INSURANCE IN AGRICULTURE – EVOLUTION AND TREND

Anup Ranade[*]
Dr. P.B. Yenurkar[**]

Abstract-

The Indian farmer does his business of production and sale of agricultural product under numerous constraints, risks and complex situations. Under these conditions, recovering the amount invested in the activity, earning for yearly expenses of the family and making a profit becomes difficult.

To add to the woes, behavioral impact of family members, peers, fellow villagers, subordinate laborers, Gram Panchayats, Bank and others Government Officers and their apathy, generally are unfavorable mainly for small, marginal and medium sized farmers. Thus there is an extremely pressing need for insuring the farmers and their businesses from the ensuing risks.

In any industry or business activity, pricing of the end product forms the most important decision. The way the pricing is done can decide whether the business is successful or not. There have been various methods of pricing that have been designed for various industries, depending on the constraints and benefits specific to the industry.

The present paper attempts to critically analyse the crop insurance scenario in India with reference to past experiences and take a brief view of the insurance in agricultural sector in some of the developed countries.

Key words : Crop Insurance, risk, agriculture, NAIS, AICI

Introduction

Indian agriculture has an extensive background which goes back to 10 thousand years. At present, in terms of agricultural production, the country holds the second position all over the world. In 2007, agriculture and other associated industries such as lumbering and forestry represented around 16.6% of the Gross Domestic Product of the country. In addition, the sector recruited about 52% of the entire manpower.

India enjoys the second position all over the world in terms of agricultural production. During the period of 2009-10, farming and associated industries such as lumbering, forestry, and fishing represented approximately 15.7% of the Gross Domestic Product of the country. These industries also recruited 52.1% of the overall manpower of India. Farming is an activity requiring wide ranging entrepreneurial qualities. A farmer has to deal with a number of inputs and has to produce their product and sell it in the competitive market. There are various stake holders of this activity and the risks involved are huge. Thus in short, farming is a fully fledged business activity. It has got investments to be done, regular costs to be incurred, product to be sold, profit to be earned and risks to be mitigated.

The agricultural income has been kept out of taxation by the government since independence because being the major employer sector and the nation is predominantly an agricultural economy. However, the government does not treat it as a business in itself. It is extremely important to consider agricultural activity as a business activity and treat it accordingly.

Complex business environment for the farmer and the risks involved.

The investments required in the farming activity by the farmers are land, tractor & other machinery for tilling etc. The costs to be incurred are for seeds, fertilizers, pesticides, insecticides, protective fencing etc.

The operations involved are tilling, sowing, treating, cutting, sorting, cleaning etc. On completion of these operations, the farmer has to transport his product to the wholesale market and sell it in an open auction. During the whole activity, a farmer has to face numerous problems which can be treated as risks.

The Indian farmer does his business of production and sale of agricultural product under numerous constraints, risks and complex situations. Under these conditions, recovering the amount invested in the activity, earning for yearly expenses of the family and making a profit becomes difficult.

To add to the woes, behavioral impact of family members, peers, fellow villagers, subordinate labourers, Gram Panchayat, Bank and others Government Officers and their apathy, generally are unfavourable mainly for small, marginal and medium sized farmers.

Thus there is an extremely pressing need for insuring the farmers and their businesses from the ensuing risks.

Need of covering risks as an instrument of financing Agriculture sector risk premium

In any industry or business activity, pricing of the end product forms the most important decision. The way the pricing is done can decide whether the business is successful or not. There have been various methods of pricing that have been designed for various industries, depending on the constraints and benefits specific to the industry.

An ideal pricing should be such that it should cover all the costs involved in the production, transportation and selling of the product to the end use customer. Further it should earn a desired level of profit for the entrepreneur to sustain the activity.

Thus there are several elements in pricing. The costs viz fixed costs and variable costs need to be covered. The profit desired in the whole endeavour is calculated and then divided by the units of production. The amount needs to be added to the cost. Many times in a high risk business, where the eventuality of the risk is uncertain, but the probable or estimated losses in the case of risk becoming true are huge, the manufacturer charges risk premium to cover for the losses that might occur in case of the risk becoming true. The price reached thus, however has to be judged and compared with the estimated market demand and supply positions of the product.

However the farmers due to their personal constraints and cash crunch situation, are unable to charge the risk premium on their products. Moreover, charging a risk premium would never

be encouraged by the Government, because of its inflationary effects. Hence Insurance of Agriculture can be helpful in financing this risk premium.

