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Management training at AIMT has continuously evolved over the years and focuses on all round development of the students. Continuous emphasis on Research through subjects like Business Research Methods, Business Intelligence Analysis, Supply Chain Analytics, Project Management and SPSS workshops has resulted in high quality Project Dissertations and Research by the Students under the able guidance of the Faculty. The introduction of Book Reviews, adds value to the Journal and provides a snapshot of highly relevant books for management professionals.

AIMT is proud to feature an advisory board comprising of renowned national and international academicians. A special word of thanks to all the contributors for their support and interest. I would also like to express my deepest gratitude to the editorial review board for scrutinizing the papers and adding value to the same.

I am sanguine that this Journal will continue to receive encouragement from the readers and feedback for continuous improvement. The editorial team joins me in wishing you all Happy Reading!!!

Cmde (Dr.) Vivek Chawla (Retd)
Director, AIMT

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Research Papers

A Study of Corporate Social Responsibility and Financial Performance of Selected Indian Fertilizer Companies

*Dr. Naresh Chandra Tripathi,

Abstract:

India has the world's richest record of Corporate Social Responsibility (CSR). The concept of Corporate Social Responsibility may be new to the corporate world, but it was originated from Mauryan period, where philosophers like Kautilya tinted moral ethics and practices while operating business.

"Corporate Social Responsibility is the continuing commitment by the business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large."

Today, companies are expected to be answerable, accountable, and responsible to benefit the society as a whole. The initiatives like ISO 14001, SA-8000, OHSAS-18001 ISO -26000, Global Reporting initiative and the Global Compact etc. are a good initiation towards CSR. Several regulatory changes have been introduced by the government over time to ensure organizations and companies play their part in CSR initiatives, for example, section 135 and schedule VII of the companies Act. as well as the CSR provisions of the Companies' Act 2014

This paper aims at studying the CSR expenditure of top 4 Indian fertilizer companies and relationship between their financial performance and CSR expenditure. The study outcome that there is significant positive relation between Corporate Social Responsibility and financial parameters such as Profit After Tax and Earning Per Share. Hence government should encourage the organizations to spend on CSR initiatives, which will not only promote environment sustainability and social causes, but this will also promote the gesture of giving back to the society and environment. Additionally, for organizations, it will impact consumer satisfaction and will positively boost their brand image.

Keywords: Corporate Social Responsibility (CSR), financial performance, Profit After Tax (PAT)

Introduction

India has the world's richest record of Corporate Social Responsibility (CSR). The concept of Corporate Social Responsibility may be new to the country, but it was originated from Mauryan period, where philosophers like Kautilya tinted moral ethics and practices while operating business. During the prehistoric times, CSR was unceremoniously practiced in the form of gift, charity and donation to underprivileged group of people. Indian scriptures have comprehensive the magnitude of sharing ones earning with the deprived section of the society.

Religion plays a significant character for promoting Corporate Social Responsibility. Sharing and compassion is embedded in the Indian culture. Dharmada, where the vendor charges an accurate amount from the customer, which was used for charity function. The Bhagwad Gita, a divine book of the followers of Hinduism, promotes the perception of charity, and allied with realizing the divine within. Correspondingly, Sikhs followed

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Daashaant that means 10% of income in charity which is known as wand chakna. Christianity highlighted the significance of benevolent time and personal service for the benefit of others.In fact, Christians were told 'let thy right hand not know what thy left-hand gives', signifying the importance of giving but not for publicity.

The ordinary method of budding from babyhood to old age through accomplishment of the duties of each of the four stages of brahmachari (apprentice), grihastha (family),vanaprastha (elder advisor) and sannyasa (religious solitaire) in recreation of the four human goals, dharma (virtue),artha (wealth),kama (pleasure) and moksha (liberation).This is personage social responsibility in relation to the family, association and the general public. Vedanta promotes the welfare, progress, development and happiness of all beings. This also indicated by a popular prayer –loka samastha sukhino bhavanthu, which means that all may be happy and healthy. A business organization should earn profit / create wealth and it should be used to satisfy the needs of the society (Mahavir, 2001). The Vedic philosophy supports earning of wealth and right action on its use on self, commotion and charity for the welfare of deprived sections of the society. When it is expended on the welfare of others, it returns in many folds (RigVed 1-8).In Atharva Ved, it is rightly said that "May we together shield each other and may we not be envious towards each other. Wealth is essentially a tool and its continuous flow must serve the welfare for achieving common good of society people" (Atharva Ved 3-2, 4-5).These ideals can be extended to provide model for CSR in the context of modern business organizations. According to World Business Council for Sustainable Development, "Corporate Social Responsibility is the continuing commitment by the business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large."

The accountability of business in the general public has undergone abundant changes. Awareness of the collision of business on society and environment has developed all along escalating socio-regulatory pressures. It is no longer easy enough to occupy people, make profits and pay taxes. Companies are now expected to be answerable, accountable, and responsible to benefit the society as a whole. The initiatives like ISO 14001, SA-8000, OHSAS-18001 ISO -26000, Global Reporting initiative and the Global Compact etc. are a good initiation towards CSR.

The government is playing a vital role to accommodate the indulgent of social responsibility, making it obligatory for different organizations to use assured profits in areas that benefit the society. The Companies Act 2013,Ministry of Corporate Affairs has recently notified section 135 and schedule VII of the companies Act. as well as the CSR provisions of the Companies' Act 2014 (revised), which has come into effect from 1 April 2014, provide the threshold limit for applicability of the CSR to a company.

- Net worth of the company to be Rs 500 crore or more
- Turnover of the company to be Rs 1000 crore or more
- Net profit of the company to be Rs 5 crore or more

It not only applicable to Indian companies but also on foreign companies who have branch office(s) in India. The companies are required to spend at least 2% of its average net profit for the preceding 3 financial years on CSR activities.

The company should announce its CSR activities in which its utter about the average net profit for the preceding three financial years and also prescribed CSR expenditure. However, if the company is in competent to squander the minimum requires expenditure, explanation in the board report for non-compliance should be specified in order to flee penalties.

This paper basically highlights on the expenditure on CSR activities of selected Indian fertilizer companies and also examines how CSR is allied with the financial performance of these companies.

REVIEW OF LITERATURE:

Adams and Hardwick (1998): The study investigated data of 100 companies listed in U.K. in 1994 liaison between the political, charitable and social donation with companies' volume, profitability, tenure and leverage. The findings exhibit encouraging relation between donation and firm volume and profitability.

Sachin Kumar (2015): considered eight foremost electronic home appliances brands in India and has examined the Corporate Social Responsibility policies of these companies, their green marketing initiatives and the method of implementation of these policies by the selected units.

Alok Kumar Mathur (2012): In his study selected five pharmaceutical companies and found that companies are activity concerned in social responsibility such as environment, physical condition, education, community care, livelihood and skill development other than profit making.

Inder Pal Singh (2015): Enlightened that private sector banks provide better service to customers as compared to public sector banks. However, both ignored the social responsibility of environment.

Oeyono et al., (2011): Inspected the relationship between Corporate Social Responsibility disclosure and profitability among apex 50 companies. He used GRI 2007 guidelines, which include five indicators of human rights, economics, society and product responsibility, environmental and social. It was found that most of the firms adopted CSR in their business.

Saleh et al.(2011): Scrutinized the empirical association between CSR disclosure and financial performance of top 200 firms of Malaysia from 1999 to 2006. It includes four indicators such as environmental, employee relation, society interest, and product dimension. The investigation accomplished that CSR and financial performances are positively related.

Pachar (2012): Analyzed the liaison between CSR misuse and financial governance in India. The study examined the connection between CSR and budgetary enforcement using experimental policy. He concludes that in most of the companies, there is a lack of compliance of financial discipline and CSR activities as per Companies' Act.

Yildirim and Dincer, (2016): This research paper analyzed various CSR practices, particularly philanthropic practices from a strategic angle of the businesses. In this study, quality of CSR practices has been evaluated in private hospitals. For this purpose, publication on CSR practices by private hospitals has been scrutinized and measured through MAXQDA software.

Objective of study

- To study the CSR expense in top 4 Indian fertilizer companies
- To analyze the financial performance of selected Indian fertilizer companies
- To analyze the relationship between CSR expenditure and financial performance of selected Indian Fertilizer Companies

- To compare CSR expenditure of selected public and private sector fertilizer companies

Hypothesis of the study:

1. **H01:** There is no considerable divergence in Corporate Social Responsibility expense of selected Indian fertilizer companies.
2. **H02:** There is no considerable divergence in profit after tax (PAT) of selected Indian fertilizer companies.
3. **H03:** There is no considerable difference in earning per share (EPS) of selected Indian fertilizer companies
4. **H04:** There is no difference in CSR expense between selected Indian public and private sector fertilizer companies.

Research Methodology

Secondary data from published annual reports has been collected. Data include profit after tax (PAT), earning per share (EPS) and Corporate Social Responsibility expenditure, sustainability exposure of chosen Indian fertilizer companies for the period of 5 years from 2015-16 to 2019-20 has been used for the study. For testing the hypothesis ANNOVA test has been applied.

Selection of Samples

Indian Fertilizers Industry is the third largest industry in the world after USA and China. It is one of the allied sectors of the agricultural sphere which is backbone of Indian economy. Indian nation is mostly dependingon fertilizer companies for growing crop to congregate the demand of mounting Indian population.Four Indian fertilizer companies are selected for study two from private companies and to from public sector companies

S. No.	Company Name	Sector
1	Coromendal International Ltd.	Public
2.	Rastriya Chemical and Fertilizer Ltd.	Public
3.	Mangalore Fertilizer and Chemical Ltd.	Private
4.	Zuari Agro Chemical Ltd.	Private

Limitations of the Study

- The study is partial to four selected Indian fertilizer companies. Sample is too small to represent the population.
- In the study, secondary data has been collected from annual reports, company's website, sustain ability report and other financial statement of selected companies, which is less viable than the primary data. Secondary data also has its own restraint.

Analysis and Discussions

1. **CSR Expenditure:** Table 1 shows CSR expenditure of selected companies for five years period and average CSR expenditure.

Table 1: Corporate Social Responsibility (CSR) Expenditure (Rs. in lakhs)

Companies	2015	2016	2017	2018	2019	Average
Coromendal International Ltd.	1323	1328	1396	1198	1548	1358.6
Rastriya Chemical & Fertilizer Ltd.	830	966	863	779	388	765.2
Mangalore Fertilizer & Chemical Ltd.	19	21	43	22	61	33.2
Zuari Agro Chemical Ltd.	45	37	-72	-65	-75	-26

(Source: Annual Reports of Selected Companies)

Diagram 1: CSR Expenditure (Rs in Lakhs)
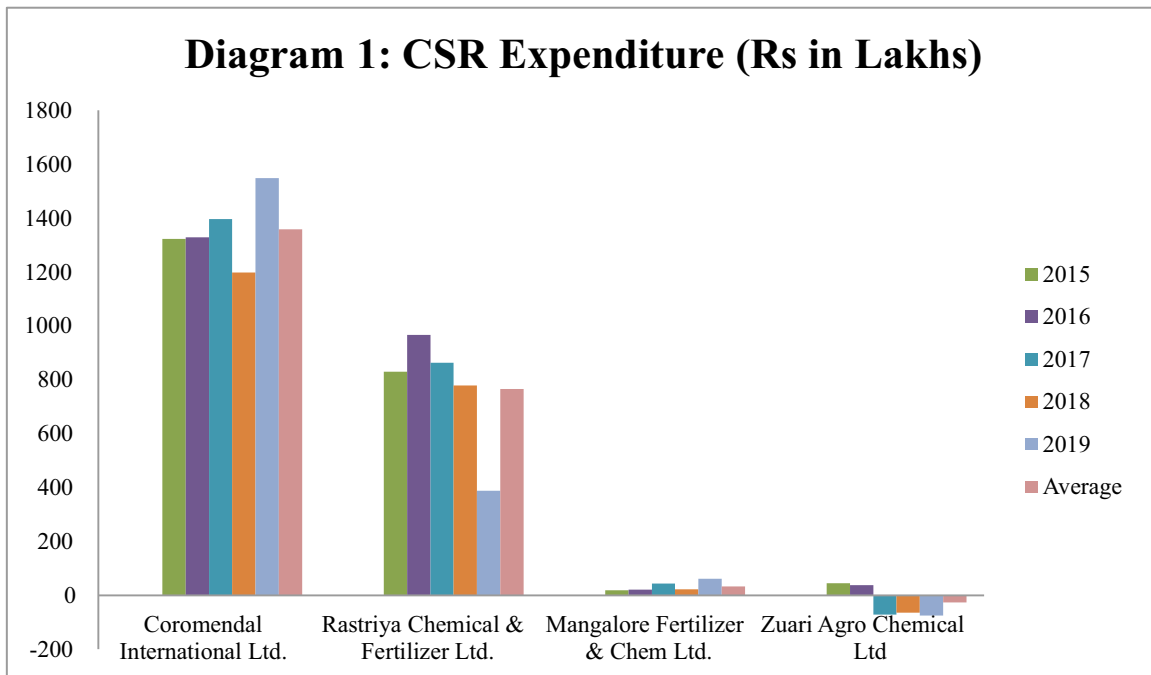
(Source: Table 1)

Table1 specifies the facts concerning Corporate Social Responsibility operating expense in selected Indian Fertilizer companies. Coromendal International Ltd. shows the fluctuated trends of CSR expenses throughout the study phase. The maximum CSR Expenses Rs.1548 lakh in 2019 and the minimum CSR expense was Rs 1198 lakh in 2018, its average CSR Expense is Rs 1358.6 Lakh. Rastriya Chemical and Fertilizer Ltd. shows the fluctuated trends of CSR expenses throughout the study phase. The maximum CSR expenses of the company is in the year 2016 Rs.966 lakh while minimum expense Rs 388 lakh in 2019 where as the average expense was Rs 765.2 lakh. The Mangalore Fertilizer and Chemical Ltd. also show the fluctuated trends of CSR expenses throughout the study phase. The highest CSR expense was Rs 61 lakh in 2019 and the lowest is 19 lakhs in

2015. However, the average CSR expense was 33.2 lakh. Zuari Agro Chemical Ltd. also had fluctuated trends of CSR Expense throughout the study phase as companies is suffering a loss for the year 2017, 2018 & 2019, so it does not fulfill the criteria of CSR expense for certain year, whereas company maximum CSR expense in Rs 45 lakh in 2015 and minimum was negative in 2019 i.e., Rs 75 lakh and average CSR expense was negative Rs.26 lakh. The average CSR expense was Rs 1358.6 lakh of Coromendal International Ltd. is maximum than the other three companies' average expense. Average differentiation between public and private companies Coromendal International spend Higher on CSR i.e., Rs1358.6 lakh as compare to Zuari Agro chemical Ltd. spent less on CSR Rs.26 lakhs, as the company suffered losses.

2. **Profit After Tax (PAT):** Profit after tax is an important determinant of financial performance of any business. PAT of selected fertilizers is shown in table 2.

Table 2 Profit After Tax (Rs. in Crore)

Profit After Tax						
Companies	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
Coromendal International Ltd.	403	358	477	685	714	527.4
Rastriya Chemical & Fertilizer Ltd.	322	191	179	78.8	139	181.96
Mangalore Fertilizer & Chemical Ltd.	19	-25	30	61	33	23.6
Zuari Agro Chemical Ltd.	19	-9	20	39	-23	9.2

(Source: Annual Reports of Selected Companies)

Diagram - 2 Profit After Tax (Rs. in crores)
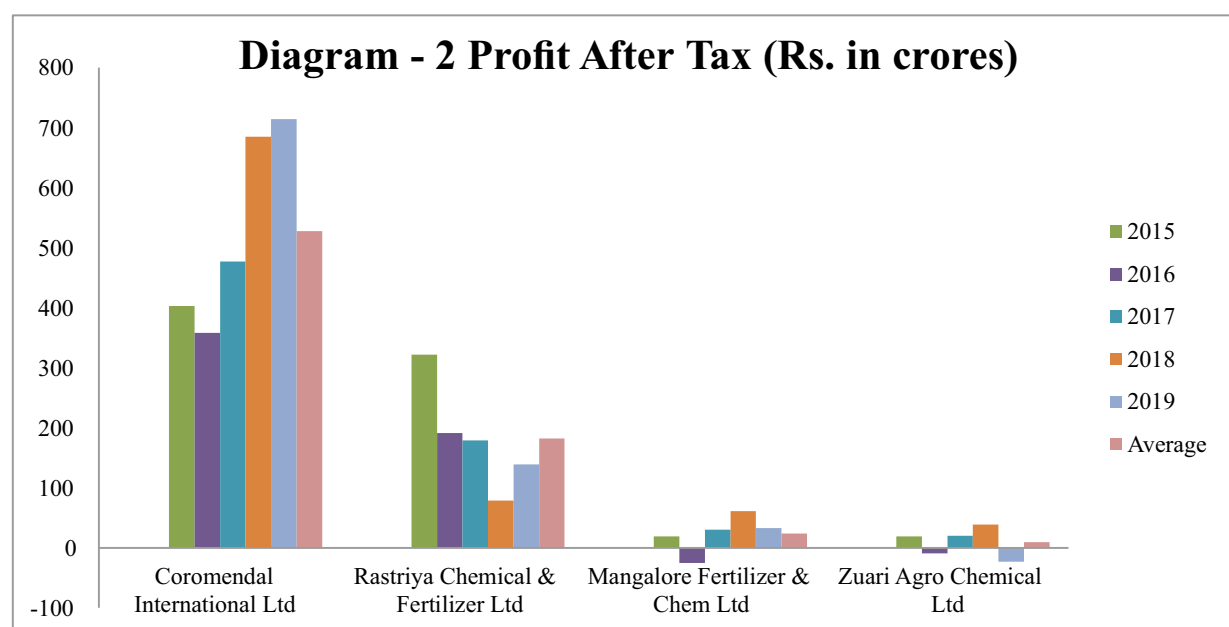
(Source: Table2)

Table 2 indicates Profit After Tax (PAT) in selected Indian fertilizer companies. Coromendal shows the fluctuated trends of PAT during study period. The company's maximum PAT was Rs.714 crore in 2019 and minimum in 2016 i.e., Rs.358 crore. The highest average PAT of selected company is Rs.527.4 crore. Rastriya Chemical & Fertilizer Ltd. shows the fluctuated trends of PAT during study period of last five years, the company's maximum PAT is Rs.322crore in financial year 2015 and minimum PAT in the year 2018 Rs.78.8crore and average of last five financial years is Rs.181.96 crore. The Mangalore Fertilizer and Chemical Ltd. shows a fluctuated trend in PAT in selected study period. The company's highest PAT is in the year 2018, Rs.61 crore and the company suffered loss of Rs. 25 crores in the year 2016. Average of last five years was Rs. 23.6 crore. Zuari Agro Chemical Ltd. shows fluctuated trend in PAT in selected study period. The company's highest PAT was Rs. 39 crores in the financial year 2018, as the company was suffering from loss and the maximum loss of Rs 23 crore was in the year 2019. Average PAT of five selected financial years was Rs. 9.2 crore. The maximum average PAT of selected companies of last five year is 527.4 crore. Average differentiation between public and private companies, public company Coromendal international earned higher PAT of Rs.714 crore and private company Zuari Agro Chemical Ltd. suffereda loss of Rs. 23 crores.

3. **Earnings Per Share (EPS):** Earnings Per Share is a tool used to measure the financial performance of any business. EPS of selected fertilizer companies is shown in table 3.

Table 3: Earning per Share (In Rs.)

Earnings Per Share						
Companies	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
Coromendal International Ltd..	24.41	23.44	16.35	12.29	13.85	18.068
Rastriya Chemical & Fertilizer Ltd..	5.84	3.47	3.25	1.43	4.36	3.67
Mangalore Fertilizer & Chemical Ltd..	1.25	-20.18	1.64	5.11	2.77	-1.882
Zuari Agro Chemical Ltd..	-50.2	7.21	4.66	7.21	-50.2	-16.264

(Source: Annual Reports of Selected Companies.)

Diagram 3: Earning Per Share (Rs.)
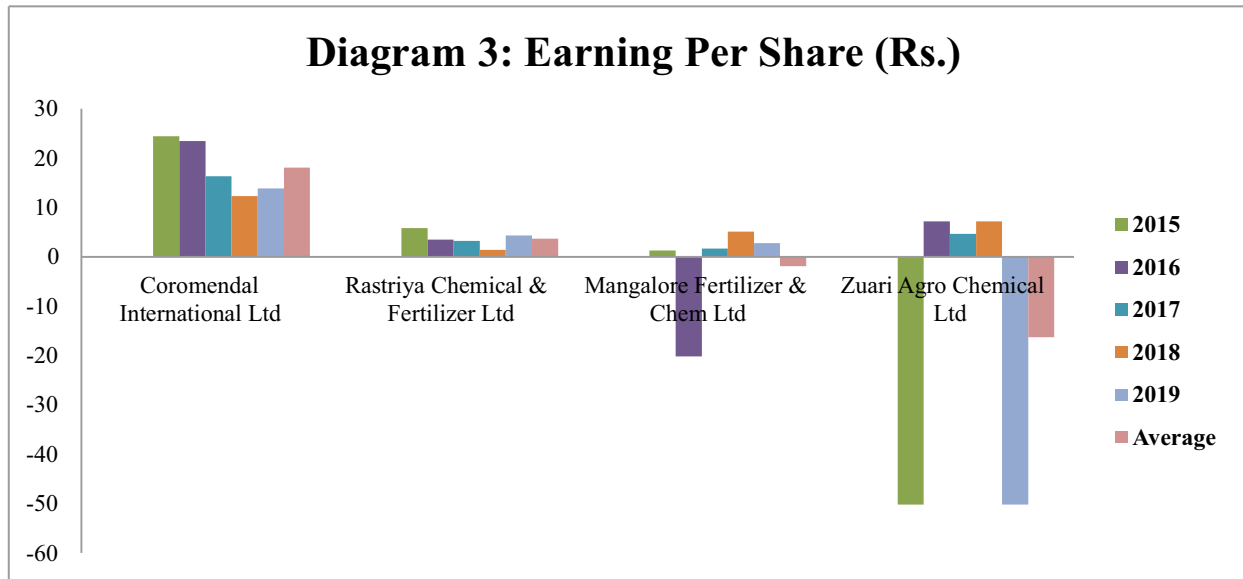
(Source: Table 3)

Table 3 indicates the data regarding Earning Per Share (EPS) in the selected companies of last five years.Coromendal Company shows fluctuated trends towards the EPS ratio. It shows the highest EPS ratio was (Rs. 24.41) in the year 2015 and lowest (Rs. 12.29) in the year 2018 and the average EPS ratio of the company was Rs.18.068. The Rashtriya Chemical & Fertilizer Ltd.specified maximum EPS ratio in the year 2015 of Rs.5.84 and minimum (Rs. 1.43) in 2018. The average EPS of the company is Rs.3.67. The Mangalore Fertilizer and Chemical Ltd.had maximum EPS ratio of the company (Rs.5.11) in the financial year 2018 and minimum (Rs. -20.18) in 2016, as company sufferedhuge losses. Zuari Agro Chemical Ltd. showed fluctuated trends in the selected study period. The company's maximum EPS ratio was Rs 7.21 in 2016& 2018 and minimum was Rs. -50.2 in 2015,as company suffered losses in this year. The average EPS ratio of last five years is Rs. -16.264, as company suffered losses in the years 2015 and 2019. Public sector company, Coromendal International earned higher average EPS (Rs. 18.068), whereas, private sector company, Zuari Agro Chemical Ltd. earned negative EPS (Rs. -16.264) as company suffered loss.

Test of Hypothesis: For testing the hypothesis ANOVA test has been applied

ANOVA Test for CSR Expenditure					
Source of variation	**Sum of Squares**	**df**	**F value**	**P Value**	**F value (Table)**
Between selected Fertilizer companies	-304274	4	-0.1614	0.05	2.3614
Within selected Fertilizer companies	7071554	15			

Calculated F-Value is -0.1614 and table value of F is 2.3614 (at 5% Significance level) Hence F(calculated)<F(Table) Therefore we have enough evidence to accept the Null Hypothesis. Therefore, there is no significant difference in the variance of the CSR in last 5 years.

ANOVA Test for PAT					
Source of variation	Sum of Squares	df	F value	P-Value	F-value (Table)
Between selected Fertilizer companies	-328420	4	-1.2374	0.05	2.3614
Within selected Fertilizer companies	995260.1	15			

Calculated F-Value is -1.2374 and table value of F is 2.3614 (at 5% Significance level). Hence F(calculated)<F(Table) Therefore we have enough evidence to accept the Null Hypothesis. Therefore, there is no significance difference in the variance of the PAT in last 5 years.

ANOVA Test for Earning Per Share					
Source of variation	Sum of Squares	df	F value	P-Value	F-value (Table)
Between selected Fertilizer companies	457.0982	4	0.2459	0.05	2.3614
Within selected Fertilizer companies	6971.041	15			

Calculated F-Value is 0.2459 and table value of F is 2.3614 (at 5% Significance level) Hence F(calculated)<F(Table) Therefore we have enough evidence to accept the Null Hypothesis. Therefore, there is no significance difference in variance of the Earning after Share in last 5 years.

