178	0.9554
FRI26	26, 937	1026	946	937	1.0	965	0.9701
DANTZIG42	42, 699	757	704	704	0.9928	864	0.7639
BR17	17, 39	40	39	39	1.0	56	0.5641
FTV33	34, 1286	1420	1286	1286	1.0	1590	0.7636
FTV35	36, 1473	1695	1507	1502	0.9803	1667	0.8683
FTV38	39, 1530	1687	1570	1559	0.9810	1739	0.8634
P43	43, 5620	5658	5623	5623	0.9995	5684	0.9886
FTV44	45, 1613	1921	1665	1665	0.9678	1844	0.8568
FTV47	48, 1776	1933	1787	1787	0.9938	2173	0.7765
RY48P	48, 14422	16172	14936	14936	0.9644	15575	0.9201
FT53	53, 6905	7699	7257	7257	0.9490	8584	0.7568
FTV55	56, 1608	1952	1674	1660	0.9677	1964	0.7786
FT70	70, 38673	41360	40119	40119	0.9626	41815	0.9188
FTV70	71, 1950	2364	2020	2020	0.9641	2287	0.8272

Table 3: Performance in Randomized Instances

Instance	Size (n)	Instances INS* Better than NN*	Performance Ratio (Average)
2-dimensional Euclidean	100	15	1.0957
2-dimensional Euclidean	200	15	1.0991
Asymmetric	100	0	0.6215
Asymmetric	200	0	0.4712

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Analyzing and Forecasting of Select Indian Banking Stocks Volatility

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Abstract

Volatility has received a great deal of concern from researchers, policy makers and market participants. Greater the volatility greater is the risk. Investors expect premium for investing in risky assets. Financial markets are supporting the growth of emerging economies. Banking sector is one of the important industries which is growing in India and contributing to the development of Indian economy and generally the banks are considered as the best alternative portfolios for investment. Even if there is growth there are a number of risks inherent in banking industry. The bank stocks are volatile due to global factors as well as domestic factors. So there is a need of modeling and forecasting volatility for banking stocks. The present study is an attempt to analyze, forecast and model an appropriate ARCH and GARCH model to estimate the conditional volatility by taking ten years' returns of select banking companies from 23rd September, 2006 to 22nd September, 2016. The study found that the ARCH and GARCH are significant in select banking companies. The GARCH (1, 1) model with Normal distribution and GED is a better model for estimation and forecasting of volatility of select banking returns. Further it is found that the volatility persists in ICICI and HDFC Banks only and not in other select banks, and one can predict the market behaviour while making any type of investment decision.

Key words: Volatility, Banking industry, ARCH and GARCH

Introduction

Today's financial markets have become uncertain, due to many factors such as financial reforms, integration of financial markets with global financial markets, communication and technological advancement and other factors. Individual investors, institutional investors, and other market participants are facing lot of risk due to uncertainty. In spite of this uncertainty, investors are still showing interest and investing. Higher the volatility higher is the risk. Market participants expect premium for investing in risky assets. Banks and other financial institutions apply value–at-risk model to assess the risk. Modeling and forecasting of volatility of asset returns is gaining lot of importance.

Researches, policy makers and financial market participants have great concern for volatility as it can be used in measurement of risk. Greater volatility in the stock, bond and foreign exchange markets raises important public policy issue about the stability of financial markets and the impact of volatility on the economy. From a theoretical point of view, volatility plays a fundamental role in the pricing of derivative securities. According to the Black Scholes model, volatility plays significant role in pricing the European options. Therefore, option markets can be regarded as a place where people trade volatility.

Need for numerous practical applications, software, calculators for risk management practices etc. is increasing due to rapid growth of financial markets over the past thirty years, along with the explosive development of new and more complex capital market instruments, 1987 stock market crash, development of option pricing and asset pricing models, need of an ever-growing accurate and efficient volatility forecasting models for financial data analysis, portfolio selection and diversification, analysis of market timing decisions. There is a lot of scope for research to forecast volatility.

Stock market cycles in India have not deepened after financial liberalization (Amita Batra, 2004). Coefficient of risk premium appeared to be statistically significant indicating that increased risk leads to a rise in the returns (Md. Aminul Islam, 2013). These studies indicate the significance of volatility forecasting in risk management. Lastly,

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for the purpose of forecasting return series, forecast confidence intervals may be time varying, so that more accurate intervals can be obtained by modeling volatility of returns.

Volatility is pursued as an important factor in measurement of risk by market participants as well as policy makers. Higher the volatility higher is the risk. Investors expect premium for investing in risky assets. Banks and other financial institutions apply value-at-risk models to assess the risks. Modeling and forecasting volatility is very important for Indian Banking sector. The present study attempts to fit an appropriate ARCH and GARCH model to estimate the conditional volatility based on the select banking stocks.

Review of Literature

There is an extensive theoretical and empirical research on modeling and forecasting of volatility for financial time series data. Many econometric models have been used on various parts of the world financial markets. However, no single model is better but some studies evidenced ARCH family model performs well, a few of them reviewed here.

Srivastava, Aman (2008) employed ARCH and its extension, the GARCH, EGARCH and TARCH models to analyze characteristics of the volatility of Indian stock market by using daily returns of two Indian prominent indices SENSEX and NIFTY for the period from April 2000 to March 2008. The study found that NSE and BSE have significant ARCH effects and it is suitable to use ARCH GARCH models to estimate the process. The study also reveals that there are leverage effects in the markets and shock is of short term in nature.

Prashant Joshi (2014) examined the predicting accuracy of GARCH (1, 1), EGARCH (1, 1) and GJR-GARCH (1, 1) Models to forecast the daily volatility of BSE in India based on forecasting accuracy measures Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), mean absolute Percentage error (MAPE) and Theil inequality coefficient (TIC) by employing daily returns of Banking Index of SENSEX from 1st January, 2010 to 24th June, 2014. The study found that BSE has shown signs of the persistence of volatility, volatility clustering and mean reverting behaviour. The result also revealed the presence of leverage effect meaning that there is no same impact of good and bad news.

Sasikant Tripathy and Abdul Rahman (2013) forecasted daily stock volatility of Bombay Stock Exchange and Shanghai Stock Exchange for the period of 23 financial years (from 1st January, 1990 to 31st January, 2013) excluding holidays when there were no transactions. The daily closing value of 5605 observations of Sensex and Composite index were included for the study. Attempt has been made in the study to fit appropriate GARCH Model to estimate conditional market volatility for both BSE and SSE respectively. It was observed that there are significant ARCH effects on both the stock exchanges and the GARCH is best fitted model to estimate the forecasting.

S.S.S. Kumar (2009) empirically examined the predicting ability of ten different volatility forecasting models based on symmetric and asymmetric error statistics measures in the context of Indian both stock and forex markets by using Nifty returns from 3rd June, 1990 to 31st December, 2005 and exchange rate. The exchange rate data pertains to the Indian Rupee/US dollar rate for the period from 3rd January, 1994 to 31st December, 2005. The study found that GARCH (4, 1) and EWMA are the better volatility forecasting models for predicting Indian stock market volatility and the GARCH (5, 1) for predicting Indian forex market volatility. These models perform better on the basis of asymmetric error statistics.

JUN YU (2002) empirically evaluated the performance accuracy of nine competing univariate models such as simple models like Random walk, Historical Average, Moving Average, Simple Regression, Exponential Smoothing, Exponential weighted Moving Average and complex models like ARCH type models and Stochastic Volatility model by considering four different measures such as the Root Mean Square Error, the Mean Absolute Error (MAE), the Theil- U atatistic and the Limex loss function for predicting NewZeland stock market by using 4741 daily returns of NZSE40 capital index for the from 1st January, 1980 to 31st December, 1998. The study found that SV Model is better predictor among the nine competing models. ARCH-type models can perform well or badly depending on the form chosen: the GARCH (3,2) model is the best model within the ARCH family, is sensitive to the choice of assessment measures. The regression and exponentially weighted moving average models are the worst models as per the measures.

Chun Liu and Cheng Hung (2010) empirically investigated forecasting performance of asymmetry type and distribution type GARCH based models through the Superior Predictive Ability (SPA) test for the standard and Poor 100 stock index series for the period from 1997 to 2003. The study has shown that GJR GARCH model achieves the better volatility forecasts and closely followed by the EGARCH model.

