From the Editor-in-Chief's Desk

'*Nothing succeeds like success*,' we often hear the adage, but the fact that our inaugural issue of *Uttaranchal Business Review(UBR)* received an overwhelming response, is significant.That has propelled us for continuing the endeavour. It gives me immense pleasure in presenting the second issue of our journal. The present issue deals in the ongoing developments in management and IT. UBR provides a strong platform for researchers to showcase their thought-provoking ideas on business situations and solutions to problems in an ever-changing business scenario. We call upon students and faculty of different institutes, researchers, industry people etc. to exhibit their novel research work through UBR.

Our current issues carries a medley of articles on relevant topics. The opening up of Indian economy, globalization and liberalization of trade etc. have uncovered many opportunities for the entrepreneurs across the world. *Dr. L.S. Sharma* has analysed the economic effects of liberalization on manufacturing sector in his article '*Economic Effects of Liberalization on the Manufacturing Sector Of BRICS + 2 : A CGE Model Simulation Analysis*.' Whereas, *Dr. Punita Soni, Dr. Payal Chowdhary* and *Mr. Ashish Asopa* have explored the opportunities underlying gold loans in India and analysed attributes of the same in '*Gold Loan-One Step Ahead in Bank's Financial Services'*.

Dr. S.M.Tariq Zafar, Dr Adeel Maqbool and Mr. S.M.Khalid presented a detailed study on Indian mutual funds under their paper article '*Empirical Study On Indian Mutual Funds And Their Performance Evaluation Before Recession'*. The personality attributes of banking sector employees have been studied by *Dr. Amit Sharma* and *Mr. Naveen Kumar Sharma* through '*Measures of Self-Monitoring Personality Traits And Motivational Factors of Employees Working in Banking Sector'*.

Ms. Rani Ramaswamy and Mr. Shyam Sunder Saini carried a study on stress factors related to performance appraisal in their research paper '*Stress Factors Involved in Unfair and Arbitrary Performance Appraisal: An Exploratory Study Carried out in Jubail, Kingdom of Saudi Arabia*. *Dr. D.S. Chaubey* and *Mr. Devkant Kala* have focused on a comparative study in emotional intelligence among engineering and management students in '*Emotional Intelligence Among Students of Engineering and Management Disciplines'.* Trans-Disciplinary Model For Absenteeism Management in police organisation has been explored by *Lt Col (Dr) J Satpathy and Prof N C Sahu,* in their article *"Trans-Disciplinary Model For Absenteeism Management* **"**

The following three research papers are from the fields of IT and Operations Research(OR): *Prof. Bhupender Kumar Som* has done a study on '*Probabilistic Approach in Minimizing Risk of Investment in Capital Market'. Mr. Fahim Uddin, Prof. M. Alam and Dr. Ritika Mehra* have worked on '*Developing Effective Fault Tolerant Coverage Protocol for Wireless Sensor Networks'.* While, the impact of e-governance on our society has been explored by D*r. Himanshu bahuguna and Dr. M.S.Rawat in their paper "* *Initiating E-Governance: A Theoretical Approach'*

We invite readers' feedback, response and suggestions which will help us make value addition to our publication. I do thank our advisory board members and editorial board members for their valuable guidance and support.

I remain,

Prof (Dr.) D.S. Chaubey

Editor-in-Chief

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ECONOMIC EFFECTS OF LIBERALIZATION ON MANUFACTURING SECTOR OF BRICS + 2 : A CGE MODEL SIMULATION ANALYSIS

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ABSTRACT

This paper evaluates the economic impacts and welfare implications of liberalisation on manufacturing sector in Brazil, Russia, India, China and South Africa (BRICS) at inter-regional level. The study evaluates the effect of trade liberalisation on manufacturing sector of these BRICS countries along with two growing nations viz. South Korea and Mexico to see the economic and welfare impacts there. The study is based on the GTAP Model developed by Purdue University. The study finds that among the BRICS countries China and India are the main gainers from the manufacturing sector trade liberalisation. India gains in terms of export of manufactured products when liberalisation was carried out by BRICS+2 (SIM 2 and SIM 3) and welfare effects were positive.

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Keywords: BRICS, GTAP, trade liberalization, tariffs, welfare

Introduction

BRIC is the acronym for the four nations referring to Brazil, Russia, India and China. It was initially coined by Jim O'Neill in 2001 in a research paper entitled "Building Better Global Economics:BRICs", since then the acronym has been popular due to the shift from the developed economies of G7 towards the developing countries. As per the report of Goldman Sachs, it was estimated that BRIC countries will overtake G7 economies by 2027.

In the opinion of Goldman Sachs, the BRIC countries are developing rapidly that by 2050, their combined economies could overshadow the combined economies of the current richest countries of the world. These four countries combined together accounts for more than a quarter of the world's land area and more than 40 percent of the world's population. Although BRIC was formed on a political move, there has been some indications that the BRIC countries are seeking some form of alliance whereby converting their growing economic power into a greater geopolitical power (Mortised, 2008).

The first summit was held in 2009, the leaders of the BRIC countries joined hands together in Yekaterinburg and issued a declaration calling for the establishment of an equitable,

democratic and multipolar world order (Halpin, 2009). Since then, next summit was held in 2010 at Brasillia, and then followed at Sanya in 2011 and recently at New Delhi in 2012. Although, the core members were Brazil, Russia, India and China, then South Africa was allowed to join the group in 2011, forming henceforth the acronym BRICS. There were several criticisms about South Africa joining BRICS as its economy is a quarter of the size of Russia's economy.

The original idea of BRICS was political and in Goldman Sach's opinion, it was not organized as an economic bloc or a trading association. The current study is based on the assumption that BRICS is moving towards a free trade or trade liberalization within these countries. The study also takes into account that Mexico and South Korea as the potential members of BRICS henceforth +2 countries. These two emerging countries are the world's 13th and 15th largest by nominal GDP just behind the BRICS and G7 economies. The opinion of Goldman Sachs proposal to add Mexico and South Korea to the current BRICS is also considered in the study.

Development of the Manufacturing sector in BRICS countries

The engine of growth and development is through the trade of manufacturing sector. With the development and expansion of markets with the removal of distortions caused by high level of protections in agriculture, manufacturing and service sectors; global trade helps to improve competition and growth. India's economy with its high prevalence of rural poverty and hunger, can improve by liberalized trade policy. Liberalised trade policy can help to reduce poverty as in the case of Latin American countries. Although BRICS are the largest developing countries, researchers seem to agree that trade openness will lead to a positive effect on economic growth. Trade liberalization leads to efficient use of resources.

Economics does not favour for the export subsidies. Apart from causing economic inefficiencies and higher cost to the consumers and tax payers in the subsidizing country itself, subsidies can inflict negative effects to the trading partners. Although many countries are trying to protect their industries, they also fear that dumping may occur and swallow the smaller economies which cannot be left alone to the market forces. The study tries to answer the question of trade liberalization as a tool of welfare enhancement.

GTAP and Analyzing Welfare Effects of BRICS

In this paper simulation analysis based on a computable general equilibrium (CGE) model is used to estimate the economic effects of free trade agreements (FTAs) and/or economic integration. In these CGE models, assumptions are made on behavior of producers, consumers and governments. For example, producers are assumed to maximize profits while consumers to maximize utility. For the government spending, many models assume that government collects revenues from various types of taxes including direct and indirect taxes and import tariffs and allocates its expenditure among different sectors according to pre-fixed sectoral shares. Most of

the CGE models assumes perfect competition in product markets as well as in markets for the factors of production including labor and capital. The model also takes Armington assumption, in which products are differentiated according to their production sites, is applied to the structure of consumption and production in goods and services. Moreover, in virtually all the CGE models, factors of production, labor and capital, are assumed to be mobile among sectors within a country but immobile across borders. Furthermore, since most of these models are static in the sense that no time dimension is explicitly considered, a comparative static simulation analysis is employed. This section analyzes the economic effects of BRICS using a CGE model with the characteristics described. The study employs the Global Trade Analysis Project (GTAP) model, the most pervasively utilized CGE model, and the GTAP 6 database ver.6 (the latest version) that corresponds to the global economy in the year 2001.

The GTAP ver.6 database comprises of 87 regions and 57sectors. In our analysis, 87 regions are aggregated into 7 regions (Table A.1 in the Appendix), and 20 sectors are aggregated into 1 sector (Table A.2). Table 1 presents basic economic data extracted from the GTAP database for 7 countries/regions. From this table, we can observe that income levels considerably vary among the 7 BRICS+2 economies. India's economy accounts for 13.22 percent of the total BRICS+2 GDP. Exports and imports, just China accounts for 38.32 percent and 39.03 percent of the region's exports and imports respectively.

Table 1. Basic Statistics of Economics

Countries	GDP (US $ million)	(Share of BRICS + 2)	Per capita GDP (US $ million)	Population (millions)	(Share of BRICS +2)	Exports (US $ million)	(Share of BRICS + 2)	Imports (US $ million)	(Share of BRICS + 2)
India	477342.2	13.23	462.4826	1032.13	36.71	60562.53	6.12	67355.54	6.12
Brazil	502502.8	13.93	2916.61	172.29	6.13	68408.63	6.91	78989.23	7.18
Russia	309947.9	8.59	2127.156	145.71	5.18	99489.05	10.05	113180.9	10.29
China	1159031	32.13	912.6877	1269.91	45.16	379467.8	38.32	429584.2	39.06
South Africa	113273.1	3.14	2611.784	43.37	1.54	39911.32	4.03	44308.67	4.03
Mexico	617819.9	17.13	6121.878	100.92	3.59	165602.1	16.72	170946.6	15.54
South Korea	427646.1	11.85	8987.939	47.58	1.69	176913.6	17.86	195341.9	17.76
Total	3607563		24140.54	2811.91		990355.1		1099707	

Table 2 shows bilateral import-weighted average tariffs, calculated by using bilateral import values at domestic prices and world prices. In scenarios of full trade liberalisation in manufacturing sector, all tariffs in Table 2 are removed. More specifically, when trade is fully liberalized among India, Brazil, and Russia with a significant amount of trade, tariffs are

removed such as India's tariffs of 5.83 percent on imports from Brazil, Brazil's tariffs of 29.89 percent on imports from India, India's tariffs of 13.27 percent on imports from Russia, and so on.

Table 2. Bilateral average tariffs by trading partners

	India	Brazil	Russia	China	South Africa	Mexico	South Korea
India	-	5.83	13.27	8.28	14.36	16.56	6.19
Brazil	29.89	-	11.42	7.45	9.31	16.32	2.22
Russia	26.50	4.12	-	5.98	1.97	5.77	2.93
China	27.83	14.18	18.32	-	14.62	18.07	6.23
South Africa	33.59	6.95	7.08	5.16	-	10.47	3.22
Mexico	15.42	16.40	10.80	9.84	4.74	-	4.88
South Korea	27.08	14.66	10.95	13.51	10.08	13.49	-

Source: GTAP Ver.6

Simulation Methodology

Simulation methodology being used in this study is the reduction or elimination of manufacturing tariffs within the region is of course important in establishing an BRICS+2 FTA. Considering that inter-regional trade has already grown dramatically in the world, the analysis investigates the effects of elimination (or reduction) of trade barriers in manufacturing sector.

In order to evaluate the significance of the BRICS+2 framework, this study basically focuses on the impacts of FTA among the regions and compares their effects. For trade liberalization, the effects of elimination and/or reduction of trade barriers to both exports and imports are investigated. The study focuses on by examining scenarios not only of trade liberalization in manufacturing sector by all countries but also manufacturing sector trade liberalization by India only as well as of manufacturing trade liberalization by BRICS+2 countries excluding India.

The scenarios with a combination of manufacturing sector trade liberalization, various facilitation measures, and technical assistance in our simulations are as follows:

SIM 1: Full trade liberalization in manufacturing sector of all regions (BRICS)

SIM 2: Full trade liberalization in manufacturing sector of BRICS regions (without India)

SIM 3: Full trade liberalization in manufacturing sector by India only

Based on the results of these simulations, the study discusses the significance of the BRICS framework, focusing on the effects of trade liberalization, various welfare measures such as gross domestic product, exports, imports and value of the output in the region in the next section.

Results of the simulation analysis

Table 3. GDP of the BRICS+2

Countries	Before Simulation	SIM1	Percent change	SIM2	Percent change	SIM3	Percent change
India	477342.19	477152.41	-0.04	476810.50	-0.11	477684.09	0.07
Brazil	502502.81	503000.44	0.10	503010.69	0.10	502492.53	0.00
Russia	309947.94	310072.06	0.04	310082.25	0.04	309937.66	0.00
China	1159031.25	1159926.88	0.08	1159950.38	0.08	1159007.88	0.00
South Africa	113273.09	113756.40	0.43	113754.66	0.43	113274.82	0.00
Mexico	617819.88	618123.00	0.05	618122.50	0.05	617820.44	0.00
South Korea	427646.13	429683.06	0.48	429689.88	0.48	427639.25	0.00

*Source GTAP Ver.6

**Amount in Million $

Table 3-6 display the estimates of the effects on GDP, exports, imports and value of output under three different simulations. These simulations provide interesting insights to the trade of the manufacturing sector. Full trade liberalization in manufacturing sector among all regions brings positive changes in GDP to all countries except for India, (SIM 1 and SIM 2). Liberalization by BRICS+2 countries by India only (SIM 3) brings positive changes of GDP to India only while other countries increases marginally. Simulation 1 and 2 shows that a largest positive change in GDP is being observed for South Korea and South Africa to the extent of 0.48 percent change and 0.43 percent change respectively.

Table 4. Manufacture sector Exports of the BRICS+2

Countries	Before Simulation	SIM1	% Change	SIM2	% Change	SIM3	% Change
India	41243.85	41954.77	1.72	41823.60	1.41	41375.01	0.32
Brazil	43515.45	43811.98	0.68	43810.91	0.68	43516.52	0.00
Russia	86939.35	87164.6	0.26	87152.02	0.24	86951.94	0.01
China	341200.3	342940.9	0.51	342925.59	0.51	341215.6	0.00
South Africa	31879.76	32197.95	1.00	32193.67	0.98	31884.04	0.01
Mexico	146133.6	146407.5	0.19	146401.75	0.18	146139.4	0.00
South Korea	156586.2	158028.8	0.92	158029.34	0.92	156585.7	0.00

*Source GTAP Ver.6

**Amount in Million $

Table 5. Manufacture Sector Imports of the BRICS+2

Countries	Before Simulation	SIM1	% Change	SIM2	% Change	SIM3	% Change

India	44009.25	44769.53	1.73	44633.55	1.42	44145.23	0.31
Brazil	46699.66	47009.08	0.66	47007.89	0.66	46700.86	0.00
Russia	98199.23	98441.13	0.25	98426.72	0.23	98213.64	0.01
China	366260.66	368094.25	0.50	368077.41	0.50	366277.50	0.00
South Africa	33672.89	33981.80	0.92	33977.32	0.90	33677.38	0.01
Mexico	149097.64	149385.48	0.19	149379.45	0.19	149103.66	0.00
South Korea	163003.80	164499.81	0.92	164500.28	0.92	163003.33	0.00

*Source GTAP Ver.6, **Amount in Million $

Table 4 and 5 show the manufacturing sector exports and imports components. The observations show that India gains in all three simulations (SIM1, SIM2 and SIM3) for export and also in imports of all simulations 1, 2 and 3. The rest of the countries in the study also shows gain in terms of exports and imports. Among the BRICS countries apart from India, South Africa is the second largest gainer in terms of percentage change in SIM 1 and SIM 2 for export of manufacturing sector. For imports of goods, apart from Russia and Mexico other remaining countries are the gainers from SIM1 and SIM2 meaning that the main advantages are Russia and Mexico while the other countries increases their share of imports.

Table 6. Value of sales of Manufacture Sector outputs of the BRICS+2

Countries	Before Simulation	SIM1	% Change	SIM2	% Change	SIM3	% Change
India	280500.19	279587.44	-0.33	279379.06	-0.40	280708.59	0.07
Brazil	257495.53	257607.11	0.04	257614.59	0.05	257488.03	0.00
Russia	248347.80	248311.75	-0.01	248330.84	-0.01	248328.69	-0.01
China	1705811.13	1706398.75	0.03	1706439.13	0.04	1705770.75	0.00
South Africa	88258.05	88526.43	0.30	88534.81	0.31	88249.67	-0.01
Mexico	403397.06	403228.28	-0.04	403241.47	-0.04	403383.88	0.00
South Korea	423080.06	424468.00	0.33	424477.88	0.33	423070.19	0.00

*Source GTAP Ver.6

**Amount in Million $

Table 6 displays the value of output of the manufacturing sector under the conditions of the three simulations. From the table it is observed that the percentage gain is positive for South Korea and South Africa with marginal percentage change for Brazil and China in terms SIM1 and SIM2 while SIM 3 change is negligible.

Although the percentage change for China and Brazil may be marginal but actual amount reflects another interesting perspective. China's SIM1 brings gains Million $ 587.62 which shows a mere .03 percent while South Africa's SIM1 makes a gain of Million $ 268.38 reflecting

0.30 percentage change. Similar is the case for simulation 2 for both the countries China and South Africa. The output shows that simulations brings in an negative percentage change for India, Russia and Mexico except for SIM3 for India. The value of output in terms of manufacturing sector is the highest for South Korea in SIM 1 and SIM 2 as the focus may shift to manufacturing sector.

As the results of SIM 1 to SIM 3 suggest, full trade liberalization in manufacturing sector does yield a certain degree of economic effects. It is also observed that a comprehensive FTA covering only manufacturing sector liberalization is feasible but also may consider other sectors like facilitation measures and technical collaboration etc. are likely to have much greater impact. The analyzed scenarios are of full trade liberalization in manufacturing sectors by all countries (SIM 1), full trade liberalization in manufacturing sector by BRICS+2 without India (SIM 2), and full trade liberalization in manufacturing sector by India only (SIM 3). Regardless of whether GDP, economic welfare, or trade, positive economic effects are greater in scenarios of full liberalization of manufacturing sector are beneficial for the countries BRICS.

Conclusions

The study examines the economic impacts of BRICS+2 through a simulation analysis based on a global trade analysis package which is prepared through computable general equilibrium model in order to assess the effects of manufacturing sector liberalization focusing on the effects of trade liberalization. Our results of three scenarios, including those with only trade liberalization demonstrates that free trade in manufacturing sector are likely to have significant economic impacts on its member countries. It is also concluded that export and import of manufacturing sector does have positive impact on all member countries in terms of export but also increases imports on the other hand. SIM 3 brings advantage to India only. In terms of simulation 1 viz., full trade liberalization in manufacturing sector by all countries in the BRICS+2 benefitted by all the countries with the exception of India in terms of GDP.

Although trade liberalization such as elimination/reduction of tariffs is important, implementing trade, investment facilitation, technological transfers and assistance in addition to trade liberalization, however, are even more beneficial to the member countries. As for trade liberalization, we investigated only scenarios of full trade liberalization in manufacturing sectors only. Our results clearly demonstrated that positive economic effects are greater in scenarios of full liberalization of trade in the manufacturing sector among the member countries. In terms of exports and imports of services India gains in comparison to rest of the member countries but in terms of GDP growth India loses.

Another area of further research could be considered by taking into consideration of other like sectors of service and agriculture in these simulations. With the growth of agriculture and

service sectors contributing to the expansion of capital accumulation in developing countries, the impact of economic welfare could be investigated.

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Appendix-1

A.1 GTAP ver.6 database

Regional sectors

Codes	Description
Ind	India
Bra	Brazil
Rus	Russia
Chn	China
Zaf	South Africa
Mex	Mexico
Kor	South Korea

A.2 Food and Agriculture Sector grouping

Code	Description
frs	Forestry
fsh	Fishing
coa	Coal
oil	Oil
gas	Gas
omn	Minerals nec
tex	Textiles
wap	Wearing apparel
lea	Leather products
lum	Wood products
ppp	Paper products, publishing
p_c	Petroleum, coal products
crp	Chemical, rubber, plastic prods
nmm	Mineral products nec
i_s	Ferrous metals
nfm	Metals nec
pcr	Processed rice
sgr	Sugar
ofd	Food products nec
b_t	Beverages and tobacco products

GOLD LOAN-ONE STEP FORWARD IN BANKS' FINANCIAL SERVICES

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Abstract

In the recent days, the Gold loan policy is growing at fast speed. As compared to other loan schemes in India, the Gold loan is considered as one of the easiest ways to raise money especially in case of a urgent need. As the process requires less paper work and acts as one of the best means to meet the financial needs, especially when one have Gold. *This research based article on Gold Loan contains features of Gold Loan, advantages of Gold Loan and comparison between Gold loan and personal loan. Further this article contains the inferences drawn from 25 institutional respondents including NBFC's and other banks based on a questionnaire study in Jodhpur district. The NBFC's and Banks studied were Muthoot Finance Corporation, Mannapuram Gold, ICICI, PNB, HDFC, UCO Bank to name a few.*

The conclusion says that the future of gold loan is bright. It is very useful for the development of economy. That's why RBI has also recently given guidelines in this aspect. Banks are coming up with different types of loans which also include loan against jewellery that helps one in unfortunate situations. Jewellery loans simply means – short term loans against jewellery from any organized financial institution.

Key Words: Gold Loan, ICICI, PNB, HDFC,

Introduction

Now-a-days, our investment in gold is now converted into productive one because most of the banks and other financial institutions offer loans against security of Gold. Even, if a hierarchy of loans needs to be built and time to get the loan is the most crucial factor, loan against jewellery (popularly called gold loans) has now become the number one option. Despite the manic obsession of Indians with gold, there's no denying the inherent value of the yellow metal. Just as buying gold is considered auspicious on all important occasions, the yellow metal now comes in handy during a cash crunch.

In the age of globalization, people demand new ways and technologies which can take care of their needs as well as problems. It was very difficult to get loans in the past as it involved huge process of filling up the forms but now all this is changed. Banks are coming up with different types of loans which also include loan against jewellery that helps one in unfortunate situations. Jewellery loan simply means – short term loans against jewellery from any organized financial institution.

There are various types of financial institutions that offer loans against gold and the interest rates charged by them vary widely. These include banks such as HDFC Bank, ICICI Bank, Canara Bank, Corporation Bank, Dena Bank, Indian Overseas Bank Indusind Bank, Oriental Bank of Commerce, Punjab National Bank, Union bank of India and State Bank of India and its associates, Allahabad Bank, Development Credit Bank, etc. Then there are a host of cooperative banks that also offer these loans. There are also non-banking financial companies (NBFCs), which cannot take deposits of money from the public but can give loans. Major players in this category include south-based players such as Manappuram Finance and Muthoot Group.

Features of Gold Loan

- **Secured Loan:** Gold Loans are secured loans - you are borrowing against the security of your gold that you give to the lender and in return for which you get the loan.
- **Purpose:** You can use the loan towards any purpose, as long as it is not for any illegal activity or for speculation in the stock market. Non-banking companies have even fewer restrictions on what you can use the loan for.
- **Interest Rate and Charges:** Banks are currently charging approximately 12.5% interest for whatever tenure you take the loan for. They usually have a processing fee for the loan as well. Non-banking companies have 30-60-90 day and other schemes where the rates of interest can be approximately 2%+ per month. Annually, this works out to be about 27% per

annum, which is a very high rate of interest. Non-banking companies usually don't have a processing fee for the loan.

- **Loan Amount:** Lending can start at amounts as low as Rs 25,000, but some banks can lend you anywhere from Rs 10 lakhs up to Rs 75 lakhs, depending upon the value of your Gold. The non-banking companies usually deal in much smaller loan amounts because they often cater to a different kind of customer base. None of these two types of lenders charges an evaluation fee for your gold.

- **Repayment Terms:** Banks usually have terms that run from 3 to 12 months, but you can prepay at anytime. At non-banking companies you can choose the term that you want, and accordingly select the loan that suits you.

The Interest rates over these loans are dependent on the Base rate of the Bank. As we know, the Base rates of the Bank keep changing in accordance with the Monetary Policies adapted by the Reserve Bank of India.

The interest rate applicable varies depending on the quality of gold jewellery. If jewellery is hallmarked, with a 'BIS' stamping by a hallmarked jeweller to indicate the purity of the gold used, the interest rate charged will be lower than on non-hallmarked jewellery. The difference could also be on the basis of carats of gold, whether 22 or 18, etc. Every bank would have its own method of calculating the value of the jewellery that is offered to mortgage. Some banks fix the consideration price at a level (say Rs 1,005-1,215 per gram) for about 6-12 months and revise it only a year later, no matter what the actual market price of gold in the international markets is.

It is estimated that the total loans against gold stands at Rs.1,20,000 crore between the banks and NBFCs. SBI alone enjoys a loan portfolio of Rs 300 crore against gold. HDFC Bank plans to increase the number of branches offering gold loans from 150 to 600 in 2011. Andhra Bank also plans to facilitate gold loan disbursals from all of its branches in few months. Currently only 60 branches provide gold loans and each branch will have one valuer for pledged gold appraisal (whose fee is borne by customer).

Advantages of Gold Loan- Rapidly increasing financial services are continuously improving the growth of economy. Gold loan is emerging trend in financial services. This loan is beneficial for the both parties – borrowers and financial institutions.

1**) Borrowers** - Gold loan is boon for female. They become more confident in the unfavorable period. Loans against gold are better than personal loans as the former are available at lower interest rates. . For example, a leading private sector bank charges as much as 18% interest on personal loans, but gives loans against gold at 15.75% or less. Another bank charges 14.5-16.5% for personal loans and 12.5% for loans against gold jewellery.

The next advantageous is easy availability of the loan at a local branch, irrespective of credit history and best of all at reasonable rates of interest especially if the amount borrowed does not exceed 50-60% of the market value of the jewellery. Also the repayment can be structured as just interest amount with principal being repaid at the end of the period in one lumpsum. Thus regular payments can be smaller than what an EMI would be for the same period. For example if somebody took a loan of Rs. 2 lakhs for 2 years at 12% interest rate his monthly payment for interest will be Rs. 2000/- for 2 years but he will need to repay the loan with a lump sum payment of Rs. 2 lakhs at the end fo 2 years whereas the EMI for a 2 year loan at the same interest rate would be around Rs. 9400 (of course the loan is repaid at the end of 24 installments so there is no lump sum payment at the end of 24 months).