The present paper attempts to critically analyse the crop insurance scenario in India with reference to past experiences and take a brief view of the insurance in agricultural sector in some of the developed countries.

During the whole activity, farmers have to face a number of problems, which can be treated as risks. There risks can be listed as follows:

1. Escalation of input costs.
2. Untimely rains.
3. Excessive or deficient rains
4. Poor quality of inputs.
5. Infestation by pests.
6. Damage by rodents & other animals
7. Theft
8. Lack of nutrition for crops due to poor quality of soil.
9. Poor quality of output product due to unpredictable conditions.
10 Falling of market price of the product due to excessive supply.
11.Damage to products due to rotting, & adverse weather conditions during storage & transportation.
12.Failure of crops due to any the other reason not mentioned above.

Research Objective:

1. To critically analyze the crop insurance scenario in India with reference to past experiences and current developments in the sector.
2. To take a brief view of the insurance in agricultural sector in some of the developed countries.
3. To discuss the future possibility for a farmer friendly crop insurance program.

Research Methodology

1. **Research Design** – This is a Conceptual Research. Conceptual research of any sort focuses on developing a theory to explain specific phenomena or behaviors. In this research paper the concept of Crop Insurance , its Evolution and development has been studied.

2. **Sampling Design :** This sample design used for the study is , non probability sampling. The generalizations obtained from this non probability sample has been filtered through knowledge of the topic being studied.

3. Data Processing and Analysis :

1. Critical review of literature and historical events.
2. Identifying gap in the existing field of knowledge.

Hypothesis:

Crop Insurance in India has improved over the years in line with the global trend.

The above hypothesis has been tested by taking stalk of the trends in the Indian scenario as well as the global scenario. These trends have been represented in the form of graphs and the validity of the Hypothesis has been found out.

Crop Insurance Evolution and Trend

The farmer should ideally charge the risk premium & arrive at the price in a similar manner. However, on cutting the crops & cleaning, the farmer have to face a number of constraints. These constraints are:

1) Insufficient space and inadequate facilities to store their product for long time.
2) Unavailability of facilities to transport are their product to the market at one go & within or on desired time.
3) Lack of exact knowledge about the market demand & current market price.
4) The whole sellers & retailers are not farmer friendly. Hence they do not co-operate with the farmers to help farmers get a fair price for their product.
1) They do not have much cash at hand, to repay their debts, to invest in farming activities of next year/next crop. They are in deep cash crunch and are badly in need of money.

Thus faced with so many constraints the farmers are not much in a position to wait till they get the desired or required price for their product. Hence it is impossible for them to change the risk premium in the price. In fact when these farmers take their products to the local market, they are offered a price much lesser than the minimum price fixed by the Government, during an action. The farmers have no other option but to settle for whatever they get rather than taking their goods back to their fields without selling it. At the auction market, the whole sellers & dealers who purchase the goods from the farmers, form guilds & collate among competitors in order to manage the price below the bare minimum so that they could maximize their profits.

The farmers invariably each one of them becomes prey to **pressure selling**. Thus the price received by the farmers is not capable of earning any risk premium to cover any possible risk. It leads the farmer to a no profit situation, and he runs the risk of getting indebted, for his yearly household expenses he also runs the risk of getting distressed.

If the costs incurred by the farmer during the year are not recovered, the farmers runs the risk of not being able to meet their commitments to his tenders i.e. they runs the risk of turning into a non performing assets in the books of his lenders, he runs the risk of looking his mortgaged land, thus stopping any further agricultural activity. Thereby he also runs the risk of getting into extreme distress & resort to taking the extreme step such as committing suicide etc.

The agricultural business is continuously under the shadow & threat of risks & problems which are huge in number. Moreover India with its huge population is in need of the agricultural sector for sustaining its growth, development, existence and self sufficiency. It cannot afford the drivers of this sector to leave at their own mercy, helpless & hopeless.

Covering these risks must not be viewed like just any other insurance plans wherein the claim is settled from the money received as premium from a number of insured entities. Rather

insurance here in agricultural sector must view as a financial tool or instrument being used to finance the risk premium for the risk involved in the business of agriculture.

Therefore even if the total claims of insurance much exceed the premium received, it must not be taken as failure, because the amount of insurance claims being settled is actually mitigating the risk involved in the agriculture activity, without the population of the country having to pay any risk premium for using the product of this high risk business.