ŞebnemEr and Neslihan Fidan(2013) modeled the Istanbul stock returns based on 100 stocks by using non parametric GARCH approach; 5433 observations were studied from November 1991 to November 2012. Result of the study has shown that when the distribution of the stock returns is unknown or has heavy tails and is leptokurtic one can use the non parametric GARCH model. Moreover, higher levels of GARCH model can be investigated by this non parametric method.

Francesco Guidi and Rakesh Gupta (2002) analyzed the characterization of asymmetric effect relation in five ASEAN stock market returns and volatility to test various statistical distribution forecasting models. The study found that the APARCH (Asymmetric Power ARCH) with t distribution is the better predicting model and also by using a asymmetry measure, they found that the Indonesian Stock market has a response of volatility to a negative shock is largest among ASEAN five countries.

Geoffrey Booth et al. (1997) applied an extended multi variate EGARCH model for pricing and volatility transmission among the four Scandinavian stock markets, Copenhagen of Denmark, Oslo of Norway, Stockholm of Sweden, and Helsinki of Finland by using 1574 daily index returns of each market for the period of 2nd May, 1984 to 30th June, 1994. The study concluded that each market's volatility and returns mainly depended on their own past observations/good news and bad news. Volatility transmission is asymmetric, spillovers being more pronounced for bad than good news. Significant price and volatility spillovers exist but they are few in number.

Martin Sola et al. (2001) introduced new procedure for analyzing and investigated the presence of volatility links which have been recently hit by severe financial crises across three emerging countries stock markets, Thailand, South Korea, and Brazil by using bivariate Markov switching model based on each country stock market data. The study found evidence that there is volatility spreading from Thailand to South Korean market in turmoil period. Volatility spillovers appear to be unidirectional. The study also found that there is a weak evidence of volatility spillover between South Korea and Brazil.

Gupta and Prabhakar Rao (2014) analyzed the Volatility patterns in BRIC stock exchanges by applying GARCH Model. The study used 8 years' stock indices returns for the period from 4th January, 2005 to 30th September 2013 of BRIC stock exchanges. BOVEPSA index has been taken to represent Brazil, RTS index for Russia, BSE Sensex for India and SSE composite index for China. The study has shown that volatility is highly persistent in all the four indices, asymmetries volatility found in three indices except in SSE. The study suggested that GARCH model can be used to estimate the volatility of the BRIC markets.

Objectives

The present study is an attempt to fit an appropriate GARCH (1, 1) model to estimate the conditional market volatility in select banking stocks. The study aims:

1.   to check the stationarity of all the select banking stock returns;
2.   to analyze the nature of daily stock market returns of select banking stocks; and
3.   to measure the volatility for select banking stocks.

Data and Methodology

The study deals with the forecasting of volatility of select banking stocks. The scope of the study is limited to select banking companies' stocks based on ten years data. The study is mainly based on secondary data which has been collected from the website of Yahoo finance (http: //in.finance. yahoo.com/). The study employs analytical research. Analysis is based on past ten year's stock returns of the major banking companies. The returns for the period of 23rd September, 2006 to 22nd September, 2016 calculated based on the daily closing prices of the select banking companies' closing prices. The stock returns are chosen to represent the banking industry: the banks taken are AXIS Bank Ltd., HDFC Bank Ltd., ICICI Bank Ltd., State Bank of India and YES Bank Ltd.

Various financial econometrics models, Augmented Dickey Fuller (ADF) test and Phillips –Perron (PP) test are applied to test the presence of unit root in time series data. ARCH LM test is used to test the presence of clustering volatility and to determine whether there is ARCH effect or not. An Auto regressive Moving Average (ARMA) model is assumed for the error variance. The GARCH (Bollerslev, 1986) model is applied to forecast the daily stock return volatility. The model generalizes the ARCH in Engle (1982) past conditional variance in the current conditional variance. Tripathy and Rahman (2013) have used GARCH model to forecast the daily stock return volatility and Jun Yu (2002) evidenced that GARCH model is the best model within the ARCH family models. Descriptive statistics explains short summaries about the sample and the observations. MS Excel and EViews 6 statistical packages are used for data analysis. Various statistical and econometric tools used in the study are described in the following paragraphs.

- **Measurement of Volatility**

Volatility has been measured as the standard deviation of the stock returns. The stock returns are the continuously compounded daily percentage change in the closing price of index in order to avoid the influence of extreme index values. Symbolically, it may be stated as follows

$Rt = log_e (pt/pt-1)*100 \ldots\ldots(1)$

Where 'Rt' is the return in the period 't', Pt is the daily closing index price at a particular time 't'; 'Pt-1' is the closing index price for the preceding period and loge is natural logarithm.

- **Autoregressive Conditional Heteroscedasticity (ARCH) model**

The ARCH (p), which is originally introduced by Engle (1982), assumes that the conditional variance is a linear function of the past p squared innovations.

$$\sigma_t^2 = \omega + \alpha \varepsilon_{t-1}^2 + \alpha_p \varepsilon_{t-1}^2 + \ldots \alpha_p \varepsilon_{t-p}^2 = \omega + \sum_{i=1}^{p} \alpha \varepsilon_{t-1}^2 \ldots\ldots (2)$$

In the above equation, the conditional volatility is assumed to be the moving average of squared innovations. The parameters must satisfy the following constraints to well define the model and the conditional variance to be positive, the

$\omega > 0$, And $\alpha_1 \geq$, $i=1\ldots, P.$

The unconditional variance of innovation, denoted by σ^2, is the unconditional expectation of σ_t^2: $\sigma^2 = E[\varepsilon_t^2] = E[E_{t-1}[\varepsilon_t^2]] = E[\sigma_t^2]$. In the ARCH (p) process, it is easy to compute that $\sigma^2 = \omega/(1 - \sum_{i=1}^{p} \alpha_i)$. This shows that the process ε_t is covariance stationary if the sum of the autoregressive parameters is less than one, $\sum_{i=1}^{p} \alpha_I < 1$

Although the innovation ε_t is serially uncorrelated, they are not time independent, because, defining $v_t = \varepsilon_t^2 - \sigma_t^2$, we can rewrite as:

$$\varepsilon_t^2 = \omega + \sum_{i=1}^{p} \alpha \varepsilon_{t-i}^2 + v_t,$$

with $E_{t-1}[v_t] = 0$. Therefore, the plain ARCH (p) model can be viewed as an AR (P) model for the squared innovation ε_t^2.

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with $E_{t-1}[v_t] = 0$. Therefore, the plain ARCH (p) model can be viewed as an AR (P) model for the squared innovation ε_t^2.

- **Generalized ARCH Model (GARCH)**

  Due to the large persistence in volatility, the ARCH model often requires a large p to fit the data. In such cases, it is more easy and cost effective to use the GARCH proposed by Bollerslev (1986). The conditional variance of a GARCH (p, q) is:

$$\sigma_t^2 = \omega + \sum_{i=1}^{p} \alpha_i\, \varepsilon_{t-i}^2 + \sum_{j=1}^{q} \beta_j\, \sigma_{t-i}^2 \qquad \ldots\ldots (3)$$

  For this equation the parameters must satisfy the following constraints to well define the model and the conditional variance to be positive:

  $\omega > 0, \alpha_i \geq 0, I = 1\ldots p, \beta_j \geq 0, for\ j=1\ldots q.$

Result and Discussion

Volatility Clustering: To validity the application of ARCH and GARCH model, and Volatility Clustering of the daily returns of the select stock prices of five companies for the period of September 23rd 2006 to September 22nd 2016 is presented in Charts 1.1 to 1.5

Chart 1.1. Volatility Clustering of Daily Returns of AXIS Bank
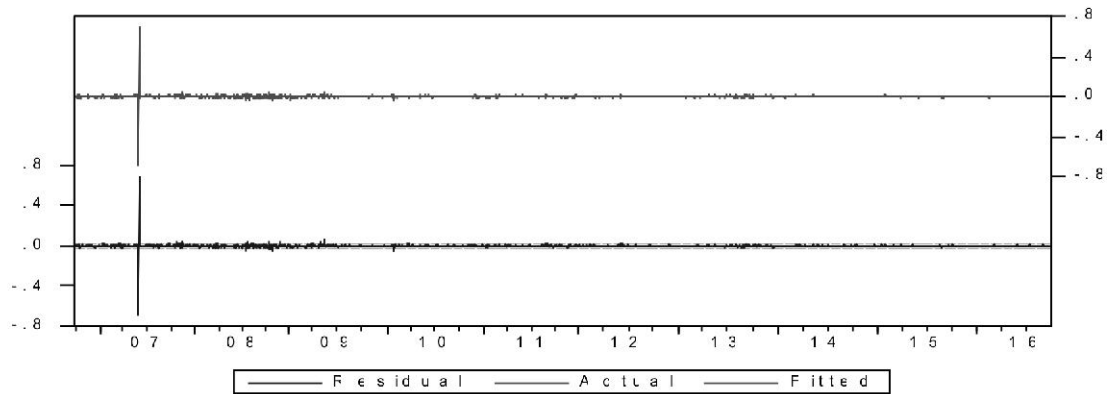**(**23rd September 2006 to 22nd September 2016**)**