2) Financial Institution-Secured borrowing such as a loan against gold, investments or property is cheaper because it is backed by some assets, which command good value at any point of time. If the borrower defaults on the loan, the banks can liquidate the assets to settle the loan account.

Being a secured loan, the risk of default and credit losses is significantly lower in this loan compared to other forms of loan for personal use. Given the lower risk, gold loans come at a lower cost than other forms of personal loans.

Another advantages for loan giver is that jewellery is an item of personal use and its emotional value is sometime far higher than its market value. If for any reason customers are unable to pay pack the loan the lender can sell customers jewellery in the market to recover its dues. The process of issuing gold loan is very easy. Bank require only recent ID proof along with Jewellery. It takes hardly one or two hours to issue the loan.

Comparison between gold loan and other personal loans- Gold loan is generally a kind of personal loan. Now here is a question -What is Personal loan? It is a loan that establishes consumer credit granted for personal (medical), family (education, vacation), or household (extension, repairs, purchase of air conditioner, computer, refrigerator, etc.) use, as opposed to business or commercial use. Such loans are either unsecured, or secured by the asset purchased or by a co-signor (guarantor). Unsecured loans (called signature loans) are advanced on the basis of the borrower's credit-history and ability to repay the loan from personal income. Repayment is usually through fixed amount installments over a fixed term.

The difference between gold loan and other personal loan is as follow-

- Most lenders provides gold loans within a working day - as long as we have proper identity and residence proof - with some of the specialist lenders such as Mannapuram and Muthoot even giving it in an hour or two. While other personal loan takes long procedure and much more time.

- The interest rate is comparatively lower in gold loan due to lower risk and high safety while for other loan the rate of interest is high.
- Gold loan does not require any credit history while other loans always issued after monitoring the previous credit history of the borrower.
- Gold loan is a short term loan whereas other personal loans may be long term.
- Since personal loans are unsecured, the banks make sure that the borrower is credit-worthy or has the financial capacity to repay the loan. So if somebody doesn't have a good credit history he cannot get an unsecured, personal loan. Whereas a **gold loan is a secured loan**, the bank doesn't have to worry about the ability of the borrower to repay the money or not. Naturally, this means much lower rates of interest also.

On the basis of short survey at Jodhpur District on the basis of questionnaire the following findings have comeup:

No doubt the scope of loan is increased due to the facilities of Gold loan. **It** is a good option for persons who do not enjoy a good credit history. This is because financial institutions don't take into account one's credit history before granting gold loan.

1. *Rapidly increasing financial services are continuously improving the growth of economy. Gold loan is an emerging trend in financial services. This loan is beneficial for the both parties –borrowers and financial institutions.*
2. The main advantage of gold loan in India is the convenience **with which it is granted by the lenders.**
3. After analysis it was found that goldloan is better than any personal loan. Even the interest rate is comparatively lower in gold loan due to lower risk and high safety while for other loan the rate of interest is high.
4. According to the respondents even banks prefer to provide gold loan than other variants of personal loan because of the security involved.
5. **It is a great boon for low income persons as no income/Salary detail are requirement**
6. **From the survey it has been found that many Banks and NBFCs are getting interested in providing gold loan as it is a secured loan and Indians are having huge investment in gold.**

7. **After 2007, many players had entered the field of gold loan in Jodhpur. They all are competing in the gold loan business on the basis of** Fast Service, No holiday for providing Gold Loan, Safety of Gold, Low Interest rates and Easy disbursement.

8. **Survey reveals that the most common reason for which the gold loan is being taken is for business purposes followed by marriage and reframing of debt. Vacations are not the popular reason for availing gold loan.**

9. **In contrast to the hypothesis that middle class persons and lower class persons are highly involved in the gold loan, survey concluded that Business class and upper middle class people are more interested in borrowing gold loan.**

1. Limitations

undoubtedly for an account holder, though loan against gold is very effective but one should always remember the time limit provided by the lender and if the concerned amount is not repaid in that stipulated time, one can lose their hold on their gold. So, it involves much risk which cannot be overlooked. Secondly, the amount of loan you can get, even if the jewellery is hallmarked and of high quality, the loan amount would be much less than the jewellery is worth. Thirdly, a limitation is for bank also that is if the value of gold falls below the loan amount, the borrower will never come back to free his gold. But if he has mortgaged his grandmother's necklace, whether the price goes up or down, he will come back for it.

2. Conclusion

The future of gold loan is finest. It is very useful for the development of economy that's why RBI has focus to increase the facility to provide the gold loan. Most of the banking organizations are in process to start the Gold Loan. T. M Bhasin, chairman and managing director, a Indian Bank Indian Bank would set up 15 exclusive branches to take care of its jewel loan business, and has set a business target of Rs 500 crore during the first year of operations. This segment offers big potential to the bank with its existing loan book size from jewellery at around Rs 4,400 crore. To make the process easier and to tap the business, we decided to set up these exclusive branches. The new branches would be taken care of by exclusive staff. No doubt it will help to improve the economy by the way of providing employment as well as by increasing the production. Ajay Mitra, managing director- India, Middle East & Turkey, World Gold Council said, "Acceptance of gold for loans by banks and financial institutions are an important development that will infuse greater confidence in gold as an asset class. With banks entering gold bar business, availability of infrastructure for storage, and with medallions being accepted for securitization purposes, the role of gold is surely bound to change from a commodity to a monetized asset that would encourage consumers to invest more in gold, a time-tested secure and now a monetized asset class".

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AN EMPIRICAL STUDY ON INDIAN MUTUAL FUNDS AND THEIR PERFORMANCE EVALUATION PRIOR TO RECESSION

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ABSTRACT

This research work aims to know how the performance of mutual funds is assessed and ranked so as to measure investment avenues. For the purpose, Sharpe, Treynor, Jensen measured along with statistical tools Mean Return, Variance, Standard Deviation, Beta' have been used on historical data of selected funds from S&P, CNX, Nifty, index for the period of 2007- 2008. After having analyzed it was found that Deutsche was the best performing fund giving the highest annualized return of 37%. Other funds like ABN AMRO, Canara and DB, Cholamandalam being laggards in respect of returns as they had a high Beta making them quite sensitive and hence reducing their annualized returns. Six funds out of nine were categorized in the low return/high risk quadrant, showing poor management of these funds. Fidelity had the highest value of 1.1665 and 0.0286 in Sharpe and Treynor respectively; Canara had the highest value of 0.000856 in Jensen. Considering **R^2** Franklin was the best securing the highest value of 0.669. Hence, we can see that different funds are appearing to be the best in different respects i.e. Rp, Sharpe, Jennsen and **R^2** as well contradicting each other's authenticity.

JEL Classifications: C11, G11, G12,

Keywords: Rank, Performance evaluation, Mutual Funds, Risk–Return, Beta, NAV, Jenson's, Treynor's, Sharpe's, GOI, SEBI

Introduction

Universal survival is a mother to all economic activities which generate, coordinate and control demand and supply of all needs, wants and desired materials. To fulfill the need of survival, industrialization with social norms is a must which is possible through efficient supply of financial resources from state and savings of common investors having appetite to invest. In the present growing and complicated business environment, the investment avenues change frequently with challenging complexities in financial sector depending upon economic circumstances and investors risk taking behavior. Capital markets which are regarded as the barometer of the economy and represent the macro economic affairs of the nation have to adopt change with protective flexibility in order to achieve minimum social objectives.

To cater to the globalised economic competitive circumstances and to oblige varied requirements of savers and investors, wide spectrum of financial intermediaries under the statutory ratification both in money market and capital market with central banks as the constituent body at apex level have come into existence across the globe. Efforts to achieve these socio-political objectives, government adopted and implemented policies and procedures of liberalization, privatization and globalization with pace which impacted competition in Indian economy and explored the opportunities to all economic players to expand and diversify their product range with operational excellence. In order to strengthen the efforts to achieve the competitive target, GOI & SEBI and regulators of mutual funds industry require effective execution of strategy for new high breed financial instruments, improvise technology, better processing of credit and risk appraisal, efficient and protective fund management, effective and lucrative product diversification, sound responsive structure, internal audit and control, trained, efficient and talented man power.

Generally, investment means a sacrifice of certain present value for unknown future rewards which relatively involves strategic decisions like, where to invest, when to invest and how to invest. It is a hard fact that investors have ideology to invest in those stocks which generate maximum returns with lesser or no risk. They have orthodox but wise considerations of the market factors like company goodwill, government policies, economics of sales and the trend in a particular sector which influences them in investing in safe portfolios, and mutual fund is one of those safe avenues. To avail the opportunity of growing globalization, financial market has been flooded with varieties of high breed investment instruments with confused, complicated and excellent features and mutual fund is one of them. It is an American concept and first time it was introduced in 21 March, 1924, later in 1929 after US stock market crashed, the Securities Act of 1933 was passed by the Congress and after a year, in 1934 Securities Exchange Act was passed. These Acts were passed to protect the investors and to bring transparency to boost mass confidence in capital market. The Act required that a fund be registered with the Security and Exchange Commission (SEC) and provide complete information through prospectus.

Later, the SEC assisted in drafting Investment Company Act of 1940, with which all SEC registered funds had to comply. With reestablished confidence under the statutory guidance, mutual funds began to blossom and with passage of time gained enough popularity in developing countries as an effective institutional tool to bridge the gap between supply and demand of capital in the market. In India, MF started in 1964 with US 64 scheme floated by Unit Trust of India under a separate act, the UTI Act 1963, which started its operations in 1964 and it was followed by PSU banks and later big private players became part of MF sector.

It is a corporation that works for mutual interest and accepts funds from common investors to buy stocks, long term bonds, and short term debt instruments issued by State or non -State business entities in futuristic hope of mutual gains with minimum risk through diversification. The term mutual generally emphasizes that all gains or losses resulting from the investment accrue to all the investors in proportion to their subscription. With protective features, mutual funds industry in India has grown dramatically and has established its roots and gradually attained maturity which can be viewed by the quantum of secondary trading and variety of funds offered by the issuers. Due to its successive growth, the mutual fund industry is judicially bound to be socially transparent and thus it became of paramount importance to understand the concept of the mutual fund and its very significance in economic development and its status in India which are also known as Investment Trust, Investment Company, Money Fund etc. Securities and Exchange Board of India (Mutual Fund) Regulations, 1996 defines mutual funds as a fund established in the form of a trust to raise monies through the sale of units to the public or a section of the public under one or more schemes for investing in securities including money market instruments. MF as a financial instrument has grown with decent pace and is playing attractive role in mobilizing financial resources from common investors along with motivating them to participate with confidence in capital market and also ensuring the savers triple benefits of minimum risk, steady returns and capital appreciation.

It is well organized and professionally managed investment company constituted by common investors for common objective with social and financial mechanism to pool their money in hope of future appreciation by investing pooled resources in diversified range of securities like stock, preference share, debentures, bonds or money market instruments in accordance with objectives as disclosed in offer document. Making investment through mutual funds means becoming a shareholder or unit holder of the fund with the diversification advantage. The invested money in MF by buying some units or portions of it diversify automatically in a set category of investments designed to suit the investors preferences, needs, risk taking ability and the return derived through market investment and the capital appreciation realized by the scheme, are fairly distributed amongst the investors in proportion to the number of units they possess by way of dividend or net asset value (NAV) appreciation.

Invested money in MF is jointly managed by professional money managers who have expertise and are qualified for the authorized responsibility of investing the pooled resources (*called a corpus*) from classified schemes like open- ended scheme in which no fixed maturity period is specified for redemption and close-ended scheme in which maturity period is specified for redemption. They obligate the responsibility entrusted by the board / Trust according to the guidelines issued by SEBI and other regulatory bodies of India.

With these distinct features mutual fund has established market confidence and with gradual and decent growth it will become back bone in the area of financial services in India. Its performance and growth has proved that mutual funds are highly regulated and protective segments of financial market. Securities and Exchange Board of India (SEBI) is the statutory body at present that has been assigned the power to formulate policies, procedures and regulate the mutual funds and issues guidelines from time to time. It accepts the instruction of GOI through RBI and act accordingly. In exercise of the powers conferred by section 30 read with clause (c) of sub-section (2) of section 11 of the Securities and Exchange Board of India Act, 1992 (15 of 1992), It notified regulations SEBI (Mutual Fund) Amendment Regulations, 1993 were fully revised in 1996 which subsequently amended by the SEBI in 1997, 1998, 1999 respectively. In order to provide more teeth to the regulatory body to regulate MF authoritatively third amendment, SEBI, FM Regulation 2006 came in force further in 2011, amended regulations called the Securities and Exchange Board of India (Mutual Funds) (Amendment) Regulations, 2011 came into force to control mutual funds either promoted by public sector or by private sector entities 'permitted by the RBI in 1995 to set up Money Market Mutual Funds (MMMFs)' including promoted by foreign entities except UTI.

SEBI requires that all MFs should be established as trusts under the Indian Trusts Act and the instrument of trust shall be in the form of a deed, and all the schemes floated by MFs are required to be registered with SEBI under the provisions of the Indian Registration Act, 1908 (16 of 1908) except MFs dealings exclusively with money market instruments have to be registered with RBI. The commencement of MF has to follow multiple regulations and require registration certificate which is issued by SEBI. Further only one third of the directors can be appointed or nominated appointee of the trust and two thirds of the directors of Trustee Company or board of trustees must be independent. SEBI approved Asset Management Company (AMC) as a separate body who manages the funds following the statutory guidelines that minimum net worth of an AMC or its affiliate must be Rs. 50 million to act as a manager in any other fund and the sponsor who promote the fund, the trustees who holds the property for the benefit of unit holders and custodian who is responsible to holds securities of various schemes of the fund are granted a certificate of registration by the SEBI under the Securities and Exchange Board of India (Custodian of Securities) Regulations, 1996. For better transparency all the MFs have statutory obligations to advertise their details in every form of media and also their rating.

Research Objective:

The main objective of the study is to judge and evaluate the performance and growth pattern of selected mutual fund schemes in public and private sector and to test the practical rationality of Sharpe's, Treynor's & Jenson's evaluation measures and understand the interdependence of funds & Index (S&P, CNX and Nifty) and adjudicate ranking according to their evaluated performance.

Hypotheses Formulated for Study:

For better interpretation and conclusion following hypotheses are formulated and tested in respect of performance evaluation of the Indian mutual funds:

H1: The sample mutual funds are earning returns greater than the market portfolio returns benchmark returns in terms of risk.

H2: The sample mutual funds are offering the advantages of diversification and superior returns due to selectivity by their investors.

Research Methodology:

The study makes a comprehensive evaluation of nine most trusted and preferred Tax fund-Growth option Mutual Fund schemes over period of 1 year (2007-2008). For the purpose, Random sampling technique has been adopted to carry out the captioned study. The research is empirical and analytical in nature and the required data are secondary and are collected from newspapers journals, published annual and periodical reports of the respective funds, websites (www.mutualfundindia.com, www.amfiindia.com). For evaluation of performance Sharpe's, Treynor's & Jenson's measures has been implemented along with statistical tools 'Mean Return, which shows the average daily return of the portfolio and the index, Variance, which shows the fluctuations in the return generated and it should be as low as possible, Standard Deviation, which shows that how much returns have deviated from the mean return, Beta, which shows the sensitivity of the fund with the market fluctuations and Risk free rate of return of that period is taken of 182 days Treasury bill. Rf = 7.1877 %. The outcome of the study depends on the selected period and tools used by the researchers which may differ from other analysis.

Data Analysis & Interpretation:

The core of the research started with the collection of raw data w.r.t NAV & historical data for the S&P CNX Nifty index for the period April 2007-March 2008

Selected Funds for Study:

ABN Amro, Canara, DBS Chola, Deutsche, DSP ML, Escorts, HDFC, Franklin, Fidelity

Tools Used for Analysis:

To evaluate the performance of selected funds from S&P CNX Nifty index for the study and to interpret the results following measures were used, Treynor Measure, Sharpe Measure, Jensen Measure, along with statistical tools 'Mean Return, Variance, Standard Deviation, Beta'. The overall analysis and interpretation steps comprised of mainly six steps which have been discussed as Part- I and Part –II. This section comprises of Part-I only as laid below

Step I:

a) Calculation of the mean & standard deviation of the returns of the funds & index(on daily basis);

$$\text{Returns} = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}} * 100$$

The mean daily return for the year viz.250 days is calculated as below;

$$\text{Mean return} = \Sigma R_i / n$$

; n=250 days & Ri – Daily returns

b) Calculation of standard deviation of each fund & index;

$$(\sigma) = \sqrt{(\Sigma (Dx)\ 2/n)}$$

; Dx= (Ri - R.avg.)& it means deviation of the return from its mean

Interpretation- 'σ' *denotes the degree to which the individual return is scattered away of the mean returns*

Step-II

a) Beta(β) is calculated as below;

$$(\beta) = [\text{Cov.}(R_i, R_m) / \text{Var.}(R_m)]$$

; $\text{Cov.}(R_i, R_m) = \Sigma (D_i * D_m)/n$

& Rm = Mean Market Return

Interpretation- Beta denotes the sensitivity of the fund w.r.t market fluctuation.

Data Analysis and interpretation-II

The performance of sample mutual fund schemes has been evaluated by using the three types of performance measures.

Step III: Calculation of the Sharpe Measurement:

It is based on the fundamentals that performance of a mutual fund can be reflected in terms of the excess returns over the risk free rate of return during a particular period. These excesses are further weighted against risk of the portfolio in terms of the standard deviation of the returns. Both of these are used to generate an index, which is as follows:

$$Sp = \frac{(Rp - Rf)}{\sigma}$$

Where: Sp- Sharpe's index

Rp- Return of the portfolio

Rf- Risk-free rate of return

σ- Standard deviation of returns

Interpretation –The portfolio with greater value of Sp is a better investment option

Step IV: Calculation of Treynor's reward –to-variability measure:

This method emphasizes the opinion that a managed portfolio is superior in selection of financial products thus must have excess returns over the risk free returns and have assumption that a managed portfolio has non-systematic risk; therefore, risk in a portfolio can be measured in terms of Beta (β), indicating market systematic risk. A best portfolio representing best correlation with market is likely to have a Beta '1'.Beta is the sensitivity measurement indicating volatility of the returns. It indicates about the expected fluctuations in the returns, if market fluctuates by 1%.

$$Tp = \frac{(Rp - Rf)}{\beta p}$$

Where: Rp- Return of the portfolio

Rf- Risk-free rate of return

βp- Beta of portfolio

Tp- Treynor's index

While comparing the various portfolios the one with highest Tp is the best one

Step V: Calculation of Jensen's Index:

Jensen measures of evaluation based on the fundamental of CAPM. It believes that performance of a mutual fund can be compared against the expected returns, which it must generate as per the fundamentals of CAPM. It is based on the following assumptions that are 'Existence of risk free assets, Existence of market portfolio.

$$\mathbf{ERp = Rf + \beta p(ERm - Rf)}$$

Where: Rf- Risk-free rate of return

ERp- Expected portfolio return

Bp - Beta of portfolio

ERm- Expected market return

Higher the value of this index the better is the portfolio to invest

Step VI:

Comparison of the Mutual fund's performance with S&P, CNX Nifty Index both as well as their inter-comparison by using the aforesaid three indices & ultimately ranking of the funds has been done. All the above tools & parameters have been applied henceforth to analyze & conclude the performance of the funds in the form of tables-as laid below;

Review of Literature

Literature review plays an important role in exploring the unexplored aspect of the topic and provides systematic direction and important feedback to the researchers in the selected area in which they have limited or no exposure. It is an organized and scientific approach of study which requires collection and systematic analysis of literature. A universal survey of literature unearthed the reality that ample research has been carried out in this field and found that researchers have critically examined different theories and empirical studies conducted worldwide which judiciously revealed the fact that most of the study differ in opinion due to study period, nature of economy, market condition, companies policies, investors behavior, political environment, recession etc. However they contributed with their potential and gave multiple dimensions to the respective field and paved the way for future. This study has been carried out in order to fulfill the gap and judicially verify the authenticity and validity of the past studies and assess the future of MFs.

The first extensive and systematic study in the field of mutual funds was done by *Friend, Brown, Herman and Vickers* in which they considered 152 mutual funds with annual data from 1953 to 1958 and created an index of Standard and Poor's indices of five securities, with the elements weighed by their presentation in the mutual funds sample, *Friend and Vickers (1965)* in their study evaluated the performance of mutual funds against the randomly constructed portfolios and constituted that mutual fund on the whole have not performed superior to random

portfolio, *Treynor (1965), Sharp (1966)* in their study tried to identify the realized return with respect to the corresponding risk associated with the fund, *Jenson (1968)* in his study gave new dimension to the portfolio performance by concentrating on managers predictive ability problem in order to earn returns successfully and concluded that fund managers were not able to forecast security prices well enough to recount even their brokerage expense, *Carlsen (1970)* in his study produced risk adjusted performance evaluation and emphasized that time period, type of mutual fund and the choice of benchmark play critical role. Any conclusion drawn from the calculation of return depend on them, *James R.F guy (1978)* In his study implemented Sharpe and Jensen measure to evaluate the risk adjusted performance of UK investment trust and concluded that no trust had exhibited superior performance compared to the London stock exchange index, *Peasnell, Skerratt and Taylor (1979)* in his study remarked the Jensen investigation into mutual fund performance. For the purpose he used the insight of arbitrage theory and endorsed the Jensen findings that professionally managed funds are systematically unable to outperform the market, *Berkowitz, Finney and Logue (1988)* in his study used quarterly data over the period of 1976-83 to evaluate the performance of mutual fund and measured higher alpha for growth funds and assumed that the findings are evidence of the small firms, that effect, *Barua, Raghunathan and Varma (1991)* in their study evaluated the performance of Master Share during the period 1987 to 1991 using Sharpe, Jensen and Treynor measures and concluded that the fund performed better than the market, but not so well as compared to the Capital Market Line, *Ajay Shah and Susan Thomas (1994)* in their study examined the performance evaluation of 11 mutual funds schemes and concluded that only one scheme has performed superior and other schemes in study has earned inferior returns than the market in general, *Jaideep and Sudip Majumdar (1994)* in their study evaluated the performance of five growth oriented schemes by using CAPM and Jensen measures and concluded that selected mutual fund schemes underperformed and offered lower returns than expected in comparison to general market during the study period, *Kaura and Jayadev (1995)* in their study evaluated the performance of growth oriented schemes by using Jensen, Treynor, Sharpe measures and concluded that selected mutual fund schemes have underperformed comparatively, *R.A. Yadev and Biswadeep Mishra (1996)* in their study implemented Jensen, Treynor, Sharpe measures to evaluate the performance of 14 mutual fund schemes on monthly data base and concluded that manager of the schemes based on conservative investment policy and maintained low profile beta and resulted better performance as a whole in terms of non risk adjusted measures of average returns, *K.V. Vao and Venkateshwarlu (1997)* in their study evaluated the performance and concluded that the performance of the UTI is mixed and study further indicated out performance in only some of the schemes, *Amitabh Gupta (2000)* in his study examined the investment performance of 73 mutual fund schemes from 1994-1999 and used weekly NAV data for the study and implemented six performance measures and concluded that the schemes have shown a mixed performance during the period, *Rania Ahmed Azmi (2000)* in their study witnessed significant relations between mutual fund performance (the dependent variable), and fund's manager gender, expense ratio, objective, total risk and type

(independent variables), *Mishra and Mahmud (2002)* in their study evaluated the performance of mutual fund by using lower partial moment which was based on lower partial moment. They evaluated portfolio performance and risk from the lower partial moment by taking into account only those states in which return is below a pre-specified "target rate" like risk-free rate, *M. M. Ibrahim (2003*) in his study analyzed the role of M F and evaluated the performance of the Nigerian mutual fund industry between 1990 and 2002. The study produced the fact that some fund managers were able to offer better yields to investors and even beat the NSE index occasionally not on a consistent basis, *Ferruz and Ortiz (2005)* in their study attempted to examine the mutual fund in India by employing factor analysis and cluster analysis, *Agarwal (2007)* in his study provides an overview of mutual fund performance in emerging markets and analyzed prevailing pricing mechanism, their size and asset allocation, *Anand and Murugaiah (2008)* examined the components and sources of investment performance in order to attribute it to specific activities of Indian fund managers by using Fama's methodology and found the fact that the mutual funds failed in expectations to compensate the investors for the additional risk taken by them, *S.M.Tariq Zafar, D.S.Chaubey and S.M.Hasan(2011)* in their study tried to analyze the growth pattern of mutual fund industry in coordination with private and public sector mutual fund schemes and evaluated their performance by analyzing the NAV and their respective returns using the Sharpe index model and found that SBI is the best performing mutual fund followed with UTI and HDFC whereas the worst performing mutual fund is of Reliance, *Nishant Patel (2011).*

In his study examined fund sensitivity to the market fluctuations in term of Beta and found that the risk and return of mutual funds schemes were not in conformity with their stated investment objectives further sample schemes were not found to be adequately diversified, *S.M.Tariq Zafar, D.S.Chaubey and S.Imran Nawab Ali (2012)* in their study evaluated the Performance of mutual funds equity diversified growth schemes for the period of 2007-2008 and tried to understand the interdependence of funds & Index (BSE 200). For the study they used Sharpe's, Treynor's & Jenson's measures and found very peculiar condition which is due to the fact that the market crashed during middle of January'2008 & further reduction resulted causing the Rm to reduce drastically as compared to fund return, *Rasheed Haroon, Qadeer Abdul (2012)* in their study investigates the performance of survivorship biased twenty five open ended mutual fund schemes in Pakistan and managers ability of stock selection and also measured the diversification. The study revealed that overall performance of the funds remains best as compare to market but mismanagement observed in mutual fund industry during the study period .Further study also revealed that portfolio was not completely diversified and contains unsystematic risk\

Analysis of Various Funds

This section of paper embodies the calculation and scientific analysis of selected variables which are taken for the study purpose. For study raw data which encompasses yearly results and balance sheet of the selected mutual funds were revealed by the researcher and calculated, analyzed and evaluated the data to compare the performance of selected funds with S&P, CNX Nifty Index. There inter-comparison also been done by using the aforesaid statistical tools and three indices and further, funds are ranked accordingly. All the above tools & parameters have been applied henceforth to analyze & conclude the performance of the funds. Further the analysis and interpretation of study carried out on chronological order according to the set parameters and inferences of the banks are as follows.