A claims to premium ratio table has been incorporated in the later part of the paper for reference and performance evaluation. The claims paid have been paid only to the farmers who have inevitably incurred losses, which makes up for their loss and readies him to carry on his agricultural activity for the next cropping season. The insurance claim expenses can hence be considered as the social cost incurred by the Govt. for sustaining the agricultural activity in the nation and at the same time providing agricultural products to the people of India at a cost lower than that the one which the people would have had to pay if risk premium was to be added to the price of the product.

Attempts towards insuring crops & farmers:

Agricultural insurance although not widespread & prevalent, but does exist in India, in one form or the other since independence. A number of steps have been taken and numerous attempts and experiments have been under taken to arrive at a comprehensive panacea insurance policy, plan or a system which could completely cover farmers from all risks.

Soon after independence, way back in 1947-48, the then Ministry of Food & Agricultural Commission did a study, to reach a policy suitable for introducing crop insurance in India. It was deliberated upon as to whether an individual approach be adopted or homogeneous approach be adopted by the nation.

Crop Insurance Bill : Post the rejection of the homogeneous approach, in 1965 the Central government introduced and circulated the Crop Insurance Bill to the State Governments. It contained reinsurance schemes in order to cover up the indemnity obligations of the states however was rejected on the grounds of emergence of high financial losses that the states could have run into in a span of upcoming time.

The schemes that had been brought in by the Central Government at various points of times, post the crop insurance bill have been mentioned below . The finanacial performance indicators like coverage of subscribers, premiums received and claims paid have been mentioned in the said table.

1. Crop Insurance scheme on cotton H.A (HA Cotton – Breed of cotton) : The Central Government through an Expert Committee studied the bill ,its financial and economical implications on the nation as well as its beneficiaries. The Expert committee was headed by the chairman of Agricultural Price Commission . In 1972-73 the Central Government started the experiments as per the provisions in the Bill and launched scheme in the same year . This scheme was introduced by General Insurance Corporation, a new company floated by the General Insurance Department of Life Insurance Corporation .This scheme adopted the Individual approach which was earlier discarded by the Central Governments due to technical and economical viability. Primarily the scheme was introduced in the state of Gujarat on an experimental basis, to study the effects and impact financially, economically and technically

as well. Later on other crops and states were brought under the scope of the scheme . However this scheme held good only up to 78-79. Later on owing to the non viable financial effects ,the state Government abolished the scheme . The main intention of the government was completely defeated as it had to pay the claims almost equal to 9 times of the premium collected. The collection and settlements of claims showed a huge inconsistency which finally led the government to conclude the scheme on note of financial instability and failure.

2.Pilot Crop Insurance Scheme [PCIS]: The failure of the H-4 Cotton Scheme , brought into the picture a new scheme as recommended by Professor Dandekar, an eminent and well known economist during that period. The scheme was launched in the fiscal year 1979. Under this new scheme, the loanee farmers were only eligible and that too was not compulsory but absolutely voluntary and subjective. The scheme laid down that the risk faced would be shared by the General Insurance Corporation and State Government in the ratio of 2:1. Earlier the scheme insured upto 100% of the loan amount which was gradually enhanced to 150% later in a span of times. This scheme was successful also due to the reason that 50% of subsidy on premium paid by the small and marginal farmers was equally shared by the State and Central Government in the proportion of 1:1. This coverage and financial performance of the scheme was far soothing than the H4 Cotton Scheme .The Government finally was able to implement a scheme which clearly proved that a well studied and sketched and detailed policy can surely bring some financial, economical and technically feasible and positive results for a nation like India. This scheme could be implemented upto the fiscal period 1980-85 .

3. Comprehensive Crop Insurance scheme [CCIS]: This scheme was launched on 1st April 1985. This scheme was backed with newer features over the PCIS in respect that it was based on the homogeneous approach. Also it was not mandatory for all states, however was compulsory for all the loanee farmers availing the crop loans. The loan was allotted up to 100% of the crop loan availed but restricted to a sum of Rs. 10,000/- per farmer at the maximum. This scheme covered almost 15 states and 2 union Territories. The premium cost to the farmers was approximately between 1% to 2%. The subsidy clause was however similar to the one as in case of PCIS. The risk was shared by the Central and state Governments in the ratio of 2:1 It showed that it had a wide coverage as compared to PCIS but financially not a positive resultant. Though popular it was unfeasible economically.