Chart 1.2. Volatility Clustering of Daily Returns of HDFC Bank
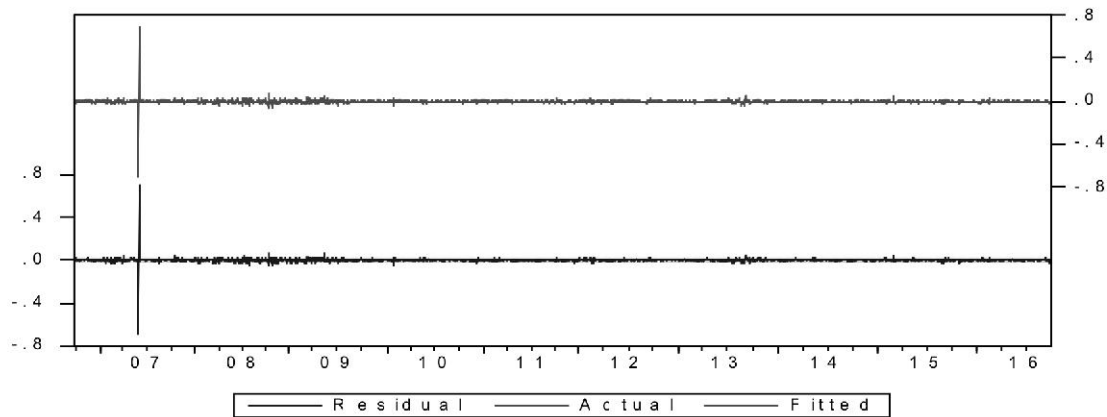(23rd September 2006 to 22nd September 2016)

Chart 1.2. Volatility Clustering of Daily Returns of HDFC Bank
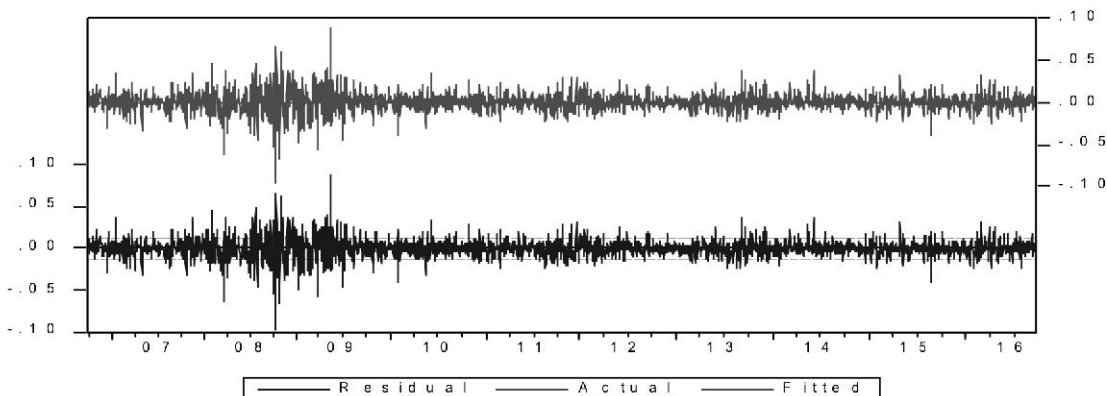(23rd September 2006 to 22nd September 2016)

Chart 1.4. Volatility Clustering of Daily Returns of SBI
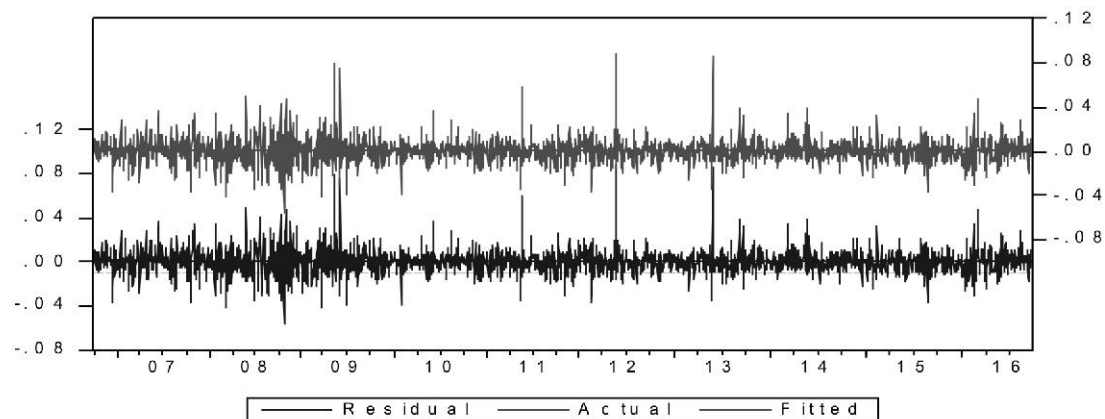(23rd September 2006 to 22nd September 2016)

Chart 1.5. Volatility Clustering of Daily Returns of YES Bank
(23rd September 2006 to 22nd September 2016)
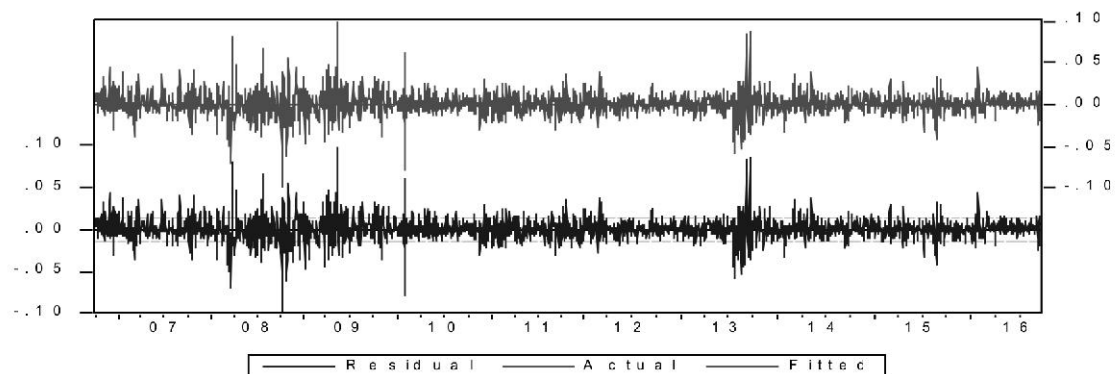
It can be seen from Charts 1.1 to 1.5 that the returns are fluctuating, mean returns are very close to zero in case of AXIS Bank and HDFC Bank and close to the other three select banks.

From the time series graph of the select banks' daily returns it is observed that periods of high volatility are followed by periods of high volatility and periods of low volatility tend to be periods of low volatility this indicates that there is an existence of volatility Clustering, and it suggests that residuals or error term is conditionally heteroscedastic and it can be represented by ARCH and GARCH model.

Descriptive statistics of Daily Returns of Select Banks
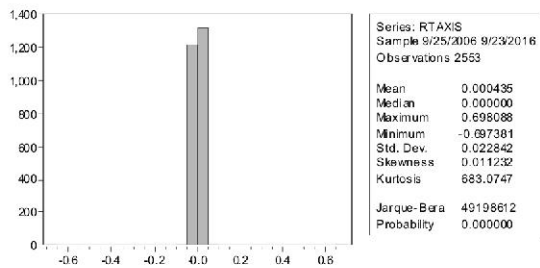(Sample period from 23rd September 2006 to 22nd September 2016)

Chart 2.1 AXIS Bank Ltd.