Inferences of the Banks:

ABN Amro, Inference:

i. In this fund we can clearly see that the NAV gave a steady return from 02-April-07, but due to the market crash of Jan. the return started declining. Even though the market crash, the market outperformed the fund.
ii. There is more variance in the return of the portfolio than the return of the market. Var. p > Var. m, i.e., 0.00042 > 0.00040.
iii. This fund has a fairly high beta of 0.78 which shows that the fund is quite sensitive to the fluctuation in the market.

Canara, Inference:

i. In April, the NAV of the fund was 14.58 and by the year end it was 15.76 giving a return of 8% as against the market index of 3633.60 in April and 4734.50 by the year end giving a return of 30%. This shows that the Rm > Rp.
ii. There is more variance in the return of the portfolio than the return of the index. Var. p > Var. m, i.e., 0.00048 > 0.00040
iii. This fund has a high beta of 0.82 which shows that the fund is very much sensitive to the fluctuation in the market.

DBS Chola, Inference:

i. The fund NAV gave a return of 48% from April to January, which declined to 8.82% in the year end. As against the NAV the market gave a return of 62% from April to January which decline to 30% by the year end. Therefore Rm > Rp
ii. There is more variance in the return of the index than the return of the portfolio. Var.m > Var.p, i.e., 0.00040 > 0.00038.
iii. This fund has a fairly high beta of 0.77 which shows that the fund is quite sensitive to the fluctuation in the market.

Deutsche, Inference:

i. The NAV gave a steady return from 02-April-07 but declined due to the market crash on 18-Jan.-08. The fund outperformed the market, it clearly shows the good fund management of the firm.
ii. There is more variance in the return of the index than the return of the portfolio.
Var.m > Var.p, i.e., 0.00040 > 0.00036.
iii. This fund has an average beta of 0.76 which shows that the fund is not very much sensitive to the fluctuation in the market.

DSP ML,Inference:

i. The fund proved to be good for the investors as by comparing the year starting, the downfall in the market and the ending NAV's, it shows that the Rp > Rm.
ii. There is more variance in the return of the index than the return of the portfolio.
Var.m > Var.p, i.e., 0.00040 > 0.00039
iii. This fund has an average beta of 0.74 which shows that the fund is sensitive to the fluctuation in the market.

Escorts, Inference:

i. In April, the NAV of the fund was 39.19 and by the year end it was 53.70 giving a return of 37% as against the market index of 3363.60 in April and 4734.5 by the year end giving a return of 30%. This shows that the Rp > Rm.
ii. There is more variance in the return of the index than the return of the portfolio.
Var.m > Var.p, i.e., 0.00040 > 0.00032.
iii. This fund has a fairly high beta of 0.72 which shows that the fund is quite sensitive to the fluctuation in the market.

HDFC, Inference:

i. In this fund we can clearly see that the NAV gave a steady return from
02-Apr.-07, but due to the market crash of Jan. the return started declining. Even though the market uncertainty, the Rm was more than the Rp. This shows that the effect of the downfall was far more on the portfolio than the market index.
ii. There is more variance in the return of the index than the return of the portfolio.
Var.m > Var.p, i.e., 0.00040 > 0.00028.
iii. This fund has an average beta of 0.69 which shows that the fund is quite sensitive to the fluctuation in the market.

Franklin, Inference:

i. The fund gave a return of 62.39% from April to January, which declined to 26.17% by the end of F.Y. '08.As against the NAV the market gave a return of 62.73% from April to January which decline to 30% by the end of F.Y. '08. Therefore we can see that the Rm > Rp.
ii. There is more variance in the return of the index than the return of the portfolio.

Var.m > Var.p, i.e., 0.00040 > 0.00031.

iii. This fund has an above average beta of 0.73 which shows that the fund is quite sensitive to the fluctuation in the market.

Fidelity, Inference:

i. Here we can clearly see that the NAV gave a steady return from 02-April-07 to mid of January, but due to the market crash in January the return started declining. Even though the market uncertainty, the Rm was more than the Rp.

ii. There is more variance in the return of the market than the return of the portfolio. Var.m > Var.p, i.e., 0.00040 > 0.00027.

iii. This fund has an average beta which shows that the fund is not very sensitive with respect to the fluctuation in the market.

Table:1 Performance Evaluation & Ranking

Inter Comparison of Performance & Ranking of the Funds

					SHARPE		TREYNOR		JENSEN	
Fund	*Rp*	*σp*	*βp*	*R²*	*INDEX*	*RANK*	*INDEX*	*RANK*	*INDEX*	*RANK*
ABN AMRO	0.0008	0.02061	0.78	0.561	-3.4486657	2	-0.0911244	3	0.0165929	2
CANARA	0.0006	0.022	0.82	0.538	-3.2398636	1	-0.0869232	1	0.0137579	1
DBS CHOLA	0.0005	0.01941	0.77	0.61	-3.6773313	5	-0.0926974	5	0.0173017	3
DEUTSCHE	0.0014	0.01909	0.76	0.604	-3.6918282	4	-0.0927329	2	0.0180105	4
DSP ML	0.0014	0.01972	0.74	0.549	-3.5738844	3	-0.0952392	4	0.019428	5
ESCORTS	0.0014	0.01776	0.72	0.641	-3.9682995	6	-0.0978847	6	0.0208456	7
HDFC	0.001	0.01683	0.69	0.654	-4.2113488	8	-0.1027203	8	0.0229719	8
FRANKLIN	0.0011	0.01756	0.73	0.669	-4.0305809	7	-0.0969548	7	0.0201368	6
FIDELITY	0.0008	0.01643	0.67	0.642	-4.3260499	9	-0.1060851	9	0.0243894	9

Note: **Rf = 7.1877 % Rm = 0.001**

Analysis:

- The inter-comparison chart of performance of funds shows that Canara is on the 1st Rank in all the performance evaluation measures, followed by ABN Amro in the 2nd position and Fidelity being the last fund taking the 9th position.
- These performance evaluation measures does not seem to be the most appropriate as the Rp of Deutsche, DSP ML and Escorts are equal (0.0014), and then too they have been given different ranks.
- Considering R^2 Franklin appears to be the best performing fund having an R^2 of 0.669 followed by HDFC, Fidelity, Escorts, DBS Chola, Deutsche, ABN Amro, DSP ML, and lastly Canara.
-

Table: 2

Risk and Return Grid of Mutual Fund Schemes		
	I	II
HIGH	Rp > Rm σp < σm	Rp > Rm σp > σm • DEUTSCHE • DSP ML • ESCORTS
	IV	III
RETURN LOW	Rp < Rm σp < σm	Rp < Rm σp > σm • ABN AMRO • CANARA • DBS CHOLA • HDFC • FRANKLIN • FIDELITY
LOW	RISK	HIGH

Inference:

Quadrant I:

Represents those funds that have earned higher return than the market with lower risk than the market (High return/Low risk), in my research, no funds lie in this quadrant. Absence of any of the fund in this category indicates that they are not professionally managed.

Quadrant II:

Shows those funds whose returns are higher than the market with a higher risk than the market (High return/High risk), Three funds out of nine lie in this quadrant, namely, Deutsche, DSP ML and Escorts, which shows that the higher return has only been generated by taking a higher risk.

Quadrant III:

This quadrant consists of those funds whose returns have been lower than that of the market but the fund risk are higher than that of the market (Low return/High risk). In this research six

funds come under this quadrant, i.e., ABN Amro, Cananra, DBS Chola, HDFC, Franklin and Fidelity. In this we can see that even after taking a higher risk than the market they have generated a lower return than the market. This shows that they are not managed professionally.

Quadrant IV:

Forth quadrant includes those funds whose returns are less than the market return and the fund risk are also lower than that of the market risk (Low return/Low risk). No fund falls under this category.

Table:3, Consolidated Ranking Chart

Rank	INDEX & FUNDS		
	Sharpe	**Treynor**	**Jensen**
1	Canara	Canara	Canara
2	ABN Amro	Deutsche	ABN Amro
3	DSP ML	ABN Amro	DBS Chola
4	Deutsche	DSP ML	Deutsche
5	DBS Chola	DBS Chola	DSP ML
6	Escorts	Escorts	Franklin
7	Franklin	Franklin	Escorts
8	HDFC	HDFC	HDFC
9	Fidelity	Fidelity	Fidelity

Inference from the Consolidated Rank Chart:

In the above table, we can see that according to the performance evaluation measure Canara proves to be the best performing fund. These models do not seem to be appropriate as in the 3rd Rank. All the three evaluation measures show different funds, i.e., DSP ML, ABN Amro, DBS Chola. The worst performing fund according to these measures is Fidelity which lies in the 9th Rank. The only performance evaluation measure that does not seem to be consistent enough is Jensen than other two. As in Sharpe and Treynor six out of nine funds have the same ranking. This shows that these two evaluation measures are more consistent. Thus we can say that none of these could be said to be conclusive for the judgment of performance of the mutual fund.

Findings, Conclusion, Recommendations:

Findings:

- It can be seen that the last three months (Jan.-Mar.) of F.Y. '08 has not been a good quarter for the Mutual Fund industry as a whole as the top performing fund in respect of

return on portfolio (Rp) was Deutsche, DSP ML and Escorts, giving a return of 88%, 95% and 83% respectively from April '07 till mid January '08, which declined to 37%, 35%, 37% respectively till March'08.

- Canara Mutual Fund secured the 1st position in all the three performance evaluation measures.
- Among the funds chosen, ABN Amro, Canara and DBS Chola are the funds having a high Beta (β), which implies that they are quite sensitive to the market fluctuation.
- From the risk and return grid we can see that out of nine funds six funds, i.e., ABN Amro, Canara, DBS Chola, HDFC, Franklin, and Fidelity lie in the third quadrant (Low return/High risk). Hence, showing lack of effective and efficient management.
- The best performing fund having the highest R^2 of 0.669 is Franklin.
- These performance evaluation measures cannot be said to be conclusive and final criteria for the judgment of performance of the mutual fund as Sharpe, Treynor, Jensen, ranked three different funds in the same 3rd rank
- According to Sharpe & Treynor, index Fidelity Mutual fund proves to be the best having the highest value of 1.1665 & 0.0286 respectively.
- According to Jensen, Canara mutual fund is the best having a highest value of 0.000856

Conclusion:

Stock selection is one of the most important characteristics of a fund manager, with the help of which he can generate higher returns by taking a relatively lower risk. After having examined the investment performance of Indian Mutual Funds with respect to the three performance evaluation measures, the results do not comply with the hypothesis taken in the study. None of the funds taken in the study exhibit a linear relationship of risk and return. HDFC and Fidelity are the funds that have an average Beta, which shows that majority of mutual funds have a very high volatility. Only three funds comply with all the three performance evaluation measures, having the same rank, i.e. Canara fund having the 1st Rank, HDFC at the 8th and Fidelity at the last position. Therefore, it can be said that proper balance between selectivity and diversification has not been maintained. This is due to the fund manager's poor investment planning of the funds.

Recommendations:

It can be recommended that the fund manager of the mutual funds taken in the study should review their investment strategies in respect of portfolio diversification. They should take into consideration less risky assets which could reduce the volatility of the funds.

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AN EXPLORATORY STUDY TO MEASURE SELF-MONITORING PERSONALITY TRAITS AND MOTIVATIONAL FACTORS OF EMPLOYEES WORKING IN BANKING SECTOR

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ABSTRACT

The purpose of this paper is to measure the self-monitoring personality trait and motivational level of the employees working in banking at different public and private sector banks. Data were collected from 219 officers of different banks. Chi-square test was used to test the hypothetical relationship of respondents among their personality trait, motivational level, age, educational level, educational discipline, managerial level and managerial experience.

Findins suggested that self-monitoring personality does not have any bearing on Motivational profile of individuals. Biographical profile of respondents such as age, educational level and managerial experience has no association with motivational profile. On the other side, biographical profile such as educati

Key Words- High self monitor, Low self-monitor, motivation, motivational needs

Introduction

An individual is motivated by several psychological drives. There drives are social recognition, affiliation, power, achievement and personality traits. An objective of this research is to construct a whole and more realistic concept of Motivation and self-monitoring personality traits. In this study, Self-Monitoring is taken as one of the personality traits. Self-Monitoring refers to an individual's ability to adjust his/her behaviour to external situational factors. Snyder argued that the population, generally speaking, can be divided into two groups: High self-monitors (HSM's), who use the behaviour of others as a guided to how they should conduct themselves, and low self-monitors (LSM's), who use their inner beliefs, values, attitudes and other personal attributes as guided to behaviour. It has been suggested that HSM's are particularly concerned with their self image that they project to others, and tend to use situational and interpersonal specifications to ascertain how they should behave in given situations. They therefore adopt different behaviours for different situations, depending upon the social cues evident in each context. It follows from this that HSM's are likely to show noticeable situation-to-situation changes in behaviour (Snyder, 1974, 1987). Research findings tend to support this idea, with HSM's showing marked changes in behaviour, relative to situational cues of appropriateness (Snyder, 1991).

In contrast to this, LSM's tend to use their values, beliefs and attitudes as guides for behaviour, and place considerably less emphasis on situational cues. They are not concerned with altering their behaviour to fit into to any situation. That is, they are concerned to act in accordance with their inner beliefs and dispositions, and will, therefore, show strong consistency in behaviour. These individuals should, therefore, show strong consistency between inner states and behaviour, and research findings have tended to support this claim (Syander, 1987).

Motivation

Motivation is a fundamental component of adaptive behavior. Motivational psychology tries to explain aspects of "why" we engage in behaviour. Motivation can be based upon factors intrinsic to an individual like thirst, as well as the presence of motivational stimuli in the environment like a cigarette to a smoker. The biopsychology of motivation attempts to identify and understand the biological influences on motivated behaviour (Schultheiss & Wirth, 2007). The personality psychology of motivation attempts to understand why individuals have differences in motivation and how those differences in personality can be measured (McClelland, 1987). Due to the complexity of motivational systems, researchers have employed several different methods in the study of human motivation in an effort to capture the multiple aspects of motivational processes from biology to behaviour. We will highlight a few methods that are relevant to the studies described in this research. McClelland asserted that a person's needs are influenced by their cultural background and life experiences.

He also asserted that the majority of these needs can be classified as the needs for affiliation, achievement or power. A person's motivation and effectiveness can be increased through an environment, which provides them with their ideal mix of each of the three needs (N-Pow, N-Ach, and N-Affil).

(a) Need For Power.

This need is indicated by a person's desire to control and influence the behaviour of others. A person with desire for power likes to compete with others when the situation is favorable for such domination. Such persons prefer jobs that provide them an opportunity to acquire leadership with power. There are two aspects of power, accordingly to McClelland. These are: positive and negative. Positive use of a power is necessary when a manager desires to achieve results through the efforts of others. The negative use of power is possible when a person uses power for personal aggrandizement. Such use of power may prove to be harmful to the Organization.

(b) Need For Affiliation.

Here, the person has a need/desire for affection and wants to establish friendly relationships. A person with high need for affiliation seeks to establish and maintain friendships and dose emotional relationships with others. He wants to be liked by others and develops a sense of belonging by joining informal groups in the Organization. Such persons (**managers**) prefer tasks that require frequent interaction with subordinates/co-workers.

(c) Need For Achievement.

Here, the person desires to succeed in **competitive** situations. He desires to prove his superiority over others. Such person sets reasonably difficult but potentially achievable goals for himself. He accepts moderate degree of risk. He is more concerned with personal achievement than with the rewards of success. Moreover, he feels that he can achieve the goal with his efforts and abilities. He also desires to have concrete feedback (social or attitudinal) on his performance. Such person has high level of energy and capacity to work hard. He naturally prefers jobs which tax his abilities and skills fully. This again is for achieving the objectives set. According to McClelland, the need for achievement is the most important need which can be used effectively for the economic progress of a nation.

Persons with achievement needs tend to be motivated by difficult, challenging and competitive work situations and not by routine and non-competitive situations. They habitually spend their time thinking about doing things better. They are not motivated by money but in their future achievements. Such **employees** are better achievers and naturally get **promotions** faster. An **Organization** also grows faster and moves towards prosperity with the support of such achievement seekers employees.

Objectives

The present study was conducted with following objectives:

1. To measure, explore, and analyze motivational needs of managers using a structured questionnaire.
2. To identify the possible relationship between Self-Monitoring personality trait and motivation, with the help of certain testable hypothesis.
3. To generating certain useful and valid hypotheses on the basis of the findings of the present study giving a useful direction for future research in the field of personality and motivation.

Hypotheses

Following Null Hypotheses were formulated for testing them in the present study:

H_{01} There is no association between motivation and Self-monitoring personality of a person

H_{02} There is no association between Age and Motivational Profile of a person.

H_{03} There is no association between Educational Level and Motivational Profile of a person.

H_{04} There is no association between Educational Discipline and Motivational Profile of a person.

H_{05} There is no association between Managerial Experience and Motivational Profile of a person.

H_{06} There is no association between Managerial Level Motivational Profile of a person.

Methodology

Nature and Sample

The present study is non-experimental and exploratory in nature that could be categorized as a questionnaire-based Case study. It has been conducted on the officers of different public and private sector banks. Around 500 printed questionnaires were distributed to various officers of banks randomly, who are located at Jodhpur, Jaipur, Kota, Kapurthala, Delhi, and Mumbai. But only 219 completed questionnaires were received which became the sample size for the study. Thus, the response rate has been around 44%. Following is the profile of sampled respondents.

Sample Profile

Variables	Respondents	Percentage	Cumulative
Age group (in years)			
20-30	06	03	03
30-40	64	30	33
40-50	85	38	71
50-60	64	29	100
	219	**100**	
Educational Level			
Graduates	166	75	75
Post Graduates	53	25	100
	219	**100**	
Educational Discipline			
Arts	56	26	26
Commerce	15	07	33
Science	19	08	41
Engineering	116	54	95
Medicine & Law	10	05	100
	219	**100**	
Managerial Experience			
00-10	27	12	12
10-20	93	44	56

20-30	57	26	82
30-40	42	18	100
	219	**100**	
Managerial Level			
Top Level	03	01	01
Middle Level	119	55	56
Lower Level	97	44	100
	219	**100**	

The Questionnaire and Variables

As the present work is questionnaire-based case study, the collection of requisite data was done with the help of a printed questionnaire consisting of three separate sections. Part I of the questionnaire sought general information about the respondents such as their age group, their educational level, their educational discipline, managerial experience, and their managerial level at which they are working in the organizational hierarchy. These five biographical variables have been finally used as independent variables for the purpose of data analysis in this research work. Part II of the questionnaire determines self-monitoring behaviour of the respondents with the help of an instrument developed by R D Lennox and R N Wolfe. Part III of the questionnaire determines motivational needs of Achievement, Power, and Affiliation on the basis of an instrument developed by R Streers and D Braunstein. Data analysis work has been carried out by using the following variables:

Independent Variables	Dependent Variables
1. Age 2. Educational Level 3. Educational Discipline 4. Managerial Experience 5. Managerial Level 6. Self-monitoring	1. Motivational Profile

The hypotheses taken in this study is basically null hypotheses which significance level will be tested at 5% confidence level.

The next part of this research presents 'results and discussion' of the study. Various data analysis procedure and statistical procedures were employed to analyze data. For the purpose of this research Chi-square test used as a tool to analysis the hypotheses.

Results & Discussion

Section I - Result

Testing of Null Hypothesis H_{01}: To test H_{01} **(There is no association between motivation and Self-monitoring trait of a person.),** we analyzed data using chi square test taking the scores of motivation and self monitoring at a given significance level of 0.05

Table H-01: Motivation and Self-monitoring

Self-monitoring	Motivation			
	Achievement	**Power**	**Affiliation**	**Total**
Low Self-monitor	134	18	41	**193**
High Self-monitor	21	03	02	**26**
Total	**155**	**21**	**43**	**219**

Null Hypothesis

H_0: $f_o - f_e$ = Zero

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 2

Calculated Value of chi-square $\chi^2 = 2.643$;

Critical Value of chi-square $\chi^2_{0.05} = 5.99$;

Calculated Value < Critical Value

The calculated value of Chi-Square is less than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be insignificant.

Since difference is considered insignificant, the Null hypothesis is accepted.

The acceptation of null hypothesis leads us to conclude that Self-monitoring and Motivation are independent of each other and there stands no-association between them.

Result of hypothesis:

Self-monitoring examined in terms of motivational profile of respondents reveals that they are independent of each other. That means self-monitoring personality does not have any bearing on motivational profile of individuals. Human motivation is an internal urge. Hence, personality trait of self-monitoring is unimportant so far as achievement, power and affiliation motives are concerned.

Testing of Null Hypothesis H_{02}: To test H_{02} **(There is no association between Age and Motivational Profile of a person.),** we analyzed data using chi square test taking the scores of motivation and number of respondents belong to different Age at a given significance level of 0.05

Table H-02: Age and Motivational Profile

Age Group (in years)	Motivation			
	Achievement	**Power**	**Affiliation**	**Total**
20-30	04	01	01	**06**
30-40	48	07	09	**64**
40-50	63	06	16	**85**
50-60	40	07	17	**64**

Total	**155**	**21**	**43**	**219**

Null Hypothesis

$H_0 : f_o - f_e = \text{Zero}$

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 6

Calculated Value of chi-square $\chi^2 = 4.634$;

Critical Value of chi-square $\chi^2_{0.05} = 12.591$

Calculated Value < Critical Value

The calculated value of Chi-Square is less than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be insignificant.

Since difference is considered insignificant, the Null hypothesis is accepted.

The acceptation of null hypothesis leads us to conclude that Age and motivational needs are independent of each other and there stands no-association between them.

Result of hypothesis:

It has been found that age has no-association with motivational needs. This shows that change in the age has no influence on the need for Achievement, Power and Affiliation as different age groups have same motivational needs.

Testing of Null Hypothesis H_{03}: To test H_{03} **(There is no association between Educational Level and Motivational Profile of a person.),** we analyzed data using chi-square test taking the scores of motivation and their education level at a given significance level of 0.05

Table H-03: Educational Level and Motivational Needs

Educational Level	Motivation			
	Achievement	**Power**	**Affiliation**	**Total**
Graduate	115	16	35	**166**
Postgraduate	40	05	08	**53**
Total	**155**	**21**	**43**	**219**

Null Hypothesis

H_o: $f_o - f_e$ = Zero

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 2

Calculated Value of chi-square χ^2 =0.95;

Critical Value of chi-square $\chi^2_{0.05}$ =5.991;

Calculated Value < Critical Value

The calculated value of Chi-Square is less than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be insignificant.

Since difference is considered insignificant, the Null hypothesis is accepted.

The acceptance of Null hypothesis leads us to conclude that Educational Level and motivational needs are independent of each other and there stands no-association between them.

Result of hypothesis:

It is discovered that a person's educational level does not influence his motivational profile. Whether a person is a graduate or postgraduate or even otherwise highly educated, it is immaterial so far as his/her motivational profile is concerned. A

graduate or a postgraduate both can be equally achievement-oriented or power oriented.

Testing of Null Hypothesis H_{04}: To test H_{04} **(There is no association between Educational Discipline and Motivational Profile of a person.),** we analyzed data using chi-square test taking the scores of motivation and their educational discipline at a given significance level of 0.05

Table H-04: Educational Discipline and Motivational Needs

Educational Discipline	Motivation			
	Achievement	Power	Affiliation	Total
Arts	28	09	19	**56**
Commerce	11	02	02	**15**
Science	15	00	04	**19**
Engineering	92	09	18	**119**
Medicine / Law	09	01	00	**10**
Total	**155**	**21**	**43**	**219**

Null Hypothesis

H_o: $f_o - f_e$ = Zero

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 8

Calculated Value of chi-square χ^2 =3.68;

Critical Value of chi-square $\chi^2_{0.05}$ =15.507

Calculated Value > Critical Value

The calculated value of Chi-Square is more than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be significant.

Since difference is considered significant the Null hypothesis is rejected.

The rejection of Null hypothesis leads us to conclude that Educational Discipline and motivational needs are dependent and there stands association between them.

Result of hypothesis:

It has been found that Educational background discipline does influence a person's motivational profile. This means persons of different disciplines do have different motivational orientations. For example, Persons with Arts background may have different motivational needs than their Engineering counterparts.

Testing of Null Hypothesis H_{05}: To test H_{05} **(There is no association between Managerial Experience and Motivational Profile of a person.)** we analyzed data using chi square test taking the scores of motivation and their managerial level at a given significance level of 0.05

Table H-05: Managerial Experience and Motivational Needs

Experience (in Years)	Motivation			
	Achievement	**Power**	**Affiliation**	**Total**
0-10	21	02	04	**27**
10-20	64	10	19	**93**
20-30	43	04	10	**57**
30-40	27	05	10	**42**
Total	**155**	**21**	**43**	**219**

Null Hypothesis

H_0: $f_o - f_e$ = Zero

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 6

Calculated Value of chi-square $\chi^2 = 2.388$;

Critical Value of chi-square $\chi^2_{0.05} = 12.591$

Calculated Value < Critical Value

The calculated value of Chi-Square is less than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be insignificant.

Since difference is considered insignificant, the Null hypothesis is accepted.

The acceptation of null hypothesis leads us to conclude that Managerial Experience and Motivational profile are independent of each other and there stands no-association between them.

Result of hypothesis:

It is indicated that Managerial Experience has no association with motivational profile. This shows that change in Managerial Experience has no influence on the need for achievement, power and affiliation as officers with different Managerial Experience have same motivational needs

Testing of Null Hypothesis H_{06}: To test H_{06} **(There is no association between Managerial Level and Motivational Profile of a person.)** we analyzed data using chi-square test taking the scores of motivation and their managerial level at a given significance level of 0.05

Table H-06: Managerial Level and Motivational Needs

Managerial Level	**Motivation**

	Achievement	Power	Affiliation	Total
Top Level	03	00	00	**03**
Middle Level	95	06	18	**119**
Lower Level	57	15	25	**97**
Total	**155**	**21**	**43**	**219**

Null Hypothesis

H_o: $f_o - f_e$ = Zero

f_o: Observed Frequency

f_e: Expected Frequency

Testing of hypothesis at 95% level of confidence

The degrees of freedom are 4

Calculated Value of chi-square χ^2 =13.62;

Critical Value of chi-square $\chi^2_{0.05}$ =9.488;

Calculated Value > Critical Value

The calculated value of Chi-Square is more than the critical value of Chi-Square, it is therefore the difference between observed and expected frequency is considered to be significant.