4. Experimental Crop Insurance Scheme - ECIS : This scheme was launched in 1997. This ECIS was launched and implemented in 19 states. It shared most of its features with the earlier scheme i.e. CCIS expert except with a major and visible difference that the small farmers were given 100% subsidy in the premium. Also the risk was distributed between the Central Government and State Government in the ratio of 2:1. Also CCIS was for Kharif Crops whereas ECIS was for Rabi crops. There were a lot of administrative difficulties in continuation of the scheme, which ultimately led to the discontinuity of the scheme in the next season of Rabi crops.

5. Pilot Project on Town Income Insurance Scheme : This scheme spoke of a different method and include crops like wheat and paddy only. Under this particular scheme, the actual farm income was provided a cover in case of loss as against the guaranteed income in the specified areas. The loanee farmers were mandatorily included under the scheme whereas non loanee farmers were taken on voluntary basis. Also it was applicable to those states which provided their consent. The sum insured was calculated as an average yield of past 7 years, minimum support price and the level of Indemnity. Thus the guaranteed income per unit area computed by the above formulation was the amount of sum insured. The rate of subsidy available to the small and marginal farmers was enhanced under this scheme to 75% as against 50% under the earlier schemes. For other farmers it was restricted to 50%. The scheme covered almost 10 states and 18 districts as scheme used the area approach as against the individual and homogeneous approach under earlier schemes.

6. Varsha Bima 2005 :- This scheme was launched in the year 2005. The main objective behind launching the scheme was to mitigate the adverse financial effects of irregular & untimely rains and allied weather condition & climate. The scheme was voluntary for all the farmers. It mainly provided a cover against the adverse deviation in the actual rainfall as against the normal estimated rainfall beyond a certain percentage for a given area and specified period premium. The particular feature of this scheme was that he claims were estimated by the insurance company on the basis of actual data of rainfall for all the areas. Hence there was no separate requirement for the aggrieved farmers to apply for the claims through a specific procedure. Thus the process of payment of claims was completely automated and the claims were paid off within a period of one month from the end of the indemnity period.

7. Rabi Weather Insurance :- This scheme provided a cover against the risk of adverse weather incidences. All the growers could buy the weather insurance. Also the adverse weather events could be independently verified and measured thereby simplifying and accelerating the settlement against the indemnities. Under this scheme also the claims were processed on an automated basis. The claims were settled on the basis of data received from different weather stations and the maximum liability was linked to the cost of cultivation and varied from crop to crop.

8. Wheat Insurance Policy :- This scheme was introduced in this scheme used a unique technique, wherein the crop vigor biomass (NDV i.e. normalized difference Negative Index) and weather parameters were combined. This scheme provided insurance against livelihood of diminished yield resulting from non preventable natural factors. The claims were processed on the basis of triggers. It refers to the events measured or gauged using high technology standards based on satellite emergency and sensing equipments.

Advent of NAIS, WBCIS through AICI:-

Farmers have various options in form of varied insurance schemes as per the nature of the crops cultivated by them and their individual need. A few of the schemes like wheat

insurance policy, Rabi weather insurance etc have been overviewed by us earlier. These policies were framed keeping in view the nature of different crops the different geographical conditions and the available facilities in the different sectors divided on a geographical basis.
Even though CCIS had failed on economical grounds the states did approach the government to float a new scheme wherein the beneficial feature of the CCIS could be merged in order to introduce a scheme which would not only be popular as CCIS as well as being wide spread but provide economical viability at equal level. AICI i.e Agriculture Insurance Company of India Ltd, was incorporated on 20/12/2002 post announcement in budget 2002-03. AICI Ltd is registered with IRDA i.e. Insurance Regulatory & Development Authority. The capital structure of the company was decided at an authorized and paid by capital of Rs. 1500 Crores and Rs. 200 Crores respectively. The capital contribution has been made by NABARD , GIC & the subsidiaries of LIC in the ratio of 35%,30% and 8.75% each respectively.
AICI also took over the further implementation of the Pilot Scheme on Seed Crop Insurance, which was earlier propagated by the GIC. The main purpose of setting up an organization/entity like AICI was to cater to the requirements of the farmers in a better manner and enroute towards a more sustainable and effective actuarial regime.
The major schemes i.e NAIS and WBCIS have been discussed below :

National Agricultural Insurance Scheme (NAIS) :