Chart 2.2 HDFC Bank Ltd.
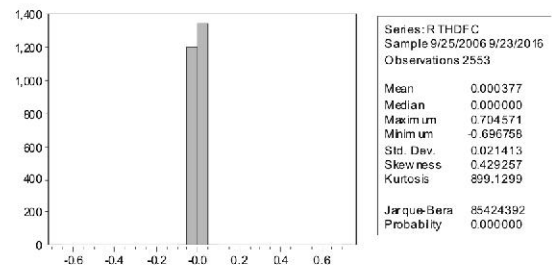
Chart 2.3 ICICI Bank Ltd.
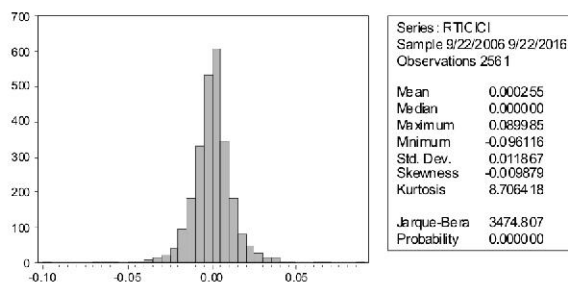
Chart 2.4 SBI
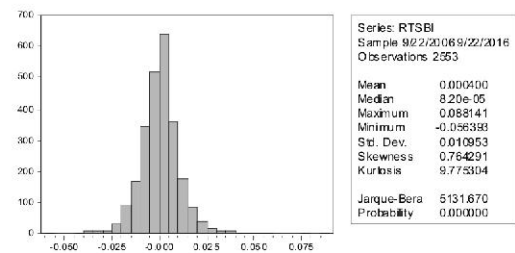
Chart 2.5 YES Bank Ltd
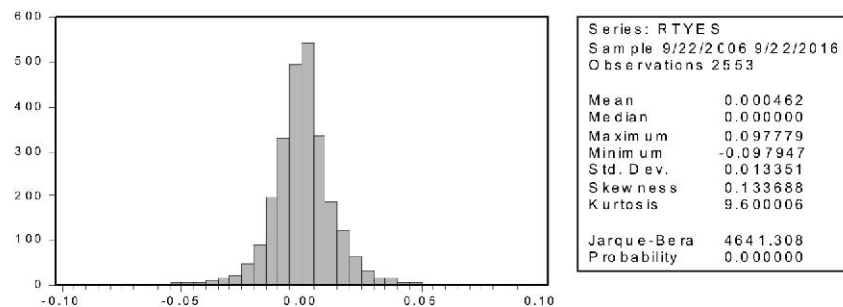
Source: Compiled from EViews output of stock returns of Select Banks

Descriptive Statistics: Descriptive statistics of daily returns of select banks for the sample period from 23rd September 2006 to 22nd September 2016 of select banks is presented in the Charts 2.1 to 2.5. From this it can be noted that average return is positive in all the select banks. All these banks have given almost all same return with a little bit low volatility. Among the select banks the volatility is high in case of AXIS Bank followed by HDFC Bank. It is found high in the returns of YES Bank followed by AXIS Bank. Volatility of SBI is little bit low followed by Yes bank and ICICI bank.

Descriptive statistics of ARCH LM test (at lag = 1) and Jarque - Bera test for daily returns: Descriptive statistics and results of Jarque - Bera test is given in the Table 1.

Table1: Descriptive statistics of ARCH LM test (at lag = 1) and Jarque - Bera test for daily returns

Test	AXIS Bank	HDFC Bank	ICICI Bank	SBI	YES Bank
ARCH LM (P value)	0.0000	0.0000	0.0000	0.0000	0.0000
Jarque - Bera	49198612	85424392	3474.807	5131.670	4641.308
Probability	0.0000	0.0000	0.0000	0.0000	0.0000

The Jarque – Bera statistics is applied to verify the null hypothesis of normality of residuals. The P value (0.000) in all the select banks (Charts 2.1 to 2.5, also refer Table 4) is highly significant indicating that the residuals are not normally distributed. In the same way the ARCH LM (Lagrange multiplier) test (See Table 4.) is applied to verify whether there is a heteroscedasticity persistent in the data series or not. The H_0 of this test is that there is no ARCH effect which means there is no presence of heteroscedasticity. As in all the select banks the P value is less than 0.05 at 5 % significant level, the H_0 is rejected for these banks. It indicates that there is a heteroscedasticity persistent in the select stock returns.

Unit Root Test: For a time series data there is a problem of auto co-relation so to tackle the auto co-relation problem Dickey Fuller and Philip Perron unit root test developed as stated in the equation.

Equation of ADF Test................ $yt = \varphi yt-1 + \mu + \lambda t + ut$ ..... (5)

Equation of Philip Perron Test............ $yt = c + \delta t + a\, yt - 1 + e(t).$ ... (6)

Unit roots are applied to test the stationary of the time series data as against the pre-condition that the series must be stationary. Here the null hypothesis is that the data series have a unit root. The rejection of null hypothesis (P Value < 0.05) implies that the series is not having unit root that means the series is having stationary.

Table 2: ADF and Phillips-Perron (PP) Unit Root Test of Stationarity Result with intercept

Select Banks	ADF				Phillips-Perron				Order of integration
	Critical value @ 5%	t stat.	Prob.	Co-efficient	Critical value @ 5%	t stat.	Prob.	Co-efficient	
AXIS Bank	-2.8636	-37.744	0.000	-1.691	-2.8636	-84.900	0.001	-1.3625	I (0)
HDFC Bank	-2.8636	-35.882	0.000	-2.174	-2.8636	-110.95	0.001	-1.425	I (0)
ICICI Bank	-2.8636	-46.477	0.001	-0.915	-2.8636	-46.317	0.001	-0.915	I (0)
SBI	-2.8636	-46.483	0.001	-0.917	-2.8636	-46.323	0.001	-0.917	I (0)
YES Bank	-2.8636	-45.959	0.001	-0.906	-2.8636	-45.722	0.001	-0.917	I (0)
Source: Compiled from EViews output of stock returns of Select Banks									

Table 2 shows that the calculated P-values are less than 0.05 and t statistics at 5 % level are greater than the critical value of ADF and PP test at 5% significant level which leads to conclude that the data of the time series under the study are not having a unit root at zero level. The results of the both tests confirm that the select bank returns series are stationary. The co-efficient of select bank stocks lag 1 variables are negative which indicates that the ADF and PP tests are viable.

Modeling ARCH and GARCH: There are two conditions to run the ARCH and GARCH model, one is there should be a volatility clustering and another one is persistence of heteroscedasticity that is ARCH effect. ARCH and GARCH model can be run for the select data as there is volatility clustering, ARCH effect, and non normality of data and stationarity of the residuals.

GARCH (1, 1) model is the most popular of the ARCH family to model the volatility. It is developed by Bollerslew in 1980 and has become an approved tool for modeling and forecasting volatility. This model can be fitted for the returns of select banking companies' stocks. This model is estimated using three types of distribution to get confirmative result. They are Normal Gaussian Distribution, Student's t distribution and Generalized Error Distribution. In order to fit an appropriate ARCH and GARCH model to estimate the conditional market volatility in select banks' stocks, the result have been shown as below.

Modeling ARCH and GARCH Model for banking stocks

Table **3: ARCH and GARCH Model for Select Banking Companies**								
$[H_t = C(2) + C(3)*RESID(-1)\wedge2 + C(4)*GARCH(-1)]$								
Select Banks	Distribution	Constant C	ARCH		GARCH		Adjusted R²	AIC	SC
			A	Prob.	β	Prob.			
AXIS Bank	Normal	6.68E-05	2.5577	0.0000	0.04455	0.000	0.1955	-5.4891	-5.4844
	Student t	8.65E-05	0.00489	0.0000	-0.00798	0.000	0.08054	-7.1139	-7.0423
	GED	1.26E-05	0.25231	0.0000	0.712321	0.000	-0.00184	-6.1816	-6.1679
HDFC Bank	Normal	8.32E-06	0.25017	0.0000	0.73342	0.000	-0.3268	-6.5952	-6.5814
	Student t	2.61E-06	0.16566	0.0000	0.81683	0.000	-0.00229	-6.9614	-6.9453
	GED	3.66E-06	0.18854	0.0000	0.794725	0.000	-0.02770	-6.9307	-6.9147
ICICI Bank	Normal	2.12E-06	0.05213	0.0000	0.93072	0.000	-0.00523	-6.3093	-6.2956
	Student t	3.76E-05	0.13440	0.0000	0.57562	0.000	0.05270	-6.5812	-6.5652
	GED	3.66E-05	0.12228	0.0000	0.567342	0.000	-0.100663	-6.5435	-6.5275
SBI	Normal	7.27E-05	0.0624	0.0000	-0.21159	0.000	0.75809	-7.4553	-7.4415
	Student t	5.81E-05	0.07743	0.0000	-0.11330	0.000	0.61956	-7.3066	-7.9779
	GED	0.000012	0.10463	0.0000	-0.20983	0.000	0.79729	-7.9919	-7.9779
YES Bank	Normal	9.19E-05	0.030297	0.0000	-0.07557	0.000	0.779271	-7.003578	-6.989841
	Student t	6.76E-05	0.109031	0.0000	0.315377	0.000	0.171896	-6.465137	-6.449111
	GED	8.73E-05	0.024224	0.0000	0.117584	0.000	0.563117	-6.791585	6.775559

Source: Compiled from EViews output of returns of select banking companies stock returns.