Since difference is considered significant, the Null hypothesis is rejected.

The rejection of Null hypothesis leads us to conclude that Managerial Level and motivational profile are dependent and there stands association between them.

Result of hypothesis:

It has been discovered that there is a relationship between Managerial level and Motivational needs. It is therefore, proved that motivational need is dependent on the managerial level of an employee. Managers working at different levels of

organizational hierarchy are influenced by different motivational needs, viz. Achievement, Power and Affiliation.

Section II – Discussion: Testing of Hypotheses

H_{01}: Self-monitoring and Motivational profile of respondents have been found to be independent of each other. That means self-monitoring personality does not have any bearing on Motivational profile of individuals .Human motivation is an internal urge. Hence, personality trait of self-monitoring is unimportant so far as achievement, power, and affiliation motives are concerned.

H_{01}: It has been found that age has no-association with motivational needs. This shows that change in the age has no influence on the need for Achievement, Power and Affiliation as different age groups have same motivational needs.

H_{03}: It is discovered that a person's educational level does not influence his motivational profile. Whether a person is a graduate or postgraduate or even otherwise highly educated, it is immaterial so far as his/her motivational profile is concerned. A graduate or a postgraduate both can be equally achievement-oriented or power oriented.

H_{04}: It has been found that Educational background discipline does influence a person's motivational profile. This means persons of different disciplines do have different motivational orientations. For example, Persons with Arts background may have different motivational needs than their Engineering counterparts.

H_{05}: It is indicated that Managerial Experience has no association with motivational profile. This shows that change in Managerial Experience has no influence on the need for achievement, power and affiliation as managers with different Managerial Experience have same motivational needs.

H_{06}: It has been discovered that there is a relationship between Managerial level and Motivational needs. It is therefore, proved that motivational need is dependent on the managerial level of an employee. Managers working at different levels of organizational hierarchy are influenced by different motivational needs, viz. Achievement, Power and Affiliation.

Limitations of and Directions for Future Research

Though case study conclusions are not regarded as generalizations or even the basis of deriving valid generalizations, the present work may help the relevant managers in examining their personality and their motivational orientation that might enable them to be effective managers in their own organizational setting, i.e. Banking Sector. With limited resources available to an individual academic researchers like us, the present work contribute usefully to enhance the existing knowledge base in the field of organizational leadership under Indian environment. Further, on the basis of the conclusions of this investigation some useful and valid hypotheses have also been generated for further testing through a large and comprehensive study for making necessary generalizations in the Indian context.

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STRESS FACTORS INVOLVED IN UNFAIR AND ARBITRARY PERFORMANCE APPRAISAL: AN EXPLORATORY STUDY DONE IN JUBAIL, KINGDOM OF SAUDI ARABIA

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ABSTRACT

Performance Appraisal deals with the challenge organizations face in defining, measuring and stimulating employee performance with the ultimate goal of improving organizational performance. Thus, Performance Appraisal involves multiple levels of analysis. This paper presents whether performance appraisal brings stress factor in the mind of employees in international organisation ie in Jubail city Kingdom of Saudi Arabia. Most work on high-performance work systems has examined only the direct relationship between a set of management practices and performance outcomes but not the stress due to unfair performance appraisal and its adverse contribution towards productivity. This article is concerned with employee's perceptions of organisational injustice which causes stress and explains the results of a study. This study investigated employee reactions to fairness of and satisfaction with an existing performance appraisal system.

Stress has been shown to affect the employees psychologically (Barnett and Brennan 1995; Friedman 1995); physiologically (Davidson et al. 1990; Cooper et al. 2001); and behaviourally (Cohen and Williamson 1988; Cooper et al. 2001; Bacharach et al. 2002). All of these have been associated with lower job performance, which is invariably a negative out come for the organisation (Longenecker et al. 1999; Nelson and Burke 2000). Due to unfair and arbitrary performance appraisal/evaluation in organisation have never been lost on both practitioners and researchers of HRM, the appraisal process itself may leave both the appraisee (Grote 1996; Roberts 1998) and appraiser (Fred et al. 1992) unhappy. Could this in any way be linked to a higher perception of stress for both parties? In this study, we explore the latter link by measuring unfair and arbitrary performance appraisal.

The purpose of this study was to investigate the relationship of hardness to stress and to performance, and to explore its moderating effect on the relationship between stress and unfair, arbitrary performance appraisal. The result indicates that there is close association between unfair and arbitrary performance appraisal and stress.

Key Words: Performance Appraisal, Stress, Performance Planning

Introduction

Employee performance appraisal is one of the most commonly used management tools all over the world. Over 90 percent of large organizations including 75 percent of state employment systems require some type of annual performance appraisal. Performance appraisal is one of the most widely researched areas in industrial/organizational psychology.

The process of measuring and subsequently actively managing organizational and employee performance in order to improve organizational effectiveness is currently seen as critical to the development and survival of organizations. Different terms refer to performance management initiatives in organizations, for examples: performance-based budgeting, management-by-objectives, planning, programming and budgeting, and pay-for-performance (Heinrich, 2002).

Rationale of The Study

Initially, such initiatives stressed the need to make employee performance explicit and measurable in order to make performance more 'manageable'. However, Performance Management has come to signify more than a list of singular practices aimed to measure and adapt employee performance. Rather, it is seen as an integrated process in which manager's work with their employees to set expectations, measure and review results, and reward performance, in order to improve employee performance, with the ultimate aim to positively affect organizational success (e.g. Mondy, Noe & Premeaux, 2002). The same emphasis is found in the literature on strategic Human Resource Management (HRM) emphasizing the importance of so-called high performance work systems (e.g. Appelbaum, Bailey, Berg & Kalleberg, 2000).

There is growing opinion that if organisations are to survive and prosper, it will be through the development and retention of a highly skilled and high-performing workforce. Indeed, within the context of an increasingly competitive, dynamic and unpredictable work environment, particular attention has been paid to the importance of developing employees who are willing and able to work proactively (e.g.Crant, 2000; Frese and Fay, 2001; Griffin et al., 2007). Proactive employees are said to exhibit the necessary innovativeness, future orientation and self-motivation required to add real value to organisations facing these difficult challenges (Parker et al., 2006).

On the other hand, however, these very same external forces have led many organisations to initiate strategies to improve their flexibility and efficiency in order to remain competitive. Such strategies commonly involve a significant re-organisation of work; very often involving regular rounds of redundancy, the introduction of short term 'flexible' contracting and/or the outsourcing of non-core functions (see Atkinson, 1987). Rather than promoting a proactive workforce, such strategies have been shown to undermine trust in the employment relationship and support the emergence of a more careerist-orientated employee (Feldman and Weitz, 1991; Robinson, 1996; Atkinson, 2007).

Career- oriented employees acknowledge disconnection between their own long-term career development goals and the goals of their employer. A lack of trust in the employer's ability, or willingness, to provide long-term job security leads to a focus on protecting one's own career interests (Feldman, 1985, 1989; Feldman and Weitz, 1991). Importantly, such career commitment has been shown to have significant negative implications for a variety of important work attitudes and behaviours, including job involvement and commitment (e.g.Aryee and Chen, 2004).

Kanter (1990), and more recently Herriot and Pemberton (1996, 1997), presented a solution to this dilemma. Employers need to provide employees with a range of career development opportunities that promote their employability and security. In other words, an economic exchange model is proposed where employee loyalty and high performance (albeit perhaps over the short term) is generated through the provision of valued and marketable career development opportunities (Herriot and Pemberton, 1996, 1997; Sturges et al., 2005). Organisations may therefore be able to reduce the emergence of damaging careerist orientations to work and garner the required levels of work performance, in particular, proactive behaviours, by providing employees with valued and satisfying career development opportunities.

To date, however, empirical support for these propositions is limited. Despite the obvious salience of proactive behaviour and careerist orientation, they have been largely overlooked by career researchers investigating employee perceptions of, and reactions to, their career development opportunities.

The authors could find no previous empirical studies exploring the relationship between employee perceptions of their career development opportunities and their proactive behaviour. Moreover, only one published study, carried out within the Chinese manufacturing context, could be found that has investigated the relationship between employee perceptions of their career development opportunities and careerist orientation (see Aryee and Chen, 2004).

Theoretically, the careers literature has also been dominated by simple exchange models such as the one posited above (e.g. Aryee and Chen, 2004). Although useful, researchers have yet to explore the conditions under which employees' perception of career development opportunities may matter more (or less) in predicting important outcomes such as proactive behaviour and careerist orientation. In other words, research is needed that investigate the existence of moderators of the relationship between career development opportunities and important outcomes. If we are to more effectively analyse current and future policy making and practice in organisational career management, it is essential therefore that research begins to explore important contextual variables that may impact upon employees' reactions to career development opportunities.

In order to meet these gaps in the current careers literature, we turned to organisational justice theory, and in particular, recent findings that suggest employee reactions to organisational decisions (e.g. the allocation of career development opportunities) may be moderated by a three-way interaction between the perceived favourability of reward/resource allocations, their perceptions of procedural justice, or the fairness of the organisations' decision-making processes (Leventhal, 1980) regarding these decisions, and their affective organisational commitment (e.g.Kwong and Leung, 2002). Kwong and Leung found support for such an interaction effect when predicting employee work effort and stay intentions. When employees viewed the allocation of valued rewards and resources as unfavourable, the moderating effect of high procedural justice on work effort and stay intentions was found to be more pronounced in employees who reported high organisational commitment.

We aim at making contributions to both the careers and organisational justice literatures. The careers literature is provided with much needed empirical research exploring the importance of employee perceptions of career development opportunities for two new dependent variables, proactive behaviour and careerist orientation. Moreover, a new organisational justice-based theoretical lens through which to understand employee reactions to their career development opportunities is also presented. Although recent research has begun to recognise the potential importance of organisational justice in a career management context, this literature is still limited in its empirical scope and theoretical development (e.g.Wooten and Cobb, 1999; Aryee and Chen, 2004; Crawshaw, 2006; Crawshaw and Brodbeck, 2011).

Stress

Stress is the "wear and tear" of body experiences as one adjusts to the continually changing environment; it has physical and emotional effects and can create positive or negative feelings. As a positive influence, stress can help compel to action; it can result in a new awareness and an exciting new perspective. As a negative influence, it can result in feelings of distrust, rejection, anger, and depression, which in turn can lead to health problems such as headaches, upset stomach, rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke.

With the death of a loved one, the birth of a child, a job promotion, or a new relationship, one experiences stress.

Positive side of stress adds anticipation and excitement to life, and every individual thrive under a certain amount of stress. Deadlines, competitions, confrontations, and even frustrations and sorrows add depth and enrichment to our lives. The ultimate aim is of any research on stress is not to eliminate stress but to learn how to manage it and how to use it to help in achieving the goals. Insufficient stress acts as a depressant and may leave us feeling bored or dejected; on the other hand, excessive stress may leave the person feeling "tied up in knots." The need of the day is to find the optimal level of stress which will individually motivate but not overwhelm.

There is no single level of stress that is optimal for all people. Human beings are all individual creatures with unique requirements. As such, what is distressing to one may be a joy to another. And even when a person agrees that a particular event is distressing, he/she is likely to differ in their physiological and psychological responses to it.

The person who loves to arbitrate disputes and moves from job site to job site would be stressed in a job which was stable and routine, whereas the person who thrives under stable conditions would very likely be stressed on a job where duties were highly varied. Also, our personal stress requirements and the amount which one can tolerate before he become distressed changes with our ages.

It has been found that most illness is related to unrelieved stress. If you are experiencing stress symptoms, you have gone beyond your optimal stress level; you need to reduce the stress in your life and/or improve your ability to manage it.

Typical Causes of Stress on the Job

Work overload, time pressure, poor quality of supervision, insecure job, inadequate authority to match responsibilities, role conflict and ambiguity, differences between company and employee values, change of any type, especially when it is major or unusual, frustration, unfair performance appraisal.

The City of Jubail

Jubail is a industrial city in the eastern province on the Arabian Gulf coast of Saudi Arabia. In 1975, it was designated as a new industrial city by the Saudi government, and has since seen rapid expansion and industrialization. The industrial city is a complex of petrochemical plants, an iron works, a number of smaller companies and a Royal Saudi Naval Base.

It is the largest industrial complex of its kind in the world and comprises petrochemical plants, fertilizer plants, a steel works, an industrial port and myriad support industries. The Royal Saudi Naval Base, a separate commercial port, and a military air base are at Jubail. It

holds the Middle East's largest and the world's fourth largest petrochemical company, SABIC. The world's largest seawater desalination plant, Saline Water Conversion Corporation, is at Jubail.

Objectives of the Study

- To analyze the Performance Appraisal and to know the level of stress among the employees working in Jubail city Saudi Arabia.
- To analyse the causes for stress among the employees
- To find out the relationship between performance appraisal and causes of stress, level of stress and outcome of stress
- To diagnose the appraiser's proper performance planning

HYPOTHESES

H0. There is no association between unfair and arbitrary Performance Appraisal and Stress

H1. There is no close association between unfair and arbitrary Performance Appraisal and Stress

Research Methodology

Present study is exploratory and descriptive in nature. In order to analyse whether performance appraisal creates stress to the employees working in some selected industries in Jubail, both the primary as well as secondary data were collected. Primary data was collected using questionnaire covering different dimensions of employees perceptions towards performance appraisal and the stress specially when they work internationally.

Total 120 private and public sector employees were selected by stratified random sampling technique. Out of the samples, 110 respondents only returned the filled in questionnaire and of them, 100 were complete in all respects. Hence, the exact sample size of the study was 100. Secondary data has been collected from books, manuals and internet. The questionnaire is the major tool administered for collecting primary data from the respondents. Data was analysed with the help of SPSS softwere. Mean, Standard Deviation, Chi square test was used to analyse the data. Table 1 present the demographic characteristics of the respondents

Table 1: Demographic Characteristics (n = 100)

	Characteristics	No of Respondents	%
	Total Number of Respondents	100	100
Age	Less than 20 Years	2	2.0
	21-30 Years	24	24.0
	31-40 Years	48	48.0
Gender	Male	85	85
	Female	15	
Marital Status	Married	81	81
	Unmarried	19	19
Country of origin	Saudi Origin	12	12.0
	Outside Saudi Origin	88	88.0
Education Qualification	Graduation	42	42.0
	Post Graduation	19	19.0
	Professional Qualification	31	31.0
	Other	8	8.0
Annual Income	Upto7,000 SR per annum	29	29
	From 7,000-10000SR per annum	18	18
	10000-15,000 SR Per Annum	33	33
	> 15,000 SR Per Annum	20	20

The data presented in the above table indicates that sample is dominated by the respondents who were in the age group of 31-40 Years as together it was indicated by 48% respondents in the sample. Respondents of male category account for 85%. married category respondents account 81% respondents in the sample. It is seen in the study that sample is dominated by the respondents of non Saudi residents who are well educated and earning above 7000SAR per Annum.

Table 2 Feeling of Stress

Sl No	Description	NO of respondents	Percentage
A	Yes	66	66.0
B	NO	26	26.0
c	Do Not Know	8	8.0
	Total	100	100.0

Occupational stress is caused by workplace, individual and social factors, and it is recognised as one of the most pervasive and potent health hazards in the work environment. This is true in many workplaces, particularly when the employees is working at international level. Analysis indicates that 66 % respondent in the sample indicated that they feel stress while at job. 26% indicated that they do not feel stress at work where as 8% employees revealed that sometimes they feel occupational stress at work but they do not know it. .

Table 3: Stress Due T\to Appraiser's Attitude towards Employees

Sl No	Description	NO of respondents	Percentage
A	Always	59	59.0
B	Sometimes	33	33.0
c	Occasionally	5	5.0
d	Rarely	3	3.0
	Total	100	100.0

From the above table, it is inferred that majority of the respondents accept that stress due to appraiser's attitude towards employees is the major cause for stress in their day to day activities. It is clear that from 100 respondents 59% of the respondents said always and the expected frequency is 65 respondents, 43% of them said no and the expected frequency is 35 respondents.

Table 4 Education * Stress Due to Appraisers Attitude towards Employees Cross tabulation

		Stress Due to Appraisers Attitude towards Employees				Total
		Always	Sometimes	Occasionally	Rarely	
Education	Graduation	25	13	2	2	42
	Post Graduation	11	8	0	0	19
	Professional Qualification	15	12	3	1	31
	Other	8	0	0	0	8
Total		59	33	5	3	100
Pearson Chi-Square		10.315[a]	9(DF)			

An attempt was made to assess the degree of association employees stress due to appraiser attitude towards employees across the level of education of the employees. Cross tale analysis of data was carried out with the help of SPSS software and the Chi-square test value (X^2 = 10.315) is less than the tabulated value (X^2 = 18.307) at 5% significance level. Thus the hypothesis is accepted and we may conclude that employees stress due to appraiser attitude towards employees are not associated with the level of education of the employees.

Table 5 Country of Origin * Stress Due to Appraisers Attitude towards Employees Cross tabulation

		Stress Due to Appraisers Attitude towards Employees				Total
		Always	Sometimes	Occasionally	Rarely	
Country of Origin	Saudi origin	3	7	1	1	12
	Out side Saudi	56	26	4	2	88
Total		59	33	5	3	100
Pearson Chi-Square		6.920[a]	3(DF)			

Further an attempt was made to assess the degree of association employee's stress due to appraiser attitude towards employees across the country of origin. Cross tale analysis of data was carried out with the help of SPSS software and is presented in the table 5. The value of Chi-square test value ($X^2 = 6.92$) is less than the tabulated value ($X^2 = 7.815$) at 5% significance level. Thus the hypothesis is accepted and we may conclude that employees stress due to appraiser attitude towards employees independent of country of origin.

Table 6: Stress Due To Unfair And Arbitrary Performance Appraisal

Sl No	Description	NO of respondents	Percentage
A	Always	57	57.0
B	Sometimes	31	31.0
c	Occasionally	7	7.0
d	Rarely	5	5.0
	Total	100	100.0

The information presented in the above table reveals that majority of the respondents accepted that there is stress due to unfairness and arbitrary performance appraisal. It is clear that from 100 respondents 57% of respondents say that they alway feel stress due to **Unfair And Arbitrary Performance Appraisal** and 31 indicated some time. Occasionally was indicated by 7% and remaining 5% say that they rarely feel stress due **Unfair And Arbitrary Performance Appraisal.**

Table 7: Appraiser Adopts Proper Performance Planning

Sl No	Description	NO of respondents	Percentage
A	Yes	37	37.0
B	NO	50	50.0
c	Cant Say	13	13.0

d	Total	100	100.0

From the above table it is inferred that majority of the respondents accepted that the appraiser did not adopts a proper performance planning. From 100 respondents 37% expressed positive towards performance planning and the researcher expected frequency is 37 nos. 50% of respondents expressed that the appraiser did not use proper performance appraisal remaining 13% expressed their inability to respond. .

Table 8 -Descriptive Statistics

	N	Mean	Std. Deviation
Geographical discrimination	100	4.4900	.64346
Racial discrimination	100	4.5200	.74508
Class discrimination	100	3.9600	.93117
Religious discrimination	100	4.3900	.79003
Superiority complex of the superior reporting officer;	100	3.5500	.95743
Narrow Outlook of Appraiser	100	4.7500	.60927
Past-record of the subordinate;	100	4.3400	.78135
Overall personality of the subordinate;	100	3.6200	.95113
Extent of work-contact between the subordinate and the reporting superior;	100	4.0500	.75712
Social status of the subordinate	100	3.6600	1.08451
Capacity of the subordinate to exercise influence at higher level.	100	3.7900	.87957
Language discrimination	100	3.4200	1.21589
Cultural Discriminations	100	3.9600	.75103
Valid N (listwise)	100		

Mean and standard deviation of different factors of affecting performance appraisal system and promoting stress among the employees reveals that narrow look of appraiser has scored highest mean (m=4.75) whch indicates that majority of the employees are of the opinion that narrow outlook of appraiser creates more stress among them. It was followed by Racial discrimination(m=4.52) Geographical discrimination(m= 4.49)and Religious discrimination(m=4.39) higher standard deviation of Language discrimination reveals that respondents view on this point is heterogeneous.

Table 9 One Way ANOVA Across the Nationality of the employees

		Sum of Squares	df	Mean Square	F	Sig.
Geographical discrimination	Between Groups	.335	1	.335	.807	.371
	Within Groups	40.655	98	.415		
	Total	40.990	99			
Racial discrimination	Between Groups	.475	1	.475	.855	.358
	Within Groups	54.485	98	.556		
	Total	54.960	99			
Class discrimination	Between Groups	2.885	1	2.885	3.409	.068
	Within Groups	82.955	98	.846		
	Total	85.840	99			
Religious discrimination	Between Groups	.044	1	.044	.069	.793
	Within Groups	61.746	98	.630		
	Total	61.790	99			
Superiority complex of the superior reporting officer;	Between Groups	.242	1	.242	.262	.610
	Within Groups	90.508	98	.924		
	Total	90.750	99			
Narrow Outlook of Appraiser	Between Groups	.379	1	.379	1.021	.315
	Within Groups	36.371	98	.371		
	Total	36.750	99			
Past-record of the subordinate;	Between Groups	.349	1	.349	.569	.452
	Within Groups	60.091	98	.613		
	Total	60.440	99			
Overall personality of the subordinate;	Between Groups	1.867	1	1.867	2.086	.152
	Within Groups	87.693	98	.895		
	Total	89.560	99			
Extent of work-contact between the subordinate and the reporting superior;	Between Groups	.186	1	.186	.322	.572
	Within Groups	56.564	98	.577		
	Total	56.750	99			
Social status of the subordinate	Between Groups	9.319	1	9.319	8.525	.004
	Within Groups	107.121	98	1.093		
	Total	116.440	99			
Capacity of the subordinate to exercise influence at higher level.	Between Groups	.207	1	.207	.266	.607
	Within Groups	76.383	98	.779		
	Total	76.590	99			
Language discrimination	Between Groups	.087	1	.087	.058	.809
	Within Groups	146.273	98	1.493		
	Total	146.360	99			
Cultural Discriminations	Between Groups	.207	1	.207	.365	.547

	Within Groups	55.633	98	.568		
	Total	55.840	99			

One way ANOVA analysis was carried out to assess the significance of mean difference of all the factor of performance appraisal promoting employees stress across the nationality of the employees assuming null hypothesis as Null Hypothesis (H_o): There is significant difference on the different factors performance appraisal promoting employees stress across the nationality of the employees. We see from the table that the calculated value of F of the different factor of performance appraisal promoting stress is less than the table value(7.85) at one degree of freedom and 0.05 level of significance. Therefore null hypothesis (H0) is accepted indicating that there is significant difference on the different factors performance appraisal promoting employees stress across the nationality of the employees

Discussion and Managerial Implications

As a supervisor, the primary responsibility is getting the job done. The best way to do this is by developing the staff. This is what performance planning is all about. It means planning work assignments in the context of your department's goals, as well as your employees' goals. Performance Planning involves two interrelated parts. The first is the Employee Position Description which provides explicit examples of the employee's responsibilities and the actions taken to fulfil these responsibilities. The second part of Performance Planning is the Employee Performance Evaluation, which is a measure of the employee's effectiveness in carrying out the responsibilities and actions outlined in the Position Description.

The negative relationship between performance and change in stress appraisal suggests that those who perform better had a reduction in stress appraisal, while those that performed poorly had an increase in stress appraisal.

This presents potential problems for physical health, mental health, and therapy. Being unaware of maladaptive stress reactivity could lead high-performing individuals to continue to put themselves in stressful situations, unknowingly exposing their body to stress damage. They may not remember the events as stressful, but their body still undergoes the stress. One limitation of this study is that stress reactivity was not an included measure, and its inclusion could further clarify the relationship between stress appraisal and performance.

Individuals who perform well naturally may misinterpret stressful situations as facilitating, and neglect to avoid these situations. Then their ability to perform well may come at the expense of more psychopathology. More research on stress and its ill effects due to unfair and arbitrary performance appraisal will help us learn how individuals can understand their stress in the healthiest way.

Conclusion

We should understand that human behaviour is complex and complicated, hence understanding and manipulating it for effective organisational results requires going beyond the mastery of rhetoric and untested concepts. The present study investigated the relationship between stress and unfair arbitrary performance appraisal.

When designing training and development programmes aimed at preparing managers and subordinates for all forms of performance evaluation, it is critical to ensure that individual discomforts arising from such evaluations are thoroughly addressed and that organisations become more interested in nourishing a highly confident employee with significant self-belief and the appropriate environment.

The company can provide councilors for the employees to discuss about their problems and even they can arrange family meets at least once six month or one year. The attitude of the appraiser should be impartial and fair enough towards the employees. Training and development actions can be broken down into smaller more digestible chunks, increasing success rates and motivational effect as a result. Relationships and mutual understanding should be developed more quickly with greater frequency of meetings between manager and staff member.

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EMOTIONAL INTELLIGENCE AMONG STUDENTS: A COMPARATIVE STUDY OF ENGINEERING AND MANAGEMENT DISCIPLINES

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ABSTRACT

In transforming students into business professionals, academicians need to play a pivotal role by enriching students' knowledge and enhancing their emotional intelligence levels. EI skills have been strongly associated with dynamic leadership, satisfying personal life experiences and success in the workplace. Emotional Intelligence (EI) has been developed, adapted and embraced by the business world and very recently, by academicians too.

This has resulted in demand for the incorporation of EI competencies in University curricula to acquaint students with EI skills. This paper has been taken up with the objective of identifying EI among the students of engineering and management streams. A total 160 students of engineering and management streams were surveyed and it was found that there is a significant difference among these two streams. Some scope of future research has been also highlighted in this study.

Key Words: Emotional Intelligence, academic performance.