Results: The results of the above analysis and hypothesis test are as follows:

1. The average CSR expenses were Rs.1358.6 crore of Coromendal International Ltd.., which was higher than other selected Indian Fertilizer Companies CSR Expenses. The Anova test of CSR expenses is significant at 5% level of significance.
2. The average PAT was Rs. 527.4 lakh in Coromendal International Ltd. which was maximum than other selected Indian Fertilizer Companies PAT expense. The Anova test of PAT shows that the difference in PAT issignificant at 5% level of significance.
3. The average EPS was Rs.18.068 of Coromendal International Ltd.,which was maximum than other selected Indian fertilizer companies average EPS expense.The Anova test of PAT shows that the difference in EPS is significant at 5% level of significance.
4. The average expenditure on CSRin public and private companies is different.Public company Coromendal International Ltd. spent more on CSR as compared to private company Mangalore Fertilizer and Chemical Ltd.& Zuari Agro Chemical Ltd.

Conclusion:

The government has made a diversity of initiatives to persuade companies to take vibrant part in nation progress by gratifying its social responsibilities. Recognizing the consequence of CSR in the Corporate World in addition to the society, the current study has been conducted to investigate the most momentous CSR practices by the Indian fertilizer industries. The research examined association between CSR and two financial

performance parameter PAT and EPS in the preferred four Indian fertilizer companies. The study outcome that there is significant positive connection between Corporate Social Responsibility and financial parameters such as Profit After Tax and Earning Per Share. Moreover, the preferred companies are two from public sector and two from private sector. Private sector companies having more turnover than public sector companies, are spending more amount on Corporate Social Responsibility (CSR) activities.

In a nutshell, government should promote CSR studies to acquire an idea of altering circumstances, realities and fulfillment of institutions. It can provide good feedback for future policy making. Corporates should understand that sustainability or CSR is not only a subject of public affairs or philanthropic activities, but also planned initiatives that are vigilantly integrated into business functions. Through sustainability initiatives, companies can enhance customer satisfaction, and simultaneously boost business growth and profitability.

Scope for further research work:

Extensive study can be done to evaluate the variation between public and private Indian fertilizer companies on CSR expenditure, other financial performances such as Return on Assets (ROA), Return on Capital employed (ROCE) and Return on Equity (ROE).

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A Study on Agricultural Commodity Market Efficiency in India In Relation with Spot and Future Markets

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Abstract

This paper aims to examine the market which reacts first in India by assessing the relationship between spot and future prices of agricultural commodities such as Chana, Jeera, Maize, Soya bean, and Turmeric for a period from November 2019 to March 2020 traded in NCDEX, The results suggest the existence of long-run equilibrium relationships between futures and spot prices which suggests that for the commodities - Maize and Soybean, both the spot and future markets price plays the leading role in the price discovery process and said to be informationally efficient and reacts more quickly to each other.

Introduction

The agricultural production system in India has undergone profound changes over the decades due to the adoption of green revolution technologies coupled with the price support policy of the government. After independence, various policy initiatives undertaken for protecting the agriculture sector affected the growth in agricultural commodities markets adversely. The Essential Commodities Act 1955 envisaged price and movement protection applicable to various agricultural commodities, particularly food grains such as paddy, wheat, coarse grains, and pulses to protect the interests of producers as well as of consumers. During the process of economic liberalization, it felt that there is a need to reorient policies and regulations in agricultural commodities. The Khusro Committee recommended the reintroduction of futures trading in most of the major commodities. The Government of India constituted another committee headed by Professor K.N. Kabra in June 1993 on Forward Markets, which also emphasized the need for the introduction of futures trading in 17 commodity groups covering a wide range of agricultural commodities. It also recommended strengthening of the Forward Markets Commission (FMC) and various amendments in Forward Contracts (Regulation) Act 1952 to bring fairness and efficiency in futures trading operations.

The National Agriculture Policy announced in July 2000 envisaged external and domestic market reforms by putting in place a mechanism of futures trade/market and dismantling of all control and regulations in the agricultural commodity market. As a result, the Government of India issued notifications on April 1, 2003, and permitted futures trading (except options trading) for a wide range of agricultural commodities.

Distress sale of agricultural commodities immediately after harvesting due to lack of farmers' capacity to wait for the opportune time for getting remunerative prices and also because of the uncertainty involved in possible future prices has always been one of the major concerns for producers as well as consumers. Futures contracts help in performing two essential management functions, i.e. price discovery and price risk management for the specific commodity.

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Price discovery is the process of revealing information about future spot prices through future markets. It is useful for producers as they get a fair idea about the amounts likely to prevail at the next point of time and hence, can allocate their limited available resources among various competing commodities for optimizing their profits. It also provides food processors and consumers with an idea about prices at which the specific commodity would be available at a future point of time. Although futures trading in a large number of agricultural commodities reintroduced in India in the year 2003, the government is always skeptical about its efficiency and likely impact on the price movement of agricultural commodities. The ban on futures trading of some major agricultural commodities in February 2007 makes it imperative to explore whether the futures market has been able to achieve its above-stated objectives of price discovery and risk management or not. Thus, understanding the influence of one market on the other and role of each market segment in price discovery is the central question in market microstructure design and has become an increasingly important research issue among academicians, regulators and practitioners alike as it provides an idea about the market efficiency, volatility, hedging effectiveness, and arbitrage opportunities if any.

The essence of the price discovery function hinges on whether new information is reflected first in changes in future prices or changes in spot prices. Hence, there exists a lead-lag relationship between spot and futures markets by information dissemination. All the information available in the market place immediately incorporated in the prices of assets in an efficient market. So, new information disseminating into the market should be reflected immediately in spot and futures prices simultaneously. It will lead to perfect positive contemporaneous co-movement between the prices of those markets, and there will be no systematic lagged response and therefore, no arbitrage opportunity. This prediction arises directly from the Cost of Carry (COC) model of future pricing which postulates that

$$F_t = S_t \, e^{(r-y)(T-t)}$$

where Ft is the futures price of the commodity at time t, S_t is the spot price of the commodity at time t, r is the interest rate foregone while carrying the underlying commodity, y is the price fluctuation on the commodity and T-t is the remaining life of the futures contract.

Above Equation justified by a "no-arbitrage" assumption since $F_t > S_t \, e^{(r-y)(T-t)}$ would enable traders or farmers to profit by selling futures and buying at the spot. In contrast, $S_t \, e^{(r-y)(T-t)} > F^t$ would allow profits by buying futures and short selling at the spot. The assumptions that underlie these arguments are that future and spot markets are perfectly efficient, and that transaction costs are zero. This simple version of the model also assumes that the interest rate and addition to price are constant over the life of the futures contract. However, in practice, they will vary, as will $(r - y)$, the net cost of carry of the underlying commodity. Most importantly, in the real world, the existence of market frictions such as transaction costs, margin requirements, short-sale constraints, liquidity differences, and non-synchronous trading effects may induce a lead-lag relationship between the futures contract and its underlying spot market. Besides, if there are economic incentives for traders to use one market over the other, a price discovery process between the two markets is likely to happen. It implies that futures and spot market prices are inter-related and can traced under different market frictions through price discovery mechanism.

Accordingly, there exist diversified theoretical arguments about the causal relationship between spot and futures markets by information dissemination. The main arguments in favor of futures market lead spot market are mainly due to the advantages provided by the futures market includes higher liquidity, lower transaction costs, lower margins, ease leverage positions, rapid execution and greater flexibility for short positions. Such advantages attract larger informed farmers or traders and make the futures market to react first when market-wide information or primary stock-specific information arrives. Thus, future prices lead the spot market prices.

Besides, the low-cost contingent strategies and a high degree of leverage benefits in futures market attracts larger speculative traders from a spot market to a more regulated futures market segments, leading to a reduction in informational asymmetries of the spot market through reducing the amount of noise trading, helping price discovery, improving the overall market depth, enhancing market efficiency, and increase market liquidity.

In such a situation, the spot market will react first when market-wide information or primary stock-specific information arrives. Hence, the spot market leads the futures market. Besides, there exists a bidirectional relationship between the futures and spot markets through the price discovery process, where both the spot and futures markets are said to be informationally efficient and react more quickly to each other. However, frictions in markets, in terms of transaction costs and information asymmetry, may lead to return and volatility spillovers between spot and futures markets. Besides being of academic interest, understanding information flow across markets is also vital for hedgers for hedging and devising cross-market investment strategies. This paper analyzes the issue of price on futures and spot markets which are of interest to traders, financial economists, and analysts. Although futures and spot markets react to the same information, the primary question is which market reacts first in agricultural commodity markets in India by assessing the relationship between the spot and futures prices of Chana, Jeera, Maize, Soybean and Turmeric commodities traded in NCDEX for the period from November 2019 to March 2020.

Literature Review

There have been a number of studies that have analyzed efficiency of commodity markets in developed countries.

Lucia Baldi, Massimo Peri, Daniela Vandone(2011)investigates the long-run relationship between spot and futures prices for corn and soybeans, for the period January 2004 September 2010. They apply cointegration methodology in the presence of potentially unknown structural breaks in the commodities prices, and we then study the causality relationships between spot and futures prices within each specific subperiod identified, intending to analyze where changes in spot and futures price originate and how they spread.

Archana Singh, Narinder Pal Singh(2014)review the available literature on commodity futures market efficiency and related issues viz. the effect of seasonality on commodity futures market efficiency, the inflationary impact of commodity futures trading and the impact of commodity futures trading on spot market volatility. The review shows that the results produced in available literature are often conflicting: the efficiency hypothesis is supported only for specific markets and only over some periods.

Dr. P. Chellasamy, Anu. K. M(2015)analyzes the relationship between spot and futures prices of commodities namely Crude oil, Silver, Zinc, Gold, and Copper in Indian Commodities Market. Econometric methods such as the ADF unit root test, Johansen Cointegration Test and Granger causality test used to ascertain the relationship between Spot Price Returns and Future price returns of Commodities in Multi Commodity Exchange India Ltd. The Study Period was from 01.01.2014 to 28.2.2015. It found that all the variables exhibited stationary. The results of the study gave evidence that the Prices of the commodities during the study period were Independent.

Shashi Gupta, Himanshu Choudhary, D. R. Agarwal(2018)has conducted the study with eight commodities which include two agricultural commodities, two industrial commodities, two precious metals, and two energy

commodities. Sophisticated statistical methods like restricted cointegration and vector error correction model (VECM) used to analyze the spot and futures price time series. Restricted cointegration test shows that near-month futures prices for all the commodities cointegrated with the spot prices. Still, futures prices of all the commodities are inefficient to predict the future spot price.

Objective of the Study

1. To test the market efficiency of selected agricultural commodity derivatives in India.
2. To determine the relationship between spot and future price return of commodity market.

Data Source and Methodology

The study based on secondary data, which has collected from the commodity market and its publications. We used daily data of spot and futures prices of Chana, Jeera, Maize, Soybean and Turmeric for the period from November 2019 to March 2020 collected from National Commodity and Derivative Exchange (NCDEX).

In this study, the techniques used for analysis are the unit root test which is the Augmented Dickey-Fuller (ADF) test, Johansen Co-integration test, and VEC Model about analyzing the Lead-Lag relationship between Spot and Future Markets.

Augmented Dickey-Fuller test used to verify the stationarily of the data series. Johansen's Cointegration test is employed to examine the long-run relationship among the variables after they integrated in identical order. And VEC Model employed for short-run causality/ relationship between the spots and futures prices. VECM model allows the existence of long-run equilibrium error correction in prices in the conditional mean equations. Following equations are used to estimate the error term for the level series of spot and futures series which are non-stationary and integrated of order one.

$$R_{st} = \alpha_s + \sum_{i=1}^{m} \beta_{si} R_{st-i} + \sum_{j=1}^{n} \gamma_{Fj} R_{Ft-j} + \lambda_s Z_{t-1} + \varepsilon_{st}$$

$$R_{Ft} = \alpha_F + \sum_{i=1}^{m} \beta_{Fi} R_{st-i} + \sum_{j=1}^{m} \gamma_{Fj} R_{Ft-j} + \lambda_F Z_{t-1} + \varepsilon_{Ft}$$

Where, R_{st} and R_{Ft} are spot and future market prices of individual agricultural prices at time t, ε_{st} and ε_{Ft} are white noise disturbance terms. The analysis of unit root, co-integration and VECM tests for different commodities were performed using econometric software EViews Version 7.

FINDINGS

Graphical Representation

Figures 1-5 shows the daily spot and future price movement of 5 agricultural commodities i.e. Chana, jeera, maize, soybean and turmeric.

As we see the below figures, the movement of the future price of agricultural commodities and the underlying spot market are in the same direction. Which means there is the probability of having an influence by prices of future on the commodity spot market.
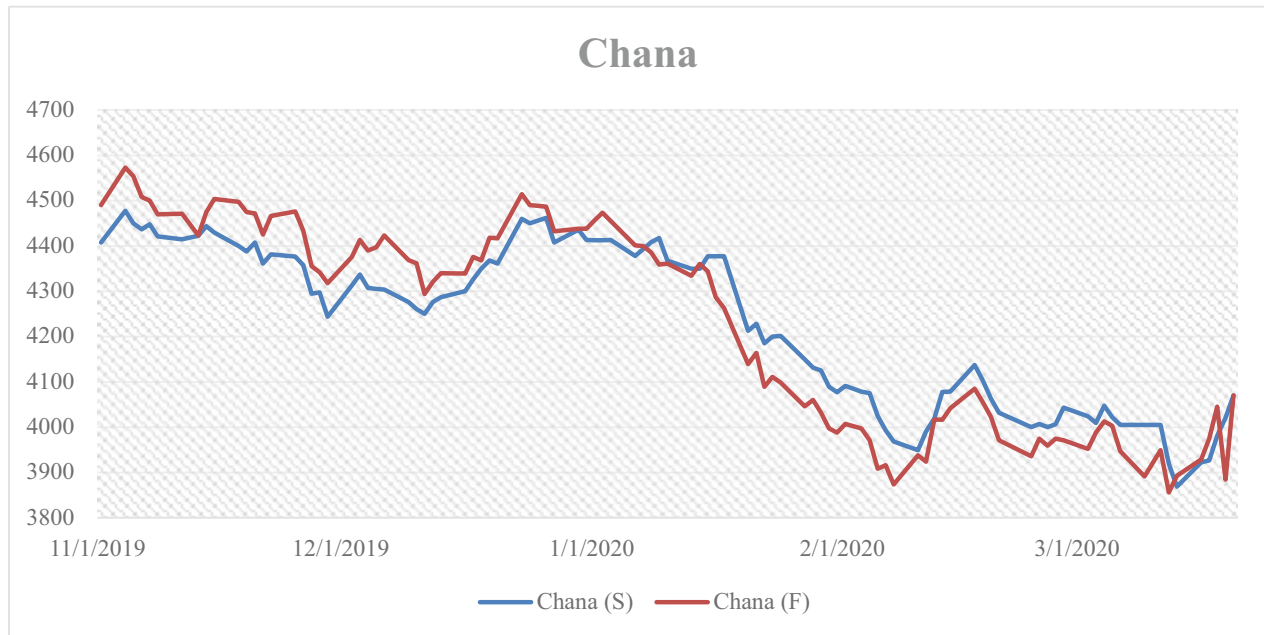
Figure 1: Spot and Future price movement of Chana
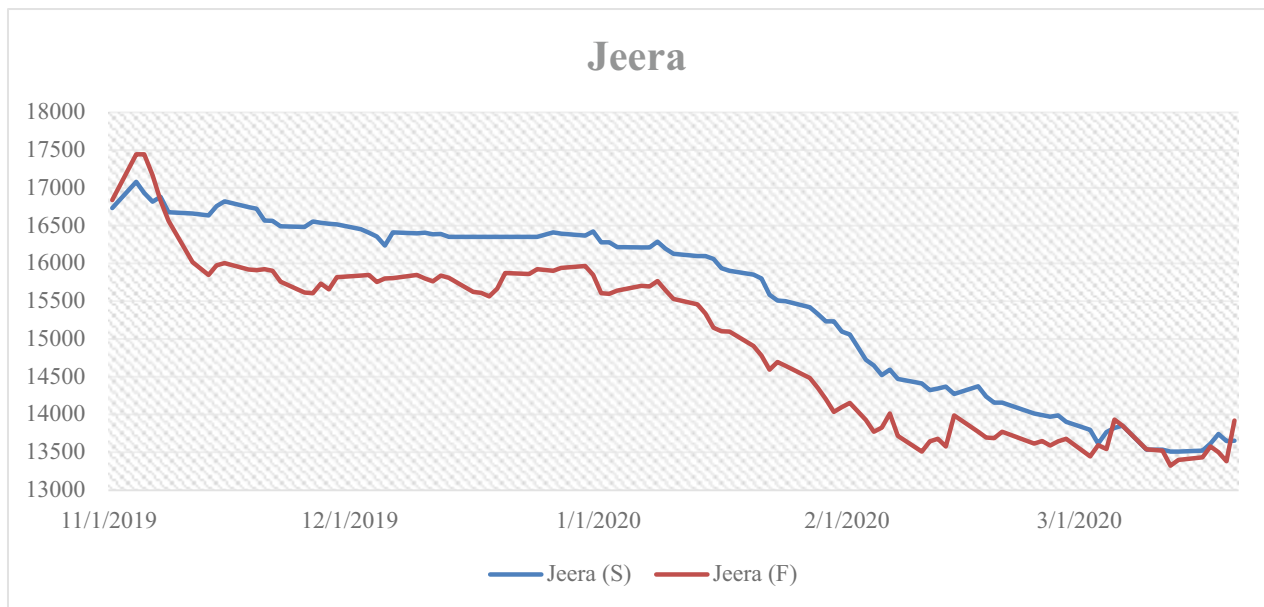
Figure 2: Spot and Future price movement of Jeera
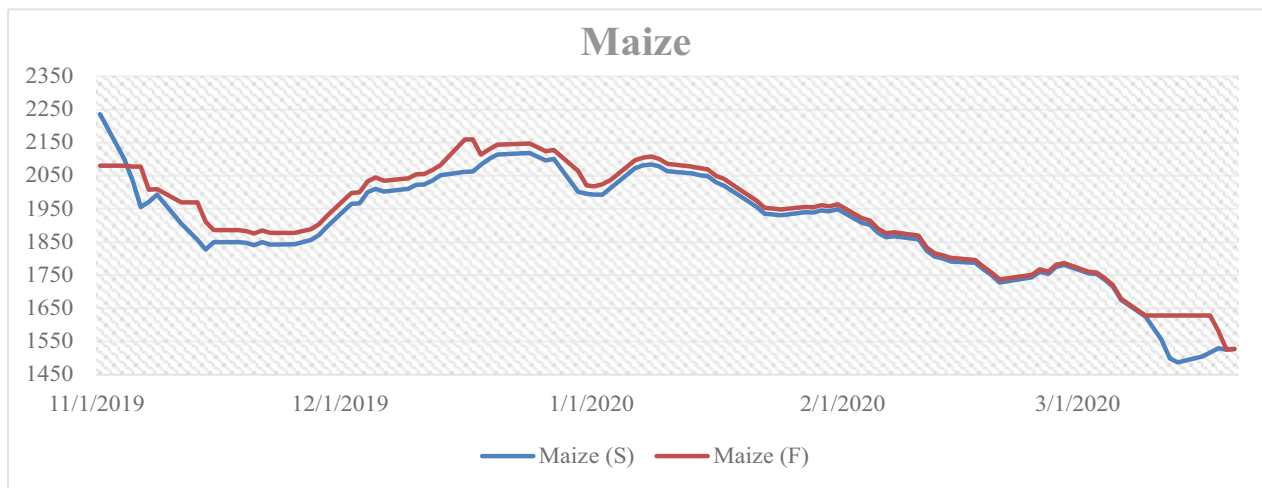
Figure 3: Spot and Future price movement of Maize
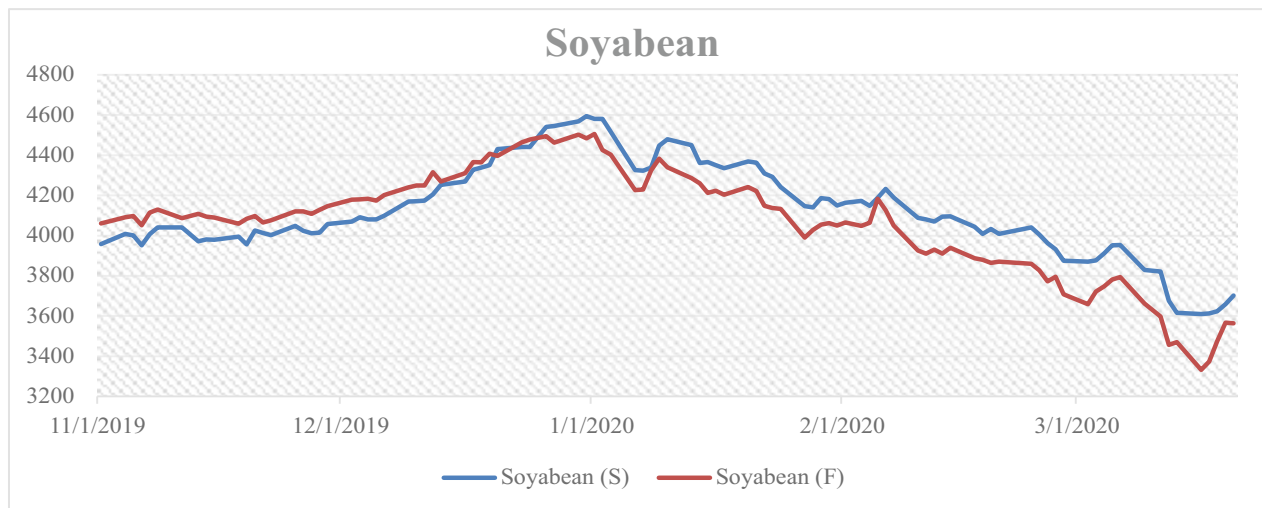
Figure 4: Spot and Future price movement of Soybean
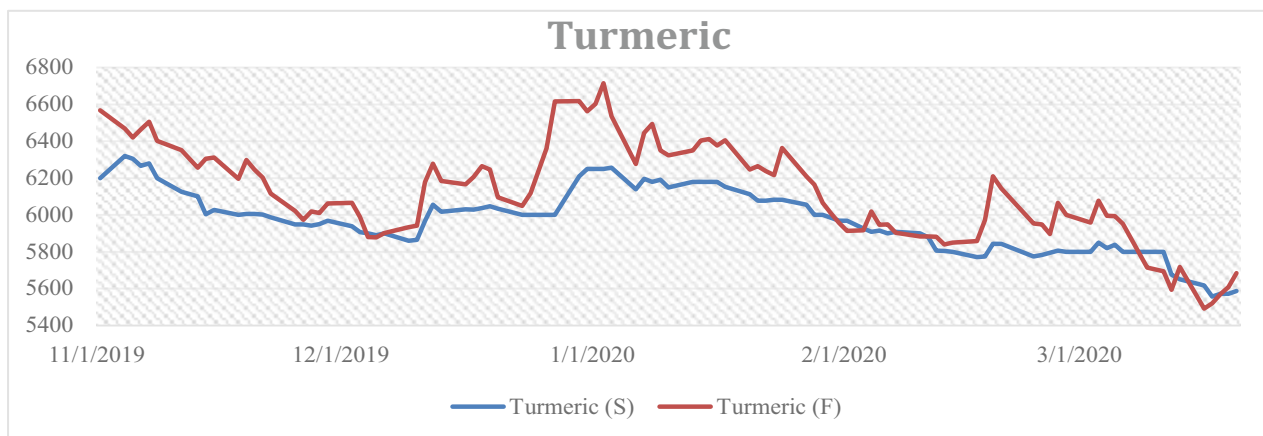
Figure 5: Spot and Future price movement of Turmeric

Descriptive Statistics

Table 1 represents descriptive statistics of 5 agricultural commodities where we observe their mean, standard deviation, skewness, kurtosis and Jarque-Bera with their probability. The mean spot prices of Chana, jeera and soybean are more than their mean future prices except maize and turmeric. Standard deviation which measures volatility shows that the future price of Chana, soybean and turmeric are more volatile compared to their spot price. Whereas in the case of jeera and maize, spot price is more volatile than future price. Jarque-Bera tests normality, here Chana, jeera, maize and soybean attained normality at 5% level except turmeric. Kurtosis of the normal distributed is 3 for maize spot and soybean futures whereas all other commodities it is below 3. Finally, skewness i.e. asymmetry of the distribution of the series is negative for all the commodities.

TABLE 1:

Commodity	Market	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
Chana	Spot	4227.648	176.6878	-0.289922	1.579502	9.612301	0.008179
	Future	4226.418	223.4128	-0.180013	1.390369	11.108830	0.003870
Jeera	Spot	15508.320	1148.9080	-0.524803	1.668552	11.737230	0.002827
	Future	14969.130	1102.5700	0.018844	1.841183	5.489133	0.064276
Maize	Spot	1897.394	164.7944	-0.753862	3.134656	9.356405	0.009296
	Future	1926.133	158.6070	-0.625944	2.589606	7.087232	0.028909
Soybean	Spot	4125.520	233.1859	-0.038373	2.775409	0.230019	0.891358
	Future	4069.510	267.3411	-0.701461	3.181272	8.170946	0.016815
Turmeric	Spot	5972.319	176.5320	-0.198929	2.675792	0.798774	0.584043
	Future	6119.980	266.4603	-0.078248	2.586325	1.075560	0.670731

* 5% level significant
Sources: Calculated by using EViews 7

Table 1: Descriptive Statistics of different Agricultural Commodities

Unit Root Test

To examine the co-integration of spot and future prices of selected commodity series, it's necessary to first examine the stationarity in each series. This can be done by Unit root properties in each commodity series. Here, we use the Augmented Dickey-Fuller (ADF) test to examine whether the sample commodity series are stationary. It used with intercept, with intercept and trend, and without intercept and trend. Table 2 represents the ADF test result for spot and future prices of selected commodities. Panel A shows the results of unit root test in level series, where null hypothesis is accepted i.e. there is unit root. Means series are non-stationary. Panel B shows the results of unit root test in first difference series, where all series become stationary after first difference i.e. I(1).