Under the three distributions as mentioned in Table 3 both ARCH and GARCH are significant in banking stocks. It means that the previous day's information of return on select banking stock returns can influence today's volatility. Similarly, the previous days of these select banking volatility (i.e. GARCH) can influence today's volatility (refer equations 2 and 3) it means that the select bank returns volatility is influenced by its own ARCH and GARCH factors or own shocks or we can say that shocks are within the family.

From Table 3, it is observed that in all the select banking stock returns the Generalized error distribution in SBI returns has high adjusted R^2 than other distributions. The standard of Akaike Information criterion and Schwarz criterion (Table 6) depicts that the model under Normal Distribution has the lowest value. The lower the AIC and SC and higher the R^2 better is the model. Here, the GED is having high R^2 and Normal Distribution is having lower AIC and SC values. This shows that GARCH (1, 1) model with Normal distribution and GED is a better model for estimation and forecasting of volatility of select banks' time series data.

Further it is found that, for AXIS Bank, SBI and YES Bank under all distribution methods the values of GARCH (β) are not close to 1. This evidences that the volatility will persist in the market even if there are expected shocks that means present innovation is a function of past innovation which means one cannot predict the market behaviour while making any type of investment decision except the HDFC Bank under all distributions and ICICI Bank under Normal distribution. Because the GARCH (β) value (refer Table 3) is close to 1 which indicates that the persistence of volatility can be continued in the ICICI Bank and HDFC Bank.

Conclusion

Analyzing and forecasting volatility is a widely researched area in finance and has many implications for stock exchanges. The present empirical study attempt to analyze, forecast, and model an appropriate GARCH (1, 1) model to estimate the conditional volatility. The results demonstrated that the ARCH and GARCH are significant in select banking stocks and it is appropriate to use the GARCH (1, 1) model with Normal Gaussian Distribution and Generalized Error Distribution (GED) to estimate the process. Further it is found that the volatility persists in ICICI Bank Ltd. and HDFC Bank Ltd. out of the five banking companies and one can predict the market behaviour while making any type of investment decision.

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Effect of Locus of Control on Teacher Effectiveness

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Abstract

The contemporary study examined the relationship between teachers' locus of control (LOC) and teacher effectiveness. The respondents comprised 62 teachers who teach Post Graduate courses, selected according to a convenience sampling method from different colleges/ institutes in Hyderabad, India. The participants were asked to complete the structured questionnaire designed by the author on the basis of Levenson Scale of Locus of control (Levenson, 1973) and Sanjay Vohra scale of Teacher effectiveness (Vohra, S., 1992). The theoretical relationship between LOC and teacher effectiveness was supported by data. The results indicated a significant relationship between teachers' internal LOC and teacher effectiveness. It was found that high correlation between LOC and teacher effectiveness can be explained by taking their internal LOC into account. It was also found that external LOC leads to teacher ineffectiveness as correlations of both external (others) & external (chance) with teacher effectiveness are not at all significant. The results derived from the current study should encourage educators to take advantage of this relationship by providing teachers with programmes and experiences for developing an effective approach for enhancing their internal tendencies and perceptions.

Key words: Teachers, Locus of control, Internal locus of control, External locus of control, Teacher effectiveness

Introduction

Education in a broad sense refers to a process of an all-round development. This process would include the quality and characteristics of teachers, students, students-teacher's interaction and the context in which it occurs. From the various studies it was observed that the attributes of a teacher are one of the most important factors affecting student learning.

It was also understood that having a teacher of excellence can result in a considerable development in student learning as compared to one with poor quality of teaching (Hanushek 1992; Sanders and Rivers 1996). The characteristics of a teacher are usually mimicked and assimilated by students through their observation. A teacher who conveys these becomes a great role model for the students. The teacher conveys this appropriate behaviour to the students. It is imperative to understand the various factors affecting the quality of teaching and hence it leads us to consider the personality factors such as locus of control in addition to demographic variables such as gender and age.

Locus of control is a very important terminology in the field of personality and social psychology. It was conceptualised by Julian B Rotter in 1954. In Latin, locus means a place or location. It can be either internal or external locus of control. Locus of control is a belief that whether outcomes of our actions are in congruence with what we do (internal locus of control) or which are outside of our personal control (Zimbardo, 1985)

Locus of control is defined as an extent to which an individual believes whether the events in the personal life are controlled by internal or external factors. A person who believes that the person has control over his or her own life, is termed as internally controlled. Whereas the person who believes that he or she is controlled by luck, chance or powerful others is termed as externally controlled.

Rotter's concept of locus of control was mainly concentrating on extreme ends. Here it denotes that a person can be moving towards either internal or external locus of control. A new model was designed in 1973 by Hannah Levenson. According to the new model, there are three components which include internal, chance and powerful others. Each of the three components may function simultaneously or independently. A person's locus of control arises from the individual's learning from society, experiences of the past and the people and situations around.

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To evaluate the teacher effectiveness in terms of his or her characteristics five areas are used which include Preparation and planning of teaching, Knowledge of Subject matter, Classroom Management, Interpersonal Relations and Teacher Characteristics. These areas cover all the dimensions of a teacher. A teacher's locus of control which can be internal, external or a continuum between internal and external has to be investigated. Based on that trait it can be further examined with regard to the effectiveness of a teacher.

The present study sets out to dissect the relationship of Locus of control of teachers who teach Post Graduate courses in relation to their effectiveness. It also seeks to examine the various components of Locus of control (internal and external which includes both chance and powerful others). The application of locus of control in the field of education is very significant in the present study. In case of teachers and students, locus of control is related to motivation, performance and achievement. Locus of control is considered as a significant factor which affects teacher's motivation (Czubaj,1996).

Literature Review

Locus of Control

The individuals with an internal locus of control are likely to be attentive to opportunities around them to improve the attainment of their goals, engage in actions to improve their environment, to place a greater emphasis on striving for achievement orientation, and be more inclined towards development of one's own skills (Julian B. Rotter, 1954). Loco Inventory (Locus of Control in Organization Inventory) was developed which distinguished between two types of external locus of control i.e. significant others and by chance or luck (Levenson, 1972). It was found that individuals who expressed internal locus of control believe that one's behaviour is candidly related to the outcome because they have control over their environment (Halloran, Doumas, John, & Margolin, 1999).

Locus of control is a formulate that measures the degree to which individuals tend to believe that they are responsible for the consequences of their behaviour (Leone & Burns, 2000).

The relationship between social support and locus of control help in determining job satisfaction levels and stress (Cummins, 1989). Individuals with an internal locus of control developed alternative ways to shield stress while people with an external locus of control were mostly dependent on supervisory support to reduce stress. Individuals with an internal locus of control were tend to be more satisfied with their jobs setting aside the stress levels while those with an external locus of control were tend to be less satisfied with their jobs due to stress.The external locus of control is correlated with peer rejection (Sandstrom & Coie, 1999) as well as aggression (Oesterman et al, 1999).

The development of locus of control is hypothesized to progress from a more external locus of control to a more internal locus of control as one matures (Lefcourt, 1982). The individual falls on a continuum which ranges from external to internal locus of control and it seems to be associated to the degree of stress one observes and the process in which the individual is able to handle that stress (Parkay, F.W., Olejnik, S., & Proller, N., 1986). Those with an external orientation, respond to stress with more anxiety, neurotic symptoms, and self-punitiveness (Butterfield, 1964; Rotter, 1966; Tolar and Rezinkoff, 1967; Eisenman, R., & Platt, J. J. 1968; Goss and Morisko, 1966; Hountras and Scharf, 1970).