Introduction

The idea of measuring intelligence took hold in the early part of the twentieth century and resulted in the concept of the intelligence quotient (IQ), which places people on a bell-shaped curve with the "average" intelligence at 100. However, the early developers of IQ tests believed that there is something which they called "non-intellective abilities" as important for predicting an individual's success in life as those of general intelligence. In the latter decades of the twentieth century, the social and emotional factors of intelligence received more attention among researchers. Eminent psychologists (Bar-On, 1998; Salovey and Mayer 1990) performed systematic reviews of various abilities, capabilities, competencies, and skills that are generally thought to determine success as well as gaining and maintaining positive emotional health. They revealed that intelligence quotient, basically cognitive intelligence, is not always the sole predictor of success. Goleman (1995), a science writer for the New York Times and a Harvard-trained psychologist, attempted to demonstrate that emotions play a significant role in thought processes and decision making, and that Emotional Intelligence is an important factor to individual success. Specifically, he stressed that intelligence Quotient (IQ) alone is no more the measure of success. According to him intelligence accounts for only 20% of the total success, and the rest goes for Emotional and Social intelligences.

Emotional intelligence (EI) is a relatively new and growing area of behavioral investigation that has attracted increasing attention and enjoyed a robust resurgence across a wide range of disciplines including management, psychology and the health sciences. The usefulness of the EI construct is increasingly asserted in terms of bringing a more balanced view of the intertwined role of cognition and emotion in influencing life's outcomes. Paying attention to emotions, using them in human relationship, understanding one's self and others emotions, self-restraint, controlling instantaneous desires, sympathy with others, and using emotions in thinking and understanding are among subjects discussed in the field of emotional intelligence.

Rationale of the study

EI is considered to be the most important determinant of success in professional and personal life among human beings. A good student is often referred to as being "intelligent", or "academically and professionally successful". From this arises a question: Is there a strong connection, between intelligence and academic achievement? This and many more questions underscore the important place intelligence has been found to play in academic success. Over the past several years, studies on intelligence have mainly focused on the adaptive use of cognition. With the dawn of 21st century, human mind added a new dimension which is now considered as a more important factor for success than intelligence alone. This is termed as Emotional Intelligence (EI) and measured as Emotional Quotient (EQ). With this background, the present study focuses on identifying the emotional intelligence among the students of professional domain. Accessibility of the researcher with the students of engineering and management stream

of different institutes of located at Dehradun has motivated them to elect these students as a sample of proposed study.

Literature Review

The increasing interest in emotions and the growing awareness of the role it plays in business and in life is in great part due to the proliferation of research over the past decade on emotions generally and EI specifically. Emotional intelligence is a relatively new concept among researchers and practitioners. Much of the recent work on emotional intelligence is based on the foundation provided by Gardner (1983). Although he did not use the term "Emotional Intelligence", his reference to intrapersonal and interpersonal intelligence has been used as a foundation in more recent models on this topic. Gardner's (1983) concept refers to having the ability to know and understand one's own emotions and other individual's emotions and intentions. Salovey and Mayer (1990) were the first to formally conceptualize and use the term "Emotional Intelligence". According to them, Emotional Intelligence includes three mental processes; first, the appraisal and expression of emotions in oneself and others; second, the regulation of emotions in oneself and others; and third, to use this to guide one's thinking and actions.

Similarly, Goleman also stressed that emotional intelligence consists of five components: Knowing one's emotions (self-awareness), managing them, motivating self, recognising emotions in others (empathy), and handling relationships. Kunnanatt (2004) explained emotional intelligence as "the sum total of the mental capabilities that enable a person in understanding his or her own and others' emotions correctly, in real time, and in using these emotions intelligently to produce personally and socially desirable transactional outcomes". A common theme present within the numerous definitions and descriptions of emotional intelligence is the human ability to use the emotional capacity of the brain to live, work, and relate more effectively in a social world.

In recent times therefore, social scientists, management practitioners and educational psychologists are beginning to uncover the relationship of emotional intelligence to other phenomena. In a recent studies conducted by Parker, Summerfeldt, Hogan and Majeski (2001, 2002) they discovered that various emotional and social competencies were strong predictors of academic success. Similarly, Parker, et al. (2003) found emotional intelligence to be significant predictor of academic success. In the same vein, Low and Nelson (2004) reported that emotional intelligence skills are key factors in the academic achievement. In a study conducted by Rode et al. (2007), it was predicted that emotional intelligence was related to academic performance for two reasons. First, academic performance involves a great deal of ambiguity, which has been shown to cause felt stress. Students are required to manage numerous assignments, adapt to the differing teaching styles and expectations of instructors, work independently toward objectives, manage conflicting academic and non-academic schedules and taking exams. Second, the

majority of academic work is self-directed, requiring high levels of self management. They concluded that individuals with high emotional intelligence would perform better academically.

Likewise, Abisamra (2000) reported that there is a positive relationship between emotional intelligence and academic achievement. He, therefore, canvassed for inclusion of emotional intelligence in the schools' curricula. Belanger (2005) studied the emotional intelligence of undergraduate students in United Sates. The researchers found that although student's emotional intelligence was not directly linked to academic success, students with higher levels of emotional intelligence had more self-efficacy and that in turn enhanced their academic performance. In essence, the importance of emotional intelligence on academic achievement has been found to be very significant. Nevertheless, and in spite of the studies reviewed, there is still a need to further investigate the relationship of emotional intelligence to academic achievement most notably in a country like India, where most researchers are yet to show interest in the construct.

Objectives of the Study

EI refers to the competence to identify and express emotions, understand emotions, assimilate emotions in thought, and regulate both positive and negative emotions in the self and in others. The construct has received widespread, international attention, both within secular and academic circles, ever since its inception in the 1980s. Subsequently, researchers have purportedly made important strides toward understanding its nature, components, determinants, developmental track, and modes of modification. With this present research work has taken up with the following objectives:

1. To study the emotional intelligence and its different dimensions.
2. To assess the difference in the level of emotional intelligence among the students of engineering and management streams.
3. To analyze the relationship between the emotional intelligence and demographic characteristics of students.

Hypotheses of the study:

H1: The level of emotional intelligence does not differ significantly across the students of engineering and management stream.

H2: The level of emotional intelligence does not differ significantly across the demographic characteristics of the students.

Research Methodology

The descriptive study was carried out to assess the emotional intelligence of management and engineering students in Dehradun and the role of demographic characteristics in it. To assess the emotional intelligence, a structured questionnaire was designed. Questionnaire was designed in two parts. The first section of the survey investigated the demographic information about the participants including gender, age and course. The second section comprised 38 items rated on a Likert-type scale requiring participants to rate the extent (1 - strongly disagree to 5 - strongly agree) to which each statement is representative of their normal emotional dispositions. The pilot study was carried out to pre-test the reliability of the questionnaire. A total of 30 students were selected representing approx 20% of the sample size. The validity of the questionnaire was reported to be acceptable and its reliability (value of Cronbach's alpha) was 0.646. After the pilot test full scale survey was carried out. 250 questionnaires were distributed among students of different management and engineering institutes of Dehradun. A total of 200 responses were received thus the response rate was 80 percent. After editing, 160 responses were found suitable and were taken for the proposed study. Data were analyzed using SPSS 20. For each student, the total score of emotional intelligence was calculated. To analyze data, descriptive statistics (frequency, mean scores and standard deviation) and ANOVA were used.

Analysis

Table 1: Demographic Characteristics

	Characteristics	**No of Respondents**	**%**
	Total Respondents	160	100
Course	Management Engineering	80 80	50.0 50.0
Age	16-20 Years 21-25 Years	48 112	30.0 70.0
Gender	Male Female	83 77	51.9 48.1

Table 1 shows the demographic characteristics of respondents. The sample was composed of 50% management and 50% engineering students. Of the sample, 30% of the students was the age group of 16-20 years and 70% were ranged in 21-25 years age group. On the basis of questionnaire administered the total number of male respondents were 82 (51.9%) and female respondents were 77 (48.1%) of total sample size of 160. It represented a balanced gender distribution.

Table 2: Mean of Emotional Intelligence with Course

Course	Self Control	Self Awareness	Stress Management	General Mood	Empathy	Self Esteem	Adaptability	Relationship	Assertiveness

Management	3.0953	3.3775	3.6125	2.3042	3.2625	3.4800	3.6844	3.0594	3.5000
Engineering	3.1813	3.2175	3.5208	2.2167	3.0375	3.5000	3.4531	3.2844	3.2906
Total	3.1383	3.2975	3.5667	2.2604	3.1500	3.4900	3.5688	3.1719	3.3953

The mean of different dimensions of Emotional Intelligence across the management and engineering courses reveals that there is a significant difference in the mean score between management and engineering students in managing emotions. Adaptability scored highest mean (3.6844) across the respondents of management professional categories. The stress management scored highest mean (3.5208) among the engineering students.

Table 3: ANOVA : Emotional Intelligence with Course

		Sum of Squares	df	Mean Square	F	Sig.
Self Control	Between Groups	.295	1	.295	1.191	.277
	Within Groups	39.192	158	.248		
	Total	39.487	159			
Self Awareness	Between Groups	1.024	1	1.024	3.866	.051
	Within Groups	41.855	158	.265		
	Total	42.879	159			
Stress Management	Between Groups	.336	1	.336	.682	.410
	Within Groups	77.842	158	.493		
	Total	78.178	159			
General Mood	Between Groups	.306	1	.306	.491	.484
	Within Groups	98.510	158	.623		
	Total	98.816	159			
Empathy	Between Groups	2.025	1	2.025	3.540	.062
	Within Groups	90.375	158	.572		
	Total	92.400	159			
Self-Esteem	Between Groups	.016	1	.016	.038	.846
	Within Groups	66.368	158	.420		
	Total	66.384	159			
Adaptability	Between Groups	2.139	1	2.139	6.486	.012
	Within Groups	52.105	158	.330		
	Total	54.244	159			

Relationship	Between Groups	2.025	1	2.025	5.517	.020
	Within Groups	57.998	158	.367		
	Total	60.023	159			
Assertiveness	Between Groups	1.754	1	1.754	5.967	.016
	Within Groups	46.430	158	.294		
	Total	48.184	159			

One-way ANOVA analysis was carried out with the assumption that mean of different dimensions of Emotional Intelligence does not differ significantly across the professional courses of students. From the table 3, it is clear that calculated value of F is greater than the tabulated value of F (3.89, $\alpha = .05$) only for adaptability, relationship and assertiveness dimensions. Hence the null hypothesis is rejected, indicating that there is a significant difference in the mean of different dimensions of Emotional Intelligence across the professional courses of students. However null hypothesis is accepted for dimensions like self control, self awareness, stress management, general mood, empathy and self esteem indicting that there is no significant difference of these dimensions across students of different age categories.

Table 4: Mean of Emotional Intelligence with Age

Age	Self Control	Self Awareness	Stress Management	General Mood	Empathy	Self Esteem	Adaptability	Relationship	Assertiveness
16-20 Years	3.1979	3.3633	3.4444	2.1875	3.2500	3.7708	3.5521	3.3542	3.2188
21-25 Years	3.1127	3.2907	3.6190	2.2917	3.1071	3.3696	3.5759	3.1938	3.4710
Total	3.1383	3.3270	3.5667	2.2604	3.1500	3.4900	3.5688	3.2740	3.3953

Mayer and Salovey (1999) compared adolescents' and adults' performance on the Multifactor Emotional Intelligence Scale. Results showed that the adult group functioned at a significantly higher level of emotional intelligence than the adolescent group. Rooy et al. (2005) examined the relationship between emotional intelligence and age using the 33-item Emotional Intelligence Scale. There was a significant positive correlation between emotional intelligence and age. Table 5 reveals that self esteem (3.7708) scored highest mean across the respondents of 16-20 years age category while stress management (3.6190) scored highest mean across 21-25 years age category.

Table 5: ANOVA : Emotional Intelligence with Age

		Sum of Squares	df	Mean Square	F	Sig.
	Between Groups	.244	1	.244	.982	.323
Self Control	Within Groups	39.244	158	.248		
	Total	39.487	159			
	Between Groups	.505	1	.505	1.884	.172
Self Awareness	Within Groups	42.374	158	.268		
	Total	42.879	159			
	Between Groups	1.024	1	1.024	2.098	.150
Stress Management	Within Groups	77.153	158	.488		
	Total	78.178	159			
	Between Groups	.365	1	.365	.585	.445
General Mood	Within Groups	98.451	158	.623		
	Total	98.816	159			
	Between Groups	.686	1	.686	1.181	.279
Empathy	Within Groups	91.714	158	.580		
	Total	92.400	159			
	Between Groups	5.408	1	5.408	14.013	.000
Self-Esteem	Within Groups	60.976	158	.386		
	Total	66.384	159			
	Between Groups	.019	1	.019	.056	.814
Adaptability	Within Groups	54.225	158	.343		
	Total	54.244	159			
	Between Groups	2.279	1	2.279	6.235	.014
Relationship	Within Groups	57.745	158	.365		
	Total	60.023	159			
	Between Groups	2.138	1	2.138	7.335	.008
Assertiveness	Within Groups	46.046	158	.291		
	Total	48.184	159			

One-way ANOVA analysis was carried out with the assumption that mean of different dimensions of Emotional Intelligence does not differ significantly across the age of students. From the table 6, it is clear that calculated value of F is greater than the tabulated value of F (3.89, $\alpha = .05$) for self esteem, relationship and assertiveness. Hence the null hypothesis is rejected, indicating that there is a significant difference in the mean of different dimensions of Emotional Intelligence across the age of students. However null hypothesis is accepted for all dimensions except self esteem, relationship and assertiveness indicating that there is no significant difference of these dimensions across students of different age categories.

Table 6: Mean of Emotional Intelligence with Gender

Gender	Self Control	Self Awareness	Stress Management	General Mood	Empathy	Self Esteem	Adaptability	Relationship	Assertiveness
Male	3.1190	3.4241	3.5261	2.3052	3.1747	3.5036	3.5843	3.1054	3.5271
Female	3.1591	3.1610	3.6104	2.2421	3.1434	3.4753	3.5519	3.2435	3.2532
Total	3.1383	3.2975	3.5667	2.2736	3.1590	3.4900	3.5688	3.1719	3.3953

The results of a study by Yusefi et al (2006) also showed no significant difference between the emotional intelligence of male and female students. However, some studies showed that the emotional intelligence of women was higher than men, which can be related to cultural differences, because in Indian society females have been learnt to suppress their emotions. The mean of different dimensions of Emotional Intelligence with gender of students reveals that adaptability (mean 3.5843) scored highest among male categories student and stress management (3.6104) scored highest mean across the respondents of female categories.

Table 7: ANOVA : Emotional Intelligence with Gender

		Sum of Squares	df	Mean Square	F	Sig.
Self Control	Between Groups	.064	1	.064	.258	.612
	Within Groups	39.423	158	.250		
	Total	39.487	159			
Self Awareness	Between Groups	2.764	1	2.764	10.887	.001
	Within Groups	40.115	158	.254		
	Total	42.879	159			
Stress Management	Between Groups	.284	1	.284	.576	.449
	Within Groups	77.894	158	.493		
	Total	78.178	159			
General Mood	Between Groups	.346	1	.346	.556	.457
	Within Groups	98.470	158	.623		
	Total	98.816	159			
Empathy	Between Groups	.105	1	.105	.180	.672
	Within Groups	92.295	158	.584		
	Total	92.400	159			
Self-Esteem	Between Groups	.032	1	.032	.076	.783
	Within Groups	66.352	158	.420		
	Total	66.384	159			
Adaptability	Between Groups	.042	1	.042	.122	.727
	Within Groups	54.202	158	.343		
	Total	54.244	159			
Relationship	Between Groups	.762	1	.762	2.031	.156
	Within Groups	59.262	158	.375		
	Total	60.023	159			
Assertiveness	Between Groups	2.996	1	2.996	10.475	.001
	Within Groups	45.188	158	.286		
	Total	48.184	159			

One-way ANOVA analysis was carried out with the assumption that mean of different dimensions of Emotional Intelligence does not differ significantly across the gender of students. From the table 8, it is clear that calculated value of F is less than the tabulated value of F (3.89, α = .05) except the dimensions like self awareness and assertiveness. Hence the null hypothesis is rejected, indicating that there is a significant difference in the mean of different dimensions of Emotional Intelligence across the gender of students except in the case of dimensions like self control, stress management, general mood, empathy, self esteem, adaptability and relationship.

Discussion

Emotions are an important part of life which seriously affect all aspects of life. Almost in every experience there is an affectionate emotional aspect and managing it can have a significant role in general. The findings of this study showed that the mean score of different dimensions of emotional intelligence of management students was a little higher than the students of engineering discipline. An interesting finding of the present study was that there was a significant difference in Emotional Intelligence dimensions viz. self control, self awareness, stress management, general mood, empathy, self esteem, adaptability, relationship and assertiveness between management and engineering students. The level of self awareness (3.3775), stress management (3.6125), general mood (2.3042), empathy (3.2625), adaptability (3.6844) and assertiveness (3.5) was higher in management students. On the other hand, the degree of self control (3.1813), self esteem (3.5) and relationship (3.2844) was higher in engineering students.

The present study also examined relationship between emotional intelligence and age and found an interesting result that the age group 16-20 years respondents functioned at a little significantly higher level of emotional intelligence than 21-30 years age group respondents. The present study also supported the study of Yusefi et al (2006) and revealed that emotional intelligence of male students was a little higher than females, but this difference was not significant.

Conclusion

Human beings function on both rational and emotional levels, but emotions are at the heart of their energy, commitment, and motivation. Emotions determine whether people accept, reject, approach, avoid, or engage with others. The more one understands and manages emotional responses, the more one enjoys greater comfort in relationships, effectiveness in interactions, and inner peace. Students in higher professional educational institutions are viewed as leaders of tomorrow. They are saddled with a lot of responsibilities and challenges which may sometimes result in stress. They need good mental health to be able to succeed in their academic as well as professional pursuits.

Limitation and future research

This study had some limitations. Even though the students of management and engineering disciplines participated in the study, they were a small group. Moreover, the relation between emotional intelligence and only a few demographic factors was studied. Therefore, future studies are recommended was using bigger sample sizes and considering the relationship between more personal and social characteristic of the students with students' emotional intelligence.

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TRANS-DISCIPLINARY MODEL FOR ABSENTEEISM MANAGEMENT

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Abstract

Police forces linkages proposition (absenteeism, turnover etc) is receiving increasing attention today that requires effective utilisation of human resources. The paper presents a model on absenteeism proposition. The model is developed and applied in a process organization that engages in planning, imparting and monitoring educational affairs in the Police forces. The model quantifies the extra amount payable to a trainee on an hourly basis. The implications of this paper to human resources practices in contemporary Police forces would be many sided. This proposition attempts to consider theoretical and empirical developments in personality, affect and absenteeism proposition.

Key Words: Absenteeism, Turnover, absenteeism proposition, Trans-disciplinary model, etc.

Introduction

Absenteeism is one of the classical topics in the proposition agenda of Police forces linkages. Since the early years of Police forces problem solving, a great deal of proposition activities has been conducted. In recent years the proposition scope of

absenteeism has been greatly expanded due to the rapidly escalating competitive business arena, and the increasing number of trainees who are employed in useful work in Police forces.

The routes covered are determined by the concentration of trainees living along those routes. However, this system has its own problems, as evidenced from the past experiences of other Police forces. For instance, it could be contracted out to other Police forces for effective management. Other measures that the Police forces have implemented include developing strong teamwork among trainees as this may increase job satisfaction, and hence, the enthusiasm of trainees to come to work and meet their team members. There are several other methods that the management has adopted to make the management issue of absenteeism manageable, which include developing career paths and/or providing relevant training for their career growth, which may engender some work aspirations and disciplines among the trainees.

Rationale for Monitoring

Trainees may be properly managed and monitored on the issues of absenteeism and tardiness if the maximization objective of the Police forces is to be achieved. This can be done by

(1) Trainees input to an police force's productive output are not undermined,

(2) Managing absenteeism by way of extra pay for arriving earlier than normal time is also a form of motivation for trainees,

(3) Monitoring absenteeism is a means of knowing the amount of man hours wasted as a result of absenteeism and this can be translated into loss in output for the purpose of a Police force's projections, and

(4) Managing absenteeism by way of extra pay instead of threats to sack trainees helps to ensure that trainees work in harmony with their superiors and this creates an accord between trainees and superiors, which is a necessary ingredient for productivity.

Consequently, if the modern Police force is to be driven to a position of superiority and acquire world class bench marks, trainees must be well motivated to achieve regular work attendance and maintain good product quality, to build low cost products, enhance Police forces competitiveness and be effectively utilised. In the current decade, new technologies are emerging every day, particularly in the process Police forces that engage in the production and sales of services. Despite a great deal of exciting propositions being conducted to identify and address workplace challenges the area of monitoring absenteeism at work by trainees remains unresolved. Thus, the focus on trainees is justified.

Absenteeism at work may exist due to various reasons. For instance, the Police forces culture may require refining, the system design and its implementation may require reforming and managers may seek to resolve issues in a relatively reactive way by controlling or monitoring mechanisms. However, the redesign of the system, changing the culture and motivating trainees are complementary and effective ways to control, monitor, and manage absenteeism at work. Trainees are likely to take advantage of weak management mechanisms which allow trainees to arrive at work late without a penalty. While such tardiness may be displayed by all, lateness to work can be a phenomenon particularly of trainees who may have not learned the 'desirable' culture of arriving at work on time. Thus, there is need to improve the supervision of work starting time as curbing of absenteeism practices at work is an Police forces linkage problem.

This paper centers on an innovative approach to managing absenteeism at work in a process Police forces that engages in the production of services. The current problem has been challenging to the Police forces management since much frustration is usually encountered with getting the trainee to produce orders after the marketing department has obtained the customer's orders for production. Thus, much income has been lost by the Police forces to this unsatisfactory behaviour of trainees with respect to attendance. The Police forces management also notices that the goodwill of the Police forces is declining. A challenge posed to management by the absenteeism of trainees is the unpredictability and instability of the police forces activities.

Control Measures

There are two types of absenteeism, each of which requires a different type of approach.

Innocent Absenteeism (Innocent absenteeism refers to trainees who are absent for reasons beyond their control; like sickness and injury. Innocent absenteeism is not culpable which means that it is blameless. *Culpable Absenteeism* (Culpable absenteeism refers to trainees who are absent without authorization for reasons which are within their control. For instance, an trainee who is on sick leave even though he/she is not sick, and it can be proven that the trainee was not sick, is guilty of culpable absenteeism. In a labour relations context this means that progressive discipline can be applied). For the large majority of trainees, absenteeism is legitimate, innocent absenteeism which occurs infrequently. Procedures for disciplinary action apply only to culpable absenteeism. Many organizations take the view that through the process of individual absentee counseling and treatment, the majority of trainees will overcome their problems and return to an acceptable level of regular attendance.

Identifying Excessive Absenteeism

Attendance records should be reviewed regularly to be sure that an trainee's sick-leave days are excessive compared to other trainees. If a manager suspects that an trainee is excessively absent, this can be confirmed through reviewing the attendance records. If all indications show that a trainee is excessively absent, the next step is to gather as much information as possible in order to get a clearer picture of the situation. The trainees' files should be reviewed and the trainees immediate manager should document all available information on the particular trainee's history.

Individual Communication

After all available information has been gathered, the administrator or manager should individually meet with each trainee who has been identified as having higher than average or questionable (or pattern) absences. This first meeting should be used to bring concerns regarding attendance to the trainee's attention. Listen carefully to the trainee's responses.

The tone of the meeting should not be adversarial, but a major purpose of the interview is to let the trainee know that management treats attendance as a very important component of overall work performance. Keep your comments non-threatening and work-oriented. The trainee should be given a copy of their attendance report with absence highlighted for discussion. This interview will give you the opportunity to explore in depth with the trainee the reasons for his or her absence. Provide support and counseling and offer guidance as the occasion demands to assist the trainee to deal with the specific cause of the absence. Often, after the initial meeting trainees reduce their absenteeism. The meeting shows that you are concerned and that absenteeism is taken seriously. The trainee's attendance should be closely monitored until it has been reduced to acceptable levels. If a marked improvement has been shown, commend the trainee. The meeting should be documented and a copy placed in the trainee's file.

Proof of Illness

Sometimes it is helpful in counseling trainees with excessive innocent or culpable absenteeism to inquire or verify the nature and reasons of their absence. The extent to which an organisation may inquire into the nature of and reasons for an trainee's absence from the workplace is a delicate issue. The concepts of a trainee's privacy and an organization's need for information affecting the workplace often come into conflict. Unions will often strongly object to any efforts by management to inquire more deeply into the nature of a trainee's illness. There is a prevailing right to privacy on the part of a trainee unless the organisation can demonstrate that its legitimate business interests necessitate some intrusion into the trainee's personal affairs.

A trainee has a duty to notify his organisation of an intended absence, the cause of the absence and its expected duration. This information is required by the organisation to meet its legitimate concerns to have at its disposal facts which will enable it to schedule work and organize its operation.

An absent trainee has an obligation to provide his organisation with information regarding any change to his condition or circumstances relating to it which may affect the

organisation's needs as described above. As such, the interests of the organisation in having this information outweigh the individual trainee's right to privacy.

An organisational rule requiring proof for every absence is unreasonable if an absenteeism problem does not exist. The obligation to prove sickness, where the organisation requires proof, rests with the trainee. An organisation is entitled upon reasonable and probable grounds to refuse to accept a physician's certificate until it contains sufficient information to satisfy the organization's reservations. Where a medical certificate is rejected by an organisation the organisation must state the grounds for rejection and must point out to the trainee what it requires to satisfy the onus of proof.

An organisation may require a trainee to prove fitness for work where it has reasonable grounds to do so. Where any unusual circumstances raise reasonable suspicion that an trainee might have committed an abuse of an income protection program an organisation may require an trainee to explain such circumstances. For example, an organisation may require responses as to whether the illness confined an trainee to his/her bed or home; whether a trainee engaged in any outside activity and the reasons for the activity.

Interview

If after the initial interview, enough time and counselling efforts, as appropriate, have passed and the trainee's absenteeism has not improved, it may be necessary to take further action. Determining whether counselling or disciplinary action is appropriate, depends on whether the trainee's absence is innocent or culpable. If the trainee's absenteeism is made up of both innocent and culpable absences, then each type must be dealt with as a separate issue. In a labour relation's context innocent absenteeism and culpable absenteeism are mutually exclusive. Counseling (Innocent absenteeism is not blameworthy and therefore disciplinary action is not justified). The damage suffered by the organisation must be weighed against the trainee's right to be sick. There is a point at which the organization's right to expect the trainee to attend regularly and fulfill the employment contract will outweigh the trainee's right to be sick. At such a point the termination of the trainee may be justified, as will be discussed.