TABLE 2:

		ADF Test		
		Intercept	**Intercept and Trend**	**No Intercept and Trend**
Panel A: Level				
Chana	Spot	0.7299	0.6098	0.2842
	Future	0.6574	0.6323	0.1085
Jeera	Spot	0.987	0.615	0.0012
	Future	0.5688	0.6957	0.0597
Maize	Spot	0.9265	0.8984	0.2031
	Future	0.9783	0.9662	0.0952
Soybean	Spot	0.8514	0.9387	0.4703
	Future	0.9503	0.8047	0.3042
Turmeric	Spot	0.8715	0.8777	0.1372
	Future	0.34	0.4276	0.2882
Panel B: First-difference				
Chana	Spot	0.0000	0.0000	0.0000
	Future	0.0001	0.0000	0.0000
Jeera	Spot	0.0001	0.0000	0.0000
	Future	0.0000	0.0000	0.0000
Maize	Spot	0.0000	0.0000	0.0000
	Future	0.0000	0.0000	0.0000
Soybean	Spot	0.0000	0.0000	0.0000
	Future	0.0000	0.0000	0.0000
Turmeric	Spot	0.0000	0.0000	0.0000
	Future	0.0000	0.0000	0.0000

* 5% level significant
Sources: Calculated by using EViews 7

Table 2: Unit root test results

Johansen Co-integration Test

After testing the precondition of non-stationary time series (i.e. the series were stationary at their first difference), Johansen co-integration test has been carried out to determine the existence of a long-run relationship between spot and future price of the selected commodities. Johansen co-integration test results seen in the Table 3, there is evidence of single cointegrating vectors at 5% level of significance according to the Trace statistics and Max-Eigen statistics i.e. between (a) Chana spot and future price, (b) Jeera spot and future price, (c) Maize spot and future price and (d) Turmeric spot and future price whereas there is no co-integration between spot and future price's soybean.It indicates that the H0 of zero can be rejected using the 95% critical value. This means that all the selected commodities spot and future price are co-integrated with 1 co-integrating vector except soybean.

TABLE 3:

Commodity	H0: vector (r)	Trace Statistics	p value	Max-Eigen Statistics	p value
Chana	r = 0	16.97200	0.0298	14.92505	0.0393
	r ≤ 1	2.046941	0.1525	2.046941	0.1525
Jeera	r = 0	18.20133	0.0191	18.14249	0.0116
	r ≤ 1	0.058837	0.8083	0.058837	0.8083
Maize	r = 0	27.58391	0.0005	27.36196	0.0003
	r ≤ 1	0.221951	0.6376	0.221951	0.6376
Soybean	r = 0	9.694654	0.3050	7.526450	0.4289
	r ≤ 1	2.168204	0.1409	2.168204	0.1409
Turmeric	r = 0	26.45352	0.0008	25.11441	0.0007
	r ≤ 1	1.339110	0.2472	1.339110	0.2472

* 5% level significant
Sources: Calculated by using EViews 7

Table 3: Johansen co-integration test results

Vector Error Correction Model (VECM)

After co-integration test, we use Vector error correction model (VECM) to identify the short-term co-integration relationship. Table 4 presents the VECM results where each commodity has two regression equation i.e. spot equation (ΔS) and future equation (ΔF) with their respective coefficients of cointegration equation (i.e. error correction term), lagged spot and future and constant.

Error correction term (ECT) is negative and significant at 5% level of significance in the spot equation (ΔS) for all selected commodities, indicates that future price has long-run causality on spot price. Only Jeera shows the joint role of spot and futures market for price discovery in the long run because ECT is significant in both spot (ΔS) and future (ΔF) equation.In spot equation (ΔS) of jeera, maize and soybean indicates that all the lagged future prices jointly influence the spot prices. This implies that future price has short run causality on spot price whereas in Chana and turmeric spot equation there is no jointly influence of lagged future price on spot prices. In future equation (ΔF) of all selected commodities has not any short run causality.

The results of VECM evidence, prima facie, is in line with traditional thinking, that 'informed' investors trade in futures (derivatives) segment as they offer leverage benefits and trades of informed investors cause permanent shifts in prices and hence more price discovery in the futures market. The change in the past lag values of spot and futures prices seems to have an impact on current and futures price change, which is the sign of market inefficiency.

TABLE 4:

Commodity	Regression Eq.	Coint. Eq. (ECT)	$\Delta SPOT_{t-1}$	$\Delta SPOT_{t-2}$	ΔFUT_{t-1}	ΔFUT_{t-2}	C
Chana	ΔS	-0.339664	0.067119	0.129472	-0.084859	-0.013753	-3.776076
		0.0006	0.6289	0.3696	0.4896	0.9199	0.2870
	ΔF	0.168367	0.292322	0.089355	-0.508674	0.046686	-6.758390
		0.0905	0.1212	0.6458	0.0027	0.8003	0.1590
Jeera	ΔS	-0.049259	-0.092641	0.046864	0.178439	-0.174281	-34.88048
		0.0150	0.3655	0.6402	0.0030	0.0029	0.0003
	ΔF	-0.171419	0.323987	0.278689	0.040891	-0.111358	-18.80561
		0.0008	0.1007	0.1493	0.7164	0.3099	0.2935
Maize	ΔS	-0.222864	0.489517	0.043398	-0.249546	0.346741	-1.696289
		0.0112	0.0000	0.6722	0.0416	0.0046	0.4688
	ΔF	-0.143192	0.196760	-0.023750	0.157597	0.147958	-3.079659
		0.1120	0.0987	0.8236	0.2121	0.2354	0.2070
Soybean	ΔS	-0.096926	-0.205932	-0.300365	0.411686	0.273944	-1.006986
		0.0121	0.1243	0.0144	0.0004	0.0225	0.8144
	ΔF	0.068353	0.203181	-0.093388	-0.056050	-0.020811	-5.637026
		0.2115	0.2473	0.5564	0.7048	0.8935	0.3187
Turmeric	ΔS	-0.198071	-0.066272	0.020816	0.073980	-0.020630	-7.474629
		0.0051	0.5543	0.8310	0.1722	0.6858	0.0694
	ΔF	-0.202088	-0.137064	0.194058	0.205803	-0.096269	-6.690602
		0.1165	0.6347	0.4403	0.1406	0.4639	0.5246

* 5% level significant
Sources: Calculated by using EViews 7

Table 4: VECM Results

Conclusion

The study investigated both the efficiency and causal relationship of agricultural commodities market. By using sophisticated statistical method to analyze time series, examines the market which indicate the presence of informational inefficiency in Indian commodity futures market which contribute to short-term biases in prices. The statistically significant value of past prices of spot and futures confirm the short-term inefficiency. In an emerging Indian economy, it is quite obvious to have initial birth pangs for a nascent futures market. The significant value of ECT of futures prices suggests that commodity futures are the most important indicator of commodity price movements.

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A Study on Role of Data Mining for Customer Relationship Management in Banking Sector

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Abstract

Data mining is one of the tasks in the process of knowledge discovery from the database. Inthe corporate world every organization is competing with the other organization in terms oftheir value towards the business and the financial growth. Apart from execution of the businessprocesses, the creation of knowledge base and its utilization for the benefit of the organizationis becoming a strategy tool to compete. In this research, researcher discuss about the basicdetails of data mining, the use of knowledge discovery process and the new techniques fromthe business point of view in the banking Industry.

The growth of the organization dependson the quality of service, competing with the other organizations, provide required informationto the customers, satisfaction of the employees working in the organization. In the bankingsector all the financial work can be done in the computers and their connectivity through WorldWide Web. The software's get automatically updated in time, use of internet banking and ATMhave made a big change in the banking sector.

The banks have realized that their biggest asset isthe knowledge and the planning to implement the right knowledge at the right time in the right market.

Keywords: Data Mining, Knowledge Discovery in Databases (KDD), Knowledge Base.

BACKGROUND OF THE STUDY

In the past, all companies have focused on selling products and services without having or looking for knowledge about their own customers, but with increasing competition, attracting new customers has become more difficult and in this context, companies need to change their approach and step up their efforts to keep current customers. Social and economic evolution has changed consumer lifestyles, customers have become better informed and less inclined to respond to marketing communications.

Thus, this change in consumers' behaviour has led companies to evolve, change their approach and have customer-oriented strategies, constantly improve service quality to ensure a good business relationship with customers. Companies have Customer Relationship Management departments specifically to make strategies to increase customer retention and development. Banks also needed to realize that customer relationships are very important for sustainable growth in the long run and Customer Relationship Management (CRM) is the strategy that can help build these long-term relationships and implicitly increase its revenue and profits. Developing the IT sector has helped the banking industry store stunning amounts of customer data, analyse and

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interpret this data in order to develop marketing strategies, risk, but also to improve processes and to better understand customers with the help of data mining.

INTRODUCTION

Data mining is becoming strategically important area for many business organizations including banking sector. It is a process of analysing the data from various perspectives and summarizing it into valuable information. Data mining assists the bank to look for hidden pattern in a group and discover unknown relationship in the data. Today, customers have so many opinions with regard to where they can choose to do their business. Early data analysis techniques were oriented toward extracting quantitative and statistical data characteristics. These techniques facilitate useful data interpretations for the banking sector to avoid customer attrition. Customer retention is the most important factor to be analysed in today's competitive business environment. And also fraud is a significant problem in banking sector. Detecting and preventing fraud is difficult, because fraudsters develop new schemes all the time, and the schemes grow more and more sophisticated to elude easy detection. This research analyses the use of data mining techniques and its applications for customer relationship management in banking sector like fraud prevention and detection, customer retention, marketing and risk management.

With the development of technology, the infamous Internet services, competitive process by increasing access to customers according to different approaches to management companies in connection withthe customers' show different companies for survival in market competition wished more profit in business need to analyse that in the market will be done. In fact, that the future oriented companies were identified and needs of their own customers' infection more belief and showed their own customers' infection is considered a value for them. Always in competitive markets more successful action. The companies via information in connection with their own customers' infection models that high–ranking bought from other rivals. Infamoustheir products and services with regard to this information.

DATA WAREHOUSING AND DATA MINING

DATA WAREHOUSE

Data Warehouse (DW), also known as an Enterprise Data Warehouse (EDW), is a system used for reporting, analysing data which is considered a core component of business intelligence, Dedic N. and Stanier C.(2016). Data Warehouses are central repositories of integrated data from one or more disparate sources. They store current and historical data in one single place that are used for creating analytical reports for knowledge workers throughout the enterprise.

The data stored in the warehouse is uploaded from the operational systems (such as marketing or sales). The data may pass through an operational data store and may require data cleansing for additional operations to ensure data quality before it is used in the DW for reporting.

There is a huge amount of data available in the Information Industry. This data is of no use until it is converted into useful information. It is necessary to analyse this huge amount of data andextract useful information from it. Data mining also involves other processes such as Data Cleaning, Data Integration, Data Transformation, Data Mining, Pattern Evaluation and Data Presentation. Once allthese processes are over, we would be able to use this information in many applications such as Fraud Detection, Market Analysis, Production Control, Science Exploration, etc.
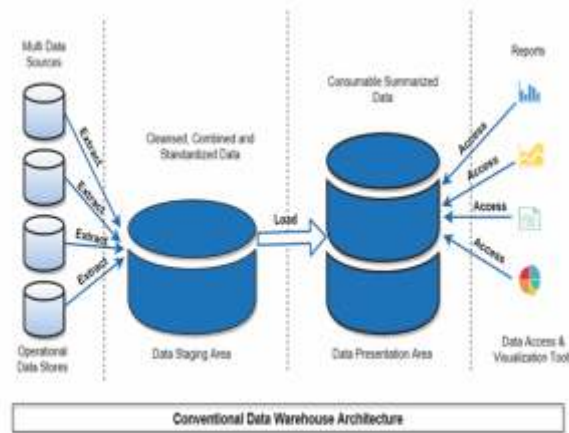
Fig.1: Architecture of Enterprise Data warehousing
Source: https://www.teksystems.com/

- Data Sources (operational systems and flat files)
- Staging Area (where data sources go before the warehouse)
- Warehouse (metadata, summary data, and raw data)
- Data Marts (purchasing, sales, and inventory)
- Users (analysis, reporting, and mining)

DATA MINING

With time and increasing data volume and expansion of modern data storage size, nature and management of statistical methods, Data necessary to evaluate the extraction of knowledge from the show. The best solution to meet this data mining can be cited. We show in Table under evolutionary data mining techniques to collect data.

Technology	Evolution
Disks of computers	data collection(1960)
Relational database(ODBC, SQL)	access data(1980)
OLAP (Online analytical processing)	data warehouse DSS(1990)
Multi-processing computer professional	data mining(2000)

Table 1.1: The evolution of data collection methods

Data mining process to extract information and advanced data analysis, and extracting knowledge from massive amounts of data in a database format, a data warehouse or any information storage is saved. In fact very similar to the data mining is the extraction of metals from the mountain. The data warehouse and data mining information that lies in the extract.

Basis of a data mining process involves five stages as follows:

- A set of training samples should be chosen, are collected and trimming.
- Type of knowledge: knowledge of the expected data mining techniques used will be specified.

- Knowledge base: the transfer of existing knowledge about the process
- Evaluation criteria: criteria value of knowledge gained from data mining, extraction time and knowledge in what has been the representation of key importance and will help data mining process.
- Presentation: usually extracted is determined depending on the type of knowledge. In many cases there is also suitable for representation.
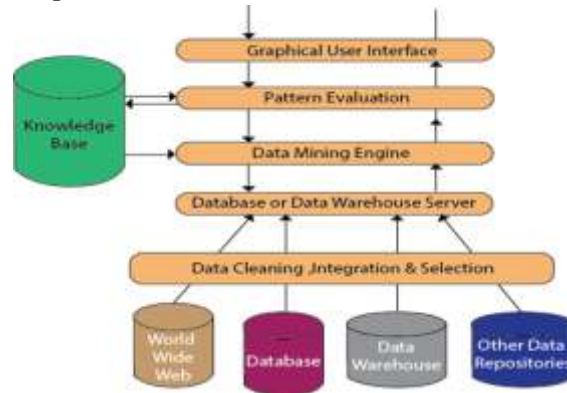
Fig.2: Architecture of Data Mining
Source: https://www.javatpoint.com/

Data mining activities toward knowledge discovery includes the following steps:
1) Identify the purpose and scope of its application is clear understanding that what, in what will be done within a field.
2) Select the data analysis and discovery for purposes of determining the preparation of data, including data cleansing
3) adopt the best methods for achieving the goals of data mining
4) The application of data mining algorithms
5) Evaluation and validation results
6) The use of stabilization and consolidation of results and knowledge discovered making decisions based on the knowledge discovered
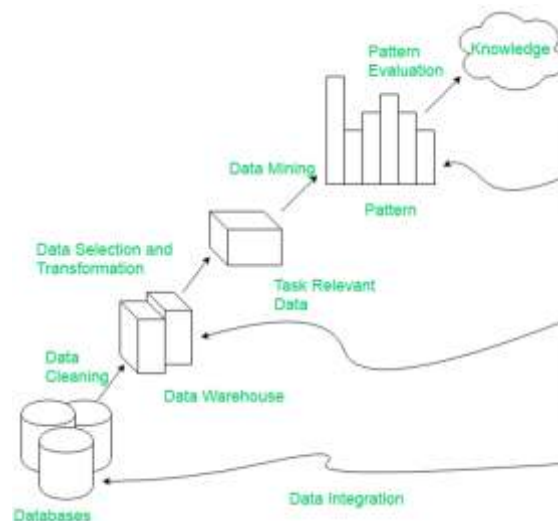
Fig. 3:KDD (Knowledge Discovery in Database) Process
Source: https://tutorialspoint.dev/

Four basic approaches to data mining has the following:
- Classification
- Regression
- Clustering
- Association

Classification: Classification method makes use of mathematical techniques such as decision trees, linear programming, neural network and statistics. In classification, we make the software that can learn how to classify the data items into groups.

Types of classification models:

- Classification by decision tree induction
- Bayesian Classification
- Neural Networks
- Support Vector Machines (SVM)
- Classification Based on Associations

Regression: Technique used to predict a range of numeric values (also called continuous values), given a particular dataset. For example, regression might be used to predict the cost of a product or service, given other variables.

Regression is used across multiple industries for business and marketing planning, financial forecasting, environmental modelling and analysis of trends.

Clustering: Clustering is a data mining technique that makes meaningful or useful cluster of objects that have similar characteristic using automatic technique. Clustering technique also defines the classes and put objects in them, while in classification objects are assigned into predefined classes. Classification approach can also be used for effective means of distinguishing groups or classes of object but it becomes costly so clustering can be used as pre-processing approach for attribute subset selection and classification.

Types of clustering methods:

- Partitioning Methods
- Hierarchical Agglomerative (divisive) methods
- Density based methods
- Grid-based methods
- Model-based methods

Association: Association is one of the best known data mining technique. In association, a pattern is discovered based on a relationship of a particular item on other items in the same transaction. Association and correlation is usually used to find frequent item set findings among large data sets. This type of finding helps businesses to make certain decisions, such as catalogue design, cross marketing and customer shopping behaviour analysis.

The various types of associations include:
- Multilevel association rule.
- Multidimensional association rule.

- Quantitative association rule.
- Direct association rule.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Dimensions of Customer Relationship Management.

- Customer Identification
- Customer Attraction
- Customer Retention
- Customer Development
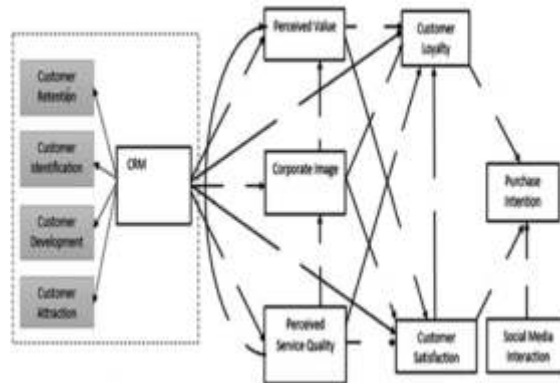
Fig. 4: CRM Components (Kracklauer, Mills and Seifert, 2004)
Source: http://www.utgjiu.ro/

Like any other business process, CRM follows a life cycle, and hence it is necessary to recognize the importance of each of the various stages in the life cycle for CRM to succeed.

Hyperion Solutions proposed a model to determine the life cycle of CRM processes.
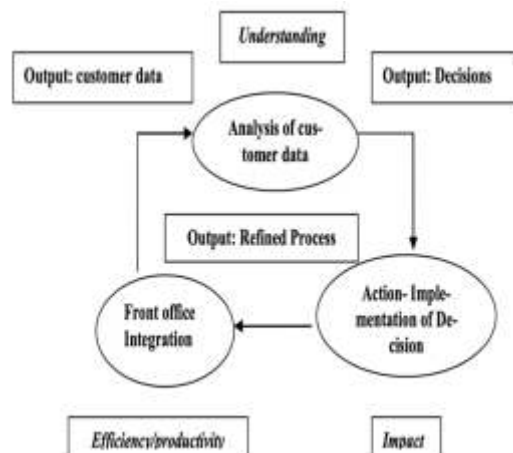
Fig. 5: CRM Life Cycle
Source: http://www.hsg-llc.net/

This model of CRM life cycle comprises of three stages:

Stage I, the integration stage, consists of integrating the front office systems, and centralizing the customer data. While the output of this stage is a centralized source of all customer data, its benefits include Efficiency and productivity.

Stage II, the life cycle is the analysis stage where customer data are analysed to understand the patterns in customer behaviour. This helps in making decisions about the various strategies to be implemented in order to increase customer profitability. It is in this stage that data mining plays a major role in understanding and predicting the customer behaviour.

In the final stage, Action, the decisions are implemented which will have an impact on the business and organizational processes. The outcome of this stage is the refinement of these processes based on the improved customer understanding gained through analysis.

DATA MINING FOR CRM

The important role in the process of data mining "CRM" plays. Because on one hand, with data canters or data warehouse is the interaction and the interaction with the software analysis is competitive management. Relationship between the manual management competitive analysis software with data mining software requires the transcription of data models to the data transmission. The same definition in the software sector, customer data mining and analysis software for corporate management to ensure that competitive. The model need not have your entire database.

Data mining in customer relationship management process is shown in figure 6.
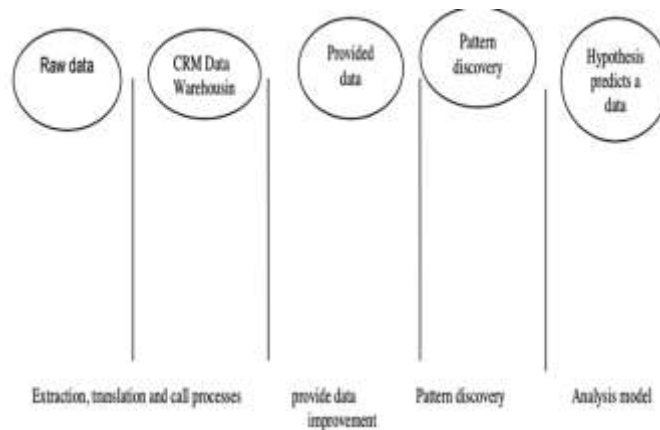
Fig. 6: Data Mining process in CRM
Source: https://www.datasciencecentral.com/

Raw data are collected from various sources and the extraction, translation and management processes of this type are called data warehouse. In data preparation, data out of the warehouse and data mining are an appropriate format.

The overall advantages of using "data mining" in "CRM":

- Data filtering to eliminate duplicate data.
- Extraction, data management, analysis and access to utility customers, retain customers models.
- Rapid and accurate access to integrated data.
- The use of precision instruments and advanced data analysis and reporting.
- Increase customer satisfaction.
- To attract potential customers, retain existing customers and increase market share.

In total, over a period of data mining can be used to predict the exact changes. Organizations in order to fetch data to identify patterns in data mining helps customers.

An Integrated model of Data mining for CRM:

It is based on inputs from Parsaye's classification of Data mining processes and CRM Group's model of the CRM Process.

The integrated model consists of the three types of data mining processes, three stages of the CRM process, certain specific techniques of data mining that could be used in the various stages of the CRM process and the possible applications of those techniques.
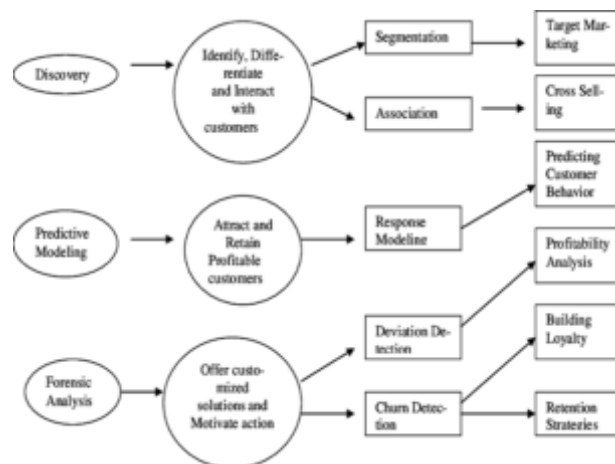
Fig. 7:Integrated model of Data Mining for CRM
Source: https://www.researchgate.net/

The applications of the data mining techniques become the important triggers for making strategic decisions related to the Customer Relationship Management process. The implementation of these actions is carried out in the action stage of the CRM life cycle.

RESEARCH OBJECTIVES

The objectives of this research are as follows:
- To analyse the data mining applications that can be helpfulfor improving customer relationship management.
- To study the major technological requirements of CRM system that support building data mining applications.
- To illustrate the contribution of data mining in CRM.

LITERATURE REVIEW

Constantin BrâncuşI (2018) The aim of this paper is to present the concept of data mining and the concept of data discovery (KDD), but also the impact and important use of data mining techniques in the banking sector. This paper explores and reviews various data mining techniques that are applied in the banking sector but also provides insight into how these techniques are used in different areas to make decision-making easier and more efficient.

Hossein Hassani, XuHuang and Emmanuel Silva (2018) their paper contributed to bringing valuable insights with regard to the future developments of both DM and the banking sector along with a comprehensive one stop reference table. Moreover, they identified the key obstacles and present a summary for all interested parties that are facing the challenges of big data.

Yuvika Priyadarshini (2017) The aim of the study was to identify the extent of Data mining activities that are practiced by banks. Data mining is the ability to link structured and unstructured information with the changing rules by which people apply it. It is not a technology, but a solution that applies information technologies. Currently several industries including like banking, finance, retail, insurance, publicity, database marketing, sales predict, etc are Data Mining tools for Customer.

M. Preethi, M.Vijayalakshmi (2017) Their article analysed the various data mining techniques and concepts that can be applied to banking sector to enhance its performance.

Burcu Oralhan, Kumru Uyar, ZekiOralhan (2016) Their aim was to investigate effect of 6 factors on customer churn prediction via data mining methods. After sale service software database is the source of our data. Their data source variables were Customer Type, Usage Type, Churn Reason, Subscriber Period and Tariff. The data was examined by data mining program. Data was compared in 8 classification algorithm and clustered by simple K means method. They determined the most effective variables on customer churn prediction.

Ahmet Boyaci, Kasım Baynal, Aslı Calis (2015) The study conducted in banking sector, it was aimed to reduce the rate of risk in decision making to a minimum via analysis of existing personal loan customers and estimate potential customers' payment performances with k-means method is one of the clustering techniques and the decision trees method which is one of the models of classification in data mining. In their study, SPSS Clementine was used as a software of data mining and an application was done for evaluation of personal loan customers.