Teacher Effectiveness

Teacher effectiveness signifies the success of a teacher in an institution. It is influenced by various components of a teacher. Teacher effectiveness is directly linked to a teacher's competence and teacher's performance with the accomplishment of teacher goals. Research on teacher effectiveness mainly focuses on relating teacher behaviours to student achievement. The instructional and management processes, teacher's affective characteristics, social and emotional behaviours, pedagogical practice are components to effectiveness. The teacher's psychological impact on students has been linked to student achievement in various effectiveness studies. An ideal teacher at the climax of the performance brings about a positive change in the overall behaviour of students.

The effective teachers hold the knowledge and skills needed to attain the goals, and should be able to use that knowledge and skills appropriately to achieve these goals. Teacher effectiveness can only be assessed, in terms of

their behaviours and learning of students, not by the behaviour of teachers (Medley, 1982).Divergent teacher effectiveness is a strong determinant of differences in student learning. There are various components to measure teaching effectiveness. They are (a) student ratings, (b)self-evaluation,(c) peer ratings, (d)student interviews, (e) videos, (f) alumni ratings, (g) teaching scholarship, (h) administrator ratings, (i) employer ratings,(j) teaching awards, (k) learning outcome measures, and (l) teaching portfolios. National standards are prescribed to guide the definition and measurement of effective teaching (Berk, 2005).

There was a remarkable difference in teacher effectiveness among teachers concerned to the level of teaching, place of the school, gender and there was no significant difference in teacher effectiveness with respect to age, marital status, years of experience, type of management and monthly income of teachers (Rajammal & Muthumanickam, 2011). If a teacher is considered good by some, it does not necessarily indicate that the teacher is the most effective, as it relates to learning of the student (Preis, 2010). In research on teaching profession, it was found that experience of a teacher is the best predictor of effectiveness and that cognitive ability is very rarely taken into consideration (Harris and Rutledge, 2009)

Locus of Control and Teacher Effectiveness

Various studies demonstrate the existence of positive outcomes associated with high internal locus of control. Individuals with an internal locus of control demonstrate better adjustment skills with their environment than their counterparts (Lefcourt and Phares, 1976). Laboratory studies done on teachers have shown that teachers with internal locus of control are able to apply effective teaching strategies than those with external locus of control (Berman, McLaughlin, Bass, Pauly and Zellman, 1977; Rose and Medway, 1981; Sadowski and Woodward, 1983).

Teacher Locus of Control is also linked to their job attitudes and perception of organizational characteristics. Those with internal locus of control have positive job attitudes such as intrinsic and extrinsic satisfaction, role clarity, commitment and a feeling of job challenge (Chang, Y.C, 1994).Locus of control also seems to be associated with the kind of approach to discipline or guidance a teacher provides in class to students. A high Internal Locus of control in teachers has also been positively correlated with reflective thinking (Norton, J. L, 1997). Reflective teachers are able to respond positively to individual student needs, critically view their own aims, objectives and review their teaching plans and strategies. Thus it can be said that those teachers who believe that they are responsible for the outcomes of their behaviour are also reflective. The individuals with external locus of control tend to use more of "custodial attitude to discipline/guidance" (Lorenz, J. R 2000).

Teacher stress essentially stems from a feeling of lack of control in work place. The internal locus of control was related to getting relevant information from environment and better adjustment, those with external locus of control would experience more of perceived stress than their counterparts (Lef Court and Phares 1976). The student-teachers with internal locus of control showed less perceived stress and better performance. These individuals tend to focus more on their work and are less anxious or stressed about their work than their counter parts (Sadowski, Blackwell and Willard 1986).

The teachers who have an external locus of control also tend be experiencing more burnout than those with an internal locus of control (Lunenburg, Fred C., Cadavid, Victoria, 1992). Those teachers who believe that they have little control over the events of their life also tend to think that they cannot do much to deal or cope with the stressful events in their life.

It is possible to modify an individual's locus of control. Hence more interventions and programmes should focus on identifying and modifying teachers' locus of control in such a way that it can beneficial to the educational objectives at large (Lefcort, 1976).

The above mentioned studies and examples indicate a strong link between internal locus of control and positive characteristics in teachers. These characteristics are desirable in an effective teacher in order to achieve the goals and objectives of teaching. Therefore, it can be said that any efforts directed towards changing locus of control from external to internal will result in better performance and effective teaching.

Theoretical Frame

In the backdrop of the literature review, it emanates that individuals with a high internal locus of control believe that events result predominantly from their own behaviour and actions, and individuals with high external locus of control (chance or others) believe that powerful others, fate, or chance primarily determine events. With this foundation, the locus of control is considered to have a relationship with the effectiveness of teachers as shown in Figure 1. Based on this premise the objectives have been set.

Figure 1: Variables of Locus of Control

Locus of Control Internal External (Chance) External (Others)	**Teacher Effectiveness**
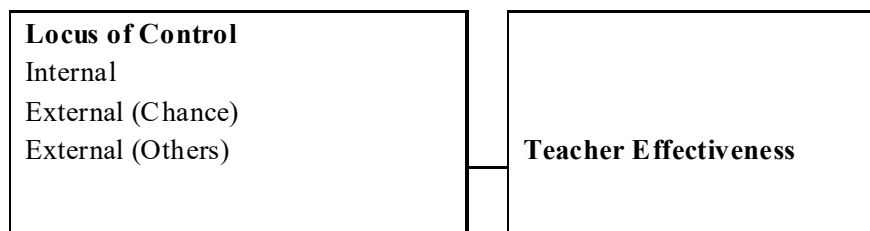
Objectives

To ascertain the type of Locus of Control (i.e. Internal or External) present in teachers of Higher educational institutions in Hyderabad.

To identify the relationship between Locus of Control and Teacher effectiveness.

Hypothesis

For the study, the research hypothesis has been set as follows:

There is a positive correlation between Internal Locus of Control and Teacher Effectiveness among the teachers who teach PG courses in Hyderabad, India.

Methodology

The present study is based on both primary and secondary data. The primary data was collected with the help of a survey conducted in Hyderabad, India. The main concentration to collect the required data was from the teachers who teach post graduate courses. Data for the study was obtained by using a structured questionnaire.

The questionnaires were distributed to 94 teachers who teach Post Graduate courses.   But at the end the researcher has got only 62 questionnaires out of 94 given to the teachers. The secondary data was collected from World Wide Web and other research studies.

Participants

The survey used a questionnaire, which had statements which highlight the factors that determine the type of locus of control and effectiveness level of the teachers. Based on Kulsum Teacher Effectiveness Scale (Umme Kulsum, 2000), the modified version of the same was administered which included elements such as Preparation for Teaching and Planning, Classroom Management, Knowledge of subject-matter, Teacher characteristics and Interpersonal Relations. Sanjay Vohra Locus of Control Scale (Vohra, S. 1992) has been used for the present study which is based on Levenson scale for Locus of control (Levenson, 1973). According to this scale the three important components which measured include Internal Locus of Control, and External Locus of control divided into Chance or Luck and by Powerful Others.

The responses were collected on a Five Point Likert Scale ranging from 1 (Strongly Disagree) to 5(Strongly Agree). The ratio analysis, correlation analysis and ANOVA one-way were used as statistical tool for analysis.

Data Analysis

The questionnaire was distributed among both genders, and the respondents numbered 71.4% in male and 28.6% in female. Results of demographic analysis are presented in Tables 1 and 2.

Table 1: Respondents: Gender

Variable	Category	Frequency	Percent
Gender	Male	18	28.6
	Female	44	71.4
	Total	62	100

Table 2: Respondents: Age

Variable	Category	Frequency	Percent
	<30	16	25.4
	30-39	17	27
Age	40-40	19	31.7
	50 and Above	10	15.9
	Total	62	100

Analysis for objective 1:

The aim is to identify the type of Locus of Control (Internal or External) present among the teachers who teach PG courses in Hyderabad, India.

Ratios

In this study, ratio analysis was used to find out the type of locus of control present in the teachers. Totally three ratios were calculated, viz., (1) Internality/Externality - Others, (2) Internality/Externality - Chance and (3) Internality/Total - Externality. The results of these 3 ratios were 1.10, 1.15 and 0.56 respectively. Out of these three values, two had values greater than 1. Thus it can be inferred that there is a significant amount of locus of control present among the teachers.