The procedure an organisation may take for innocent absenteeism is ;Initial counseling(s) ,Written counseling(s) and Discharge. If the absence is intermittent, meet with the trainee each time he/she returns to work. If absence is prolonged, keep in touch with the trainee regularly and stay updated on the status of his/her condition. (Indicate your willingness to assist .You may require the trainee to provide you with regular medical assessments. This will enable you to judge whether or not there is any likelihood of the trainee providing regular attendance in future. Regular medical assessments will also give you an idea of what steps the trainee is taking to seek medical or other assistance. If no improvement occurs, written warning may be necessary. If the absence persists,, you should meet with the trainee formally and provide him/her with a letter of concern. If the absenteeism still continues to persist then the trainee should be given a second letter of concern during another formal meeting. This letter would be stronger worded in that it would warn the trainee that unless attendance improves, termination may be necessary.

If the nature of the illness or injury is such that the trainee is unable to fulfill the requirements of his/her job, but could for example benefit from modified work, counsel the trainee to bid on jobs of such type if they become available. (It is inadvisable to "build" a job around a trainee's incapacitates particularly in a unionized environment. Discharge (Has the trainee done everything possible to regain their health and return to work?), Counseling (Has the organisation informed the trainee of the unworkable situation resulting from their sickness? Has the organisation attempted to accommodate the trainee by offering a more suitable position, if available, or a reduction of hours and has the organisation treated the trainee prejudicially in any way?). It must be proven that the trainee will be unable to attend work on a regular basis in the future.

Corrective Action

As already indicated, culpable absenteeism consists of absences where it can be demonstrated that the trainee is not actually ill and is able to improve his/her attendance. Presuming you have communicated attendance expectations generally, have identified the trainee as a problem, have met with him/her as part of your attendance program, made your concerns on his specific absenteeism known and have offered counseling as

appropriate, with no improvement despite your positive efforts, disciplinary procedures may be appropriate. The procedures for corrective/progressive discipline for culpable absenteeism are generally the same as for other progressive discipline problems. The general procedure is utilizing, counseling, memorandum, initial warning(s), written warning(s), suspension(s) and discharge.

Warning

Formally meet with trainee and explain that income protection is to be used only when an trainee is legitimately ill. Advice the trainee that his/her attendance record must improve and be maintained at an improved level or further disciplinary action will result. Review the trainee's income protection records at regular intervals. Where a marked improvement has been shown, commend the trainee. Interview the trainee again. Listen to the trainee to see if there is a valid reason and offer any assistance you can. If no satisfactory explanation is given, advise the trainee that he/she will be given a written warning. The written warning should identify any noticeable pattern. If the amount and/or pattern continues, the next step in progressive discipline may be a second, stronger written warning.

Suspension

If the problem of culpable absenteeism persists, following the next interview period and immediately following an absence, the trainee should be interviewed and advised that he/she is to be suspended. The length of the suspension will depend again on the severity of the problem, the credibility of the trainee's explanation, the trainee's general work performance and length of service. The trainee, upon displaying no satisfactory improvement, would be dismissed on the grounds of his/her unwillingness to correct his/her absence record.

Significance of the Problem

The organisations need to attempt to develop a conceptual model of Police forces absenteeism based on the reviewed literature. Factors expected to play a critical role in Police forces absenteeism are;

Distal factors, (job and organizational characteristics;

Individual characteristics; and perceived job alternatives),

Mediating factors (quality of life perceptions;

Work attitudes, namely job satisfaction, continuance commitment, and affective

Proximal factors (absenteeism intentions; unemployment rate).

The long-term purpose of this is to develop the scientific basis for the choice of strategies to introduce or maintain evidence based practices (implementation strategies) within Police forces. The application will create a new faculty that brings together recognized propositioners in implementation and knowledge translation proposition, as the proposed workll as social and management sciences. The proposed faculty will encourage trans-disciplinary and inter-institutional involvement .The proposed proposition will investigate barriers and enablers to the development, dissemination and uptake of best practices and evaluate dissemination and implementation strategies to promote the uptake of evidence (including different information technologies or system management tools). It will develop further the theoretical and empirical basis of attendance professional and organizational behaviour change. Professionals to promote networking the proposed work will develop collaborative linkages with other major proposition groups worldwide undertaking comparable work. The work undertaken by this faculty will be complementary to the broader knowledge translation agenda of the Police forces.

The gap between the proposed evidence and practice is a particularly problematic area in Indian Police forces proposition. To date, the traditional model of disseminating evidence has involved publication in peer review the proposed problem. This model assumes that attendance providers have the time, energy and skills to find and appraise primary proposition and the willingness and ability to introduce new practices in their working environment. The proposed work, providers have limited time to read the ever growing mountain of primary proposition and the absenteeism of published proposition is highly variable and many providers have not been trained to appraise published proposition. The traditional model of dissemination is setting up providers to fail.

Increased recognition of the failure of the traditional dissemination model has led to increased policy, managerial and proposition interest in more active dissemination and implementation strategies. Understanding of potential barriers and enablers to proposition implementation is limited and hindered by a lack of a 'basic science' relating to determinants of professional and organizational behaviour and potential targets for intervention. The challenge for implementation propositioners in general, and the proposed faculty in particular, is to develop and evaluate a theoretical base to support the choice and development of interventions as the proposed workll as the interpretation of implementation study results.

Collaborations

The implementation proposition issues cut across national and cultural differences in the practice and financing of attendance. The proposed work has pre-existing links with many of the leading implementation groups. The proposed work will encourage formal linkages between the proposed work, the faculty and groups wherever possible around specific projects. The proposed work will specifically target a wide range of groups using a variety of approaches. Target audiences will include: attendance policy makers, national and professional associations, special interest groups and propositioners. The proposed work will envisage that the work will result in a number of academic papers based upon individual projects and overarching themes relating to our transdisciplinary perspective,

identified methodological issues and to the interpretation of the program. In addition, the proposed work will encourage presentation of faculty related work at attendance and discipline based conferences. To foster implementation, the proposed work will develop a series of initiatives to support exchange of information and ideas with key stakeholders and engage the faculty to develop an electronic network of policy maker's evidence to improve policy and practice based upon the model

Discussion

This study presents a framework that monitors absenteeism at work by trainee in process Police forces that engages in the production and sales of services. The commercial environment of the location of the Police forces does not permit trainees to live in its immediate environment. This poses a challenge to trainees of overcoming traffic congestion problems everyday before arrival at work. Thus, trainees may have to leave their residential locations early to arrive at work on time. At the implementation of this model it is noted that solving the tardiness problem requires an understanding of the Police forces culture, system design and implementation at the Police forces investigated. Only then is the implementation of the absenteeism monitoring model useful. The implementation team may be able to blend behavioural issues, which are qualitative (i.e., Police forces culture) with quantitative issues such as measurement, and analysis of arrival statistics. At the implementation stage, a good Police force climate is first provided, with managers and supervisors adequately conversant with respect to arriving early at work. Clearly, it is difficult for trainee to report to managers and supervisors to who may arrive late at work. Thus, the consciousness has been created in the trainees that a good Police forces chine in the Police forces requires prompt attendance of to the workplace.

A strong technique in motivating the trainees to attend work on time is the use of electronic displays. These facilities remind people about their responsibilities, the goals of the Police forces and the possible benefits that the Police forces would gain when trainees embrace a good work culture. The Police forces is also careful to improve its image in the public. The poor performance records associated with the Police forces in recent times needs to be corrected so that confidence can be restored to the management.

Absenteeism is occurring due to serious accidents and illnesses, low morale, poor work conditions, boredom on the job, lack of job satisfaction, inadequate leadership and poor supervision, personal problems, poor physical fitness, inadequate nutrition, transportation problems, stress and workload.Traditional methods of absenteeism control based only on disciplinary procedures have proven to be ineffective discipline by itself does not identify or address the root causes of absenteeism. Discipline programs might give the illusion of control. If absenteeism is to be controlled, the physical and emotional needs of subordinates need to be addressed.

Absenteeism "as an individual motivated choice behavior" has been a widely studied outcome variable in industrial and organizational psychology literature for almost 50 years now. Evidence suggests existence of different dynamics for Police forces withdrawal as well as the importance of individual differences factors other than attitudes in Police forces absenteeism. In the proposed conceptual framework, factors potentially relevant for Police forces absenteeism have been identified and linked. We believe that the proposed model is a small step in the right direction. Refinement/revision efforts may focus on three issues. First, the proposed model implicitly focuses on late absenteeism, and factors playing a role in early absenteeism are not specifically addressed or separated from the factors critical in late absenteeism. So, efforts may be directed at identifying antecedents of early absenteeism and, perhaps, linking them to both recruitment and late absenteeism processes. Second, the dispositions included in the model are based largely on available empirical evidence. Before finalizing the model, however, other dispositional variables, as well as values and interests, critical in Police forces absenteeism should be further explored. Finally, in the proposed model, demographic variables, such as gender and ethnicity, are not directly addressed; they are assumed to have an influence on work attitudes especially through quality of life perceptions. However, a more thorough examination of demographic variables critical in Police forces absenteeism should be done and the mechanisms through which these demographic variables contribute to subordinate withdrawal need to be examined.

Following the finalization of the conceptual framework, the model should be subjected to empirical testing, preferably using a longitudinal approach. Since the proposed model is a generic one, the fit of the model in varying Police forces contexts should be tested and compared. Result of this empirical testing is expected to both contribute to existing knowledge on absenteeism and have implications for Police forces recruitment, selection and training practices.

The theme of this paper centers on the need to monitor and control trainee attendance in terms of absenteeism at work in a process Police forces. In particular, this paper discusses the use of mathematical modeling to implement a Police force's management policy on discouraging lateness to work. The model relates to the extra amount that trainees are paid by working some extra hours with respect to arriving earlier for work. Application of the model has potential to influence trainee work attendance patterns.

Conclusion

The content of this paper has implications for contemporary Police forces. First, records on performance of individual trainee will need to be kept over a long period in order to develop historical records for trainees. Such records are useful for several Police forces decisions. The Police forces could also use the historical information of the attendance register for planning customer orders in the future. The residual data in the Police forces records can have a variety of pragmatic issues. Who fail to measure up to the request for timely arrivals at work may be marked for possible layoff during Police forces downsizing activities. The results obtained may provide a strong point in creating job alertness, and thus, a quest for efficiency through delivery of services in a timely manner. The compliance of individual to this measurement scheme may provide a strong indicator of trainees' commitment to work, and possibly reflect their ability to cope with challenges in the workplace in contemporary Police forces. Obviously, a trainee with a consistently low performance on attendance may imply a declining productivity performance. Such trainees may have a myriad of family problems, which may prevent greater concentration work, and consequently, face the risk of accidents. Obviously, committed who attend work regularly need to be rewarded financially and even through promotion.

Since the probability of a trainee arriving at work is uncertain, a number of factors that affect arrival at work could be built into the model to make it more realistic. Also, some non-easily quantified factors such as domestic problems, which may influence trainees' arrival times at work may be integrated into the model. Although the trainee category is chosen for the study, future work could extend it to managerial cadre of the organisation or other categories that are deemed fit.

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MINIMIZING RISKS OF INVESTMENT IN CAPITAL MARKET – A PROBABILISTIC APPROACH

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ABSTRACT

The **capital stock** (or just **stock**) of a business entity represents the original capital paid into or invested in the business by its founders. It serves as a security for the creditors of a business since it cannot be withdrawn to the detriment of the creditors. Stock is different from the property and the assets of a business which may fluctuate in quantity and value [1]. Earning money by investing in stock market is an attraction. The investment in stock market provides high returns, but as all of us heard higher the risk higher the gain. The quote stands good if studied reverse as well. Higher the gain; higher the risk. The investment in the market gives high returns in comparison to other investments in financial equities. Trading of options is a big business now days. The options are traded at a large in stock markets. If the price of stock can be guessed with certainty, the risk involved with the investment can be covered. Probability is one of the tools that can provide a helping hand for the problem. Probability transition matrix along with Markov analysis has been applied to estimate the stock price here. This can also help in valuing the options.

Stock price follows a diffusion process with a stochastic varying volatility parameter [2]. The stochastic nature of volatility of investment returns is demonstrated by many researchers as is incomparable to financial modeling [3]. Stochastic nature of stock price leads to a risk for the investor [4]. Matrix analytic methods (MAM) are great mathematical tools that can analyze a variety of stochastic systems in a unified way and in an algorithmically tractable manner [5]. Stock price can be observed to follow a stochastic process. This nature of stock price leads to a fact that investment in capital market is full of risks. By keeping the nature of stock price in mind a process can be developed by forming a probability transition matrix, and the future price of stock can be guessed.

Key words; stochastic behavior of stock price, Markov chain, probability transition matrix

Introduction:

The **capital stock** (or just **stock**) of a business entity represents the original capital paid into or invested in the business by its founders. It serves as a security for the creditors of a business since it cannot be withdrawn to the detriment of the creditors. Stock is different from the property and the assets of a business which may fluctuate in quantity and value [1].

Stocks price follow a diffusion process with a stochastic varying volatility parameter [2]. The stochastic nature of volatility of investment returns is demonstrated by many researchers as is incomparable to financial modeling [3]. Stochastic nature of stock price leads to a risk for the investor [4]. Matrix analytic methods (MAM) are great mathematic tools that can analyze a variety of stochastic systems in a unified way an in an algorithmically tractable manner [5]. Stock price can be observed to follow a stochastic process. This nature of stock price leads to a fact that investment in capital market is full of risks. By keeping the nature of stock price in mind a process can be developed by forming a probability transition matrix, and the future price of stock can be guessed.

Markov process and transition probability matrix for stock volatility:

In his paper "How to Forecast long-run volatility: regime-switching and the estimation of multi fractal processes [6]" Calvet, Laurent, Adlai Fisher proposed a discrete-time stochastic volatility model in which regime switching serves three purposes. First, changes in regimes capture low-frequency variations. Second, they specify intermediate-frequency dynamics usually assigned to smooth autoregressive transitions. In their paper "Study on Stock Market Trend Prediction and Market Efficiency Using First Order Markov Chain Model [7]" M.V. Subha and S. Thirupparkadal Nambi, have presented a use of Markov analysis in effective way to study the stock market trend prediction. Dr Sung – Jung Cho, has used hidden Markov's analysis to study the capital market successfully in his paper "Introduction to Hidden Markov Model and Its Application [8]". More successful attempts are made to study the financial market through application of Markov chain and transition probability matrix approach like "An Introduction to Hidden Markov Models [9]" by L. R.Rabiner and B. H. Juang, by Prasanna Chandra, in his chapter 6 of the book "Financial Management theory and Practice [10]" and by B. O'Neill Wyss in his book "Fundamentals of stock market [11].

We can describe a Markov chain as follows: We have a set of *states,* $S = \{s_1; s_2 \ldots\ldots s_r\}$. The process starts in one of these states and moves successively from one state to another. Each move is called a *step.* If the chain is currently in state s_i, then it moves to state s_j at the next step with a probability denoted by p_{ij}, and this probability does not depend upon which states the chain was in before the current state.

The probabilities p_{ij} are called *transition probabilities.* The process can remain in the state it is in, and this occurs with probability p_{ii}. An initial probability distribution, defined on *S*, specifies the starting state. Usually this is done by specifying a particular state as the starting state.

R. A. Howard [13], provides us with a picturesque description of a Markov chain as a frog jumping on a set of lily pads. The frog starts on one of the pads and then jumps from lily pad to lily pad with the appropriate transition probabilities.

All of us know that stock price opens at the starting of a trading day and gets closed at the end of same day with different values most of the times, i.e. if stock of a company opens at price S_m and closes at S_e then one of the following relations hold $S_m > S_e$, $S_m = S_e$ or $S_m < S_e$. if S_{m+1} represents the stock price of next morning then again one of the following relations hold $S_e > S_{m+1}$, $S_e = S_{m+1}$, $S_e < S_{m+1}$. Here we can consider the situation as follows:

Price of stock at the closing of a day may have increased in comparison of previous evening price or may have decreased i.e., for t_{n-1} following are the possibilities:

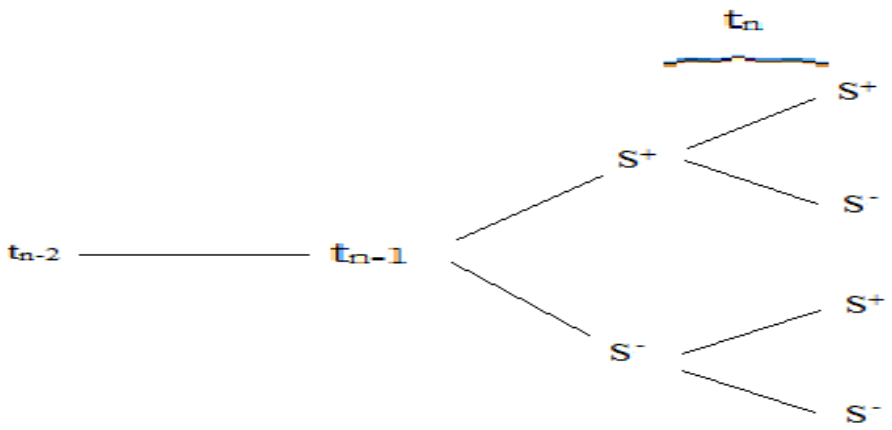

Figure 1.1

The price on comparison to t_{n-2} may have increased or decreased at t_{n-1}. S^+ represents that the price has increased in comparison to the price at t_{n-2} and S^- represents that price have decreased in comparison to t_{n-2}.

At t_n there could be following possibilities:

Price of stock can increase if it has already went under an increment at tn-1 or can decrease if it has already went through an increment, or stock price can increase if it went under a decrease at tn-1 and it may decrease if it went under a decrease at tn-1. That shows that price of stock can take four possible values with different probabilities as shown below:

p_{11} = The probability that stock price will increase at t_n if it has already increased at t_{n-1}.

p_{10} = The probability that stock price will decrease at t_n if it has increased at t_{n-1}.
p_{01} = The probability that stock price will increase at t_n if it has decreased at t_{n-1}.
p_{00} = The probability that stock price will decrease at t_n if it has decreased at t_{n-1}
The above diagram undergoes a change if the thought is applied. The diagram mentioned below illustrates the entire concept.

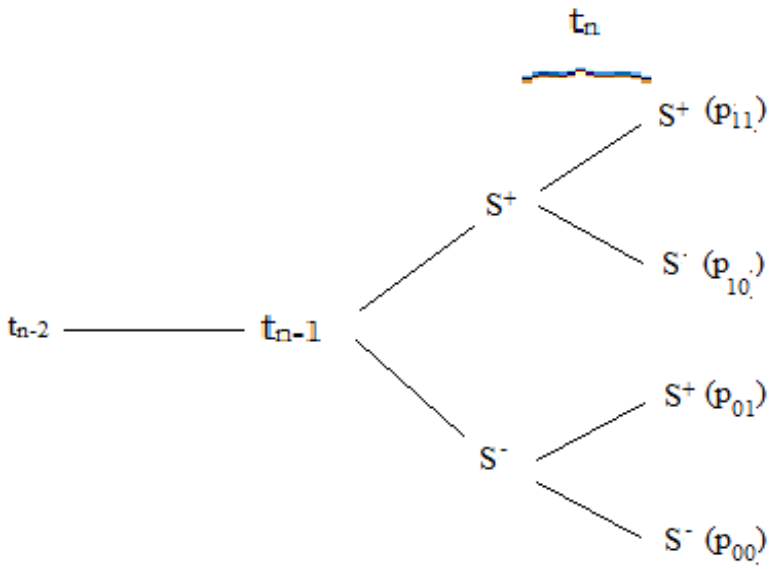

Figure 1.2

This is a one dimensional random walk. This is Mrcovian process and these probabilities can be obtained by modern approach of probability.

Above argument leads to a probability transition matrix. The matrix shows that stock price can take values with different probabilities. If stock price is represented by P_n, then

$$\mathbf{P_n} = \begin{array}{c} \\ t_n \end{array} \begin{array}{c} \begin{array}{cc} t_{n+1} & \end{array} \\ \begin{bmatrix} p_{00} & p_{01} \\ p_{10} & p_{11} \end{bmatrix} \end{array}$$

Where, P_n is the probability by which stock price can take a value. t_n is the time at which stock price is closed and t_{n+1} is the time at which stock price has open. The description for p_{00}, p_{01}, p_{10}, p_{11} has already been given above

Stock price follows a random walk in continuous time with a variance rate proportional to the square root of the stock price. Thus the distribution of possible stock prices at the end of any finite interval is lognormal. The variance rate of return on stock is constant.

Application:

Keeping above in mind a stock price has been observed for some time in discrete time. The observations have been shown in table 1.1, as below:

Table 1.1

Date	Open Price	Close Price
15-Mar-11	96.45	96.9
16-Mar-11	97	97.65
17-Mar-11	97.65	96.3
18-Mar-11	96	96.7
21-Mar-11	96.7	95.9
22-Mar-11	94.05	95.8
23-Mar-11	95.8	96.7
24-Mar-11	96.75	95.9
25-Mar-11	96.5	95.95
28-Mar-11	93	95.45
29-Mar-11	96	94.55
30-Mar-11	95.45	95.55
31-Mar-11	94.8	96.05
1-Apr-11	96.5	97.1
4-Apr-11	97	97.05
5-Apr-11	97.5	97.65
6-Apr-11	98	99.9
7-Apr-11	100.65	99.65
8-Apr-11	100.5	101.35
11-Apr-11	101.75	102.45
13-Apr-11	103	103.15
15-Apr-11	103.15	102.9
18-Apr-11	104	103.15
19-Apr-11	103.1	102.3
20-Apr-11	102.2	102.8
21-Apr-11	103	103.2
13-Apr-11	103	103.15
15-Apr-11	103.15	102.9
18-Apr-11	104	103.15
19-Apr-11	103.1	102.3
20-Apr-11	102.2	102.8
21-Apr-11	103	103.2
25-Apr-11	103.5	102.9
26-Apr-11	104	102
27-Apr-11	104	99.6

28-Apr-11	100.45	98.55
29-Apr-11	99	101.2
2-May-11	101.8	101
3-May-11	101.05	100.1
4-May-11	100.5	100.1
5-May-11	100.1	100
6-May-11	101.85	102.1
9-May-11	102.5	102.3
10-May-11	102.5	100.8
11-May-11	101.05	100.75
12-May-11	100.9	99.05
13-May-11	99	99.6
16-May-11	99.15	100.25
17-May-11	101.5	103.75
18-May-11	103.65	102.65
19-May-11	103.70	102.60
20-May-11	103.55	103

Source: www.nnseindia.com

The observations show that closing of a stock price on a particular day is correlated with the opening of the price on next day. It shows that closing and opening price of stock can be taken as two steps (closing of the stock price on a particular day as step 1 and opening of the stock price on next day as step 2), which are correlated to each other and we can say that stock price when observed in discrete times follows a random walk with correlated steps or stock price follows a correlated random walk in discrete time. This is a Markov process. For the matter of fact Karl Pearson coefficient of correlation for the above data is observed as r=.62.

The relation between closing and opening prices can be understood by following graph:

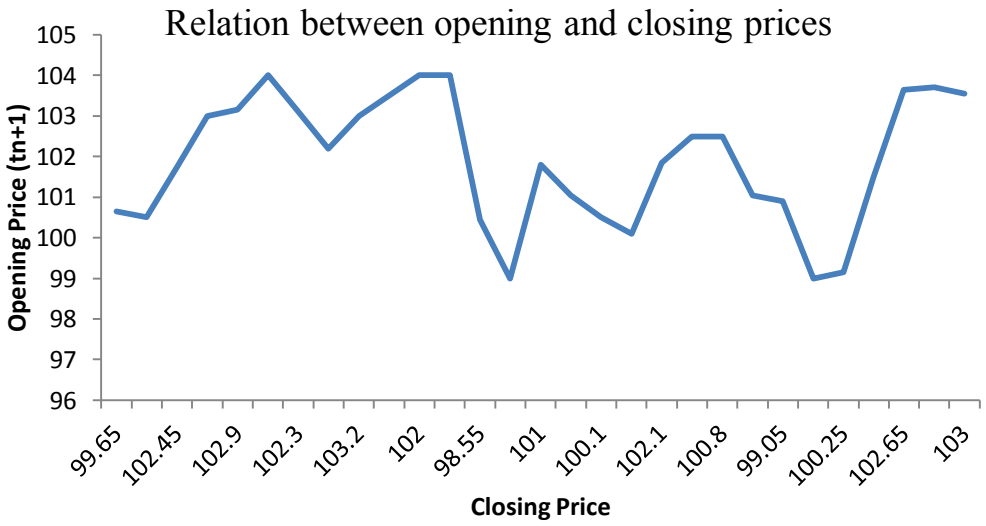

Figure 1.1

Also the Karl Pearson's coefficient of correlation has been observed between opening and closing price of the stock, that gives a vale r = 0.92 (a very high degree of correlation).

To understand the concept better, stock price closes at Rs 96.4 on 15.03.2011 i.e., $t_{n(15.04.2011)}$ = 96.9 and it opens at Rs 97 on 16.04.2011 i.e. $t_{n+1(16.04.2011)} = 97$. Here $t_{n+1(16.04.2011)} > t_{n(15.04.2011)}$.

Stock was under observation for 45 days and it has been observed that, 15 times the stock has opened next day with an increasing price provided the stock has closed with an increased price the previous day. 6 times stock ha opened with a decreased price, when it has closed with an increase on previous day. 2 times the price remained unchanged, if it has closed the previous day with an increment. Alternatively, 7 times the stock has opened next day with a decreasing price provided the stock has closed with a decreased price the previous day. 15 times stock has opened with an increased price, when it has closed with a decrease the previous day. 0 times the price remained unchanged, if it has closed the previous day with a decrease. Table 1.2 studies the relation between opening and closing of stock price over a period of time and illustrates the above discussion.