- **Introduction-** NAIS was introduced by AICI from Rabi 1999-2000. It is also called as RKBY i.e. Rashtriya Krishi Bima Yojana.
- **Geographical Coverage -** The scheme covers almost 23 states and 2 Union Territories. The farmers as equal to almost 7.51 Crores have been covered under this scheme. Once the states opt for the scheme, there is a lock in period of min 3 years from date of entry.
- **Crops covered -** Food Crops – Cereals, millets, pulses. Oil seeds, Sugarcane, Cotton, Potato. Other crops would be simultaneously introduced in a span of 3-4 years.
- **Coverage -** All the farmers i.e. share croppers tenant farmers cultivating the notified crops in the notified locations are eligible to participate under this scheme. This scheme is voluntary for non loanee farmers, however compulsory for farmers growing notified crops in notified regions who are loanee farmers availing the seasonal Agricultural Operation loans popularly known as SAO loans.

Objectives of NAIS:

The objectives of NAIS can be short listed as follows:
1) Provide stability to the farming incomes.
2) Provide encouragement and upliftment of farmers in order to engage progressive and employ high technology inputs and methods.
3) Provide insurance coverage as well as an economical aid in times of failure of crops due to natural calamities.

- **Economical/Financial Coverage -**

On a normal note, the sum issued would extend up to 100% of threshold yield of the insured corp. This may be extended to 150% of average yield of crop, if the subscriber pays the premium at commercial rates. This would be applicable incase of Non loanee farmers. As far as the loanee farmers are concerned they would be provided a minimum insurance equal to the amount of loan advanced to him/her. In case of loanee farmers insurance charge shall be charged separately. The guidelines of RBI/NABARD would be binding for all the loan disbursements of crops.

- **Premium –**

The rates of premium charged vary between 1.5% to 3.5% of sum insured and the actual rates whichever is less. The rates vary depending upon the nature of crops i.e. Kharif/ Rabi, food crops or oil seeds or commercial or horticulture crops etc. Currently the Annual commercial crops/ horticulture crops are liable for a premium @actual rates. However the other products would be brought under this bracket from 1.5% to 3.5% of sum insured in a span of not less than 5 years.

WBCIS – Weather Based Crop Insurance Scheme

This is another popular scheme that was floated from Kharif 2003 season. The scheme was firstly introduced in the states of AP. Bihar, CG, Gujarat, Haryana, Karnataka, MP, Punjab, Rajasthan, UP.

- **Objective** - The main objective of this scheme was to provide a unique insurance product to the farmers. This product assured to provide insurance protection/shield against losses of crop due to unfavourable weather conditions.
- **Coverage -** As per the latest /recent news in Economic Times dtd 4th Sept 2012, WBCIS covered 150 districts out of the total 450 districts.
- **Financial Scope -** AIC has insured a risk of around 14,500 Crores in 2011-12. The total premium paid was 1400 Crores out of which the farmers had paid Rs. 450 Crores while the rest of the premium amount was paid by Central and State Government on a 50:50 basis.
- **Crops covered –** The crops covered under this scheme include wheat, cereals, millets, pulses and oilseeds.
- **Risks covered** – This scheme covers risks against the weather conditions like, frost, heat, relative humidity, unseasonal rains and adverse rainfall including deficit in rainfall or excess rainfall during Rabi Season.
- **Area Approach -** This scheme also alike NAIS uses the area approach. It idolizes RUA i.e. Reference unit Area which is similar to a defined unit under NAIS. RUA is a homogeneous unit of insurance. The RUA's are notified prior to the commencement of the Kharif season. Similarly RWS i.e. Reference Weather Station is related to current weather data. RUA is linked to RWS to process claims of the claimants. The payout is done on the basis of adverse weather incidences. The same is subject to weather triggers as defined in the "Payout Structure" and the terms and conditions of the scheme. The claims are raised when there is an adverse deviation in actual weather parameter

incidence in the specified RUA as against the one measured under RWS. The actual loss may be more/less was compared to the data specified in the Benefit Table. If it is deemed that the crop has suffered an adverse deviation, the claims are processed on an automated basis. The payment is disbursed within a time period of 45 days from the end of the indemnity period.