Mean

To identify the type of locus of control that exists in the teachers, mean was calculated and used in the present study. From the results, it is observed that most of the teachers from the sample belong to internality with the highest mean of 38.42. It can be inferred that most of the teachers have high Internal locus of control since the mean of Internal locus of control is higher than External locus of control (Chance) and External locus of control (Others).Externality (Others) is observed to be next to Internality with a mean of 34.8. Externality (Chance) was observed to have the lowest mean of 33.53. The mean for Teacher Effectiveness was also calculated. The scale of Teacher effectiveness was taken as from 1 to 35 with seven questions on Teacher effectiveness. The data showed that the mean of teacher effectiveness is 28 which is significantly closer to the maximum value of 35. Hence it can be inferred that the present sample of teachers is effective.

Analysis for objective 2

The purpose is to analyse the impact of type of Locus of Control on teacher effectiveness

Correlation

The correlation values range from -1 to +1. It is vital to find out that the correlation between the two variables is significant or not (i.e., if it has occurred absolutely by chance or if there is a high probability of its existence).The level of significance of p =.05 indicates that 95 times out of 100, we can be sure that there is a true or significant correlation between the two variables, and there is only a 5% chance that the relationship does not truly exist. Thus the hypothesis presumes a significant positive (or negative) relationship between the two variables. The results of the findings are shown in Tables 3 to 5, the sample size being 62.

Table 3: Correlation between Internality & Teacher Effectiveness

	Internality	Teacher Effectiveness
Internality Pearson Correlation	1	0.62 (**)
Sig. (2-tailed)		0
Teacher Effectiveness Pearson Correlation	0.62(**)	1
Sig. (2-tailed)	0	

From the data in Table 4 we can state that, given the sample size 62, there is a positive correlation of 0.62 between the internal locus of control and teacher effectiveness level which is significant at the 0.05 level. That is, over 95% of the time we would expect this correlation to exist. From Table 5 we observe that there is a correlation of 0.25 between the external (others) locus of control and teacher effectiveness level, but it is found to be not significant at the 0.01 level because the value of significance is 0.31 which is higher than 0.01. From Table 6 we can see that there is a positive correlation which is partial between External (Chance) locus of control and job effectiveness of teachers. And it is also not significant at the 0.05 level because the value of significance is 0.85 which is quite higher than 0.05.

Table 4: Correlation between Externality (Others) and Teacher Effectiveness

	Teacher Effectiveness	Externality Others
Teacher Effectiveness Pearson Correlation	1	0.25
Sig. (2-tailed)		0.31
Externality Others Pearson Correlation	0.25	1
Sig. (2-tailed)	0.31	

Table 5: Correlation between Externality (Chance) and Teacher Effectiveness

	Teacher Effectiveness	Externality Chance
Teacher Effectiveness Pearson Correlation	1	0.04
Sig. (2-tailed)		0.85
Externality Chance Pearson Correlation	0.04	1
Sig. (2-tailed)	0.85	

One-Way ANOVA

One-way ANOVA table is a statistical tool which helps us to know the degree of variance between one factor and other variables. It helps us to know how the main factor will get influenced by other variables. Mostly One-way ANOVA is used to measure how different demographical variables will have an impact on particular variable. Results are presented in Tables 6-8.

Table 6: One-Way ANOVA showing the relationship between demographic factors with internal locus of control.

Demographic Variables		Sum of Squares	df	Mean Square	F	Sig
Gender	Between Groups	3.313	15	0.177	1.41	0.378
	Within Groups	7.345	46	0.161		
	Total	10.658	61			
Age	Between Groups	25.737	15	1.387	1.25	0.049
	Within Groups	35.099	16	0.848		
	Total	60.836	61			

Table 7: One-Way ANOVA showing relationship between demographic factors and External locus of control (Others)

Demographic Variables		Sum of Squares	df	Mean Square	F	Sig
Gender	Between Groups	3.035	14	0.167	1.05	0.492
	Within Groups	7.623	47	0.165		
	Total	10.658	61			
Age	Between Groups	15.517	14	0.608	0.435	0.623
	Within Groups	45.319	47	1.137		
	Total	60.836	61			

Table 8: One-Way ANOVA showing relationship between demographic factors and External locus of control (Chance)

Demographic Variables		Sum of Squares	df	Mean Square	F	Sig
Gender	Between Groups	3.854	16	0.167	1.070	0.298
	Within Groups	6.804	45	0.165		
	Total	10.658	61			
Age	Between Groups	30.417	16	0.608	1.970	0.035
	Within Groups	30.419	45	1.137		
	Total	60.836	61			

a) The results of One-Way ANOVA showing the relationship between demographic factors with internal locus of control are as follows:

Gender: At 0.05 level of significance, it is observed that there is no significant difference between gender and internal locus of control since p-value is 0.378 which is greater than 0.05. Age: At 0.05 level of significance, it is observed that there is a significant difference between age and internal locus of control since p-value is 0.049 which is lesser than 0.05. It means that there is a significant variance among the different age groups when they are asked about internality.

b) The results of One-Way ANOVA showing relationship between demographic factors with External (others) locus of control are as follows:

Gender: At 0.05 level of significance, it is observed that there is no significant difference between gender and External (Others) locus of control since p-value is 0.454 which is greater than 0.05.

Age: At 0.05 level of significance, it is observed that there is no significant difference between age and External (Others) locus of control since p-value is 0.623 which is greater than 0.05.

c) The results of One-Way ANOVA showing relationship between demographic factors with External (chance) locus of control are as follows:

Gender: At 0.05 level of significance, it is observed that there is no significant difference between gender and External (Chance) locus of control since p-value is 0.492 which is greater than 0.05.

Age: At 0.05 level of significance, it is observed that there is a significant difference between age and External (Chance) locus of control since p-value is 0.035 which is lesser than 0.05. It means that there is a significant difference among the different age groups when they are asked about External (Chance) locus of control.

Conclusion

The researcher found that there exists more of internal locus of control among the teachers of PG courses in Hyderabad, India. According to the ratio analysis used, it was identified that internal locus of control has significantly positive impact on teacher effectiveness. In the case of external locus of control, even though there is a positive relationship between externality (others) and externality (chance) and teacher effectiveness, it is not significant. It is also found that there exists significant variance between age of teachers and internal locus of control. The negative attributes emanating from the locus of control will lead to teacher ineffectiveness. Here also it was found that external locus of control leads to teacher ineffectiveness as correlation of both external (others) and external (chance) with teacher effectiveness are not at all significant. In essence, strengthening of internal locus of control enhances the effectiveness of teachers.

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Book Review:
The Dhando Investor - The Low Risk Value Method to High Returns by Mohnish Pabrai

Charu Rastogi*

Dhando, literally translated, means 'endeavours that create wealth'. It is the low risk high return approach to business. The author stands by and propagates the tenet of 'heads I win, tails I don't lose much'. In this book, Pabrai demonstrates how the Dhando capital allocation framework helped the business-savvy Patels create successful motel businesses in the United States of America in the 1970s and 80s. Pabrai explains how this framework can be applied and replicated by individual stock investors in the stock market.

The book is divided into 17 chapters. In the first four chapters, Pabrai introduces four real-life examples of people who created millions of dollars' worth of businesses out of little to no seed capital.

In the first chapter, the author introduces the example of 'Patel Motel Dhando', where he tells the tale of the 'Patels', a small ethnic group from India, who first started arriving in the United States in the 1970s as refugees from Uganda, with little education or capital. Today, they own over $ 40 billion in motel assets in the United States, pay over $ 725 million in taxes, and employ nearly a million people. Pabrai credits the success of the Patels to their entrepreneurial spirit, hard work, perseverance and the ability to take heavy bets when the odds are in their favour.

In the next chapter the author introduces the second example, by telling the story of 'Manilal Dhando Chaudhari'. Like Patel, Manilal also belongs to Gujarat and has migrated to the United States in the 1970s. Manilal has 6 siblings who end up settling in the United States over a period of ten years and create significant real estate assets by sheer hard work, pooling of savings, working together as a family. The family also created a successful motel business by buying an existing distressed business and turning it around. As per the author, his story is all about **'Few bets, Big bets, Infrequent bets'** and participating in coin tosses where 'heads I win, tails I don't lose much'.