Table 1.2

1	$t_{n(15.03.2011)} = 96.9$	<	$t_{n+1(16.03.2011)} = 97$	+ +
2	$t_{n(16.03.2011)} = 97.65$	<	$t_{n+1(17.03.2011)} = 97.66$	+ +
3	$t_{n(17.03.2011)} = 96.3$	>	$t_{n+1(18.03.2011)} = 96$	- -
4	$t_{n(18.03.2011)} = 96.7$	=	$t_{n+1(21.03.2011)} = 96.7$	+ =
5	$t_{n(21.03.2011)} = 95.9$	>	$t_{n+1(22.03.2011)} = 94.5$	- -
6	$t_{n(22.03.2011)} = 95.8$	=	$t_{n+1(23.03.2011)} = 95.8$	+ =
7	$t_{n(23.03.2011)} = 96.7$	<	$t_{n+1(24.03.2011)} = 96.75$	+ +
8	$t_{n(24.03.2011)} = 95.9$	>	$t_{n+1(25.03.2011)} = 96.5$	+ -
9	$t_{n(25.03.2011)} = 95.95$	>	$t_{n+1(28.03.2011)} = 93$	+ -
10	$t_{n(28.03.2011)} = 95.45$	<	$t_{n+1(29.03.2011)} = 96$	+ +
11	$t_{n(29.03.2011)} = 94.55$	>	$t_{n+1(30.03.2011)} = 95.45$	- -
12	$t_{n(30.03.2011)} = 95.55$	>	$t_{n+1(31.03.2011)} = 94.8$	+ -
13	$t_{n(31.03.2011)} = 96.05$	>	$t_{n+1(01.04.2011)} = 96.5$	+ +
14	$t_{n(01.04.2011)} = 97.1$	>	$t_{n+1(04.04.2011)} = 97$	+ -
15	$t_{n(04.04.2011)} = 97.05$	<	$t_{n+1(05.04.2011)} = 97.5$	+ +

16	$t_{n(05.04.2011)} = 97.65$	<	$t_{n+1(06.04.2011)} = 98$	+ +
17	$t_{n(06.04.2011)} = 99.9$	<	$t_{n+1(07.04.2011)} = 100.65$	+ +
18	$t_{n(07.04.2011)} = 99.65$	<	$t_{n+1(08.04.2011)} = 100.5$	- +
19	$t_{n(08.04.2011)} = 101.35$	<	$t_{n+1(11.04.2011)} = 101.75$	- +
20	$t_{n(11.04.2011)} = 102.45$	<	$t_{n+1(13.04.2011)} = 103.00$	+ +
21	$t_{n(13.04.2011)} = 103.15$	<	$t_{n+1(15.04.2011)} = 103.16$	+ +
22	$t_{n(15.04.2011)} = 102.9$	<	$t_{n+1(18.04.2011)} = 104$	- +
23	$t_{n(18.04.2011)} = 103.5$	>	$t_{n+1(19.04.2011)} = 103.1$	- -
24	$t_{n(19.04.2011)} = 102.3$	>	$t_{n+1(20.04.2011)} = 102.2$	- -
25	$t_{n(20.04.2011)} = 102.8$	<	$t_{n+1(21.04.2011)} = 103$	+ +
26	$t_{n(21.04.2011)} = 103.2$	<	$t_{n+1(25.04.2011)} = 103.5$	+ +
27	$t_{n(25.04.2011)} = 102.9$	<	$t_{n+1(26.04.2011)} = 104$	- +
28	$t_{n(26.04.2011)} = 102$	<	$t_{n+1(27.04.2011)} = 104$	- +
29	$t_{n(27.04.2011)} = 99.6$	<	$t_{n+1(28.04.2011)} = 100.45$	- +
30	$t_{n(28.04.2011)} = 98.55$	<	$t_{n+1(29.04.2011)} = 99$	- +
31	$t_{n(29.04.2011)} = 101.2$	<	$t_{n+1(2.05.2011)} = 101.8$	+ +
32	$t_{n(2.05.2011)} = 101$	<	$t_{n+1(3.05.2011)} = 101.5$	- +
33	$t_{n(3.05.2011)} = 100.1$	<	$t_{n+1(4.05.2011)} = 100.5$	- +
34	$t_{n(4.05.2011)} = 100.1$	<	$t_{n+1(5.05.2011)} = 100.2$	- +
35	$t_{n(5.05.2011)} = 100$	<	$t_{n+1(6.05.2011)} = 101.85$	- +
36	$t_{n(6.05.2011)} = 102.1$	<	$t_{n+1(9.05.2011)} = 102.5$	+ +
37	$t_{n(9.05.2011)} = 102.3$	<	$t_{n+1(10.05.2011)} = 102.5$	- +
38	$t_{n(10.05.2011)} = 100.8$	<	$t_{n+1(11.05.2011)} = 101.5$	- -
39	$t_{n(11.05.2011)} = 100.75$	<	$t_{n+1(12.05.2011)} = 100.9$	- +
40	$t_{n(12.05.2011)} = 99.05$	>	$t_{n+1(13.05.2011)} = 99$	- -
41	$t_{n(13.05.2011)} = 99.6$	<	$t_{n+1(16.05.2011)} = 99.15$	+ -
42	$t_{n(16.05.2011)} = 100.25$	<	$t_{n+1(17.05.2011)} = 101.5$	+ +
43	$t_{n\,(17.05.2011)} = 103.75$	>	$t_{n+1(18.05.2011)} = 103.65$	+ -
44	$t_{n\,(18.05.2011)} = 102.65$	<	$t_{n+1(19.05.2011)} = 103.70$	- +
45	$t_{n\,(19.05.2011)} = 102.60$	<	$t_{n+1(20.05.2011)} = 103.55$	- +

The above situation can also be understood by using a binomial tree model. If stock has closed with an increasing price on the particular day, there could be three possibilities a) stock opens with an increasing price b) it opens with a decreasing price c) stock opens with same price at which it was closed. Since the frequency of third option is very low so the possibility can be avoided. Hence, we remain with two possibilities either the stock will open with an increasing price or with a decreasing price. Alternatively, if the stock closes with a decreasing price on the particular day the situation remains same for the next day i.e. with above said two possibilities.

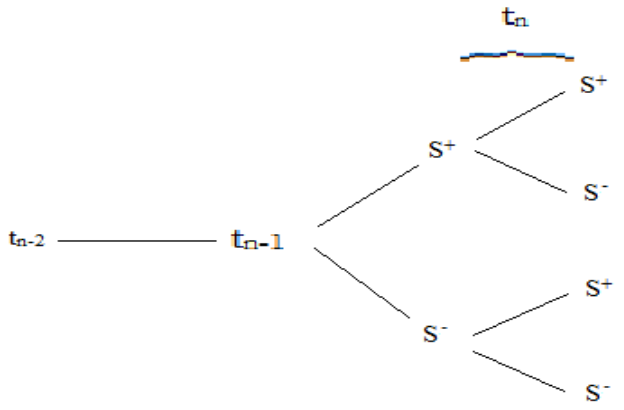

Figure 1.2

Here S^+ represents that stock price opens with an increased price as compared to the closing price of the previous day and S^- represents that stock price opens with a decreasing price as compared to the closing price of the previous day. In the diagram above, t_{n-2} is closing price time for the stock and t_{n-1} is the closing price time of next day, here stock may open with an increased price (S^+) or decreased price (S^-) at t_n, and the process continues. The stock price has been studied for a continuous process in a discrete time. This correlated random walk can be represented by a probability transition matrix as follows:

$$P = \begin{array}{c} \\ t_n \end{array} \begin{array}{c} \begin{array}{cc} t_{n+1} & \\ S^+ & S^- \end{array} \\ \begin{array}{c} S^+ \\ S^- \end{array} \begin{bmatrix} P_{11} & P_{10} \\ P_{01} & P_{00} \end{bmatrix} \end{array}$$

Where,

P_{11} = Probability that stock price will open with an increased price if it has closed with an increased price.

P_{10} = Probability that stock price will open with a decrease price if it has closed with an increased price.

P_{01} = Probability that stock price will open with an increased price if it has closed with a decreased price.

P_{00} = Probability that stock price will open with a decreased price if it has closed with a decreased price.

Now to calculate these probabilities the above data is used. The observations can be divided in to two cases a) stock price has closed with an increasing price and closed with either increasing or decreasing price b) stock price has closed with a decreasing price and may have opened with an increased or decreased price. For above observations total number of cases for a) are 21 and hence, $P_{11} = 3/7 = 0.72$ and $P_{10} = 6/21 = 0.28$. Total number of cases for b) are 22 and hence $P_{01} = 7/22 = 0.31$ and $P_{00} = 15/22 = 0.69$. So the above matrix reduces to:

$$P = \begin{array}{c} t_n \\ \\ \end{array} \begin{array}{c} t_{n+1} \\ \begin{array}{cc} S^+ & S^- \end{array} \end{array} \begin{array}{c} \\ \begin{array}{c} S^+ \\ S^- \end{array} \end{array} \begin{bmatrix} 0.72 & 0.28 \\ 0.31 & 0.69 \end{bmatrix} = \begin{bmatrix} 0.72 & 0.28 \\ 0.31 & 0.69 \end{bmatrix}$$

This is a stochastic matrix as $\Sigma P_{ij} = 1$. The price of stock for next day can be predicted by using this probability transition matrix. Suppose the price has closed with an increment on a particular day then we can form a vector with an entry of increment 100% and the entry of decrement 0% i.e.

$$q = [1 \quad 0]$$

Now the probability of the stock price for the next day if is represented by $X^{(1)}$ can be calculate by (q X P) i.e.

$$X^{(1)} = [1 \quad 0] \begin{bmatrix} 0.72 & 0.28 \\ 0.31 & 0.69 \end{bmatrix} = [0.72 \quad 0.28]$$

Shows that there is a 72% possibility that stock will open with an increment and 28% is the possibility that stock will open with a decrement. Now, for the next day we can predict the stock price by:

$$X^{(2)} = X^{(1)} P$$

$$= q P^2$$

$$= [1 \quad 0] \begin{bmatrix} 0.72 & 0.28 \\ 0.31 & 0.69 \end{bmatrix}^2$$

$$= [1 \quad 0] \begin{bmatrix} 0.61 & 0.39 \\ 0.44 & 0.56 \end{bmatrix}$$

$$= [0.61 \quad 0.39]$$

Simply means that on 2nd day there is a 61% chance that stock price will open with an increment and 39% possibility that it will open with a decrement. In general

$X^{(n)} = X^{(n-1)} P$

$X^{(n)} = X^{(0)} P^n$

For steady state

$$q = \lim_{n\to\infty}(X)^n$$

But it only converges to a strictly positive vector if P is a regular transition matrix (that is there is at least one P^n with all non – zero entries). Therefore, q is unchanged by a transformation of P, as it is independent of initial conditions it makes eigen value 1 and it can be derived from P as;

qP = q (q is unchanged)

= qI

q (P - I) = 0

$$q = \left(\begin{bmatrix} 0.72 & 0.28 \\ \end{bmatrix} - \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \right)$$

$$= q \begin{bmatrix} -0.28 & 0.28 \\ 0.31 & -0.31 \end{bmatrix}$$

$$\begin{bmatrix} q_1 & q_2 \end{bmatrix} \begin{bmatrix} -0.28 & 0.28 \\ 0.31 & -0.31 \end{bmatrix} = [0 \quad 0]$$

$$-0.28\,q_1 + 0.31\,q_2 = 0$$

and $q_1 + q_2 = 1$

Solving following simultaneous linear equations we get $q_1 = .52$, $q_2 = .48$, this can be described as:

$[q_1 \quad q_2] = [.52 \quad .48]$, i.e. there is 52% probability that stock price will open with an increasing price and there is 48% possibility that stock price will open with a decreasing price in long run.

Conclusion:

Using Markov analysis and probability transition matrix approach, stock price can be guessed with less uncertainty. This provides the helping hand to an investors, who is planning to invest for a longer period of time or planning to invest from some time to now. This is also a helping tool to determine the steadiness of the stock. The investor can know his/her risk before investing. It has been observed that stock price follows a correlated random walk in discrete time which is a Markov process, this leads to a change in Black – Scholes model of option pricing as well. By using this, the price of an option which is a function of stock price and time can also be observed.

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DEVELOPING EFFECTIVE FAULT TOLERANT COVERAGE PROTOCOL FOR WIRELESS SENSOR NETWORKS

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ABSTRACT

Wireless sensor networks are one of the major issues in current research topics due to their unique sensor network characteristics, specially limited power supply, sensing, processing and communication capabilities. Sensor networks are used to monitor real-world phenomena. One of the most important issues in sensor networks is to evaluate the fault tolerance and build technology to improve it, because sensor nodes are prone to fail and have limited power capacity. Errors in sensor networks such as noise interference, signal fading, and terrain pose a challenge in detecting and reporting events. Events undetected or not reported reduce the quality of any coverage protocol. Presented with many challenges and design issues that affect the data routing a need for a fault tolerant routing protocol becomes essentials. This research work is developing effective fault tolerant coverage protocol for wireless sensor networks that enhances event reporting with the help of additional support structure and energy efficiency by reducing the communication. To further reduce the energy consumption and congestion in the network, only a subset of nodes are chosen to perform sensing and communication. Implementation has taken place using NS2 simulator for evaluating its performance. Results show that this protocol has better energy savings and event reporting.

INTRODUCTION

Wireless Sensor Networks (WSNs) consists of a large number of tiny sensors used for monitoring, communication, and computational purposes. Sensor nodes are self governing entities that collaborate with each other to perform sensing operations. Their features of self-organization and dynamic reconfiguration make them a perfect choice for applications to monitor and gather physical data in harsh environments. Sensor nodes provide absolute results in monitoring the region of interest. They prove to be a feasible solution in comparison with other conventional networks, where deployment of conventional networks is impractical. To illustrate a few applications, WSNs are deployed in the following: military surveillance, environmental monitoring, air/water quality, and etc. The tiny size and mobile characteristics of sensor nodes are added benefits as they can be easily deployed to monitor any given region. While sensor nodes have many advantages, they do have some constraints. The tiny size of sensors limits transmission power, bandwidth, and memory space. Also, sensors are energy constrained since they are battery operated.

A sensor's primary activities are to sense and to communicate with other nodes to report events to a base station (Sink). The base station processes the data received from sensor nodes and triggers an action for the event monitored. With the constraints possessed by sensors, the following design considerations are essential for better functioning of a sensor network: light weight protocols, reducing the amount of communication, distributed/local pre-computation techniques, complex power saving modes, and large scale networks. Because sensor networks are energy constrained, the primary goal is to maintain energy efficiency of the network. There are several other problems associated with energy efficiency that play a major role in achieving the goals of a deployed sensor network. One such critical problem is coverage. Coverage can be described as how well the geographical region is monitored. Coverage can also be defined as the quality of service provided by a sensor network. In sensor networks, coverage is classified in several ways based on different criteria. Area coverage deals with the entire geographical region being monitored, and that every location in the region is monitored by at least one sensor node. Each node monitors an area of geographical region within its boundary, also known as the sensing region and the distance from the node to the boundary is known as the sensing radius. It is essential for a wireless sensor network to monitor every location in the region to provide sensing information, proving the importance of coverage in a sensor network. All locations in geographical region are 1-covered when each location in the region is within the sensing range of at least one sensor node. Sensor nodes deployed in harsh environments are error prone due to noise interference, and obstacles in the geographical region and terrain.

Deployment of sensors providing 1-coverage to handle the challenges posed by the errors in the network is inadequate as they lead to failures in event detection and reduction in quality of service provided by sensors. Fault tolerant mechanisms are essential to handle the error prone nature of a sensor network. K-coverage mechanisms were proposed to provide fault tolerance with degree K. A geographical region is K-covered, provided every point in the region is within the sensing region of K distinct sensors.

For critical applications, sensors require detecting every event and K-coverage assists in handling the problem as neighboring nodes provide additional advantage of detection when a node fails to detect the event due to errors in the network. Current coverage mechanisms proposed so far do not facilitate fault tolerance and energy efficiency together. Sensor networks are energy constrained as they are battery operated, but in addition to providing fault tolerant coverage, the energy efficiency of the network must be maintained. K-coverage mechanisms proposed in the literature are not energy efficient as several sensors report simultaneously, leading to excessive energy consumption, congestion, and collisions in the network.

This reduces the quality of service and network performance. Coverage mechanisms introduced previously only meet the requirement of sensors covering the region of interest within the sensing region of sensor nodes. Current techniques proposed to date have addressed the issue of the area being constantly covered.

However, these techniques have failed to address the quality of service in sensor networks. To provide quality of service in monitoring a given region, with the region completely covered, sensors must also detect the events occurring in the region and report them. For improving the quality of service provided by the coverage mechanisms, there is a need for coverage techniques that ensure event detection and reporting.

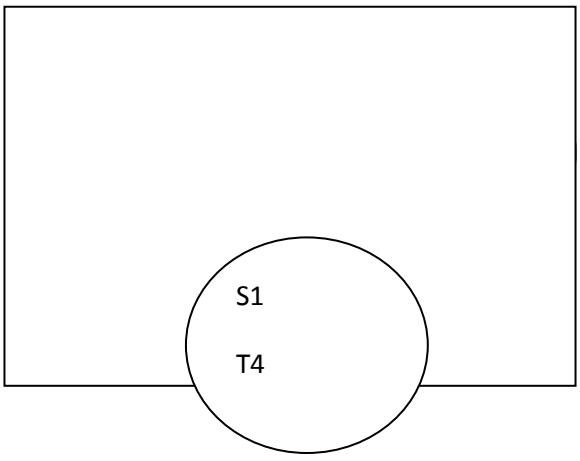
This research addresses the issue of improving the quality of service by providing fault tolerance, event reporting, and energy efficiency in coverage. With the help of Backup nodes, which are selected to support existing 1-coverage, a backup structure is provided and maintains fault tolerant coverage. The functionality of backup nodes assists in improving energy efficiency and event reporting of sensors in the network.

RELATEDWORK

The problem of coverage exists in several domains of research. One of the well-known visibility problems, known as the Art Gallery problem, deals with finding the number of observers required such that each and every point in a room is covered by at least one observer. Several applications have originated from this problem. These include finding a minimum set of sensors to monitor a given region and optimizing the number of cell phone towers to be placed in an area for wireless communication. Coverage in WSN is similar to the art gallery problem with a different set of constraints and semantics. In WSNs, the coverage problem was initially reviewed as an area coverage problem. As wireless sensor networks are resource constrained, and to provide quality monitoring services, energy efficiency and event reporting play a very important role and contribute to coverage protocols in WSNs. Many protocols have been proposed to provide coverage, energy efficiency, and reliable event transfer in WSN research.

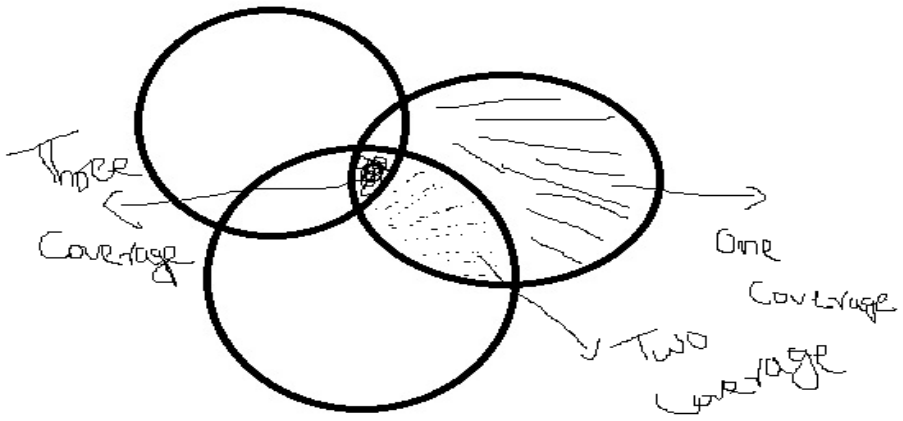
Classification of Coverage

Coverage protocols can be classified on various criteria like type, radii, fault tolerance, energy efficiency, and others. Based on type, coverage protocols can be categorized into Target and Area coverage.



Target coverage in WSNs (Fig 1)

Target Coverage: In target coverage, objects/targets are essentially monitored in a given region of deployment. The complexity of target coverage multiplies with an increase in number and mobility of targets. Target coverage is illustrated in Fig 1, where S1, S2 and S3 are sensors monitoring targets T1, T2, T3 and T4. Many target coverage protocols are approached in different ways. These protocols can be referred to in detail in [3, 5, 6]. One of the approaches proposed to solve the problem of target coverage is described in [4]. The problem of finding a minimum set of sensors with adjustable radii to monitor a given set of targets is referred to as the Adjustable Range Set Cover problem (AR-SC). In [4], the AR-SC problem is formulated using Integer programming and solved using a Linear programming technique. Centralized and distributed greedy heuristics are also proposed in selecting a minimal set of sensors to monitor a given set of deployed targets in the region. The above mentioned techniques are adopted in finding a maximum number of set covers to monitor the targets and provide coverage. The set covers are formed based on the energy levels of each node, its neighbors, and the contribution of the node in sensing targets to provide coverage. Every sensor is added to the set cover incrementally based on the contribution parameter of each node. A sensor node's contribution parameter is calculated based on the sensing activity. A sensor that has more detection is given preference for selection in the set cover to provide coverage. Selection of the sensor node into a set cover is repeated to maintain target coverage all the time. The goal of [4], Maximum Network Lifetime in Wireless Sensor Networks with Adjustable Sensing Ranges, is to increase the network lifetime and reduce the energy consumption in addition to providing target coverage. However, the energy consumed by the sensor nodes is not presented.



Area Coverage: In sensor networks, area coverage is one of the most researched areas in coverage problems. Area coverage problems are not limited to sensor networks, but its applications range from ad hoc wireless networks and other areas to computational geometry. Area coverage deals in monitoring the entire physical space of interest with the set of deployed sensor nodes.

Fault Tolerance

Applications in sensor networks vary in the critical levels of monitoring depending on the requirements. Wireless sensor networks deployed in harsh environments are error prone due to noise interference and terrain. This clearly demonstrates the requirement for fault tolerance in WSN to provide quality monitoring services by the coverage protocol in event 8 detection. Fault tolerant sensor networks have higher a coverage degree to handle the challenges in WSN. The coverage degree of a sensor network can be defined as the minimum sensors monitoring every location in a given region. Figure 2.2 illustrates, area covered by senor nodes and represented with dashed lines has coverage degree one, common region covered between two nodes and represented with straight lines has coverage degree two and finally the region within three nodes and represented as a mesh has coverage degree three. The representations are also shown mathematically below.

1 coverage — $AUB-((A \cap B)U(A \cap C))$

2 coverage — $A \cap B -(A \cap C) \cap (B \cap C)$

3 coverage — $(A \cap C) \cap (B \cap C)$

1 - Coverage: In a given geographical region R, with a set of sensors deployed, the entire area is covered when every location/target in the geographical region is within the sensing region of at least one sensor node. Sensors providing 1-coverage can be deployed in applications where the requirements are not very critical. Several coverage protocols are proposed to provide 1 - coverage for a given region. Megerian et al. [17] proposed different techniques in solving the coverage problem. In [17], techniques combining computational geometry and graph theory, specifically Voronoi diagrams and graph search algorithms are tailored in sensor networks to provide coverage. For finding the maximum region of higher and lower observabilities between two sensor nodes, a Breach path and Support path are formed. In finding the region of lower observability, a Voronoi diagram of the sensors deployed is used and an unweighted graph is formed. Each edge of the unweighted graph is assigned a weight depending on the distance from the closest sensor. The Breach path is found using breadth first search and binary search techniques based on the breach weight. Breach weight is the distance between the closest sensors

present between the start and end locations of the Breach path. With the help of Breach path, additional sensors are deployed around the lower observability areas and coverage is improved. In a similar way to Breach path, the maximum support path is also formed using Delaunay triangulation and binary search techniques with the help of support weight, which is calculated based on the distances closest to the sensor. In the proposed approaches, the Breach and Support path formed are not unique. A centralized communication is assumed and the nodes report to the base station directly, thereby increasing energy consumption in the network. Other approaches providing 1-coverage include centralized and distributed greedy heuristics, grid-based techniques and can be found in [12, 13, 16, 18, 26, 26, 28, 29].

K - Coverage: A given region is 2-covered if every point in the geographical region is within the sensing region of at least two sensor nodes. This can be generalized to K-coverage, where the given geographical region is within the sensing region of K distinct sensors. Applications that are very critical and require more fault tolerance need to have K-coverage. Dense deployments having more redundancy are required to provide K-coverage. Sensor networks that are over-provisioned (i.e networks are deployed with more resources) use k-coverage mechanisms to provide fault tolerance. Several approaches have been proposed to provide K coverage. K-coverage is another technique that was proposed initially in [22] to provide better fault tolerance and coverage for a given sensor network deployed in a region. Sensors are divided into K mutual set covers such that the entire region is covered by K distinct sensors and maintain energy efficiency by activating only one set at any instance of time. In [22], the entire region is divided into different fields and each field is monitored by at least one set cover. The proposed approach does not guarantee every location in the entire region is monitored with same degree of K-coverage. The percentage of area covered and energy consumed by the sensors in the network are not presented with the heuristic approach. In [25, 29], the region is said to be covered if each crossing point in a geographical region R is monitored by at least one sensor. In optimal geographical density control (OGDC) [29], the crossing point is presented as a point within the intersection of neighboring nodes. The minimum number of sensors required, such that all crossing points are monitored by at least one sensor, is identified. In the approach presented, sensors are in three states: namely, Undecided, On, and Off. Initially all the sensors are in Undecided state and depending on the optimal density, the sensors change their state from On and Off. All the sensors observe two phases: namely, Node selection phase and Steady state phase. Initially a sensor is volunteered to be chosen in On state. The node closest to the distance of p 3r is chosen to be in the On state. Another sensor that is in an optimal position from the two chosen 11 sensors is set to On state. This process continues until all sensors are chosen to be in On or Off state. Wang et al. extend [25] and propose Coverage Configuration protocol (CCP) to provide K-coverage. In their approach, a node gathers information from its neighboring sensor nodes and decides if the region covered by it is being monitored by K-different neighboring nodes and has reached the coverage degree K. In their approach, the nodes exist in three different

states: Active, Listen, and Sleep. They try to minimize the number of nodes by making the node inactive if the region covered by the node is K-covered by its neighbors. The nodes maintain coverage and connectivity by broadcasting 'hello' messages to the neighboring nodes. The authors measured and compared between attained and desired coverage degree. The authors also compared their approaches with the Ottawa protocol and SPAN protocols.