Sandeep Sharma, Sashi Tarun, Pankaj Sharma (2014) have discussed about the basic details of data mining and the use of knowledge discovery process and the new techniques from the business point of view. In their approach they made an efficient system so that the organization will get the right information at the right time and right to access the necessary information for their growth. The growth of the organization depends on the quality of service, competing with the other organizations, provide required information to the customers, satisfaction of the employees working in the organization.

Dr. K. Chitra, B. Subashini (2013) Their paper analyses the data mining techniques and its applications in banking sector like fraud prevention and detection, customer retention, marketing and risk management.

RESEARCH METHODOLOGY

In a view to precede the research in a systematic way the following research methodology has been used. As the nature of research in CRM and data mining are difficult to confine to specific disciplines, the relevant materials are scattered across various journals. The methodology adopted in the study is both descriptive and analytical. Secondary data was collected from different official bank websites and the following online journal databases were searched to provide a comprehensive bibliography of the academic literature on CRM and Data Mining:

a. ABI/INFORM Database
b. Ebsco
c. Academic Search Premier
d. Research Gate
e. Business Source Premier
f. Emerald Fulltext
g. Ingenta Journals
h. Science Direct
i. IEEE Transaction

DATA ANALYSIS AND INTERPRETATION

Each of the selected articles was reviewed and classified according to the proposedframework. The classification process is consisting of four phases:

1) Online database search.
2) Initial classification by researcher.
3) Independent verification of classification results by any secondresearcher.
4) Final verification of classification results by third researcher.

If there was a discrepancy in classification, each of these articles was then discussed until there was agreement on how the article should be classified from the final set in the proposed classification framework. The selection criteria and evaluation framework is shown in Fig. 8. The collection of articles was analysed in accordance with CRM elements and data mining models, by year of publication and according to the journal in which the article was published.
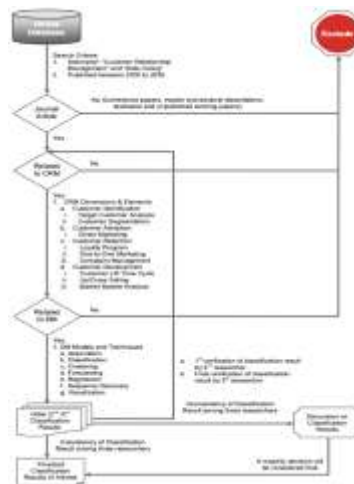
Fig. 8: Selection criteria and evaluation framework
Source: Secondary data

TABLE NO: 5.1

DISTRIBUTION OF BANKS BY CRM AND DATA MINING MODEL

CRM dimensions	CRM elements	Data Mining Model	Number of Banks		
Customer Identification	Customer segmentation		4		
		Classification		1	
		Clustering		2	
		Regression		1	
	Target customer analysis		4		
		Classification		2	
		Clustering		1	
		Visualization		1	
					8
Customer Attraction	Direct marketing		5		
		Regression		1	
		Classification		3	
		Clustering		1	
					5
Customer Retention	Complaints management		2		
		Clustering		1	
		Sequence Discovery		1	
	Loyalty program		8		
		Classification		4	
		Clustering		1	
		Regression		2	
		Sequence Discovery		1	
	One to one marketing		9		
		Association		3	
		Classification		1	
		Clustering		3	
		Sequence Discovery		1	
					19
Customer Development	Customer lifetime value		5		
		Classification		1	
		Clustering		2	
		Forecasting		1	
		Regression		1	
	Market basket analysis		3		
		Association		2	
		Sequence Discovery		1	
	Up/cross selling		2		
		Association		1	
		Sequence Discovery		1	
					10
Total			42	42	42

INFERENCE:

Among the four CRM dimensions, customer retention (19 out of 42 banks, 45.23%) is the most common dimension for which data mining is used to support decision making and in that 9 out of 19 banks(47.37%) do one on one marketing in majority for customer retention.

TABLE NO: 6.2
DISTRIBUTION OF BANKS BY DATA MINING TECHNIQUES
Source: Secondary Data

Data mining techniques	Number of Bank	Percentage
Neural network	15	18.52%
Decision tree	11	13.58%
Association rules	9	11.11%
Regression	8	9.88%
Genetic algorithm	3	3.70%
Markov chain	3	3.70%
Survival analysis	3	3.70%
K means	2	2.47%
K nearest neighbour	2	2.47%
Bayesian network classifier	1	1.23%
If-then-else	1	1.23%
Set theory	1	1.23%
Support vector machine	1	1.23%
Attribute oriented induction	1	1.23%
Constructive assignment	1	1.23%
Customer map	1	1.23%
Data envelopment analysis	1	1.23%
Data mining by evolutionary learning	1	1.23%
Expectation Max	1	1.23%
Expectation Max	1	1.23%
Mod Farthest first	1	1.23%
Goal oriented sequential pattern	1	1.23%
Latent class model	1	1.23%
Logical analysis of data	1	1.23%
MARFS1/S2	1	1.23%
Mixture transition distribution	1	1.23%
Multi-classifier class combiner	1	1.23%
Multivariate adaptive regression splines	1	1.23%
Online analytical mining	1	1.23%
Outlier detection	1	1.23%
Pattern based cluster	1	1.23%
Rule-based RIPPER	1	1.23%
S-means	1	1.23%
S-means Mod	1	1.23%
Total	**81**	**100.00%**

INFERENCE:

Among 34 data mining techniques which have been applied in CRM, neural networks is the most commonly used technique. It has been applied in 15 (19.52%) out of 42 banks in total. Following are decision tree and association rules which have been applied in 11 (13.58%) and 9 (11.11%) banks respectively.

TABLE NO: 6.3

DISTRIBUTION OF BANKS BY SOFTWARE / TOOLS USED FOR DATA MINING

Software / Tool Used	Number of Bank	Percentage
Sisense	5	8.47%
Looker	1	1.69%
Zoho Analytics	1	1.69%
Ycllowfin	1	1.69%
Wyn Enterprise	1	1.69%
Qualtrics Research Core	1	1.69%
CXAIR Platform	2	3.39%
Oracle Data Mining	9	15.25%
BigR	5	8.47%
RapidMincr	1	1.69%
Microsoft SharcPoint	7	11.86%
IBM Cognos	5	8.47%
KNIME Analytics Platform	2	3.39%
Dundas BI	4	6.78%
Board	1	1.69%
Orange	2	3.39%
SPSS Modeller	4	6.78%
Big Insights	3	5.08%
Hadoop	4	6.78%
Total	**59**	**100.00%**

Source: Secondary Data

INFERENCE:

Among 19 software tools which are being used by 42 banks, Oracle Data Mining and Microsoft SharePoint is being used in 27.19% banks, that is Oracle Data Mining is being used by 9 banks and Microsoft SharePoint is being used by 7 banks.

FINDINGS

Following are the key findings:

a. Customer retention (19 out of 42 banks, 45.23%) is the most common dimension for which data mining is used to support decision making

b. 9 out of 19 banks (47.37%) who choose Customer Retention as their priority do one on one marketing in majority for customer retention.

c. 23.81% banks choose Customer development as their priority to increase the customers lifetime value.

d. Among 34 data mining techniques which have been applied in CRM, neural networks is the most commonly used technique. It has been applied in 15 (19.52%) out of 42 banks in total.

e. After Neural networks, decision tree and association rules are the most commonly adopted techniques by the banks, that is they have been applied in 11 (13.58%) and 9 (11.11%) banks respectively.

f. Most of the banks do not only rely on one technique, they use more than one technique for data mining. Like State Bank of India uses 4 techniques i.eBig R, SPSS Modeller, Big Insights, and Hadoop.

g. Among 19 software tools which are being used by 42 banks, Oracle Data Mining and Microsoft SharePoint is being used in 27.19% banks, that is Oracle Data Mining is being used by 9 banks and Microsoft SharePoint is being used by 7 banks.

h. Some of the tools are being used in different banks, they have been selected according to the CRM policies of the banks.

i. Choice of Tool is influenced by the type of data banks want to mine.

CONCLUSION

Data mining is an efficient tool to extract knowledge from existing databases. In Banking, data mining plays a vital role in handling transaction data and customer profile. A User can make an effective decision by using data mining techniques. Two major areas of banking application are Customer Relationship Management and Fraud detection. Here the main techniques used are clustering and Association methods.

In this research, based on these methods various types of algorithms are discussed. Finally, we conclude that Bank will obtain a massive profit if they implement data mining in their process of data and decisions.

SUGGESTIONS

a. For Customer Identification, Banks should focus more on target customer analysis to get the best result out of that.

b. As most of the banks are targeting customer retention, so in that area, they should also focus more on complaint management because their focus is tilting towards Loyalty Program and One to One Marketing.

c. For the banks, who want to focus on customer development, they should focus more on up/cross selling because that can provide their customers more benefits.

d. Banks should use more data mining techniques to get better results which can help the banks in providing better customized service.

e. Small Banks should learn from big banks how they are using different tools for analysing the mined data and able to give the best customized services to their customers.

f. More budget and time should be allotted for increasing Customer Relationship by the small banks.

LIMITATION OF THE STUDY

In any research conducted there shall be some limitations associated with it. Hence, for the proper understanding of the project it is inevitable to specify the limitations which are mentioned below:

a. Most of the data mining techniques used by banks are not in public domain.

b. The study is based on quality and originality of secondary data taken through the different portals is considered as another limitation of study.

c. Non-English publications were excluded in this study.

d. There can be more techniques which could have not been considered.

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Animating Factors of Impulse Buying Behavior: A Literature Review

Neha Munjal

Abstract:

Buyers purchase items in light of need to them as well as on account of unexpected desire to get them. The motivation purchasing have been explored by purchaser conduct scientists and promoting academician in excess of 50 years. The point of this examination is to introduce a nitty gritty writing audit of the motivation purchasing conduct by dissecting the different looks into in the field of customer conduct. Improvement of drive buying idea, procedure of customer's motivation buying conduct, different elements that affect motivation buying and the connection between drive purchasing and retailing are examined right now. This examination will be helpful for retailing analysts and professionals towards thorough understanding of the customer's lack of caution in hypothetical structure. The substance investigation of the different explores about drive purchasing conduct might be manual for understanding the fundamental attributes of motivation buying for future specialists by clarifying the various components affecting drive purchasing.

Keywords: Impulse buying, factors of impulse purchase, consumer behavior

INTRODUCTION

Purchasing conduct looks into have been intrigued over the sixty years (Applebaum, 1950; Clover, 1950; West, 1951). After the WW II, American and European economies moved from dealer arranged economy to purchaser situated economy which caused to starting to Buyer Behavior School of Thought which has centered to investigate singular purchaser conduct, for example, needs and needs, inspirational, social and social elements. Technologic advancements and changes in the ways of life uncovered drive buying propensies which has been a significant marvel for shopper conduct after 1950s (Sheth, 1985:6).

Drive purchasing has more significance since high salary level, diverse installment choices, on the web and portable buying choices. Most customers once in a while take part in motivation purchasing. The greater part of shopping center customers were found to buy on drive, and more than 33% of all retail establishment buys have been made on motivation, demonstrating that drive buys are basic to retailers' benefit (Dawson and Kim, 2009:20). As indicated by the USA Today, in 2014, Creditcards.com study which applied in the logical phone overview of 1,000 grown-up Americans demonstrated that three of every four American make drive buys, and another examination which made in 2013 tended to that in the UK and USA alone, customers at present go through some £24 billion per year on spur of the moment purchases. Additionally in Britain these record for somewhere in the range of 45% and 100% of retail turnover while in the United States practically 62% of general store deals and 80% of extravagance great deals are comprised of motivation buys. In 2012, Point-of-Purchase Advertising International revealed that Americans settled on their 76% of all buy choices in the store (USA Today, 2014; Lewis&Layser, 2013; POPAI, 212).In Turkey, a few scholastic hunts have been led in various areas and urban communities, and results demonstrated that %70 to %80 of the review members were making drive buying (Dursun et al., 2006:246; Ünal,2008:175).

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Right now, broke down a hypothetical system of drive purchasing conduct in view of expanding significance of this point. In the primary section, the definitions and sorts of drive purchasing writing looked with contrasting changed analysts' perspectives. In the subsequent section, we examined the shrouded elements to trigger the customer to carry on rash, for example, social variables, situational factors, and persuasive components.

DEFINITIONS OF IMPULSE BUYING BEHAVIOR

The expression "motivation purchasing" has been critical to financial aspects, buyer conduct, clinical and advancement brain science, instructive looks into and criminology in principle and suggestion con, and this term has recognized uniquely in contrast to one another points of view (Dittmar et al., 1995:491; Rook and Fisher, 1995:305).

Most normally, drive purchasing conduct has been arranged two perspectives which were brain science idea and purchaser conduct idea. The brain science idea of motivation conduct has been begun to take consideration in the scholarly community in 1920s; in any case, the philosophical system of hasty conduct from the legend of Adam and Eve (Rook, 1987:189; Piron, 1991:512; Ünal, 2008:153).

Purchaser examine in motivation purchasing started end of the 1940s with the DuPont Consumer Buying Habits Studies and different investigations which were supported by Point-of-Purchase Advertising Institute (Stern, 1962:59; Piron, 1991:509; Rook, 1987:190).In by and large, researchers have concurred that drive purchasing was first recognized in promoting writing by Clover in 1950 (Rook, 1987:190; Piron, 1991:509; Tinne, 2010:66; Punj, 2011:745; Muruganantham and Bhakat, 2013:149). In his examination, Clover made explores in 154 stores to dissect the motivation purchasing relationship and retail condition in January and February of 1948. After his paper, the motivation purchasing writing in customer investigate has started to well known. The drive purchasing was recognized as an impromptu buy conduct in the DuPont Studies, Point-of-Purchase Advertising Institute Studies and Clover's work.

Applebaum (1951) was the first to offer that motivation purchasing happens when the buyer came to store and the individual was animated by store condition. Simultaneously, West (1951), who was keen on drive purchasing by Clover (1950), characterized that the motivation purchasing is the purchasing choices which occur available and purchaser doesn't plan to purchase before the store.

As per the Nespitt (1959), motivation buying is effective and sensible, recommending that customers don't have any arrangement about their buys however scan for and exploit in-store advancements to expand their buying power (Piron,1991:510; Stern, 1962:60; Kang, 2013:196).

Harsh (1962) expressed that the expression "drive purchasing" is commonly viewed as synonymous with "spontaneous purchasing" that portrays any buy which a customer makes yet has not arranged ahead of time. Harsh was the primary researcher to create four particular kinds of motivation buys. These four kinds of motivation purchasing can be distinguished (Stern, 1962:60):

a) Pure drive purchasing: This is the oddity or getaway buy which breaks an ordinary purchasing conduct of customer.
b) Reminder motivation purchasing: This sort of drive purchasing happens in the store when the customer sees the requirements of items.
c) Suggestion motivation purchasing: Without any information or experience about the item, customer

shows proposal drive purchasing by buying another item with picturing a requirement for it.

d) Planned motivation purchasing: This sort of conduct happens when customers enter the store with aims to buy certain items and furthermore with the desire for making different buys. This is on the grounds that a customer may not know previously the sort of offers advancements, new items/marks that are on offer in the store.

Kollat and Willet (1967:21) characterized the imprudent purchasing as an impromptu buy which happens in store condition that helps them to remember their shopping needs. The items which fulfill these necessities don't list in the pre-shopping list.

Rook (1987:191) re-imagined hasty purchasing "Motivation purchasing happens when a customer experience an unexpected, frequently ground-breaking and tireless inclination to purchase something right away". He proposed that drive purchasing alludes to purchasing that is remarkable, leaving, gluttonously perplexing and constrained. Prior to the investigation of Rook, the meanings of motivation purchasing were centered around the item while deciding a drive buy (Muruganantham and Bhakat, 2013:149).

Piron (1991:510) proposed a meaning of a motivation buy that incorporates four criteria which are spontaneous buy, presentation to upgrade, on-the-spot choice, and enthusiastic or potentially psychological responses.

Rook and Gardner (1993) depicted that drive purchasing as an impromptu conduct including abrupt dynamic and propensity for dire procurement of the item.

Dittmar et al. (1995:492) clarified that motivation purchasing happens not exclusively to fulfill abrupt necessities of physical needs yet in addition to utilize products as a declaration of self-character. They guessed the components of drive purchasing, for example, instrumental-capacities and representative capacities.

Beatty and Ferrell (1998:170) characterized that motivation purchasing alludes to earnest buy which are with no pre-shopping objective either to buy a particular item class or to satisfy a particular need. They clarified that motivation buy happens in the wake of encountering a purchasing want by the customer and absent a lot of reflection.

Bayley and Nancarrow (1998:100) talked about passionate and silly, which was seen by customer, nature of motivation purchasing. They thought about the useful and socio-mental explanations behind shopping. Likewise, Bayley and Nancarrow expressed four styles of hasty shopping which are Accelerator Impulse, Compensatory Impulse, Breakthrough Impulse and Blind Impulse.

Square and Morwitz (1999:347) contended that drive purchasing conduct can be characterized as customer purchasing thing with practically zero consideration after the consequence of an abrupt, ground-breaking inclination.

As per the Hausman (2000:405) "customers use shopping to fulfill various necessities, not simply their requirement for the items they secure during the shopping outing. At the end of the day, the shopping demonstration itself fulfills certain necessities and the items bought during these excursions, since their buy was unforeseen, fall into the domain of motivation purchasing conduct. What's more, customers may buy items during these shopping trips that were not envisioned at the same time, when purchasers see the item during the shopping investigation, they perceive its reasonableness for fulfilling a specific need. Consequently, purchasers may utilize the shopping experience and coming about motivation purchasing conduct to fulfill various requirements which don't fit into speculations of monetary utility". Likewise, Hausman referenced that drive

purchasing is a mind boggling and multifaceted marvel which represents a high volume of items sold every single year.

Xu (2007:42) portrayed the few qualities of indiscreet purchasing conduct, for example, a unintended, unreflective, and quick. Xu characterized these qualities on the grounds that the buy is made while shopping, without taking part in a lot of assessment, no pre-shopping plans and the choice to purchase is made spontaneously.

Mohan et al. (2013:1713) clarified "motivation purchasing is an impromptu buy with the little idea (a customer sees some treats and chooses to purchase on an unexpected inclination) while spontaneous update purchasing is purchasing since the customer neglected to put a thing on his/her rundown (a customer sees sugar in the store, recollects that he/she is out of stock and gets it)".

Kang (2013:197) referenced that the purchasing choice procedure of drive purchasers is portrayed by being impromptu before buy, likely joined by data search, options assessment, and short dynamic time. In this way, motivation purchasers can be ordered into two sorts. The principal sort of motivation purchasers settles on the choice with no data search. Their purchasing conduct is planned to fulfill certain full of feeling needs. The subsequent kind settles on the choice after data search. Drive purchasers purchasing choice is made on motivation yet through all the dynamic procedure to amplify the advantages of the buy.

FACTORS INFLUENCING IMPULSE BUYING BEHAVIOR

Outer Factors of Impulse Buying

A few examinations propose that motivation purchasing conduct came about because of the related of a spontaneous buying to the presentation to improvement inside the store. The impact of in-store improvements like item shows, rack positions, bundling, product offering and cost turns out to be more significant for motivation purchasing than preplanned buy choices. Outside inspiration elements of drive buy are explicit improvements related with related factors and with shopping condition.

Store Environment

Retailers are known to configuration store condition in a way that will upgrade buyers' sure sentiments, under the presumption that this will prompt wanted purchaser practices, for example, a higher eagerness to buy or remain in the store for more (Xu, 2007:40). The investigation of Mattila and Wirtz (2008:564) demonstrated that store condition positively affects drive purchasing conduct particularly when the store condition is seen as over-invigorating.

i. Store Layout: Layout alludes to the manner by which items, shopping baskets, and passageways are organized; the size and the states of those things and spatial connections among them (Mohan et al., 2013:1713). To amplify accommodation of the buyer coming up, the store format can be improved by advertisers (Crawford and Melevar, 2003:96). As per the Crawford and Melevar's examination (2003:97), giving a decent store format can expand the drive purchasing conduct at air terminal.

ii. Store Atmospherics: Applebaum (1951:174) was among the first to suggest that the hasty buy can be led by the buyer's composition at the hour of his experience of shopping to an improvement of the earth. Furthermore, Stern (1962:61) indicated the presence of a significant connection between the incautious buy and showcasing's methods. These strategies make one positive condition for the hasty buy.

Some later works demonstrated that the variable of the deal climate (sounds, perspectives and scents) are significant energizers that can create the craving to purchase rashly (Graa et al., 2014:104). Head supervisors can take a gander at different ecological structure factors to build incitement in their shop. For example, quick rhythm and high volume music increment excitement levels, warm hues, for example, orange, yellow and red are related with thrilled excitement and surrounding aromas, for example, grape organic product or different citrus scents likewise support incitement levels of purchasing (Mattila and Wirtz, 2008:567). As indicated by the Dingfelder (2005), the aftereffect of Morrin and her partners' investigation demonstrated that while the wonderful aroma and music didn't have any impact on the customers' accounted for dispositions, they affected how much the customers spent, and "customers who had made an impromptu buy spent, all things considered, $32.89 more when music was playing than those in the control condition. At the point when a fragrance was available, they spent about $8.66 less. Pondering purchasers spent about $1.00 not exactly common when music played, yet within the sight of the citrus smell, they burned through $5.71 more than expected".

iii. Store Type: Consumers will in general be rash in various store. For instance, Iyer and Ahlawat's investigation (1987:244) demonstrated that in the market, buyers' incitement level of purchasing is higher than different stores. The observational discoveries of Noohasbadi's exploration (2012:3) brought up that impact of the sort of store affect motivation purchasing which is accepted that this to invigorate the volume of offer.

iv. Salesperson: Peck and Childers (2006:765) began to address the hours of contacting with individuals would make more drive purchasing, they discovered clients who have more contact with sales reps; they would expand the chance of motivation purchasing. A well-prepared sales rep can diminish disappointment by managing and supporting the purchaser in the buy procedure and initiate drive purchasing conduct (Tinne, 2010:71).Store representatives' kind disposition effectsly affects clients' motivation purchasing conduct. Accommodation of sales reps in helping clients impacts buyers' ability to purchase. Additionally, the apparent cordiality of store representatives may decrease the negative effect of saw swarming on spontaneous buys (Mattila and Wirtz, 2009:562-564).

i. Product Category: Hedonic items and practical items can be proposed as a two classes of items by showcasing writing. Decadent items are fundamentally devoured for their gluttonous advantages; then again useful items are expended for their utilitarian advantages (Tinne, 2010:71). It has been discovered that motivation purchasing happens more on account of indulgent items due to the representative significance they pass on. To help their confidence by feeling alluring, customers ready to purchase item, for example, beautifying agents that improve their appearance and mental self portrait (Lucas and Koff, 2014:114).Harmancioglu et al. (2009:34) saw that information about new item drive motivation purchasing aim and conduct which is dictated by overhearing people's conversations and consistence with social standards.

ii. Product Price: It is a significant determinant of motivation purchasing. Cost is a factor that influences drive buys a thing with out of the blue low cost can cause customers to feel that they are spending short of what they initially arranged (Stern, 1962:61). All the more explicitly, buyers will in general be increasingly imprudent when there are deals or item limits, low minor requirement for the thing, short item life, littler size, and simplicity of capacity. The cost of nourishment is a significant factor in deciding nourishment decision and hasty buy, especially in lower pay gatherings, for example, understudies and youthful purchasers (Duarte et al., 2013:1238).

iii.   Product Brand and Package: Duarte et al. (2013:1237) guaranteed that item brand is one of the boosts components of drive buy on account of brand's message. Their investigation demonstrated that utilization of nibble nourishment brands can fulfilled four diverse individual qualities which are prosperity, fellowship and having a place, fun and pleasure. The need to satisfy these individual qualities can be trigger of the shopper want to purchase hastily. As per Stern (1962), item bundle type which related with size or weight has an effect on customers motivation buy; for instance, (Stern, 1962:62) "if a customer noticed an especially decent purchase on a nursery hose at her local medication store, she may control her drive to purchase if the hose is either excessively overwhelming or too clumsy to even think about carrying home".

iv.   Product Distribution: The more various the outlets wherein a thing is accessible, the more open doors the buyer needs to discover and get it. Since she isn't shopping explicitly for the thing, it ought to be made accessible to her in whatever number spots where she shops as could reasonably be expected (Stern, 1962:61).

Interior Factors of Impulse Buying

Interior variables of drive purchasing are identified with the diverse character related which portrays an individual as opposed to the shopping condition. Inward factors indicate the person's inner signals and qualities that make him/her participate in drive purchasing. Likewise, a portion of the inner components can be called as segment and social elements.