In the third chapter, 'Virgin Dhando', Pabrai presents the example of Richard Branson, the flamboyant entrepreneur and founder of the Virgin group. Branson specialized in spotting classic 'dhando' opportunities, where the upside is unlimited and the downside is insignificant. By practicing this philosophy, Branson has created a massive business empire with interests in airlines, entertainment, telecommunications, etc. As per the author, Branson is an 'ultra low-risk, ultra high-return' person who takes frequent business opportunities with minimal downsides, so that even if half of the ventures fail or do not scale up, it does not cause significant financial loss.

In the next chapter, Mittal Dhando, Pabrai introduces a Marwari entrepreneur, 'Lakshmi Mittal'. Mittal invested all his energy and available capital in an industry with terrible economics- Steel Mills, where one has no control over the prices of the raw materials or the price of the finished product. In spite of facing such headwinds, Mittal used the 'Dhando' strategy of buying up distressed businesses in distressed economies like Romania, Kazakhstan and Mexico and turned them around. Now, Mittal has a net worth of over $ 20 billion.

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In the fifth chapter, Pabrai lays down the Dhando framework, which is presented below:

- Focus on buying an existing business
- Buy simple businesses in industries with an ultra-slow rate of change
- Buy distress businesses in distressed industries
- Buy businesses with a durable competitive advantage-The Moat
- Bet heavily when the odds are overwhelmingly in your favour
- Focus on arbitrage
- Buy businesses at big discounts to their underlying intrinsic value

In the next 9 chapters, Pabrai explains the principles stated in the Dhando framework, with the help of the four examples stated earlier, several other instances drawn from his own life and those of his acquaintances.

For instance, in chapter 6, the author makes a case for investing in existing businesses. Pabrai propagates Benjamin Graham's view on buying stocks. As per Graham, stocks are an ownership stake in an existing business. Stock holder is a partner in business who benefits when the business prospers. Pabrai further explains how investing in the stock market is better than investing one's capital in buying an entire business. Instead of putting in tremendous amounts of effort and capital in growing a business from scratch or in scaling up an existing business, a stock holder can become a part owner of a business by investing a small amount of money. The author recommends that having an ownership stake in a few businesses is the best path to building wealth due to bargain buying opportunities, low capital requirements, large selection and low frictional costs.

In chapter 7, Pabrai expounds the virtues of investing in simple, easy to understand businesses. He recommends investing in businesses which are trading below their intrinsic value. This can be found by discounting the cash inflows and outflows likely to occur over the lifetime of the business at an appropriate discount rate. Again, Pabrai suggests investing in businesses where conservative assumptions about future cash flows are easy to estimate.

In chapter 8 Pabrai talks about investing in distressed businesses in distressed industries. As per efficient market theorists stock picking is a negative sum game, given that stocks always trade at their intrinsic value, price in all available information and frictional costs add to the cost of acquiring stocks. However, Pabrai mentions that the markets are mostly efficient, but not always efficient. He cites the example of how Warren Buffet has made billions of dollars in the stock market by cherry-picking stocks when they fall below intrinsic value due to macroeconomic events, company or sector specific events or other events which generate an atmosphere of fear. Similarly, Patel, Manilal and Mittal made their fortunes by investing in distressed businesses.

In the next chapter, Pabrai demonstrates how investing in businesses with durable moats increases the chances of getting a high return on investment. Moat refers to a lasting competitive advantage that a business has which gives it an edge over its competitors. Additionally, the author also recommends that one must make reasonable assumptions about the longevity of a business because sooner or later, the moat of a business withers away.

In chapter 10, the author reiterates his tenet of making 'Few bets, Big bets and Infrequent bets'. He strengthens his argument by referring to the work of John Larry Kelly Jr., who came up with the Kelly Formula. This formula gives the optimal fraction of one's bankroll to bet on a favourable bet. Basically, the better the odds are, the higher the

amount that one should bet. Pabrai shows how Patel, Manilal, Mittal and Branson intrinsically knew that they should bet big when they have the odds. Likewise, in the stock market, one should focus on businesses that are in temporary distress, causing the stock price to go below intrinsic value and then bet big.

In the next chapter, the author focuses on arbitrage. He says that arbitrage opportunities allow an investor to earn a high return on invested capital with virtually no risk. In chapter 12, Pabrai expands on the concept of having a margin of safety in one's investments. Margin of safety comes from buying a business for lesser than you think it is conservatively worth. The bigger the discount to intrinsic value, lower the risk and higher the return. Minimization of risk is something which Patel, Manilal and Branson also focused on.

In chapter 13, Pabrai recommends investing in low-risk, high uncertainty businesses. The actors in the four examples cited by the author invested in low risk businesses. The future performance of their businesses was very uncertain but the odds of permanent loss of capital were very low. In the stock market too, an investor may face three kinds of scenarios:

· High risk, Low uncertainty

· High risk, High uncertainty

· Low risk, High uncertainty

· Low risk, Low uncertainty

Businesses that fall in the fourth category have the highest trading multiples. As such, they do not provide much of a return to investors. However, low risk, high uncertainty combination gives the best coin toss odds and is the one in which Dhando investors are the most interested. Pabrai says that fear and greed drive buying and selling decisions in the stock markets. When extreme fear sets in, there is likely to be irrational behaviour which in turn provides low risk, high uncertainty opportunities.

In the next chapter, the author talks about investing in copycats rather than innovators. Pabrai cites the example of the thousands of Patels who did not innovate but simply copied the model of motel ownership business popularized by the earlier Patel refugees from Uganda. The late entrants copied a proven, virtually risk-free business model and today, the motel industry in the United States is practically in the hands of the Patels. The author also uses the examples of McDonalds, Microsoft and his own Pabrai Investment Funds, to illustrate how the strategy of being copycats pays off quite well. It is interesting to note that Pabrai Investment funds adopted the fee structure of Buffet Partnerships. In fact, Pabrai himself cloned Warren Buffet's practices regarding reinvesting his fees back into his partnerships, disclosure of equity portfolio positions, running a concentrated portfolio, not investing institutional investor's funds, reporting performance numbers and doing his own investment analysis. The author reasserts that lifting and scaling is the Dhando way and it worked wonders for Pabrai Investment Funds.

In chapter 15, Pabrai elaborates on the art of selling. He states that making an investment is only one half of the battle – the easy part. A robust framework for selling is equally essential. The author gives the example of Abhimanyu's decision to fight the Kauravas by penetrating their chakravyuh even though he did not know how to exit the battle formation, to make a point about how an investor must figure out an exit plan before making a stock investment. The decision to enter, traverse and finally exit a chakravyuh is akin to figuring out how to buy, hold and sell a stock. Once an investor has bought a stock at a discount to the intrinsic value, Pabrai recommends holding it for at least three years as there is likely to be convergence between intrinsic value and price. Once this gap narrows to under 10 percent, the investor may sell the position and exit. Unlike Abhimanyu, if an investor can time his entry to his advantage and have an exit plan in place, then successful traversals and big rewards are guaranteed.

In the next chapter, Pabrai addresses the question of indexing. He quotes that there is a large body of research and empirical data that suggests that indexing is an excellent investing strategy. Unlike active investing where there are significant frictional costs, indexing outperforms most active fund managers over the long haul. Therefore, investors who cannot or do not want to do the heavy lifting that securities analysis requires, indexing is a sound investing strategy. The author recommends, 'The Little Book that Beats the Market' by Joel Greenblat where he has

come out with a very direct set of recommendations and a 'magic formula' for stock selection, for the individual investor.

Pabrai closes the book with a chapter on investing lessons from Arjuna, the great warrior. An investor must focus on stocks within his circle of competence and read up pertinent books, publications, company reports, industry periodicals, etc., on them. When an opportunity arises and the business appears to be underpriced compared to intrinsic value, it is time to focus all energy on ascertaining whether it is an investing opportunity as per the Dhando framework. The author cautions an investor against looking at several businesses at once. Like Arjun, an investor must focus solely on the target until it is either rejected as an investment or passes all the Dhando filters and an investment is made.

In conclusion, it can be said that the book is written in a lucid manner. The chapters flow well. At no point, do the readers feel overwhelmed with financial or stock market jargon. Pabrai distills the methods of investment gurus, Buffet, Graham and Munger, into a user friendly approach applicable to individual investors. 'The Dhando Investor' is a must read for any value investo.

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