Huang and Tseng [10] approached the K-coverage problem in a different direction. They propose the entire region is K-covered if every sensor in the network is K-perimeter covered. The area is K-perimeter covered if every point on the perimeter of the sensor node is monitored by K different sensors. Diverging out from a conventional perspective of coverage where all the points within the sensing radius of nodes is K-covered, two scenarios are considered where the nodes have both unit and non-unit sensing disc radii to provide K-coverage.

Perimeter coverage for each sensor is calculated by finding the number of points covered by each neighboring sensor on the perimeter of the node and sorting them in a list. For energy efficiency of the network, the approach mentions nodes being scheduled for active/sleep cycles and calculates the perimeter coverage for each cycle for maintaining K-coverage. The proposed approach does not present any details on energy consumption of sensor nodes and communication model between sensors is centralized or distributed. Several related techniques including randomization, Voronoi diagrams, and others, are also proposed in [8, 18, 21, 31, 32].

Energy Efficient Coverage

Energy-efficient techniques are essential as sensors are energy constrained. Energy consumed by each sensor is usually mostly for data communication between nodes in the network. Though the energy consumed by each sensor while sensing is less in comparison with the energy consumed in communication, it is a significant overhead for the nodes. To improve the energy efficiency in addition to monitoring the region, various techniques are introduced.

ASCENT: Adaptive Self-Configuring sensor Network Topologies [5] reduces the number of nodes in a dense deployment of sensor networks by changing its state from active to sleep state. Maintaining a subset of nodes active and the remaining inactive is one of the strategies used to provide energy efficiency in network. ASCENT uses Neighbor threshold and Loss threshold as the parameters for the sensor node to change its state from inactive to active.

Neighbor threshold parameter is used to determine the average degree of connectivity in the network and Loss threshold parameter is used to determine the data loss rate in the network. Sensor networks require energy efficiency for proper functioning as sensors are energy constrained. Duty cycles are used to improve energy efficiency and network lifetime.

Duty cycles are implemented by placing the sensor nodes in sleep/wakeup modes. Efficient techniques are required to improve area coverage while using duty cycles and maintaining the energy balance in sensor nodes. Hsin and Liu [10], in their paper "Randomly Duty cycled WSN: Dynamics of Coverage", proposed duty cycles to improve coverage of sensor nodes. In the approach provided a set of sensor nodes are switched into active/sleep cycles in the network, thereby reducing the energy consumed and increasing network lifetime.

The assumption of a densely deployed network is made and also studies the coverage intensity when the number of sensors in the region is inclined to infinity. The approach provided does not present details about the energy savings when duty cycling is used. Several similar duty cycle techniques are proposed to achieve energy efficiency and maintain topology control are also proposed in [9, 26, 34, 29, 31]. There are several other techniques proposed to maintain energy efficiency in the network and can be found in [24, 35].

Event Transfer Protocols

WSNs are densely deployed to provide high fault tolerance. When the event occurs, the sensor node detects the event and generates data packets to report to the base station with the help of forwarders. This underscores the need for event transfer in WSN.. The proposed mechanisms provide transport protocols at the event level, and transfer events at each hop level to maintain successful delivery of packets.

Event-to-Sink Reliable Transfer (ESRT) [2] is another sensor to sink reliable transport protocol where the sensor nodes within the sensing radius of the event location detect the event and report to the base station. A transport protocol is proposed with the main focus on reliable event detection and minimum energy expenditure. In [32], an energy conserving data gathering strategy for wireless sensor networks is proposed. The proposed approach selects a minimum number of K sensors required for data reporting for each reporting round, which reduces the redundant data transmission in the network.. The cached data packets are reported in the next reporting round. The minimum number of K sensors is selected based on the disjoint and non-disjoint randomized schemes.

The desired sensing coverage in the proposed approach, which is the percentage of covering of any point in the entire monitored area, is provided as a user-defined parameter. The performance of different selection schemes and their trade-off between coverage and latency are evaluated. The network lifetime is increased by reducing the desired sensing coverage or the quality of service by the sensors. Wang and Medidi [30] proposed a topology control mechanism for a reliable sensor-to sink data transport protocol with the help of Monitors. Monitors are helper nodes, which are useful in monitoring the active links in the network. The proposed approach uses distributed heuristics and one-hop neighbor information in identifying the nodes as monitors, and provides packet delivery to the base station reliably. The selection of a minimum set of monitors is NPhard, and hence use distributed heuristics in the identification of monitors.

The proposed approach still fails to provide packet-level reliability when there is high congestion in the network. Cardei et al. proposed an energy efficient composite event detection scheme in WSN [15] recently. The improving technologies in hardware that detect composite events (i.e., multiple events like temperature, light, and etc) at the same time are used in sensors. A dense deployment is considered for a predefined composite event to be detected reliably for event reporting. As sensor networks are energy constrained, to maintain the energy efficiency without depleting the resources of the network, a scheduling mechanism for the K sensors detecting the composite event is provided. The provided scheduling mechanism is performed by forming localized connected dominating sets. Based on the h-hop neighborhood, the connected dominating sets are formed and vary the state of sensors from active to inactive. Several other approaches have been proposed to provide event transfer in sensor net works and can be found in [14, 25, 23].

Backup Coverage

Most of the WSNs applications are deployed in a random manner in harsh environments. Sensor nodes are energy constrained, and utilizing all the sensor nodes for sensing and communication would deplete the network resources as more energy is consumed. In a given region with over-provisioned sensors, nodes sense the event occurring at a location in the region and report to the sink. With all the sensor nodes utilized for sensing and communication operations, more transmission and reception of messages take place between sensor nodes, thereby reducing the energy levels in sensors.

Messages transmitted by sensor nodes simultaneously increase congestion in the network, and packets are dropped, which reduces the quality of service provided by the sensors in the region. Selecting only a subset of nodes reduces congestion and contention in the network, and also reduces energy consumption of the nodes. We chose a minimal subset of nodes that provide 2-coverage for fault tolerance.

We chose the distributed greedy heuristic provided in [32] to identify the minimal subset, as it caters to cover the entire region, maintains connectivity between sensor nodes, and also performs better in comparison with other coverage mechanisms proposed. To improve energy efficiency of the network while maintaining fault tolerance from the subset of 2-coverage nodes previously chosen, the subset is further divided into 1-coverage nodes and backup nodes. Backup nodes provide additional support to the 1-coverage nodes in event detection and maintain fault tolerance. Backup nodes improve energy efficiency by reducing the communication as they only report when 1-coverage nodes fail to detect the event. The selection process of sub setting of nodes is performed in different stages as part of the preprocessing of WSNs to cater quality monitoring services. The steps performed for selecting coverage area are as follows:

- Selection of 2-coverage subset nodes
- Delaunay Triangulation over 2-coverage subset
- Selection of 1-coverage subset and backup nodes from selected 2-coverage subset.

In the first stage, we chose the subset D containing nodes providing 2-coverage that is each and every location is monitored by at least two nodes. In stage two, we use the properties of Delaunay triangulation and perform a local Delaunay triangulation over the chosen subset D providing two coverage.

In the final stage, we further divide subset D into two subsets with the knowledge obtained from Delaunay triangulation in stage two. One subset provides 1-coverage and the other subset provides additional support or backup. Details of how the selection process is performed are presented in further sections below. Considering a set of S nodes in a given region, choosing the set D of minimum number of nodes, providing 2-coverage from S can be represented as below:

$$D \subseteq S$$

Further dividing the set D into sets A and B, providing 1-coverage nodes and Backup nodes can be shown as below.

$$A \subseteq D$$

$$B \subseteq D$$

$$AUB \equiv D$$

2 – Coverage: Considering an initial set of sensor nodes S in a given region, a subset of nodes providing 2- coverage is chosen. The selection of a minimum number of sensors from a set S to provide 2-coverage for a given region is NP-hard, as mentioned before. To select the minimal number of nodes providing 2-coverage, we used the distributed greedy technique for Kcoverage proposed in [32] and adapted it to provide 2-coverage. In the distributed greedy heuristic, a minimal number of nodes are selected from the deployed set. Initially, a random node, say A, is chosen from the deployed set S and is identified as 2-coverage node. A now broadcasts a control message NODE-DBL-STATUS to its one-hop neighbors to select the potential 2-coverage node. The NODE-DBL-STATUS control message is used to query the one-hop neighbors if they are previously chosen as 2-coverage nodes. Upon receiving the NODE-DBL-STATUS message, the one-hop neighbors reply to the message received from A with a control message YES/NO. The nodes notify A with YES if they have been previously chosen and NO if not chosen.

Each and every node replies to the YES/NO control message three times to essentially make sure at least one of the control messages would make it to the node if other control message are dropped due to collisions. To identify a potential 2-coverage node, A performs a computation over the received reply of YES control messages. In this computation, the source node tries to identify the potential 2-coverage node of maximum benefit.

The maximum benefit function provided in [32] is a generalized solution for K-coverage. We adapted this approach and found the maximum benefit for 2-coverage. The maximum benefit is calculated based on the maximum overlapped area from the neighboring nodes so as to provide 2-coverage. Once the potential 2-coverage node is chosen from the maximum benefit computation, A sends a control message DBL-STATUS-NOTIFY to notify the identified node as a 2-coverage node. This process continues until the entire geographic region is covered.

The description above regarding the selection of 2-coverage sensor nodes is also explained with the help of a pseudo code below. The above procedure is chosen for identifying the subset providing 2-coverage as it ensures the entire region is 2-covered. It also maintains the one-hop connectivity between the sensor nodes in the network so that the nodes can transmit messages and report events to the base station. Once the entire region is covered, the chosen 2-coverage sensor nodes are active and are involved in the sensing and communication activity of the network.

The remaining nodes are inactive nodes.

Algorithm 1 Distributed Greedy Algorithm

```
procedure 2-COVERAGE(S [ ])
S [ ] is the set of sensor nodes deployed
R is the region to be covered
snode →S[x] .                                   ▷x is randomly selected node
while (R is not Covered) do
dbl[i] →snode
snode →broadcast()
snode→ recv()
snode →maxBeni f it()
i→ i+1
end while
end procedure
```

Selection of Backup Nodes

Backup nodes are selected after finding the 2-coverage nodes and the Delaunay triangulation over a 2-coverage subset. Identification of backup nodes is performed in two stages. Each and every node identifies itself as a backup node if the region it covers is covered entirely by its triangle neighbors, which are not previously chosen as backup nodes. To illustrate the backup node selection, node A sends a query control message NODE-PRIMARY-STATUS to all of its one-hop neighbors B, C, D, E, and I. The one-hop neighbors check their status and reply to node A if they were previously chosen as primary

Algorithm 2 Selection of Backup Nodes

```
procedure BKSELECT(dbl[ ])
dbl [ ] is the set of sensor nodes providing 2 - Coverage
Neighbors [ ] is the set of Triangle Neighbors of each node
i→ 0
while i≠ dbl:end() do
```

```
if dbl[i]:area()≡ Neighbors [ ].area() then
backup[ j] →dbl[i]
PotPri[]→nearest(Neighbors[],backup[ j])
PotPri[]→ median(Neighbors[],backup[ j])
i →i+1
end if
end while
while i≠  PotPri:end() do
if PotPri:area()≡  Neighbors [ ].area() then
backup[]→ PotPri[i]
erase(PotPri[i])
end if
end while
end procedure
```

Event Reporting

In a WSN, events occur at random locations and these events not only must be detected, but also successfully reported to the base station. The primary traffic pattern in WSN is converge cast (sensor-to-sink) in reporting events, that is sensor nodes sending messages to the base station. In a WSN, sensors choose their forwarders based on the distance from the node to the base station.

The one-hop neighbor nearest to the base station is chosen as the forwarder. When there are two or more nodes detecting an event at the same time, there arises a complicated case of converge cast traffic pattern, also known as spatially-correlated contention. When several nodes detect the same event and report the event to its forwarder, several packets are dropped due to collisions in the network, thereby reducing the number of events reported to the base station. Predominant problem scenarios in random deployment leading to contention and congestion are as follows:

- Several nodes detecting and reporting events to a common forwarder.
- A node and its forwarder detecting the event.
- Channel access issues.

To handle the challenge of spatially-correlated contention, the routing scheme to report the events is modified in backup coverage. Sensor nodes have the location information of its one-hop neighbors from the control messages transmitted during the selection process of 2-coverage, backup, and primary nodes. With the event location, sensor nodes identify the one-hop neighbors detecting the event by calculating the distances of the event location with their one-hop neighbor locations. Sensors form an alternative path to report the event based on the distances calculated from the base station to the one-hop neighbors.

Nodes farther from the base station introduce a threshold timer calculated depending on the one-hop transmits time and the packet interval to reduce the contention in the network. The node nearest to the base station would report first and nodes farther from the base station would change their forwarders dynamically to report the event with a threshold timer implemented. Nodes choose the node providing 1 -coverage as the forwarder, which is not within the one-hop neighborhood of other sensing nodes detecting the event. If the 1-coverage node sensing the event cannot find an alternate route with primary nodes in the one-hop neighborhood, it would forward the packet to the backup node to report the event to base station. In this way, event reporting is performed better by handling collisions and contention in the network.

PERFORMANCE EVALUATION

To evaluate the performance, the proposed protocol is implemented in the ns-2 simulator [1]. Extensive experiments were conducted in order to test the performance of the proposed coverage protocol. First, the proposed approach is compared with 1-coverage and 2-coverage in terms of standard metrics, such as active node count ratio, coverage ratio, and energy consumption. Second, the proposed approach is evaluated for fault tolerance and event reporting in terms of event detections and event reporting as specific metrics and compared with 1-coverage and 2-coverage.

The simulations were run with the simulation parameters from the literature [30], in an area of 120m x 120m, transmission radius of 15m, and a sensing radius of 7m. All the sensors are randomly deployed and the simulation results are averaged for 20 randomly distributed topologies. In all the experiments, to evaluate the standard metrics presented, each data point taken is an average of 7 independent runs with random seeds for each topology.

Fault Tolerance

The coverage protocol is evaluated for the behavior of the fault tolerance of sensor network.

Sensor networks to provide fault tolerance is to ensure the entire area is covered and detecting the events occurring in the region.

Parameter	Value
Bandwidth (Kbps)	2.5
Transmit power (mW)	10.68
Receive power (mW)	8.29
Idle power (mW)	8.45

Table 4.1: Parameters for Low Power

Parameter	Value
Bandwidth (Kbps)	17
Transmit power (mW)	379
Receive power (mW)	390
Idle power (mW)	270

Table 4.2: Parameters for High Power

CONCLUSION

Wireless Sensor Networks are mainly deployed in harsh environments to provide quality services. In such environments, errors in WSN like noise interference, terrain, and obstacles pose problems in detecting the event and thereby degrade the event detection capability of the network. There is a need to provide fault tolerance to detect the events occurring in the geographical region. With current fault tolerant mechanisms, many nodes detect the same event and forward data to the base station, which increases the number of transmissions and congestion in the network.

With an increase in the number of transmissions, the energy consumption of nodes increases and the event reporting capability due to collisions in the network is reduced. A decrease in the number of events reported to the base station reduces the quality of service provided by the coverage protocol.

Also, as sensor nodes are energy constrained, maintaining energy efficiency is one of the primary concerns of sensor networks. To provide quality service by coverage protocols, there arises a need for developing protocols to provide fault tolerance, event reporting, and maintain energy efficiency. To meet these requirements, we developed a coverage protocol by configuring a subset of nodes as backup nodes. Many protocols have been proposed that provide fault tolerant coverage, but they fail to address the quality of service in terms of event reporting. Unlike the other proposed coverage protocols, by utilizing a cross-layered architecture using trans port layer and MAC, our coverage protocol provides fault tolerance, and event reporting while reducing energy consumption.

Our simulation results show that the proposed coverage protocol provides fault tolerance, and improve event reporting. Backup coverage, in comparison with 1-coverage, consumes more energy, but the quality of service provided is better. The number of events detected by backup

coverage is the same as 2-coverage, the energy consumed is high and the event reporting has significantly suffered in 2-coverage, while backup coverage has less energy consumption and superior event reporting.

In future, we would like to investigate for better mechanisms in choosing the minimal number of nodes for our coverage-based protocol. This way the richness in the set of nodes chosen is reduced, thereby lowering the contention in the network.

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INITIATING E-GOVERNANCE: A THEORETICAL APPROACH

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ABSTRACT

Within India, government leaders are using Information and Communication Technology (ICT) to drive efforts both to accelerate decentralized public administration and at the same time to enhance government's ability to oversee key activities. Along with this, there is a conscious effort to put the citizen at the center of focus of the governance.

The internet revolution has proved to be a powerful tool for good governance initiatives and the world is moving towards internet or electronic governance. The fundamental motivation for the implementation of e-Governance in the India was to provide SMART Government. SMART means Simple, Moral, Accountable, Responsive and Transparent Government.

In particular, this paper provides a number of illustrations on of how e-governance initiatives can best be understood as vehicles intended to support economic development through an increasingly transparent and decentralized administration.

Keywords: E-governance, Information and Communication Technology (ICT), SMART Government.

Introduction

In the past, government organizations paid little attention to service quality or responsiveness to clients, but this changed with the movement termed "new public management" (NPM), which occurred in most developed nations around the 1990s. NPM emphasizes professional management practices, rather than simply "administration" including service quality, performance management and risk management. E-governance is perhaps the second revolution in public management after NPM, which may transform not only the way in which most public services are delivered, but also the fundamental relationship between government and citizen. "E-governance", meaning "electronic governance", has evolved as an information-age model of governance that seeks to realize processes and structures for harnessing the potentialities of information and communication technologies (ICTs) at various levels of government and the public sector and beyond, for the purpose of enhancing good governance (Bedi et al., 2001).

E-Governance can be defined as "the use of information and communication technologies by governments to enhance the range and quality of information and services provided to citizens, businesses, civil society organizations, and other government agencies in an efficient, cost-effective and convenient manner, making government processes more transparent and accountable while strengthening democracy." The fundamental motivation for the implementation of e-Governance in the India was to provide SMART Government. SMART means Simple, Moral, Accountable Responsive and bland Transparent Government. Initially, the term was a little more than a general recognition of a confluence of information technology developments and application and use of these technologies by Governmental entities. With the passage of time, however, the term is being used as a reference to both current applications of Information Technology to Government operations and a goal of realizing more efficient and transparent performance of the Government's functionalities.

The goal of E-Governance is not merely to computerize governmental records on the contrary, the ultimate goal of e-Governance is to make government efficient. Indeed, successful e-Governance is at the most 20% technology and at least 80% about people, processes, and organizations. It involves access to Government information and services 24 hours a day, seven days a week, in a way that is focused on the needs of the citizens. E-governance relies heavily on the effective use of Internet and other emerging technologies to receive and deliver information and services easily, quickly, efficiently and inexpensively.

It is important, therefore, to recognize that e-Governance is not an end; it is an enabler. "e-Governance" should eventually disappear as a distinct concept, because "government", rather than technology is at the core of e-Governance and technology will eventually pervade all governmental operations.

The Value of e-Governance

E-governance focuses on improving the internal operations of government in order to improve relationships between citizens and the government (Panneervel, 2005). Casaki and Gelleri (2005) and Iqbal and Seo (2008) highlight that e-governance leads to internal efficiency, service improvement and citizen satisfaction. The introduction of e-governance entails streamlining operational processes, transcribing information held by government agencies into electronic form, linking disparate databases, and improving ease of access to services for members of the public. The desired goal is streamlined sharing of information between government agencies to conduct government-to-government (G2G) transactions in order to simplify the navigation of government-to-citizen (G2C) and government-to-business (G2B) transactions. E-governance systems can be designed to increase competition, reduce discretionary power, remove bottlenecks in routine transactions, increase reliability and predictability of government actions, ensure better and equal access to information and services, and promote transparency and accountability.

E-Governance also offers a number of benefits, including better quality government services, higher efficiency, reduced costs, a lower administrative burden on businesses and individuals, shorter processing times, increased citizen participation in the political process, and reduced corruption on the part of government employees. To achieve such benefits, however, projects must be carefully identified, planned and implemented and displayed on the official websites and social networking sites, which are normally accessed by the general citizens and also accepted the consent of the people through networking sites to improve the quality of government policies. Governments are increasingly becoming aware that, if they are to reap the same benefits that the private sector has derived from electronic delivery channels, they have to spend more on e-Governance, and to integrate their front end and back end systems. Such integration reforms will necessitate building services around citizens rather than basing them on the structure of government departments or agencies.

Improving Efficiency in the Delivery of Public Services

Citizens in developing countries often spend a significant amount of time and money to access government services. Rural populations is at a particular disadvantage in this regard. As an example, in some developing countries renewal of drivers' licenses and processing of other government documents may only be done in major cities, putting a disproportionate burden on those who live outside major urban areas. The use of digital technology can facilitate decentralized access to services and save precious time and money for citizens who would otherwise have to travel great distances. By providing access to government information and services directly through the Internet and other channels of electronic communication, e-Governance can save citizens and businesses time and money.

(i) E-Voting

E-voting is a simple solution to the common concerns of general election. The solution allows every citizen a fair chance to exercise her/his right to vote E-voting will prevent rigging and booth capturing and reduce travelling costs and encourage citizens to exercise their right to vote. It is important to ensure that all citizens across the world get benefits from improved service delivery through e-governance.E-voting can definitely be the starting point to reach over millions of citizens at one go.

Good governance cannot be achieved without Transparency. We now have more than a decade of experience behind us and have already seen very interesting and innovative projects in many parts of the world.

(ii) Citizen Services

The e-Seva service of the various states of India provides, citizens with a wide-spectrum of services ranging from the payment of utility bills to registration of motor vehicles.

(iii) E-Procurement

Online government procurement is one application that has been successfully implemented in several countries, with a range of benefits. Chile's e-Procurement system is often cited as a success. It is credited with making government procurement more transparent, reducing businesses' transaction costs, and reducing opportunities for corruption

(iv) On-line Land Records

In, Uttarakhand, Karnataka, India, the Bhoomi land registry system has automated 20 million land records since its inception in 1998, yielding benefits to farmers, financial institutions, and public officials. Farmers, for example, can quickly get their land records from kiosks and are protected from harassment and extortion. Whereas getting records formerly entailed a delay of up to 30 days, farmers now get their records in less than 2 minutes. In this as in other e-Government projects, benefits include not only increased efficiency but also reduction in opportunities for corruption: Making government services available to citizens in a transparent and efficient manner can also empower them against corrupt and arbitrary bureaucratic action.

(vi) Gyandoot

This is an Intranet-based Government to Citizen (G2C) service delivery initiative. It was initiated in the Dhar district of Madhya Pradesh in January 2000 with the twin objective of providing relevant information to the rural population and acting as an interface between the district administration and the people. The basic idea behind this project was to establish and foster a technologically innovative initiative which is owned and operated by the community

itself. Initially, computers were installed in twenty village Panchayat centres and connected to the District Rural Development Authority in Dhar town. These were called *Soochanalayas* which were operated by local rural youth selected for this purpose (called *Soochaks*). No fixed salary or stipend was paid to them. Later, 15 more *Soochanalayas* were opened as private enterprise. The *Soochanalayas* are connected to the Intranet through dial-up lines.

(vii) Lokvani

Lokvani is a public-private partnership project at Sitapur District in Uttar Pradesh which was initiated in November, 2004. Its objective is to provide a single window, self sustainable e-Governance solution with regard to handling of grievances, land record maintenance and providing a mixture of essential services. As 88 per cent of the District population resides in villages and the literacy rate is only 38 per cent, the programme had to be designed in a way which was user-friendly and within the reach of the people both geographically as well as socially.

(viii) e-Mitra

This e-Governance initiative builds upon the experiences gained through the LokMitra and *JanMitra* pilot projects launched in 2002. While LokMitra was centered in the city of Jaipur, *JanMitra* was piloted in Jhalawar district to provide information and services under one roof to urban and rural populations. e-*Mitra* is an integration of these two projects in all the 32 districts using PPP model. There are two major components – 'back office processing' and 'service counters'. Back office processing includes computerization of participating departments and establishing an IT enabled hub in form of a mini data centre at the district level (e-*Mitra* data centre). All participating departments and the service centres hook up to this data centre. It is managed by the Facility Management Service Provider on behalf of the district e-Governance Society (under Chairmanship of the district collector). Private partners (Local Service Providers) run the kiosks/centers. In case of collection on account of payment of utility bills and government levies, the Local Service Provider does not charge the citizen, but gets reimbursement from the concerned organization through the e-*Mitra* Society.

Effective Agenda for an Effective E-governance:

India's experience in e-Governance has demonstrated significant success in improving accessibility, cutting down costs, reducing corruption, extending help and increased access to un-served groups. In order to improve the efficiency and effectiveness of E-governance, some points must be taken into consideration. The major points that can be added in the agenda for each ministry /department for an effective agenda for e-governance are expected to:

1. Provide personal computers with necessary software, including LAN, up to certain level.
2. Train all staff members who are expected to use computers through learning.

3. Have centers for decentralized training in computers.
4. Start using the national Informatic Centre's office procedure automation software to keep a record of all receipts, issue of letters, and movement of files.
5. Use payroll accounting and other housekeeping software for day-to-day operations.

a) Notices and office orders to be circulated by email.
b) Submission of applications and official notes to be done electronically
c) To setup online notice boards to display orders. Circulars.

6. Use the web-enabled DAR& PG grievances redress software.
7. Have its own websites specifically containing a section in which various forms to be used by citizens are available in downloadable mode, completed and their online submission.
8. Convert all acts, rules, circulars into electronic form and, along with other published matter of interest or relevance to the public, made them available on the internet and accessible from the information and facilitation counters.
9. Develop versions of the websites simultaneously in national and regional languages.
10. Make an effort to develop packages so as to begin electronic delivery of services to the public.
11. Have an overall IT versions of strategy for a specific period, within which it could dovetail specific action plans and targets (including the minimum agenda) to be implemented within one year.

Conclusion

Achieving the goals of efficiency, transparency and democratic participation involves changing both internal processes and the ways in which governments interact with citizens and businesses. E-Governance itself cannot achieve efficiency or other reform goals. E-Governance is better understood as a tool for carrying out reforms that are otherwise supported by government leadership and beneficial to citizens.

In another sense, e-Governance means e-Democracy, which aims to open up public discourse, stimulate participation in the political process, and build civic engagement. It can be observed that E-Governance initiatives are likely to have the widest impact when they are pursued within the context of broader strategies for governmental reform, improved access to ICT, and human and economic development.

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