Customer Characteristic

i.   Age: Wood (1998:314) saw as a significant determinant in anticipating motivation purchasing. More youthful individuals feel low dangerous when going through cash. Drive buy is at more significant level between age 18 to 39 and lower level from that point. Besides, prior research recommends that more youthful people have a higher level of impulsivity than more established people and they show less restraint (Kacen and Lee, 2002:164). Generational accomplices include a gathering people who experience comparative life occasions because of growing up inside a particular timeframe. Customer markets are sectioned to generational accomplices which are Baby Boomers, Generation X, Generation Y and Generation Z (Schiffman et al., 2012:353; Solomon, 2013:523). For instance, individuals from Generation Y associate likewise called "Recent college grads" or "Reverberation Boomers" were conceived somewhere in the range of 1977 and 1994 (Xu, 2007:39). Age Y buyers are probably going to go through their money rapidly, and having a general preference for buying, this accomplice is probably going to spend rashly more than different ages (Pentecost and Andrews, 2010:45; Xu, 2007:40).

ii.   Gender: Women keep an eye on more hasty than men (Dittmar et al., 1995:496; Lucas and Koff, 2014:111; Pendecost and Andrews, 2010:45). Ladies reference is for things identified with basic qualities for passionate and relationship reasons, while men inclination is more things identified with relaxation and account for utilitarian instrumental reasons. For instance, ladies for the most part purchase gems, garments, shoes, purses and extras with motivation purchasing conduct since this sort of items doesn't have to more inquiry. At the point when a lady sees a shoe or dress in store that she loves regardless of whether she doesn't have any arrangement to shopping, she presumably gets it. Then again, men for the most part purchase innovative, electronic and athletic gear, and these sorts of items need detail search regardless of whether he needs it at the earliest opportunity. Likewise, sex variable of drive purchasing factor is identified with item type. In any case, Cobb and Hoyer (1986) proposed that

men make more motivation buy more than ladies, in light of the fact that in customary family ladies make shopping and they know more stores and items which can assist them with making shopping list (Mai et al., 2003:19; Block and Morwitz, 1999:361).

iii. Mood: A person's full of feeling state or disposition has been seen as one of the significant determinants of drive purchasing, in that if an individual is feeling acceptable, the individual will in general prize oneself all the more liberally and in this way, will in general be progressively indiscreet (Beatty and Ferrell, 1998:185). Then again, Rook and Gardner (1993) found while pleasurable disposition states, for example, energy, empowered motivation purchasing, customers were moreover liable to spur of the moment purchase during negative disposition states, for example, pity, so as to improve their mind-set.

iv. Perceived Risk: Perceived hazard can be characterized as the vulnerability that shoppers face when they can't foresee the results of their buy choices. The level of apparent hazard can likewise influence the customer dynamic procedure. The relationship of saw hazard and motivation purchasing relies upon the level of readiness or want to purchase the item. Shoppers' feelings and emotions turn away the view of hazard about the item. Seen hazard has an influence when the customer has poor level of readiness to purchase the item (Lee and Yi, 2008:86).

v. Materialism: A couple of studies (Troisi et al., 2006; Hourigan and Bougoure, 2012; Park et al., 2006; Mowen, 2000) demonstrated that there is a positive connection among realism and hasty purchasing (Badgaiyan and Verma, 2014:541).According to Richins and Dawson (1992:307), the idea of realism shows that people who get items as a self-fruition technique to be inclined to be progressively indiscreet. Richins (2011:146) brought up that materialistic shoppers are invigorated by the craving to accomplish social class through material belonging, and in this manner, that sort of customers will be hastily going through cash by respecting the trigger of enticement.

vi. Shopping Enjoyment: According to the Goyal and Mittal (2007:106), shopping pleasure is a purchaser's individual trademark which speaks to the propensity to discover shopping progressively wonderful and to encounter more noteworthy shopping diversion than others. An individual who has a high attribute of shopping happiness will in general act in-store perusing longer and is then expected to feel more grounded inclination to make incautious purchasing (Badgaiyan and Verma, 2014:540). It is another variable, whereby people think about shopping as a type of amusement, don't adhere to a purchasing list, and along these lines, will in general make numerous rash buys (Beatty and Ferrell, 1998:174)

vii. Impulse Buying Tendency: BT has been seen as a sub-quality of the general impulsivity build, which was characterized by Gerbing et al. (1987:357) as "an inclination to react rapidly to given boost, without consultation and assessment of results".

Situational Factors of Impulse Buying

Situational variables of drive purchasing rely upon circumstance for instance buyer act diversely when the person in question at the air terminal, or when she or he has their Mastercard with them. Situational factors impacting drive purchasing are time, cash, the nearness of others and in-store perusing.

Time

The time a buyer has for shopping decides if the person will be indiscreet. The additional time an individual has, the more drawn out time the person in question will spend perusing the store condition (Beatty and Ferrell, 1998:175). The time pressure is the opposite of the accessible time for a customer to do the demonstration of procurement. Time pressure is generally seen and treated as a situational variable influencing shoppers' dynamic inside a store domain, and it negatively affects drive purchasing in light of the fact that the buyer may feel baffled because of the absence of time to shop or peruse and in a similar time (Graa et al., 2014:103; Lin and Chen, 2013: 437).

Cash

The accessibility of cash is a facilitator in the drive purchasing process since it expands the buying intensity of the individual (Beatty and Ferrell, 1998:185). Regardless of whether individual need to make drive purchasing, in the event that the person in question needs more cash, the person will maintain a strategic distance from the shopping condition by and large. Muruganantham and Bhakat (2013:157) referenced that sensational increment in close to home salaries and credit accessibility has made motivation purchasing in retail conditions pervasive buyer conduct.

The Presence of Others

The nearness or nonappearance of different clients is probably going to affect the choice to make a buy. As indicated by the Lou (2005:293), the nearness of others can build the inclination of a drive buy. For instance, people in the gathering will in general eat more. Then again, it can have a hindering impact on the buyer, when the individual in question feels that the conduct will be seen as being silly. In those circumstances, individual will decided to make increasingly rash buy when the person is separated from everyone else (Fisher and Rook, 1995:306).

In-store Browsing

It has been seen as a significant segment of the motivation purchasing process. Programs as a rule make more spontaneous buys than non-programs (Tinna, 2010:71). In-store perusing produces experiences with attractive items, whose experience creates a desire to purchase, which is hard to oppose because of the physical nearness of items (Beatty and Ferrell, 1998:172).

End

Motivation purchasing explores' significance has been expanding step by step, and it has been a test for economic specialist because of escalated rivalry condition. Shopper scientists have primarily centered around distinguishing the various elements that instigate drive purchasing in different created nations, for example, USA, France, and Japan. In the rising economies like Turkey, there is a need to break down the motivation purchasing conduct in light of ongoing improvement and changes in retailing and colossal social contrasts when contrasted with created economies. Changes in utilization which can be identified with sensational increments in close to home extra cash, way of life and credit accessibility have made motivation purchasing a far reaching marvel over the distinctive retail organizes.

Retail location administrators can take a gander at various ecological plan factors. For instance, quick rhythm

and high volume music increment excitement levels, warm hues, for example, orange, yellow and red are related with thrilled excitement, and surrounding aromas, for example, grapefruit or different citrus scents increment incitement levels. Representative kind disposition and consideration are important to pull in clients. Supervisors can lessen the negative impact of swarming via preparing their workers to be additional well disposed at active occasions that may build motivation buying. For model, the retailers should concentrate on give space to the customers to stroll around by diminishing shop thickness. The store must have readable and great presentations to expand the likelihood of offers. Promotions might be intended to underline the non-financial awards of drive purchasing. The nearness of ecological incitement factors, for example, fragrance and sound or appealing store presentations may direct the decision of search techniques and making motivation buys.

The substance examination of the writing of drive purchasing prompts explain the motivation purchasing idea, its different measurements, and its association with the shopper, and its significance for retailers.

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Application Of Conditional Heteroscadicity Model On Sectoral Index In India With Special Reference To Banking Sector Using Garch Model

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Abstract:

The objective of this paper is to investigate the impact of volatility in stock prices of banking sector. The sample data consist of closing prices of Bank Nifty from January 1, 2017 to December 31, 2019. The study uses EGARCH model tocapture volatility clustering, persistence and leverage effect.The result shows ARCH Effect (C3) is positive i.e. there is a positive relation between the past variance and the current variance in absolute value,Leverage effect (C4) is negative indicates an asymmetric effect i.e. Bad news will increase volatility more than a good new of the same size and Significant and positive value of GARCH Term (C5) indicates present volatility or conditional variance is significantly affected by previous period conditional variance.

INTRODUCTION

The volatility in the returns of financial time-series is a main focus of attention among researchers, investors, portfolio managers, and other market practitioners. The reason is that volatility is used as a proxy for risk or uncertainty. Volatility was first applied by Markowitz (1952) as a measure of risk in portfolio selection. Accurate forecasts for the standard deviation or the variance of returns has become indispensable since it is a critical parameter in asset allocation in portfolio management, hedging, options pricing, and the calculation of value-at-risk (VaR). The volatility in the returns of financial time-series is characterized by stylized features commonly exhibited in most financial time-series in varying degrees. These stylized facts are volatility clustering, long memory, leptokurtosis and the leverage effect.

Volatility clustering also referred to as pooling implies that the variance is time-varying (heteroskedastic). Volatility clustering describes the tendency of large changes in asset prices to follow large changes and small changes to follow small changes.Long memory refers to the long-term dependencies or the persistence of autocorrelation in the volatility of financial time-series. Leptokurtosis refers to the heavy (fat) tails of the volatility indicating a non-normal distribution. The leverage effect refers to the negative correlation between volatility and asset returns (Black 1976). Among the various methods by which the variance can be estimated, the ARCH model introduced by Engle (1982) to specifically model and forecast conditional variances and the GARCH model introduced by Bollerslev (1986) have become the standard tools for variance modelling. These models are able to capture the stylized features of volatility persistence, volatility clustering and leptokurtosis, but not the asymmetric feature described as the leverage effect. The exponential GARCH or EGARCH introduced by Nelson (1991) and the threshold GARCH or TGARCH introduced by Zakoian (1994) can capture the leverage effect stylized fact where positive and negative shocks have asymmetric effects with negative shocks having a greater impact on volatility than positive shocks. This paper is an attempt to model conditional volatility of banking sector of National Stock Exchange of India i.e. BANK NIFTY by capturing volatility clustering, persistence and leverage effect.

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LITERATURE REVIEW

Krishna Murarihas model and forecasted the short-term volatility of the Indian banking sector.Data have been collected since January 2000 up to the period of June 2013.As per the analysis, ARIMA (1,0,2) model was found to be the best fit to forecast the volatility of bank sector stock returns.

William Coffie has and evaluates the performance of asymmetric first order generalised autoregressive conditional heteroscedasticity (GARCH 1, 1) models for Ghana and Nigeriastock market return. Data is collected from 1996-2013. Glosten Jagannathan and Runkle (GJR) version of GARCH (GJR-GARCH) and Exponential GARCH (EGARCH) methodology used to investigate the leverage effect of return volatility in Ghana and Nigeria stock markets using Gaussian, Student-t and Generalised Error Distribution (GED) densities.The EGARCH provides the best out-of-sample forecast for the Ghanaian stock market, while the GJR gives a better estimation for the Nigerian stock market.

Amanjot singhattempts to capture conditional variance of Indian banking sector's stock market returns across the years 2005 to 2015 by employing different GARCH based symmetric and asymmetric models.The exponential GARCH (EGARCH) model is found to be the best fit model capturing time-varying variance in the banking sector.The results report existence of persistency as well as leverage effects in the banking sector return volatility.On an expected note, the global financial crisis increased conditional volatility in the Indian banking sector during the years 2007 to 2009.

Dr. Shveta Singh, Teena has model the conditional volatility of banking sectors of National Stock Exchange, India and to capture its dynamics as volatility clustering, persistence and leverage effect.Data is collected from 1stApril 2011 to 31st March 2017.Volatility is analysed by applying EGARCH model on daily returns data of two sectors namely composite Bank sector (Bank) and PSU Bank sector (PSU).It is found that both sectors are showing volatility clustering, significant persistence and leverage effect but PSU bank sector is more prone to negative news and its returns are more volatile, composite Bank sector is less prone to negative shocks due to inclusion of private banks.

OBJECTIVE OF THE STUDY

- To model conditional volatility of banking sector of National Stock Exchange of India.
- To capture volatility clustering, persistence and leverage effect.

DATA SOURCE AND METHODOLOGY

Data is in form of daily closing prices of bank nifty has been taken from NSE website from 1st Jan 2017 to 31 Dec 2019. Logged returns have been obtained from daily closing prices to use in models.

$$Return\ Series = Log\ (Pt/Pt\text{-}1)\ *100$$

Descriptive statistics: This is used to find the distribution of returns.

Test of stationarily
1.   ADF test: Augmented dickey fuller test is used to find the stationarity of return series.
                         H0 = y series contains unit root or non-stationary.
H1= y series is stationary.

2.   ARIMA (p, d, q) Modelling Process: where p denotes the no. of autoregressive terms, d the no. times the series has to be differenced before it becomes stationary and q the no. of moving average terms.

Residuals are checked for auto correlation

1)   by using Ljung box Q statistics

H0: no autocorrelation among residuals.
H1: autocorrelation among residuals.

2)   ARCH effect: to ascertain the presence of serial correlation in the residuals.

H0: no ARCH Effect in residuals.
H1: ARCH Effect in residuals.

Model testing: EGARCH MODEL

Diagnostic Test for The Best Fitted EGARCH Model:

1.   ARCH Effect
2.   using Ljung box Q statistics

DATA ANALYSIS

Descriptive statistics

Table 1 it can be seen that bank sector returns are positive during the study period. The Bank sector positive returns may be due to Private or public sectors stocks contribution. Standard deviation is low which lead to less risk and volatility. Sectors is positively skewed and kurtosis is excess of 3 indicating more peak values of returns means large fluctuations are happening within fat tails. Jarque Bera values is high and its p-values are less than 0.05 indicating returns are deviated from normal distribution.

Table 1:

	LN_RETUR...
Mean	0.000791
Median	0.000915
Maximum	0.079839
Minimum	-0.028678
Std. Dev.	0.010158
Skewness	0.878407
Kurtosis	9.339297
Jarque-Bera	1318.026
Probability	0.000000
Sum	0.578427
Sum Sq. Dev.	0.075326
Observations	731

ADF unit root test

In Table 3 ADF test results are shown it can be seen that bank sectors returns are stationary at levels with constant and trend. **H0** = series contains unit root or non-stationary. **H1**= series is stationary. The series should be stationary to apply EGARCH model.

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=1}^{P} \beta_i \Delta Y_{t-i} + u_t$$

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-25.66932	0.0000
Test critical values: 1% level	-3.970673	
5% level	-3.415984	
10% level	-3.130267	

*MacKinnon (1996) one-sided p-values.

Result: Bank sectors absolute t-statistics is greater than MacKinnon critical values. So, the **H0** of unit root or non-stationary series get rejected resulting series is stationary.

Modelling of ARIMA equation

Many time series data which are not stationary are integrated. Therefore, if we have to difference a time series d times to make it stationary.

Table 3:

Result: The ARIMA (2,0,2) model has been identified using the information criterion and log likelihood. As a user of these information criteria for a model selection guide, the model with the smallest information criterion (AIC) is selected with highest log livelihood.

TESTING RESIDUAL AUTOCORRELATION

Residuals are checked for auto correlation by using Ljung box Q statistics. Autocorrelation has been checked up to 36 lags. Table 3 is showing residuals diagnostics.

Table 4:

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.051	0.051	1.8842	0.170
		2	-0.029	-0.032	2.5042	0.286
		3	-0.048	-0.045	4.2278	0.238
		4	0.017	0.021	4.4333	0.351
		5	-0.050	-0.055	6.2565	0.282
		6	0.030	0.035	6.9337	0.327
		7	0.007	0.002	6.9716	0.432
		8	-0.085	-0.090	12.352	0.136
		9	0.040	0.056	13.552	0.139
		10	0.065	0.052	16.715	0.081
		11	0.046	0.038	18.322	0.074
		12	-0.014	-0.007	18.470	0.102
		13	-0.025	-0.029	18.943	0.125
		14	-0.076	-0.063	23.279	0.056
		15	-0.044	-0.037	24.699	0.054
		16	0.087	0.081	30.377	0.016
		17	0.009	-0.004	30.431	0.023
		18	0.063	0.074	33.372	0.015
		19	-0.007	-0.008	33.408	0.022
		20	-0.023	-0.034	33.793	0.028
		21	-0.030	-0.017	34.479	0.032
		22	0.064	0.048	37.527	0.021
		23	-0.026	-0.026	38.022	0.025
		24	0.003	0.032	38.027	0.034
		25	-0.058	-0.059	40.621	0.025
		26	-0.003	-0.000	40.627	0.034
		27	0.066	0.059	43.983	0.021
		28	0.022	-0.013	44.348	0.026
		29	-0.037	-0.039	45.400	0.027
		30	-0.017	0.014	45.627	0.034
		31	0.057	0.062	48.103	0.026
		32	-0.037	-0.041	49.143	0.027
		33	-0.004	-0.006	49.154	0.035
		34	-0.047	-0.062	50.861	0.032
		35	-0.081	-0.072	55.891	0.014
		36	-0.023	-0.000	56.287	0.017

Result: We can see that there is autocorrelation in residuals of bank sectors because p>0.05 for up to 15 lags. But after lag 15 to 36 at 5% level in Bank sector there is no autocorrelation. Hence, our null hypothesis of no autocorrelation gets rejected and alternative of autocorrelation among residuals gets accepted.

LM ARCH Effect

After this ARCH effect is checked up to lag two. We test for ARCH effects in the estimated mean equation to ascertain the presence of serial correlation in the residuals. The high values of the F and chi-squared statistics and their corresponding small p-values up to lag 2, there is an evidence to conclude that there is presence of ARCH effect in the return series even at 1% significant level.

Table 5:

Heteroskedasticity Test: ARCH

F-statistic	4.703207	Prob. F(2,726)	0.0093
Obs*R-squared	9.324470	Prob. Chi-Square(2)	0.0094

Result: It can be seen that p<0.01so, null hypothesis of No ARCH effect get rejected and indicating ARCH effect in residuals. To apply EGARCH model it is necessary to check the residuals obtained from mean equation for serial correlation and ARCH effect. There should be serial correlation in squared residuals and ARCH effect in residuals. So, by seeing the results of Table 6 we can ensure to proceed for EGARCH (1, 1) model.

EGARCH

Table 6:

```
Dependent Variable: LN_RETURNS
Method: ML ARCH - Normal distribution (BHHH / EViews legacy)
Date: 05/06/20   Time: 20:24
Sample: 1 731
Included observations: 731
Convergence not achieved after 500 iterations
Presample variance: backcast (parameter = 0.1)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) +
      C(4)*RESID(-1)/@SQRT(GARCH(-1)) + C(5)*LOG(GARCH(-1))
```

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000840	0.000333	2.521045	0.0117
Variance Equation				
C(2)	-0.889128	0.214555	-4.144054	0.0000
C(3)	0.212003	0.032561	6.510863	0.0000
C(4)	-0.117539	0.022378	-5.252546	0.0000
C(5)	0.922247	0.021323	43.25162	0.0000
R-squared	-0.000023	Mean dependent var		0.000791
Adjusted R-squared	-0.000023	S.D. dependent var		0.010158
S.E. of regression	0.010158	Akaike info criterion		-6.486457
Sum squared resid	0.075328	Schwarz criterion		-6.455032
Log likelihood	2375.800	Hannan-Quinn criter.		-6.474334
Durbin-Watson stat	1.896978			

- C2 = Constant, C3 = ARCH Effect, C4 = Leverage Effect, C5 = GARCH Effect.
- If C4 = 0, the model is symmetric.

But if C4 < 0, it implies that bad news(negative shocks) generate larger volatility than good news(positive shocks).

ARCH term is the square of past residual factors (e2) while GARCH is the past volatility (variance H) for general GARCH model and in the case of E-GARCH, it is the past values of log variance (H). C (5) is for the GARCH term. C (3) and C (4) is for the ARCH term, but the absolute value in C (3) is for the effect of the size, while C (4) is for the effects of sign (bad news vs. good news).

C3 is positive shows there is a positive relation between the past variance and the current variance in absolute value. C4 is negative indicates an asymmetric effect. Bad news will increase volatility more than a

good new of the same size does - which is normally found in financial time series of stock prices and exchange rate.

In Table 6 it can be seen that ARCH and GARCH coefficients of variance equations are significant and positive in. Significant and positive value of ARCH Term (C3) indicates present volatility is significantly affected by previous period news information on volatility and presence of volatility clustering. Significant and positive value of GARCH Term (C5) indicates present volatility or conditional variance is significantly affected by previous period conditional variance.

C3 Values are close to one in Banking sectors indicating higher persistence of shocks of volatility. Leverage term coefficient in Bank sector is negative and significant so indicating presence of leverage effect means negative shocks have larger impact on volatility than positive shocks. Sum of C3 and C5 is greater than one indicating conditional variance is explosive means movement of indices will be destabilized due to volatility disturbances and possibility of permanent change in future behavior of these indices is there. Moreover, Impact of these disturbances could be reinforced over time. By seeing AIC and SIC information criteria it can be said that EGARCH Model best describes the Bank sector by giving lower values and Log likelihood giving higher values. EGARCH Model residual diagnostic–For EGARCH model diagnostic further ARCH effect is checked. From Table 7 it can be observed that Durbin Watson statistics is near to two indicating no autocorrelation after implementation of EGARCH model.

DIAGNOSTIC TEST FOR THE BEST FITTED EGARCH MODEL

Table7:

Heteroskedasticity Test: ARCH			
F-statistic	4.208318	Prob. F(1,728)	0.0406
Obs*R-squared	4.195626	Prob. Chi-Square(1)	0.0405

The null hypothesis that there is no remaining ARCH effect in the models is not rejected at 1% significant level based on the Chi-squared statistic. The conformity of the residuals of the estimated model to homoscedasticity is an indication of goodness of fit. The probability value of the Q-statistics in NEXT Table for all lags are higher than 0.01, confirming that there is no serial correlation in the standardized residuals of the estimated models at 1% significant level.

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	0.065	0.065	3.1335	0.077
		2	-0.009	-0.013	3.1949	0.202
		3	-0.026	-0.025	3.8958	0.296
		4	0.002	0.005	3.8964	0.448
		5	-0.020	-0.022	4.0053	0.549
		6	0.017	0.019	4.2162	0.647
		7	0.009	0.008	4.2747	0.748
		8	-0.080	-0.082	8.9948	0.343
		9	0.023	0.036	9.3888	0.402
		10	0.017	0.012	9.6157	0.475
		11	0.038	0.035	10.760	0.464
		12	0.003	0.001	10.766	0.549
		13	-0.008	-0.011	10.814	0.626
		14	-0.060	-0.054	13.516	0.496
		15	-0.039	-0.031	14.661	0.476
		16	0.081	0.080	19.623	0.238
		17	0.010	-0.001	19.699	0.290
		18	0.027	0.027	20.239	0.320
		19	-0.002	0.001	20.243	0.380
		20	-0.018	-0.021	20.485	0.428
		21	-0.053	-0.047	22.611	0.365
		22	0.052	0.048	24.673	0.313
		23	0.003	-0.009	24.678	0.367
		24	-0.020	-0.005	24.970	0.407
		25	-0.052	-0.049	27.004	0.356
		26	-0.003	0.005	27.012	0.409
		27	0.059	0.065	29.681	0.329
		28	0.003	-0.015	29.688	0.378
		29	-0.031	-0.042	30.401	0.394
		30	-0.003	0.021	30.410	0.445
		31	0.063	0.071	33.493	0.347
		32	-0.021	-0.032	33.824	0.379
		33	0.002	-0.004	33.829	0.427
		34	-0.063	-0.070	36.905	0.338
		35	-0.071	-0.061	40.837	0.229
		36	-0.035	-0.020	41.760	0.235

FINDINGS AND CONCLUSION

This study is related to analyses the volatility of Bank Nifty of National Stock Exchange, India from January 2017 To December 2019 with the help of EGARCH model. It is analyzed that distribution of Bank sectors is deviated from normality and return series are stationary at level with constant and trend. EGARCH model is applied with student t distribution. Mean equation indicated that present period returns are significantly related with previous period returns by showing significant AR term. ARCH and GARCH coefficients of Banking sectors are positive and significant, indicating present volatility is significantly affected by previous period news information on volatility and present period conditional variance is significantly affected by previous period conditional variance respectively. GARCH Effect values are close to one in banking sectors indicating higher persistence of shocks of volatility, shocks take longer time to die out. Negative and significant leverage term coefficient in Banking sectors indicates presence of leverage effect means negative shocks have larger impact on volatility than positive shocks. Sum of constant (C2) and GARCH Effect (C5) is greater than one in Bank sectors indicating conditional variance is explosive in nature means movement of indices will be destabilized due to volatility disturbances and impact of these disturbances could be reinforced over time. Overall Banking sectors have heterogeneous responses towards volatility so requires attention not only from investment point of view but needs steps towards reforms also that can help in minimizing the volatility and stabiles its movement in future.

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Best Practises in Employing Differently able peoples in Indian Hotel Industry – A Case Study of Lemon Tree Hotels

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Abstract

Employing differently able people (DAP) or people with infirmities is difficult to deal with in the Indian societal structure as it is still treated as a taboo.In India 26.8 million people are people with infirmities,30 per cent of whom live in urban areas, while 70% live in rural India, in accordance to the 2011 Population Census.,. Employment status of DAP in India is very disheartening, the Census 2011 report shows that only 36% are working. There are 47% male workers while only 23% of females are working in all over India. The RPWD Act, 2016 reserves for 4% jobs of Indian Government and PSU's in identified posts. Employability in Private sector by improvement of proper skills is being encouraged now among persons with disabilities. People with infirmities have been motivated to pursue skill training in light of the emerging number of job opportunities in the service sector. Market specific skill training set up has been designed by Skill India Council for the disabled. Numerous hotels in India are running as an element of their CSR (Corporate Social Responsibility) activities for various social causes but Lemon Tree Hotels has adopted this policy of employing DAP as a diversified manpower enlistment policy. This case study is trying to discover the possibilities and impact of employing DAP in Lemon Tree Hotels and how other hotel can use it as role model for employing more DAP and making them feel inclusive in the society.

Keywords: Differently Able People, Employment, Hotels.

INTRODUCTION

Disabilities are a part of mans proviso. At certain point in life, almost everyone may be momentarily or permanently disabled, and those who live to old age will find it increasingly difficult to work. Most extended families have a disabled member, and many people with no disabilities would be in charge for taking care of relatives and friends with disabilities (1-3).The UN set of laws on the "Equalization of Opportunities for Persons with Disabilities" included rights for persons with disabilities, resulting with the adoption of the United Nations 'Convention on the Rights of Persons with Disabilities (CRPD)' in 2006.In Report of World's Disability by WHO there are about 15 out of every 100 individuals are having infirmities in the globe and among them 4 have brutal disabilities (4). In India 26.8 million people are differently able people,30 percent of whom live in urban areas, while 70 % live in village areas, as per the 2011 Population Census. In accordance with the 2011 census, the share of the disabled population in the 10-19-year age group is 17 percent, and 16 percent are in the 20-29-year age group, which is mostly the working population. It was again divided in ratio to their incapacities as in the maturity cluster of 0-19 years, 20% are having disability in hearing followed by 18% with disability in seeing, 13% in movement, 9% in speech and 9% has multiple disabilities. Among the disabled in the age group 20-39 years, 22% are having disability in movement and 18% has disability in hearing followed by 15% in seeing, 9% in speech and 6% has multiple disabilities. Employment status of DAP in India is very disheartening, the Census 2011 report shows that only 36% are working. There are 47% male workers while only 23% of females are working in all over India (5).

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Research about the employment state of disabled people in the hotel industry around the globe have acknowledged many arguments or presumptuous by managers of hotel and workers as to why people with infirmities are less employable than people in general. Main arguments consist of soaring expenses of supervision and of willing to help any fussy needs of persons with disabilities (6,7), their limited multi-tasking skills, and their restrictions on movement that could have a detrimental effect on night and shift work (6; 8). The first choice of the hotel industry for workers with visual and self-presentation skills is also evident as a primary barrier to disabled workers' jobs (9). Regardless of these employment challenge for those with disabilities, Lemon Tree Hotels, India has engaged a standard of more than 15 % of individuals with disabilities in its operations (10). Using the 'Lemon Tree hotels' as the target organization for study, the aim of this paper is to see if the above mentioned point of view for the limited employability of those with disabilities are justified or not.

Review of Literature

A case study on a group of German hotels employing differently abled peoples revealed that the misconceptions perceived by managers for this new pool of employees has turned out to be inaccurate. They perform every job with a lot of dedication and sincerity and prove their capability to be employed in the hotel industry.(Groschl, 2011 & 2012).

Researcher studied eight different hospitality companies employing differently abled people in their establishments to explore the out-comes of this practice. The results were exhibited and explained as a guide line for other hotels for deciding their inclusion policy and increase the employment opportunities of this otherwise deprived sect of people. In another paper Kalargyrou used inclination of many hotel chains towards social services as a tool for employment of differently abled people in the hotel industry. This type of services can be used as a marketing tool to attract guest for unique services and invoking other stakeholders in the market to follow this inclusive culture by accepting the disabled people in the workforce. Kalargyrou also studied customers view point and comfortability with differently abled service staff, in a first of its kind of research in USA. The study shows a positive approach and increase in sales in selected dining options with family and friends but not during romantic or business meets. (Kalargyrou et.al, 2014,2018 & 2014)

The reassess supports the engagement of differently abled peoples in various departments of hospitality sector but similar studies were not prevalent in Indian context.

OBJECTIVE OF THE STUDY

- To learn about the real-world problems of hiring differently abled individuals through a case study of 'Lemon Tree Hotels'.
- To estimate departmental preference for this alternative manpower is also investigated through a case study of different departments of the hotel.

METHODOLOGY

Given the explorative nature of this project, the most appropriate research style seemed to be a case study approach. Semi structured in-depth interviews were chosen as the key method for the purpose of data collection. Interviews conducted with the hotel directors and head of departments with incorporated questions about individual and company backgrounds, organizational performance results, HR related activities and procedures regarding the attraction and integration of their staff, the rapport among all workers and the obstructions and opportunities of operating an integrative hotel. To analyse the data, researcher have used the

interview queries as the basis for category creation. Processing of information and analysis of data have been done manually, creating a strong association that confirm to be the basis for interpretative treatment of the information. With clear methodological justifications and appropriate, multiple research methods the truthfulness of the project's findings was assured and the interpretative validity of the data was provided (11).

Case Overview - 'Lemon Tree Hotels' - A Refreshing Concept (Strategies & Specifications)

'The Lemon Tree hotel' chain was established in September 2002 and now operates 55 hotels in 32 cities across India. The chain operates in three segments to cater guests across different levels:

- Lemon Tree Premier   Upscale segment
- Lemon Tree Hotels   Midscale segment
- Red Fox Hotels   Economy segment

The Lemon Tree Hotels sustainability policies are based on a triple bottom line that is Planet, People and Profit. They are firm on ethnicity and on keeping people engaged. LTH is an equal opportunity employer and is constantly encouraging those with deformities to apply for jobs. The corporate ethos are that persons with infirmities should have the same opportunity as others to realize their full prospective.

According to the Horwath Report, bright, strong-willed and young at heart, Lemon Tree Hotels (LTH) is India's largest mid-priced hotel chain and the third largest overall, based on guarded interest in self own and leased rooms as of 30 July 2017.

In May 2004, this award-winning Indian hotel chain opened its first hotel, which had 49 rooms and now it operates 55 hotels in 32 cities with 5400+ rooms and over 5000 employees (As on January, 2019).Lemon Tree hotels are positioned all over India in metro cities including the NCR, Bengaluru, Hyderabad and Chennai, as well as cities of Tier I and Tier II such as Pune, Ahmedabad, Chandigarh, Jaipur, Indore and Aurangabad.

1. Lemon Tree Premier

'Lemon Tree Premier's' plush and cosy interiors amp up the excitement. This upper midscale business and leisure hotel chain elevates the Lemon Tree experience while preserving its brightness, eccentricity and creativity. Personalized facilities, premium room amenities, eminent restaurants, and enjoyable experiences pamper the style conscious and cheerful traveller at this hotel.

2. Lemon Tree Hotels

Lemon Tree Hotels are mid-scale commercial and holiday hotels that at the day end will raise the spirits like the fruit they are named after, Lemon Tree Hotels are fresh, cool and with full of zest, friendly welcome and a scent of the lemony freshness will welcome you at 'Lemon Tree'. With its sharp wit and spirited setting, this stylish business hotel with new and vibrant interiors will refresh you. The ' next to home ' expediency of Lemon Tree lets you relax with its neat array of facilities.

Both of these brands include:

- A diverse selection of dining choices:
Citrus Café, Slounge, Republic of Noodles and Kebab Theater

- A fitness center, a revitalizing swimming pool and a rejuvenative spa-Fresco to keep you feeling as fresh-as-a-lemon.
- Business on the move is more dynamic with a well-equipped business centre and meeting rooms.

3. Red Fox by Lemon Tree Hotels

Its fresh bold interiors and hygienic rooms, Red Fox welcomes you. With its unbeatable price and safety standards, these economic hotels will delight anyone. A friendly grin and a lively atmosphere with professional service and state of the art amenities, whether you're working on your laptop or playing a carom game in the lounge, Red Fox hotels are young at heart. Add to that the scrumptious food of Clever Fox Café and the "close to home" environment of hotels are the best option for price-conscious travellers.

Management Team

LTH is governed by a collection of seasoned hospitality professionals acted for a prestigious luxury hotel brands and across sectors like consultancy, FMCG, banking and insurance, telecommunications, automotive and offshore business processing.

Learning and Development

The organization has introduced a comprehensive learning and development plan to deliver on its trade name assurance and has evolved with world-class and industry-wide benchmarked tailored content and training processes.

Wealth Creation Opportunity

Notably, through an employee stock option program, LTH provides its employees with opportunities to create wealth.

Sustainability

The endeavour of Lemon Tree is to have a healthy ' triple bottom line, ' i.e. Through its sustainability measures, Planet, People and Profit.

Planet: Present efforts comprise energy competence and protection; water competence and conservation; use of CNG rather than LPG; use of green construction material; planting on hotel premises of trees and shrubs; building hotels in accordance with Universal Design concepts - for greater access for differently abled people and building our hotels to 'Leadership in Energy and Design (LEED) Gold Standards'. It focuses on wind power in the average to extensive term; agro-power i.e. agricultural waste burning; used water for AC cooling tower; heat propel for energy conservation; solar photovoltaic (PV) lighting system; widespread use of LED light fixtures (post cost reduction); geo-thermal energy.

People: They are persistent on their ethnicity and on engaging the manpower. Lemon Tree Hotels has been selected amongst the 'Best Companies to Work for' in India for seven consecutive years (2011 -2017) by the Great Places to Work Institute. In 2017, it was ranked #4 in the Top 100 Great Places to Work. LTH is an equal opportunity employer and is constantly encouraging those with disabilities to apply for jobs. The vision of the organization is that disabled persons must have the same opportunities to achieve their full potential. Through

developing an organizational atmosphere that allows them to offer their best, LTH may play a role in social inclusiveness and nation building, however limited it may be.Lemon Tree has definite goals of mainstreaming 'Opportunity Deprived Indians' i.e. ODIs into its workforce. ODIs include:

A. Employees With Disability (EWDs):

Physical Disability

- Speech and Hearing Impaired (SHI)
- Orthopedically Handicapped (OH)
- Acid Survivors (AS)
- Going forward, also Visually Impaired (VI), Low Vision (LV)

Intellectual Disability

- Down Syndrome
- Autism

Key Findings and Discussion

Lemon Trees inclusive hiring policies are an central part of the company's HR culture since 2007 according to Mr. Patu Keswani, company's founder. Mrs. AradhanaLal, Lemon Trees Vice president of sustainability initiatives states that "This initiative is not done as charity or corporate social responsibility. It is part of our business model and it has become our culture.''

The sample organizations had between 45 to 280 rooms. Many of the interviewed managers had a disability.

The majority of the disabled employees are either deaf or dumb. Managers provided comprehensive explanations of activities and procedures for workers with Down syndrome, as well as familiar systems and routine tasks. Workers who were unable to read were assisted by illustrating their tasks with colours and symbols. New tasks or adjustments and improvements to current work patterns were slowly introduced by constant practice. And many devices in inclusive hotels such as vacuum cleaners bore names for workers with Down Syndrome who often hate impersonal items. Managers accepted that contributing their hospitality experience and know-how unique to the social sector has often contributed to low-cost styles to people with disabilities for day-to-day job challenges.

As the staffing team for managers was restricted to their hotels' associated NGOs, most of the applicants with infirmities had no hospitality experience. The deficit of skills and knowledge required managers to provide financial and non-financial investments for training their employees with disabilities. To some degree, this reinforces the assumption among non-disabled managers that disabled workers may have significant, expensive training needs. However, it's critical to add that this is mainly because of their lack of hotel work experiences and not of their disability. The Lemon Tree Hotels are hiring those with infirmities as six months of job interns and then validating them as regular employees with more or less equal pay scale as non-disabled employees. In fact, hotel employers can use financial support from governmental to support their inclusive training programs. For many this training helps them acquire new skills, and build trust which enables them to take further responsibilities slowly. Greater performance creates more self-assurance and give them basis for developing more multi-tasking and cross-functional abilities. Given their deep sense of loyalty and long-term

commitment, dedicating resources and time to training people with disabilities will make long-term investment in training costs.

Workforce with disabilities would be better integrated if artificial barriers in the form of perceptions and stereotypical thinking to be identified and dealt with early on. Managers must eliminate all physical and social obstacles resulting from indifference, ignorance, and fright. Managers and workers need to have the same corporate values and a shared vision. Such shared common goals amongst all employees could add to the growth of a powerful and cohesive organizational culture needed to place disabled employees needed to put the employees with disabilities at the centre of slew of administrative and organisational processes and procedures.

Types of Disability	No. of Disability Employed	Departments
In seeing (Blind)	7	F&B Service, Front Office, Housekeeping, Production
In hearing (Deaf) In speech (Dumb)	424	Housekeeping, Purchase & Stores, F&B S ervice, Production, Front Office, Finance, HR, Security, Revenue Management & Distribution
In Movement	75	Production, Housekeeping, Purchase & Stores, F&B Service, Maintenance, Security, Front Office, Sales
Mentally Retarded Mental Illness Any other (Autism)	23	F&B service, Housekeeping
Multiple Disability	6	F&B Service, Revenue Management & Distribution, Finance

Conclusions

Despite all legal efforts and administrative programme and policies promoting fair job opportunities for people with disabilities, these individuals continue to face significant challenges in their everyday lives and at work. Artificial barriers as negative perception of disabled persons prohibit these otherwise capable individuals can be engaged entirely in jobs in many different sectors, including the hotel industry. Here we can conclude that several job barriers for disabled workers in the hotel industry do not seem to be justified and do not match up to facts. Engaging and integrating significant figures of critically differently abled persons in a very aggressive marketplace is also possible. Organization's vision and its trade and HR plans, to its efficient programmes for disability employment is of extreme importance. This needs to be accompanied with sensitivity building led by top brass, with open and direct communication to both internal and external stakeholders. Managerial improvements in the inclusion of differently abled persons should be explained with clear objectives and reasons in the commercial case. It must be recognized that people with infirmities to be recruited for their abilities and not for their disabilities.

Recommendation and Limitations

This research should be seen as a preliminary point for further debate between academicians and hoteliers on

the amalgamation of differently abled persons in the non-inclusive hotel sector. Further research of non-integrative hotel organizations will give greater in-depth analysis of job difficulties and obstacles faced by differently abled people. The qualitative character of this research can be initiated with more quantitative oriented research designs. Because of the participant's confidentiality, data collection methods such as surveys could provide different responses or viewpoints from patrons.

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Capturing Trends and Patterns of FDI in Agricultural Sector, Agricultural Production, Employment, Income and Trade in India in an Econometric Framework

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Abstract

Foreign Direct Investment(FDI) in developing economies in general and Indian economy in particular acted as a crucial pillar of growth. It acts as a leading indicator to spur employment, Income, capital expenditure, technological knowhow and demand. Henceforth the government has taken several reforms via FDI in various sectors, to get rid from the vicious circle of recession. On the other hand, the structure of Indian economy is highly dependent on the agricultural sector. The backward integration of the manufacturing and service sector in the agricultural sector is significantly high. This makes the sector prominent and considered as a key sector in generating employment, income and exports. The study captures the trends and patterns of FDI in the agricultural sector, since 1991 to 2020. The motive of the study is to prepare a background work of the mega study on FDI in the agricultural sector and its impact on various macro variables. Henceforth, the study has done preliminary study on capturing the trend and patterns of FDI in the agricultural sector, agricultural productivity, employment, income and trade in an econometric based growth model.

Keywords: FDI, Agricultural Sector, Macro Variables, Econometric-Growth Model.

Background and Motivation to Study

FDI has been considered as a leading indicator of economic growth as it spurs demand, employment, standard of living, infusion of capital, improving technology and growth. FDI in India proved to be a growth accelerator in various sectors like Railways, Pharma, Financial institutions, Agricultural etc. The government continuously widens the limits of FDI via automated route in various sectors to trigger its growth. There are various literature available of FDI in India and its determinants and FDI in various sectors but very scant literature is available on FDI in agricultural sector. The structure of Indian economy is highly dependent on the agricultural sector. The backward integration of the manufacturing and service sector in the agricultural sector is significantly high. This makes the sector prominent and considered as a key sector in generating employment, income and exports. Henceforth, the importance of the sector in Indian economy and further scant literature available on FDI in the agriculture sector motivates to underpin the understanding of FDI in the agricultural sector and its effect on various macro variables. Before addressing the major objective to analyze the impact of FDI in the agricultural sector on Agricultural productivity, Income, Employment and Trade, it is imperative to understand the variables well. Thus the paper is able to capture the trend of FDI in the agricultural sector in India. The scope of the paper is wider as the paper is not only limited to FDI in the agricultural sector but captures the trend of other macro variables. The study captures the trends and patterns by the application of econometric based growth curves. The econometric based growth curve is considered as a proxy indicator of Compounded Annual Growth Rates (CAGR). The econometric based growth model has been applied on log

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values of the variables undertaken that are FDI in the Agricultural Sector, Agricultural Productivity, Income, Employment and Trade. The econometric based CAGR model is not based on any a priori assumption to run the model. The growth model is nothing but Ordinary least square and where time is an independent variable. Thus, the log series of the variables has been regressed on time and the coefficient of time provides the growth rate of the variable. Next the study understands the nature of the variables undertaken. For this, descriptive has applied and the preliminary understanding of the variables under study has been done by applying mean, median, variance, skewness, Kurtosis and Jarque Berra test.

Literature Review

There is various literature found on FDI in Indian economy, its determinants and sector FDI. Thus this section highlights certain study that comes in this broad framework. Kaur et al. (2013) established interrelation among FDI and economic growth. Venkatachalam (2000) has analysed the determinants of FDI in India. Singhania (2011), Sultana (2016) and Jena (2018) have identified the trends of various macroeconomic factors as significant determinants of FDI in India. Singh (2016) has the trends and patterns of FDI in India. Das (2018) has analysed the causal nexus among exports, FDI and growth of economy. Bhasin (2016) has done a unique contribution by adding some unconventional variables like labour cost etc. with macro variables as determinant of FDI. Gupta et al. (2008) has done FDI in various sectors of India. Anantaram (2004) had considered wide variables based on social, economic and political factors affecting FDI in India. Woodward and Rolfe (1993) has analysed FDI as a leading indicator of growth.

The present literature provides significance of FDI in the agricultural sector and thus leaves scope to capture the trend and understand the causal nexus among FDI in agricultural sector and various other macro variables.

Research Methodology

Objective of the Data

The objective of the study is to capture the trends and patterns of FDI in the agricultural sector and the key proxy macro indicator of growth.

Variables and Data Profile

The study considers the five variables out of which two are of FDI in agricultural sector and Agricultural productivity and rest three are macro variables that are the proxy and important pillar of growth i.e. Income, Employment and Trade. The data has considered the period of study from 1991 to 2020 from Indian stats database.

Methods and Models

The paper has applied two broad preliminarily models to understand the pattern and trends that are descriptive and econometric based growth models. The models applied are discussed as hereunder:

Descriptive Statistics

The preliminary exercise to understand the data well is required before application of the methods and models. For the understanding of the data has been done with descriptive statistics by using mean, median, model and

skewness. The descriptive has been taken of six variables considered in study that are FDI in agricultural sector, Agricultural production, Income, Employment, Exports and Imports.

CAGR – GROWTH CURVES Econometric models

To understand the trend and captures the growth of variables from 1991 to 2020 i.e. almost three decades the data of six variables that are FDI in agricultural sector, Agricultural production, Income, Employment, Exports and Imports have been analysed from the econometric based Compounded Annual Growth Rate Model. The Growth model of the variable considered has been regressed on time. The six models of growth curves in an econometric framework have been developed. The study has considered the annual time series which is free from seasonality. For the implementation of the growth curve, time has been considered as an independent variable and log values of the dependent variables are considered. Since the study has considered six variables thus, the six growth models have been formulated. That are explained as hereunder as:

Ordinary least squares (OLS) estimates of annual compound growth rates are derived from the following growth curve:

$$Y_t = a\ e^{bx+u} \quad\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$$\ln FDI\_Agri_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

$$\ln Agri\_Prod_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

$$\ln Income_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(4)$$

$$\ln Employment_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots(5)$$

$$\ln Exports_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(6)$$

$$\ln Imports_t = \alpha + bt + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots(7)$$

α is an intercept of the equation and is interpreted as Compound Annual Growth Rate, where FDI in agriculture, Agricultural productivity, Income, Employment, Exports and Imports are the dependent variables.

Empirical Results

The empirical results of the paper discussed the growth curves of variables undertaken in study. The study has applied econometric based growth curves. The results are encapsulated in Table 1.1. Finally, descriptive statistics has been done and the results are displayed in Table 1.2.

Discussion on Results of Growth Curves

The results of growth curves provide very useful insights that are encapsulated hereunder:

1. The R square value of the growth curves varies from 0.194 to 0.965. It means the value explained by the growth curves ranging from 19.4% to 96.5%. In all the variables growth curves fit the data well as the F value is greater than F significance.

2. The beta coefficient ranging from -0.01 to 0.33. It means the CAGR ranging from -1% to 33%. Employment has shown negative growth i.e. -1% and Agricultural production has shown the highest growth rate among all.

3. All variables under study have shown significant growth except employment. FDI in agricultural sector, Agricultural Production, Income, Exports and Imports are having significant growth as they are having t values that are 2.322, 7.154, 17.226, 19.791 and 17.937. The t value is greater than 1.96 at the 0.05 significance level.

4. The negative growth rate of employment has been apparently captured by the growth curves and this is the major concern for the economy and the policy makers.

5. The results of the growth curves have shown that the economy is currently facing the situation of Growth led unemployment. This the major concern.

6. It has also been captured that the growth rate of Agricultural production is greater than the growth of FDI in the agricultural sector. At this stage it could be inferred that the FDI done in the agricultural sector could be one of the reasons for accelerated agricultural production.

7. The growth rate of the variable has shown that Agricultural production has highest growth rate i.e. 33.78%, followed by Imports i.e. 15.14%, followed by Exports i.e. 14.09%, then by Income i.e. 11.55%, then FDI in agriculture sector i.e. 6.4% and lastly negative growth of employment i.e. -1.01%.

8. The state of trade deficit in the economy is perceived in the economy as the growth rate of Imports (i.e. 15%) is higher than the growth rate of exports (i.e. 14%).

Table 1.1 Results of Growth Curve

S.No.	Variable	R square	Alpha	Beta	t0	t1	F	Fsig
1	*FDI_Agri*	0.491	11.064	0.0640	35.182	2.322***	5.393	0.0329
2	*Agi_Prod*	0.866	9.698	0.3378	18.012	7.154***	51.180	0.0000
3	*Income*	0.954	13.226	0.1155	107.606	17.226***	296.741	0.0000
4	*Employment*	0.194	6.067	-0.0101	36.577	-1.007	1.016	0.3228
5	*Exports*	0.965	10.651	0.1409	81.645	19.791***	391.704	0.0000
6	*Imports*	0.958	10.771	0.1514	69.599	17.937***	321.736	0.0000

Discussion on Results of Descriptive

The results of descriptive statistics captured in Table 1.2. For understanding the data well the study has done descriptive in the form of Mean, Median, Standard deviation, Skewness, Kurtosis, Minimum & Maximum. The total number of observations under study is 31. The mean value of Agricultural production is 1390100 million; FDI in agricultural sector is 155446 million; Income is 5983375 Crore; Exports is 789600 and Imports are 1160089 million. The mean value of employment is 392 Lakhs. The Kurtosis is ranging from -1.050 to 18.760. The employment has shown high peakedness in the data set. The skewness of employment is highly negatively

skewed i.e. -3.906. It shows the economy is suffering a high unemployment rate and that should be inferred from the basic statistics. The inference drawn for employment should be the major concern for the state of the economy.

Table 1.2 Results of Descriptive Statistics

	Agri_Prod	**FDI_Agri**	*Income*	**Exports**	**Imports**	**Employment**
Mean	1390100	155446	5983375	789600	1160089	392
Standard Error	266952	26748	1069692	138785	210810	14
Median	1229195	115966	3390503	456418	660409	401
Standard Deviation	1163615	116591	5955794	772723	1173743	75
Kurtosis	-1.000	1.549	0.152	-1.030	-1.050	18.760
Skewness	0.405	1.399	1.159	0.739	0.725	-3.906
Range	3523466	399846	19808035	2281871	3504811	439
Minimum	12117	35050	531814	32558	43193	44
Maximum	3535584	434896	20339849	2314429	3548004	483
Sum	26411900	2953477	185484635	24477585	35962771	10967
Count	31	31	31	31	31	31

Conclusion

The paper focuses to capture the trends of the variables under study. The trend of the variables captured by econometric based growth curves and visualization of the variables has been done by descriptive statistics. The results are captured in this paper and need to strengthen further by applying more methods and models. The results of the CAGR model and descriptive statistics have shown the actual state of the economy. The results showed that the growth curves in all variables fit the data and all variables have shown positive and significant growth rates except Employment. Agricultural production has shown the highest growth rate over time and the growth of productivity of farms is greater than the growth of FDI in the agricultural sector. Further, employment projected the negative growth rate where income has shown positive and significant growth that reveals the state of unemployment led growth of the economy. Further, the state of trade deficit is also captured by the growth rates of exports and imports. The inferences drawn from basic statistics has shown that employment is negatively skewed and the skewness is high, where rest variables have shown positively skewed distribution.

The inferences drawn in this paper is important for regulators and policy makers for the formulation of reforms to trigger the growth of the economy.

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Market Basket Analysis: A Case Study of a Dehradun Based Bakery Shop

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Abstract

Market Basket Analysis is a modeling technique based upon the theory that if you buy a certain group of items, you are more (or less) likely to buy another group of items. The main goal of such an analysis is to entice customer to buy more than they usually do. Market basket analysis (MBA) is an example of an analytics technique employed by retailers to understand customer purchase behaviors, which can aid the retailer in correct decision making. It is used to determine what items are frequently bought together or placed in the same basket by customers (Kaur & Kang, 2016). In this research we study the new trends, challenges, and the impact of market basket analysis on consumer buying behavior by using Data Analytics software Rapidminer to create frequent item-sets and associations between the products purchased together in a bakery shop in Dehradun. The study exploits the certain marketing activities which later can be leveraged effectively by the Bakery shop and hence increase their sales and profit margin.

Keywords: Market Basket Analysis, MBA, Predictive Analysis, Rapidminer, Modeling Technique, Data Analytics

Introduction

Market basket analysis (MBA) is an example of an analytics technique employed by retailers to understand customer purchase behaviors, which can help the retailer in correct decision making. It is applied to determine what items are usually bought together or placed in the same basket by customers (Kaur M & Kang S. 2016). MBA is an upcoming technique being used by retailers to manage inventory. Collecting large no of data of the customers makes no sense if that cannot be used to extract important information for gaining competitive advantage. ANN backpropagation is used to predict product's inventory requirement for each product Market basket analysis (also known as association rule mining) is a method of discovering customer purchasing patterns by extracting associations or co-occurrences from stores' transactional databases (Chen Y, Tang K, Shen R, Hu Y. 2004). Market Basket Analysis is done to check whether the purchase of one product raises the likelihood of the purchase of other products. This knowledge is a tool for the marketers to bundle the products or strategize a product cross sell to a customer.

According to Szymkowiak M et.al If the traditional contents of a market basket is replaced with specific sociodemo graphic variables, the technique can also be applied to data from sampling surveys or censuses in order to discover association rules and co-occurrence relationships. MBA analysis is better than multicategory choice model. Explanatory models of multi category choice behavior explains the dependency of purchases. They estimate own and cross category effects of marketing-mix variables on purchase incidences for a predefined set of product categories. Because of analytical restrictions, multi-category choice models can only handle a small number of categories. Hence, for large retail arrangements, the problem arises of how to determine the composition of shopping baskets with a meaningful selection of categories. Traditionally, this is

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resolved by managerial intuition (Boztug Y, Reutterer T. 2006). In recent years, the progress of bar code technology has made it possible to collect information containing consumer transaction data efficiently. Information about market baskets is collected in the form of sets of items which are bought together in a transaction. (Aggarwal C & Wolf J, 1999). MBA is the oldest areas of data mining. Mining of databases has attracted a growing amount of attention in database communities due to its wide applicability to improving marketing strategies. Among others, data clustering is an important technique for exploratory data analysis. (Huang C et.al 2002). The typical solution involves the mining and analysis of association rules, which take the form of statements such as people who buy diapers are likely to buy beer." Market basket analysis has been an elementary part of quantitative decision support in retail marketing for many years and it is regularly cited as a prime application area of data mining. (Decker R & Monein K. 2003). Store-chain association rules, an Apriori like algorithm for automatically extracting association rules is proposed specifically for a multi-store environment, where stores may have different product-mix strategies that can be adjusted over time. (Chen Y, Tang K, Shen R, Hu Y. 2004) MBA using K-Apriori algorithm extracts a set of frequent itemsets from the data, and then pulls out the rules with the highest information content for different groups of customers by dividing the customers in different clusters.(Annie M.C, Kumar D).

Research Methodology

Objective:

The main objective of this research is to see:

1. How different products in a retail shop assortment inter-relate.
2. Mining association rules from transactional data will provide us with valuable information about co-occurrences and co - purchases of products so that we can focus on cross-sell and increase the profit margin.

Data Collection:

The methodology of market basket analysis in a retail stores is to find the selling documents with the items for the transactions. In this research the copy bills are the selling documents considered here. Transaction data for about 45-50 days are taken into consideration. 200 bills from the Dehradun bakery shop were collected for the study.

Number of Attributes that can be taken:

Attribute Information:

- Invoice No: Invoice number. Nominal, a 6-digit integral number uniquely assigned to each transaction. If this code starts with letter 'c', it indicates a cancellation.
- Stock Code: Product (item) code. Nominal, a 5-digit integral number uniquely assigned to each distinct product.
- Description: Product (item) name. Nominal.
- Quantity: The numbers of each product (item) per transaction. Numeric.
- Invoice Date: Invoice Date and time. Numeric, the day and time when each transaction was generated.
- Unit Price: Unit price. Numeric, Product price per unit in sterling.
- Customer ID: Customer number. Nominal, a 5-digit integral number uniquely assigned to each customer.

Market Basket Analysis Using Rapid Miner:

A market basket database typically consists of many transaction records. Each record lists all items purchased during a single customer transaction. The objective of this data mining exercise is to identify if certain groups of items are usually purchased together. The result is a set of rules, called association rules which summarize item associations as follows:

If [A] is purchased --> then [B] is also purchased, [x%] of time.

These association rules can be applied in an old-fashioned brick and mortar setting as well as in an online setting for real-time cross-selling or ad placement.

Two essential concepts - Support and Confidence:

A key idea to get comfortable with is that of frequent item sets. An item set can consist of one item or more. An example of typical data says consist of customer transactions involving purchases of typical cosmetics items, one frequent item set example could be [brushes, nail polish].

Frequent item sets are quantified by support which is the ratio of the number of instances where [brushes, nail polish] appeared together in a single transaction to the total number of transactions.

Support = occurrences of [brushes, nail polish]/total # of transactions

The next important metric that you will need to run a market basket analysis is confidence. Extending the above example, the confidence of finding [brushes, nail polish] together is defined as confidence [brushes, nail polish] = occurrences of [brushes, nail polish]/total # of [brushes]

Setting up a market basket analysis using Rapid Miner

In Rapid Miner, association rules are extracted using two operators in a sequence. The first operator, called FP Growth, is required to generate frequent item sets. The second operator, Create Association Rules, then produces the IF-THEN rules based on the confidence requirement. But before that you may need some pre-processing steps for selecting the attributes you want and more importantly, to convert the input data to binomial (true/false) format which is required by the FP Growth operator
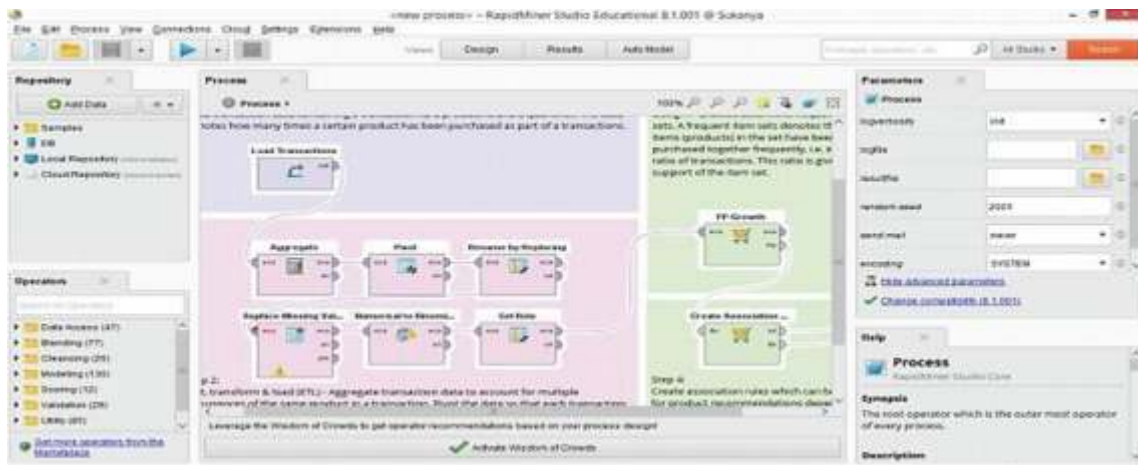
Model associations between products by determining sets of items frequently purchased together and building association rule to drive recommendation.

Step 1: load transaction data containing a transaction id, a product id and a quantifier. The data denotes how many times a certain product has been purchased as part of a transactions.

Step 2: Edit transform & load (ETL) - aggregate transaction data to account for multiple occurrences of the same product in a transaction. Pivot the data so each transaction is represented by row. Transform purchase amounts to binary "product purchased yes/no" indicators.

Step 3: Using FP-Growth, determine frequent item sets. A frequent item sets. A frequent item sets denotes that the items (products) in the set have been purchased together frequently, that is, in a certain ratio of transactions. This ratio is given by the support of the item set.

Step 4: Create association rules which can be used for product recommendations depending on the confidences of the rules.

Note:

1. When using the FP Growth operator, the important parameter is "min support". Rapid Miner will find only those item sets which exceed this minimum support value. However, if you check the box for "find min number of item sets", then the priority is given to "Min Number of item sets", in which case it will continue to reduce the support threshold until it finds at least that many item sets indicated in the "Min Number of item sets" field.

2. After finding the frequent item sets, the next step in the process is to extract rules which meet the confidence requirement. You can provide this in the "min confidence" field under the parameter options for Create Association Rules operator.

3. When the above process is run, Rapid Miner will generate outputs for both FP Growth and Create Association Rules operators. The FP Growth output is a table with support values for the minimum number of item sets requested in Tip 1. The association rules output consists of a text view, table view and graphical views of the extracted rules. The easiest and most insightful view is surprisingly the text view which will show rules such as these below:

Output: 1. Association Rules

[Blush] --> [Concealer] (confidence: 0.738)

[Brushes] --> [Nail Polish] (confidence: 1.000)

Data Analysis & Interpretation

Association-rule mining is a useful method of discovering customer purchasing patterns by extracting association or co-occurrences from stores' transactional databases. In Rapid miner:

Frequent item Set using FP growth:

Size	Support	Item 1	Item 2	Item 3
1	0.475	BREAD/BUN		
1	0.45	RUSK		
1	0.41	LOOSE BUISCUIT		
1	0.235	SNACKS		
1	0.2	CAKE/PASTRY		
1	0.145	NAMKEENS		
1	0.135	BUTTER/CHEESE		
1	0.13	DRY CAKES		
2	0.215	BREAD/BUNS	RUSK	
2	0.19	BREAD/BUNS	LOOSE BISCUIT	
2	0.125	BREAD/BUNS	BUTTER/ CHEESE	
2	0.29	RUSK	LOOSE BISCUIT	
3	0.125	BREAD/BUN	RUSK	LOOSE BISCUIT

Association Rules using Create Association:

No	Premises	Conclusion	Support	Confidence	La Place	Gain	p-s	Lift	Conviction
5	BREAD/BUN	LOOSE BISCUIT	0.19	0.4	0.80677966	-0.76	-0.00475	0.97560976	0.98333333
6	RUSK, LOOSE BISCUIT	BREAD/BUN	0.125	0.43103448	0.87209302	-0.45	-0.01275	0.90744102	0.92272727
7	BREAD/BUN	RUSK	0.215	0.45263158	0.82372881	- 0.74	0.00125	1.00584795	1.00480769
8	LOOSE BISCUIT	BREAD/B U N	0.19	0.46341463	0.84397163	- 0.63	-0.00475	0.97560976	0.97840909
9	RUSK	BREAD/B U N	0.215	0.47777778	0.83793103	- 0.69	0.00125	1.00584795	1.00531915
10	BREAD/BUN, RUSK	LOOSE BISCUIT	0.125	0.58139535	0.92592593	- 0.31	0.03685	1.41803744	1.40944444
11	RUSK	LOOSE BISCUIT	0.29	0.64444444	0.88965517	- 0.61	0.1055	1.57181572	1.659375
12	BREAD/BU N LOOSE BISCUIT	RUSK	0.125	0.65789474	0.94537815	- 0.26	0.0395	1.4619883	1.60769231
13	LOOSE BISCUIT	RUSK	0.29	0.70731707	0.91489362	- 0.53	0.1055	1.57181572	1.87916667
14	BUTTER/ CHEESE	BREAD/B U N	0.125	0.92592593	0.99118943	- 0.15	0.06088	1.94931774	7.0875

After processing the transaction data of the bakery shop using Rapid Miner researchers have conclude that Bread and Buns are the item mostly sold in the bakery shop followed by Rusk and loose biscuits. Focusing on the Marketing 4Ps (place , price, product and promotion) to increase more sales in the bakery shop the chef or owner needs to add more variety to the products that are the basic revenue generators (e.g. Bread, buns, cookies,

rusk) of his business like adding more number of flavor of loose biscuit types or of rusks or they can start making customized and more decorative cakes to increase the sales of cakes and Pastry, they need to add more number of pastry to the display self so that it attracts the customer to buy them as these product also come under impulsive buying. They should introduce more items of different price ranges so that more customers are attracted to buy many items at the same time. They should display or place their varieties of product on the self by specifically labelling the sections so that customers can easily pick up items of their choice. To increase sales of cheese and butter which is a very slow-moving inventory item the refrigerator containing these items should be kept just next to the bread and buns counter. So that customers purchasing the breadsor bun get an idea of buying bread or cheese along with it. The biscuits and namkeens self or counter should be right next to the café area so that people who are purchasing coffee gets and impulse of buying coolies or rusk along with it. Now to increase more sales they should focus on promotion by creating useful and attractive combinations, first the chocolates and the toffees which has a very low support should be made into a big and small chocolate hampers consisting of wide variety chocolate product that can be served for gifting purpose and should be displayed in near about the bill counter so that the customers are able to get a proper view while billing and end up making the last moment purchase decision. Hot beverages are very less sold therefore they can be combined with the certain snacks and at a low rate to drive more traffic to the shop like for people who like to hangout over coffee, which will automatically generate more sales of other items as people will end up purchasing for a pastry or say a dry cake or bread for their next day breakfast or tiffin while leaving. Snacks and coffee can be very well focused on to drive more customers to enter the shop for chitchat over coffee. Misc. goods like the birthday poppers, hats, candles should be well displayed and made attractive combo along with the birthday cake so that people feel benefited and lured to purchase the combo. This will make the sales of birthday cake increase and this might become as USP of the shop that they serve a great birthday party combination which is cost-effective and worth buying.

Conclusion:

Market basket analysis (MBA) is an example of an analytics technique employed by retailers to understand customer purchase behaviors. It is used to determine what items are frequently bought together or placed in the same basket by customers. It uses this purchase information to leverage effectiveness of sales and marketing. MBA looks for combinations of products that frequently occur in purchases and has been prolifically used since the introduction of electronic point of sale systems that have allowed the collection of immense amounts of data. MBA using association rule mining can be used to find relation between various phenomena. Various techniques can be used in the method of producing suitable outcome with the obtained market basket data.

In this case the copy bills of a bakery shop have been collected and analyzed using the software Rapid Miner and the suitable outcome was produced regarding the store arrangements, creating combinations, introducing more varieties to the ones highly sold and maintain products of various price ranges. These strategies will surely help increase the sales of the bakery shop and hence increase its profit margins.

Scope of Further Research:

Market basket analysis has gone one step forward with the combination of proximity marketing using low energy Bluetooth Beacons technology and other internet of things (IOT) with market basket analysis (Shinde P. et.al, 2017). This advancement can make the shopping experience of acustomer better and cost-effective and very easy. An attractive campaign can be organized to ensure customer engagement and sales conversions.

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Psychological contract as a structure for explaining career commitment and career advancement: A Research Agenda

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Abstract

In the fast-changing turbulent business environment the term psychological contract has been viewed differently by research scholars. Conventionally loyalty to an organisation and continuance commitment were seen as important dimensions for career growth and advancement. But in the changing context, employment relationships are changing where the responsibility of career growth is viewed as the responsibility of an individual employee. There are two important related aspects, first is whether with an increased focus on self-serving individual career management strategies, does the concept of psychological contract still hold good and second is how the emerging psychological contract has changed in its essence in terms of the elements constituting it. In the background of the changed Psychological Contract, understanding the linkage between the Psychological Contract, Career Commitment and Career Advancement of employees in order to bring about a conceptual structure tounderstand these interrelationships becomes imperative.

Introduction

Career has been portrayed as a vertical progression with a rising level of economic advantages, power, social position and security (Hall, 1996). Career is depicted as a series of progressive milestones within the skilled journey that someone undertakes throughout the tenure of his work and it is usually perceived as a phenomenon describing the transition from one stage of work life to the next stage (Callanan and Greenhaus 1999).

Traditionally careers were generally viewed and expressed as a relationship of an employee with its employing organization in a very linear manner.

The operational working environment within the new age organizations has been radically reworked owing to the factors like dynamic economic environment, technological advancement, increased participation of female employees across all the industrial sectors and geographies, twin career couples and work force diversity (Coovert, 1995; freewoman, Soete, & Efendioglu, 1995; Howard, 1995; Rosenthal, 1995).

These changes have forced the organizations to adopt versatile structures breaking the rigid hierarchies to cope up with the challenges presented by this volatile and ambiguous business environment.

All these factors have led to the different kinds of work arrangements which has further given birth to new career types such as the boundary less career (Kotter, 1995; Arthur and Rousseau, 1996), the post-corporate career (Peiperl and Baruch, 1997) and the protean career (Hall and Moss, 1998).

Opportunities for career growth are very important for ambitious employees as they enter into a corporate life.Career growth and progression can be understood in two dimensions which are objective and subjective. The objective criterion entails a rise in the level of authority and responsibility, an increment in remuneration or increase in financial benefits and number of promotions over a span of time (Whitelyet al.,1991). Subjective

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criterion includes career behaviours such as career satisfaction and career engagement. Apart from this, there are situational and personal characteristics that influence career advancement prospects of an individual (Tharenou et al.,1994).

Fulfilment of Psychological Contract

The psychological contract offers a framework for understanding the behaviour and attitudes of employees on those dimensions that have an influence on job performance (Chartered Institute of Personnel and Development (CIPD), 2010). The early approaches of Argyris (1960), Levinson (1962) and Schein (1965;1980) towards conceptualizing the psychological contract from a sociological perspectiverelied upon the necessity to know the relevance of intuitive, general and un specified inter communication between the employer and employee. The expectations of both parties and also the level of mutuality and reciprocity required to be thought-aboutjointly so as to clarify the sources of agreement and inequality (Cullinane & Dundon,2006).

The notion of psychological contract refers to perceptive employee attitudes and behavior that influence work performance of an individual employee. Psychological contract has been viewed as the depiction of a reciprocal relationship between an employee and employer (Schein 1980). Three dimensions, namely, promise, payment and acceptance represent the essential components of Psychological contract (Rosseau, 1998). From the perspective of worker, psychological contract springs out of the anticipated promises created by the employer to the worker. Once the employer fulfils these perceived guarantees, this constitutes the payment. The set of expected guarantees and fulfilment of these guarantees leads to emergence of a psychological contract that once profaned might lead to sturdy negative feelings. Third component is acceptance which means that the employer and the worker are reciprocally accountable to fulfil the obligations underlying the psychological contract (Rousseau 1989). This contract is taken into account as a crucial variable exerting a major influence on career growth and advancement. (Turnley& Feldman, 1999; Coyle-Shapiro et al., 2000; Rousseau, 1995).

Psychological contracts can be explained as individual beliefs and perceptions relating to reciprocal obligations. Beliefs get translated into contracts once a personal expects higher level of economic returns and opportunities for career growth and progression in part of the efforts that he puts in to realize the structure outcomes (Rousseau, 1995). Rousseau (1995) so describes that the interpretation of psychological contract is subjective to perception that differs between people. Second, the psychological contract is dynamic, which implies it changes over a period of time because the employment relationship grows between the employer and worker. Third, the contract considers mutual obligations, supported given guarantees, within which both parties invest in their relationship hoping to realize higher career outcomes and effective structure performance. (Anderson & Schalk, 1998).

Scholars have conducted varied research studies within the concept of psychological contract and have derived interpretations from completely different views (Roehling, 1997). The common theme of all the explanations of the term Psychological contract consists of components like values, beliefs, expectations and reciprocal obligations of the worker and employer (Middlemiss, 2011). Additionally, it can be seen that the Psychological Contract sets out mutual obligations arising out of the expectations that need employers and also the workers to speculate during this work relationship for positive outcomes (Anderson & Schalk, 1998).

Establishing Linkages between Fulfilment of psychological contract, Career Commitment and Career Advancement

Career growth and progression is impacted by a number of variables comprising of Job performance; social and human capital factors ; Gender; Characteristics of human capital; Mentoring and networking relationships; proactive career behaviours like commitment and career engagement; contentment with the fulfilment of obligations arising from psychological contract, recruitment and selection practices and organizational structure concepts which are oriented towards continuous learning and flexibility to cope up with career challenges posed by radically changing work environment.

This paper is aimed at reviewing the existing research studies on the important dimensions of Psychological Contract, Career Commitment and Career advancementto develop a framework depicting interlinkages of these factors.Career behaviours like commitment and responsibility towards managing one's career and a focused orientation towards career development are crucial personal variables that influence career progression.Actively participating in various learning and development initiatives, upgrading skills and abilities are the behaviours undertaken by an individual in order to grow in career (Munjuri,2011). Research scholars have outlined the role of work -related commitment as it leads to certain career related outcomes like performance enhancement, reduced turnover and absenteeism resulting in career benefits for employees and organizations. Responsibility towards managing career or commitment is a longitudinal metric that is mapped over a time period and is therefore considered as an important parameter to understand the career growth and development of an individual. A career is often viewed as a ladder having certain progressive steps that an individual undertakes in his or her professional journey (Hall, 1976; Solomon et al.,1986), therefore the concept of career commitment seems to be a very apt measure determining career progression or development.

From the viewpoint of an employee and employing organization, career commitment holds relevance in the practical sense as it helps an individual in undertaking continuous efforts to develop specialised skills and competencies desired for moving up in the organizational hierarchy (Perrow,1986).Career commitment facilitates nurturing work relationships which are utilized for trading favors, exchange transactions and services (Kaplan &Mazique, 1983), and also serve as sources of information. In the radically transforming information age, career commitment may be all the more crucial for the growth of an individual as well as organization (London & Stumpf, 1986).

In the changing organizational landscape characterized by downsizing, rightsizing and movement towards flat hierarchies and project-based structures to cope up with the demands of the dynamic work environment, the form and content of psychological contract is also altered.New career environment requires individuals to be proactively engaged in managing their careers. Therefore, the new psychological contract includes the proactive career management strategies of individuals and the expectations about career support to be provided by the organizations (Cavanaugh & Noe,1999). Earlier employees anticipated that their jobs are secured and as the organization progresses, it will naturally result in opportunities for career growth and therefore tenure of employees and stability in an organization was valued. Now, as the career trajectories of an individual changes with the non-linear career paths gaining popularity, more so for women employees, these expectations have also undergone a shift and employees expect upskilling themselves on a continuous basis and enhancing their marketability in context of the careers spanning over multiple organizations. (Altman & Post, 1996; Hall &Mirvis, 1996).

Study by Sturges et al., (2005) on the concept of Psychological Contract with its implications as a framework for career growth found that the individuals undertaking proactive career behaviours and self-promotingreceive an increased career management support from organizations. Proactive career behaviour is the expected initiative from the employees and career management support from organizations constitute expected promise of the employer resulting in the fulfilment of the implied expectations of the Psychological

contract. Also, the perceived level of career management support results in an increased level of affective commitment and better performance at workplace. Further it is proposed that affective commitment mediates the relationship between psychological contract and career outcomes. Research studies also reveal that whenever employees experience breach of psychological contract, their commitment is adversely impacted and they start exploring career growth opportunities outside the organization.

Conceptual Framework linking the concept of psychological contract, career commitment and career advancement
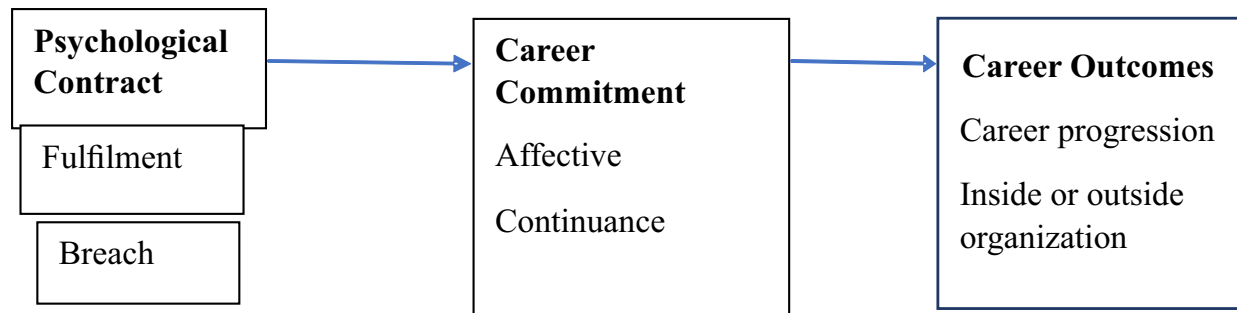
Conclusion and Way Forward

The term psychological contract and proactive career behaviours is an area of great interest amongst research scholars as it holds a huge potential to plug an emerging gap in the new paradigm of changing employment relationships. The contemporary perspective moves beyond organizational level focus to consider all the values, behaviours, attitudes and career orientations that form an important component of employer employee relationship.

Researchers have asserted that a "new deal" emerging fromemployee-employer relationship with a background of thedynamic and radically changing work environment poses a number of challenges for employers as well as employees. Thefast-paced volatile business environment does not permit organizations to offer job security and a "career for life". Need of the hour is on developing and upgrading individual skills to remain adaptable and marketable.

This further implies that the dimensions of career growth are undergoing huge transformation.Traditional linear growth path in a single organization has given way to "boundaryless career" in which individuals will have multiple employment opportunities with a diverse set of employers. Therefore, career advancement will largely depend on the orientation and inclination of an individual to undertake responsibility of career management and continue to add significant value to the existing employer and keep gaining diverse skills to remain employable. The onus of managing individual careers therefore will be on the employee and the organization will assist in this growth path which require changing the terms and conditions of the psychological contract.

A successful integration of the elements of psychological contract into contemporary employment relationships demands more empirical research to explore and appreciate the changing nature of employment relationships in the current business scenario and how the new psychological contract will influence career commitment for various occupations and professions which in turn will determine the Career growth opportunities for an individual.

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Study on skill based Compensation structure with reference to Randstad

Priyanka

Abstract

In skill-based pay (SBP) systems, employees are compensated for the range, depth and types of skills they possess. They are paid for the ability they can use, not for the job they are doing at a given time. This is a basic departure from traditional job-oriented pay plans, which pay employees for the jobs they hold.
Skill-based pay refers to a pay system in which pay growth is linked to the number or depth of skills the employee acquires and applies, and is a tool for developing broader and deeper skills in the workforce. Such increases are in addition to the normal wage increase that employees can receive.

Key words: Compensation, Skill, Skill based pay, job-based pay, merit pay, traditional pay.

JFL Classification: J24, J33, M52,

Introduction:

Evidence shows that companies with the best and best long-term relationships in delivering customer value have well-managed HR processes.

In skill-based pay (SBP) systems, employees are compensated for the range, depth and types of skills they possess. They are paid for the ability they can use, not for the job they are doing at a given time. This is a basic departure from traditional job-oriented pay plans, which pay employees for the jobs they hold.
Skills remuneration refers to a pay system where growth is linked to the number or depth of skills that an employee acquires and uses, and is a tool for developing broader and deeper skills for employees. Such increases increase the overall growth of the workforce that can be achieved.

Wage increases are usually associated with three types of skills:

- Horizontal Skills, which expands skills in terms of range of tasks
- Vertical skills, in which higher level skills are acquired
- Skills Depth Skills are advanced skills in specific areas related to a single job.

Skill-based wages differ from traditional wage systems in reflecting the differences in skills in the structure of wage rates for unskilled, semi-skilled and skilled workers in the following areas:

Skill-based pay is person-based and job-oriented, not systemic.

It is worth more than a job for one person. Job value is reflected in the basic wage rate for minimum skills, whereas pay progress is directly linked to skills acquisition (rather than the general wage increase applicable to all).

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It rewards (and emphasizes) a wide range of skills that make the employee multi-skilled and therefore comfortable.

It positively promotes skills development.

The skill-based pay system may not necessarily reflect how well the skill is used, as it falls into the performance segment of pay. But there is nothing to prevent performance standards from being introduced into the system. In such cases, the system has more performance than the structure that detects different pay rates for skills.

Of course the key to the success of the system is the need to strengthen the system through training opportunities. The traditional structure does not depend on such possibilities.

Reasons for Skill-Based Pay

In the history of industrial relations the generality of interests in employee skills has developed more than ever before between employers and employees. Skills provide employees with protection from unemployment, as well as opportunities for higher income. At the same time, skills provide an important way for employers to achieve competitiveness.

Today many countries are trying to move forward with more technology and skill based industries, while others have become (or are becoming) post-industrial societies in which the application of knowledge determines productivity, performance and competitiveness. Based on comparative advantage.

For example, cheap labor or raw materials have diminished the importance of competitive advantage based on the ability to add value to a particular resource or purpose. Such a comparative advantage depends in part (often mostly) on people - their literacy and education standards, work attitudes, value systems, skills and motivation. The ability to innovate and develop groups of competing firms in specialized industries is critical today.

For more industrialized nations it means some of the key industries of the coming century, such as microelectronics, biotechnology, new materials science industries, telecommunications, civil aviation, computers and software, robotics and machine tools and entertainment. When a skilled employee develops a wide range of skills, he or she will be able to learn further advanced skills, develop analytical skills, and even work in a team. Important elements of today's skills package include multiple skills, cognitive skills, interpersonal and communication skills, positive work attitudes and quality consciousness.

Training is no longer required to prepare not only for current ability, but also for the next step skills. Pay systems that promote current and future skills requirements are becoming increasingly important among employers.

The impact of rapid technological change, increasing globalization of product markets, greater customer choice and emphasis on quality requires frequent updating of skills and flexibility to respond to rapid changes in market needs. The flexible workforce, which is multi-skilled, sees to it that production is not disrupted due to the narrow skills of the workers and that the workers are responsible for the quality of the products.

Advantages of Skill-Based Pay
The benefits of a skill-based salary include the following:

- It contributes to job expansion and prosperity by breaking down narrow job classifications.
- Flexibility is increased by promoting the performance of multiple tasks. This allows for job rotation and replacement of temporary vacancies. Hence it contributes to the thin workforce.
- It enhances productivity and quality by making better use of human resources.
- It facilitates technological change, which is fully resisted in the job-oriented system.
- Pay Job expansion through higher wage levels, continuous training and skills expansion will reduce staff turnover.
- Eliminating unnecessary jobs keeps the workplace narrow and the skills rather broad. It also reduces the need for monitoring.
- Employees Job satisfaction is created by employees having more control over the planning and execution of their work.
- Expanding Skills- Skills help employees develop a better perspective on the overall operations.
- Self improvement- It is an incentive for self-improvement.
- It provides job security through skills enhancement.
- It reduces the need to look towards promotion to a higher level (always limited) as the only way to increase earnings and it simplifies the planning of the employee's career development path.

Since the prize flows from the application of Skill and it does not reduce the chances of others to increase their skills and earnings, there is likely to be less competition among individuals.

Because wage increases due to skills are associated with measurable criteria, the critique of subjectivity often associated with performance appraisals and personal-based performance-related pay is avoided.

The Effectiveness of Skill-Based Pay Systems

Performance has long been at the core of compensation management. The desire to pay more productive employees a greater salary is, in fact, a strong business strategy, but with the multi-faceted nature of jobs today, a simple measure of performance" is often very difficult to justify. More and more it is not just the effort put forth by the employee that makes them desirable, but also the amount of job based skills the employee possesses.

The Wide-Spread Use of Skill-Based Pay Systems

Another possibility outcomes of skill-based pay systems include a flexible workforce, lowered labor costs, and increased quality and productivity. Considering the merits of skill-based pay systems, it is obvious why about half of the Fortune 1000 companies use them (estimates are between 30 and 67 percent of the Fortune 1000).

Implementing Skill-Based Pay Systems

Skilled payment systems are based on assumptions that employees will perform proactively in obtaining new, job-related skills if they are compensated for such efforts. This is a basic principle of behavioral psychology: Actions that lead to rewards will be repeated. The underlying concept behind a skill-based pay system is relatively simple: increase an employee's compensation as he or she acquires and becomes more proficient with job-related skills. Newly implementedskill-based pay systems can be met with resistance, especially from long-tenured incumbents who have continuously received pay increases based on tenure. This can be challenging to overcome, but in most cases the tenured employees have a great deal of job-related skills, allowing them to enter into the new pay system with a high level of compensation. To use skills based on skills

pay system, it is important for the skills in the system to be job-related.

For example, a welder being rewarded for learning to use a larger, more powerful welding machine is appropriate, but the same individual should not be compensated for learning to fix a plumbing system. Another important aspect of a well thought out skill-based pay system is that the amount of compensation increase should be relevant to the difficulty of the skill: Learning to construct a basic spreadsheet in Excel is not as difficult as learning to write macros in Visual Basic, so the former should not be associated with as large of a pay increase as the latter. The final important characteristic of an effective skill- based pay system is regular testing of skill proficiency.

When incumbents initially learn skills, they should be tested for proficiency. In most cases an incumbent will not be as proficient with a newly acquired skill as with a skill they have possessed for an extended period of time. Additionally, employees who do not use a skill for a long period of time may lose proficiency. In light of both of these factors, it is important for skill proficiency to be tested at least every year. This will allow the pay system to reflect skillproficiency more accurately.

Increased Effectiveness of Skill-Based Pay Systems

Skill increases at the individual and workforce level result from the implementation of a skill-based pay system, both of which lead to a more productive workforce. However, some changes to the structure of skill-based pay systems can allow for greater effectiveness. Some of these changes include: Skills learned early in the system should be easier to learn Employees who have early success with skill-based pay plans may continue gaining newskills.

• The first reward an individual receives should be relatively large

Great rewards at the beginning of the program motivate employees to continue working hard to obtain more skills, which is the ultimate goal of skill-based pay systems. Put simply, the first skill learned, regardless of difficulty level, should be compensated at a high level, and every skill learned after that should be compensated based on the difficulty level of the skill. While this may seem contradictory to the earlier mentioned rule about making sure the size of the pay increase is related to the difficulty of the skill, the two ideas are mutually exclusive. If every employee received the same bonus after obtaining his or her first skill, it will not seem unfair that an easier skill is rewarded at a greater level.

• Management should encourage employees to obtain new skills as much as possible

Skill-based pay systems put the responsibility of earning pay increases in the hands of the incumbents. Some employees, especially those new to skill-based pay systems, may not work as hard to obtain new skills. As such, it is important for management to be supportive in giving employees the time, encouragement, and resources necessary to obtain new skills. Skill-based pay systems, as with any compensation management strategy, can be ineffective if used incorrectly. It is important to consider the suggestion sout lined in this article before implementing a skill-based pay system. Ultimately, the implementation of a skill-based pay system can lead to greater profits as employees become more skilled and more proficient, allowing for them to perform their jobs more effectively.

Objective of the study

The main aim of the study is to understand how the different skill set of an employee leads to an different level of pay for them and how does it impact their pay structure. The research aims at understanding the co-relationship between gross salary and skill category.

Skills provide employees with a certain level of unemployment protection, as well as higher pay opportunities. At the same time, skills provide employers with the most important ways to achieve competitiveness.

Hypothesis

The data is collected is of primary nature which is collected from the employers i.e. clients of the Randstad who are on the payroll of the Randstad. Sampling of data is not done as the whole chunk of data is analyzed to interpret the results. Alternate hypothesis states that there is statistical significance between two variables.
So, in this study we have used alternative hypothesis to explain the relationship between gross salary and skill set that they possess. We will be using the following variables in our research.

Independent variable: Skill category

Dependent variable: Gross salary

To accomplish the research objective of the report, we state that –

Ho: Skill category of the employee and the Gross salary are independent

Ha: Skill category of the employee and the Gross salary are not independent

Research Methodology

Data used in the research is of primary nature. The data used for the research is of quantitative type and consist of data of around 524 people who get their salary on the payroll of Randstad. It consists of many factors as how their salary is calculated and at what percentages their skill influence their pay.

Various software and tools are used to analyize and interpret the data. Descriptive analysis is used to analyize the data. **Adescriptive statistic** (in the count noun sense) is a summary statistic that describes or summarizes in detail the features of a database, while descriptive statistics (in the plural sense) are the process of applying and analyzing those statistics. Descriptive statistics are separated by unlimited statistics (or diminishing statistics), in which descriptive statistics aim to summarize the sample, rather than using data to study demographic sample data is thought to represent. This generally means that descriptive statistics, unlike inferential statistics, is not developed on the basis of probability theory, and are frequently non parametric statistics.

In the business world, descriptive statistics provides a useful summary of many types of data. For example, investors and brokers may use a historical account of return behavior by performing empirical and analytical analyses on their investments in order to make better investing decisions in thefuture.

The tool used for analyizing data was the simple linear regression that shows the relationship between two variables out of which one is of independent nature while the other would be dependent on independent variable.

Simple linear regression

Given a dataset of variables (xi,yi) where xi is the explanatory variable and yi is the dependentvariable that varies as xi does, the simplest model that could be applied for the relation between two of them is a linear one. Simple linear regression model is as follows:

$$yi = \alpha + \beta * xi + \epsilon i$$

ϵi is the random component of the regression handling the residue, i.e. the lag between the estimation and actual value of the dependent parameter. If Y is the estimation value of the dependent variable, it is determined by two parameters:

1. The core parameter term $\alpha + \beta * xi$ which is not random in nature. α is known as the constant term or the intercept (also is the measure of the y-intercept value of regression line). β is the coefficient term or slope of the interceptline.

2. Above explained random component,ϵi.

Findings:

N denotes the total number of responses we have or the number of people whose information is being used to analyize the data.

In statistics, the **Pearson correlation coefficient** or the **bivariate correlation,** is ameasure of the linear correlation between two variables X and Y, it has a value between +1 and −1, where 1 is total positive linear correlation.

As per the model summary of the data the value of R Square stands to .761 that means 76.1% the dependent variable can be predicted by using independent variable.

The value of significance is less than 5% (0.05) that means none of our variables lies between the rejection area.

a. Dependent Variable: Gross

The standardized equation formed after regression analysis Y=30607.078 *X- 13460.859.

Y= Dependent variable which is gross salary

X=Independent variable which is category.

From the above data interpretation we can say that the in the given data the skills are taken as a parameter to decide on the compensation of the employees.

Conclusions & Recommendations

Our research has introduced us to the literature of various fields as we try to piece together evidence that separates the best scientific understanding of the adequacy of skills as a basis for decision-making by employees regarding their compensation and the effectiveness of pay-based sill to improve performance. Investigating the consequences of linking compensation and capabilities took us from the question of individual performance to organizational performance and required an examination of two relevant and different payment systems.

From the above data interpretation we can say that the accurate salary compensation structure will only be possible if the skill is given proper weightage to analyize and decide upon the salary of the employees.

Skill-based pay (SBP) systems are like snowflakes -- they share some common characteristics, but each one is unique. We will explore the foundations which underlie skill-based pay and many of the options which are available.

Designing skills-based payments is not something which can be done by copying someone else's system. Every company has its own unique products, people and work processes. What works in one organization may or may not work in another. Much can be learned by studying what has succeeded or failed with other companies, but a sound understanding of the many variables and principles involved in SBP is essential to an SBP design.

Skill-based pay has a purpose -- to promote learning. It is not the only way to compensate employees and it is not a system for all situations nor one which lasts forever. It is very useful in promoting new learning. This accounts for its popularity in start-up organizations and its association with organization redesigns. SBP systems mature as the majority of participants either reach thelimits of the system or coast to a stop somewhere along its path. Paying for learning may eventually give way to requests to pay for performance based upon team or total organization results. If higher skills create higher performance, this is a foresee able development.

Developing a skill-based pay system is not a linear process. The system requires that many items be balanced. Very often what looks promising as a way to handle one part of the system becomes impractical when meshed with other pieces. Original ideas need to be reworked again and again. Designers of SBP can expect to travel the same territory several times before a system takes final shape.

The best systems are deceptively simple. That simplicity is usually the result of untangling a great many hidden complexities. Like snowflakes, a good SBP system is a wonder to behold, but it's hard to tell what went into creating it. This book can help melt away some of that mystery.

Most skill-based pay systems have been instituted in manufacturing and processing plants. SBP is commonly found with team systems or other participative settings. More is known about these types of installations. For that reason, those environments will be the primary focus of examples and discussion in this guide. Many of the ideas and cautions for those systems can be extended into other work environments.

Employees should expect to learn as part of living. Administered incorrectly, SBP can encourage people to expect all learning will be compensated -- "You want me to learn it, pay me for it." There is a delicate balance between encouraging and recognizing learning with pay and creating a tit-for-tat mentality in an organization. Keeping learning broad and expectations high can help avoid the problem. Trying to assess minute skills and provide pay in small increments may contribute to the problem.

ADVANTAGES

SBP is adopted because it provides advantages over other types of pay systems. Intended advantages are related both to business performance and employee morale.

Intended advantages include:

a) increased ability to focus personnel on problem areas and avoid idle time waiting for problems to be fixed by others;

b) flexibility in position coverage enabling work teams to cover for absent members for short periods of time;

c) faster adaptation to changes in technology and product mix due to greater skill base;

d) improved participation in problem solving and other participatory activities because of wider perspective on total workflow;

e) lower overall staffing levels caused by incorporation of specialized functions (e.g., maintenance, quality, supervision) into team skill requirements;

f) higher commitment to organizational goals due to broader perspective;

g) increased self-esteem from development of personal talents;

h) improved self-managing abilities;

i) higher minimum hiring qualifications since employees are required to progress through a multi skilled job;

j) overall increases in total productivity.

Organizations using skill-based pay report gains in flexibility and versatility along with enhanced employee motivation and team effectiveness. Accompanying this is an increased use of technology and increased output per hour. About two-thirds of firms in the ACA study reported moderate success in reducing overall compensation costs.

Systems which succeed have good local management support and often originate in the local operation as opposed to being mandated by the corporation. They place emphasis on employee growth and development and honor a commitment to thorough training.

WHY DO IT? WHY NOT?

Adoption of skill-based pay may be done for a variety of reasons. The system stands the greatest chance for success if it is founded on solid business needs. SBP should be designed and measured to demonstrate that it reduces total organizational costs. If it does not do this, then it will eventually be replaced by a system that is perceived to do so.

A caution is in order. Skill-based pay may likely result in individual pay rates that are higher than pay for similar positions in other firms not using SBP. Organizations using SBP have reported the following rates:

a) starting rates at the 63rd percentile compared to local rates,

b) average rates at the 75th percentile compared to local rates and at the 65th percentile for their industries,

c) top rates at the 90th percentile compared to local rates and at the 80th relative to their industries.

This can be deceptive. The cost of labor is a function of the wages paid, the level of staffing, and the productivity of the workforce. SBP can more than offset higher wage rates by higher productivity.

It has not been clearly demonstrated that overall staffing levels are always significantly changed (either up or down) by using SBP. It has been difficult to document productivity and staffing improvements because finding comparable SBP and non-SBP operations is difficult. Some organizations have measured reductions in staffing of 10% due to removal of backup "utility" workers. Others have measured 30% productivity gains and 30% cost reductions in work systems using SBP as a component.

The key relationship lies between SBP systems and total cost per unit, not just labor costs. Greater efficiencies, quicker problem solving, and less wasted time and material can create significant gains in other cost categories to offset higher labor rates. This is one intent of SBP, not a guarantee.

The intent of SBP is to provide an incentive for employees to learn and apply new skills to increase organizational productivity and profitability while fostering high commitment to organizational goals. With a good system, everybody wins!

Recommendation

Other factors such as pay for performance, merit pay and the pay as per the numbers of years a person had given to the firm should also be considered.

Skill-based pay adopted because "everyone is doing it" has a marginal chance for survival. Since pay is an outlay of money by the company, this rationale will not support a system once competitive cost pressures arise.

SBP adopted because it is "good for the employees" or will cause "higher morale" is well intended. However, this logic will not sustain a system that does not demonstrate its business value. In addition, applying SBP to some groups and not others causes resentment by those not included.

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Appendix

Regression

Coding is done so as toanalyize the data.

Category	Gross Salary	Frequency
1	0-350000	501
2	35000-70000	19
3	70000-105000	3
4	105000-140000	0
5	140000-175000	1

Category 1 signifies unskilled employees
Category 2 signifies semi-skilled I employees
Category 3 signifies semi-skilled II employees
Category 4 signifies skilled employees
Category 5 signifies highly skilled employees

Descriptive Statistics

	Mean	Std. Deviation	N
Gross	18840.12	10336.694	524
Category	1.06	.295	524

From the above table it can be concluded that the N denotes the total number of responses we have or the number of people whose information is being used to analyize the data.

Correlations

		Gross	Category
Pearson Correlation	Gross	1.000	.872
	Category	.872	1.000
Sig. (1-tailed)	Gross	.	.000
	Category	.000	.
N	Gross	524	524
	Category	524	524

In statistics, the **Pearson correlation coefficient** or the **bivariate correlation,** is a measure of the linear correlation between two variables X and Y, it has a value between +1 and −1, where 1 is total positive linearcorrelation.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Category[b]	.	Enter

- Dependent Variable: Gross
- All requested variable sentered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.872[a]	.761	.761	5058.157	.761	1662.139	1	522	.000

a.   Predictors: (Constant), Category

b.   Dependent Variable: Gross

As per the model summary of the data the value of R Square stands to .761 that means 76.1% the dependent variable can be predicted by using independent variable.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42525763165.581	1	42525763165.581	1662.139	.000[b]
	Residual	13355347538.602	522	25584956.971		
	Total	55881110704.183	523			

a.   Dependent Variable: Gross

b.   Predictors: (Constant),Category

The value of significance is less than 5% (0.05) that means none of our variables lies between the rejection area.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-13460.859	822.523		-16.365	.000		
Category	30607.078	750.738	.872	40.769	.000	1.000	1.000

c.   Dependent Variable:Gross

VIF Factor = 1, which should be varied between 1 to 4, data is correct.

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Category
1	1	1.963	1.000	.02	.02
	2	.037	7.308	.98	.98

a.   Dependent Variable: Gross

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	17146.22	139574.53	18840.12	9017.273	524
Residual	-12753.297	17776.781	.000	5053.319	524
Std. Predicted Value	-.188	13.389	.000	1.000	524
Std. Residual	-2.521	3.514	.000	.999	524

a. Dependent Variable: Gross

The below chart shows that the tools used was linear regression which can be easily depicted through it.
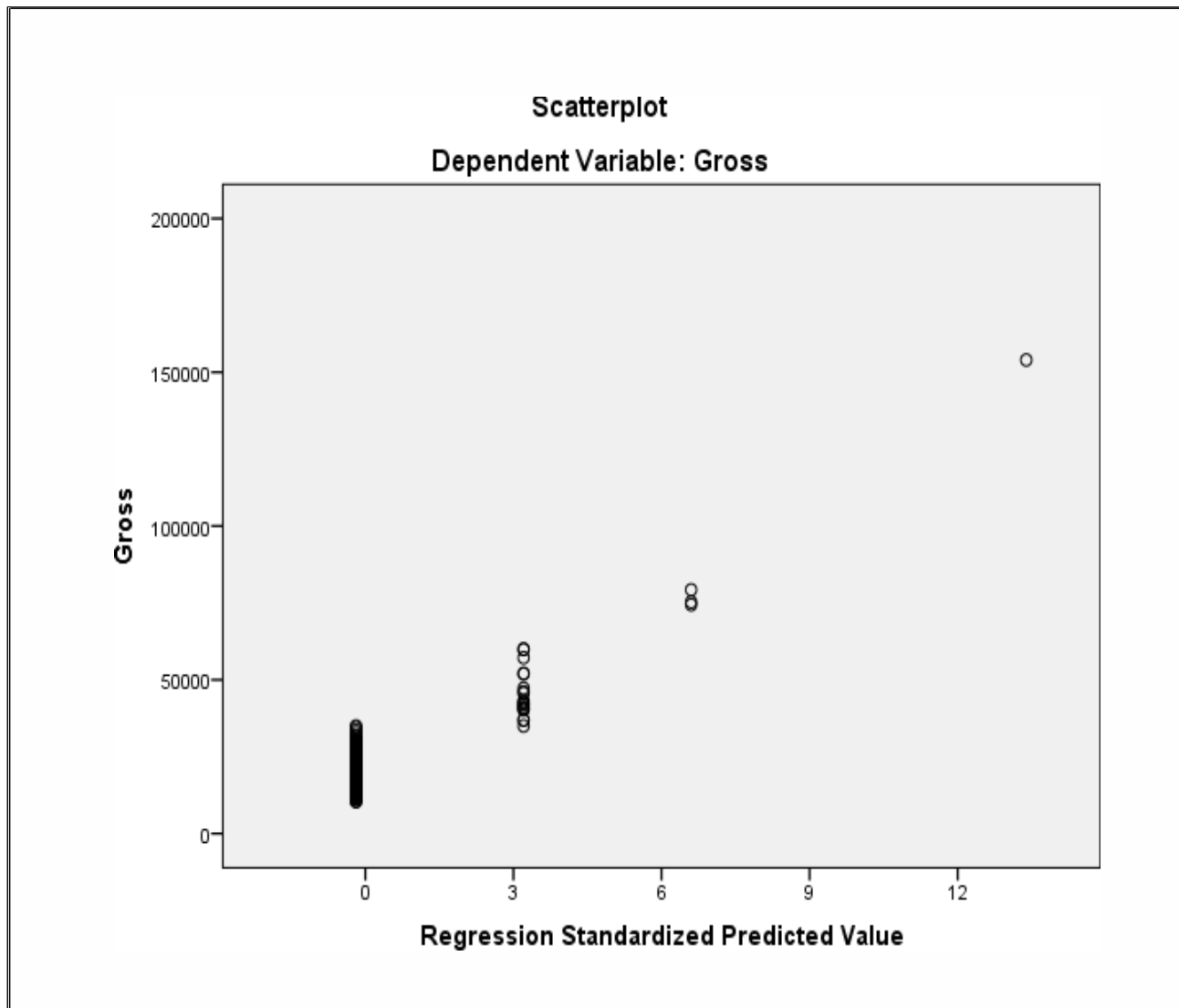
Bansal, R. (2011). Connect the Dots. Westland Limited.

Rashmi Bansal continues with her compendious writing style with "Connect the Dots." It is seamlessly articulated and relatable. The book is one of the most inspiring works aimed towards igniting the zeal of entrepreneurship in the people. It's a compilation of 20 stirring entrepreneurial ventures of the people who actually never studied the management or entrepreneurship courses. The inverted title on the cover page itself makes you curious to find out what is inside.

The book is divided into three major sections viz., Jugaad, Junoon and Zuban. The first section of 'Jugaad' has compiled the stories of Indian entrepreneurs who has come up with the business ideas involving typical Indian mentality of making the things work the jugaad way. This includes finding the alternative ways with the examples of ventures like Su-Kam Inverters, tantra T-Shirts etc. This section very well portrays and emphasizes the importance of persistence.

The next section of 'Junoon 'presents the 7 stories of entrepreneurial ideas which presumably were considered crazy at first and finally took the shape of much liked and successful ventures like Reva Electric Cars and haathi Chaap paper. Shakti Sudha Industries make you believe the so called land of crime is also full of potentials and can surprise you with the most innovative ideas.

The book culminates into third section of 'Zubaan' sculpting the stories of Prince Dance Group, Paresh Mokashi of 'Harishchandrachi Factory' fame and designer Abhijit Bansod, techie turned wildlife photographer Kalyan Verma who believed in the power of their dreams and made the world accept their unique thoughts.

The book is amazingly inspiring and can act as a push for all those procrastinating their decisions to take that one giant leap. The author advocates that being an expert is not mandatorily required to foray into a business. The only thing required is 'courage'. The book gives the main lesson as "you are not allowed to sit and watch, rather start and win early to win higher" and "the world is school and you can learn from anywhere and everywhere".

<div align="right">

Dr. Babita Bhati
Assistant Professor, AIMT

</div>

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