- **Insured Sum -** The sum insured is a pre-declared per unit area by AICI at the inception of each crop season with reference to the crops in RUA and consultation of the govt. For a loanee farmer sum insured is computed by multiplying the per unit area value as declared in the application form, for borrowal of limit. For a non loanee farmer, the amount is equal to the amount as declared in the Insurance proposal form.
- **Premium -** Premium is payable by the cultivator@ranging from 1.5% to 2% or actuarial rate whichever is less. This depends on the nature of crop.
- A Brief description of evolution and development of Crop Insurance in various countries.
- **Argentina**

This country has many of the features of developed agriculture, so it is not surprising that some 25 percent of the total crop area is insured - mostly just against hail damage, though a start has been made to introduce multi-peril policies. The crops concerned include soybean, wheat, sunflower and maize (corn). Insurance on grapevines and other fruits is also important. The agricultural insurance business is competitive. Some 25 companies and mutual entities operate in this area. Some of them have invested significantly in technical expertise. For example, one company, with about 12 percent of the market, employs eight fulltime agriculturalists in order to have an in-house team, both to design policies and to manage the insurance products being sold.

- **Brazil**

This major agricultural producing country has had a crop insurance programme subsidized by the government. This has gone through some serious problems, originating from its desire to cover too much risk too quickly. The result was that the insurer bearing the risk had insufficient understanding of that risk - a major error for any branch of insurance. More recent developments have progressed in a slower and better informed manner, and have been largely led by the private sector. New style apple cover started in 1998, wine and table grape covers in 1999, and broad acre crops such as soybean, wheat and maize in 2000. Despite these developments, crop insurance business is very small in relation to the size of the agricultural sector in the country. Some recent developments include moves to introduce crop-revenue products, under area-based determination of loss

- **Cyprus**

The Agricultural Insurance Organization of Cyprus (OGA) was established under an Act in 1977, following earlier attempts to structure relief payments for farmers affected by adverse climatic events. After investigation, the format of a parastatal insurance corporation was adopted. A wide variety of crops are covered, against a range of perils. Some examples:

Cereals	:	drought, rust, hail
Deciduous fruits	:	Hail

Grapes and citrus	:	frost, hail

There is continuous demand from growers to extend the range of risks covered, especially windstorm, excessive rain and excessive heat. The OGA employs professional agriculturalists, both for product development and for supervision of loss assessment.

- **Malaysia**

Malaysia's agricultural sector combines large-scale, plantation enterprises with large numbers of small-scale producers. Both types have access to crop insurance, but the larger scale farms are more likely to buy insurance. Cover is available for oil palm, cocoa, rubber, for several species of timber trees, as well as for tropical fruits such as durian, mango and mangosteen. As with many other countries, the Malaysian experience with crop insurance has been mixed, but companies are taking a professional attitude to understanding the risks, and to the design of policies accordingly. A new initiative is a possible pool of commercial insurers to develop insurance for paddy rice.

- **Mauritius**

A parastatal agency, the Mauritius Sugar Insurance Fund (MSIF) was established some 50 years ago in order to provide protection to the island's sugar farmers against losses from cyclones. As experience has been gained, and staff trained, this programme has gradually taken on the coverage of other risks. For example, fire and excessive rain were added in 1974, and losses from yellow spot disease (only in conditions of excessive rain) in 1984. The programme has also developed a sophisticated method for rewarding growers whose claims experience has been good for the insurer. All growers are placed, for each insurance/growing season, somewhere on a 100 point scale. Their position on this scale determines the level of premium to be paid, and the indemnity level they will receive in the event of a claim for that insurance period. The scale is dynamic, with movements up and down being dictated by claims experience.

- **Philippines**

Some 22 cyclones, on average, strike the Philippines each year, and of these four cause significant damage. The northern and central parts of the county are more affected than is the south, where the main perils for farmers are drought and pests. The present crop insurance programme grew out of an agricultural guarantee fund, which was operated by the Land Bank of the Philippines, the principal government bank servicing the agricultural sector. The insurance is operated by a parastatal entity, the Philippines Crop Insurance Corporation (PCIC), which began business in 1981, after a three year preparatory period. Designed initially to provide risk management to borrowing farmers and their lenders, the PCIC also offers policies to self-financed farmers. Participation in insurance is compulsory for farmers in the higher-potential agricultural areas, for two crops, maize and rice. This element of compulsion has not resulted in a negative reaction by growers - probably because the premiums paid to PCIC, at approximately 8 percent for rice and 7 percent for maize, are heavily subsidized, by the government and by institutional lenders, so farmers pay only a proportion of these amount.

- **Syria**

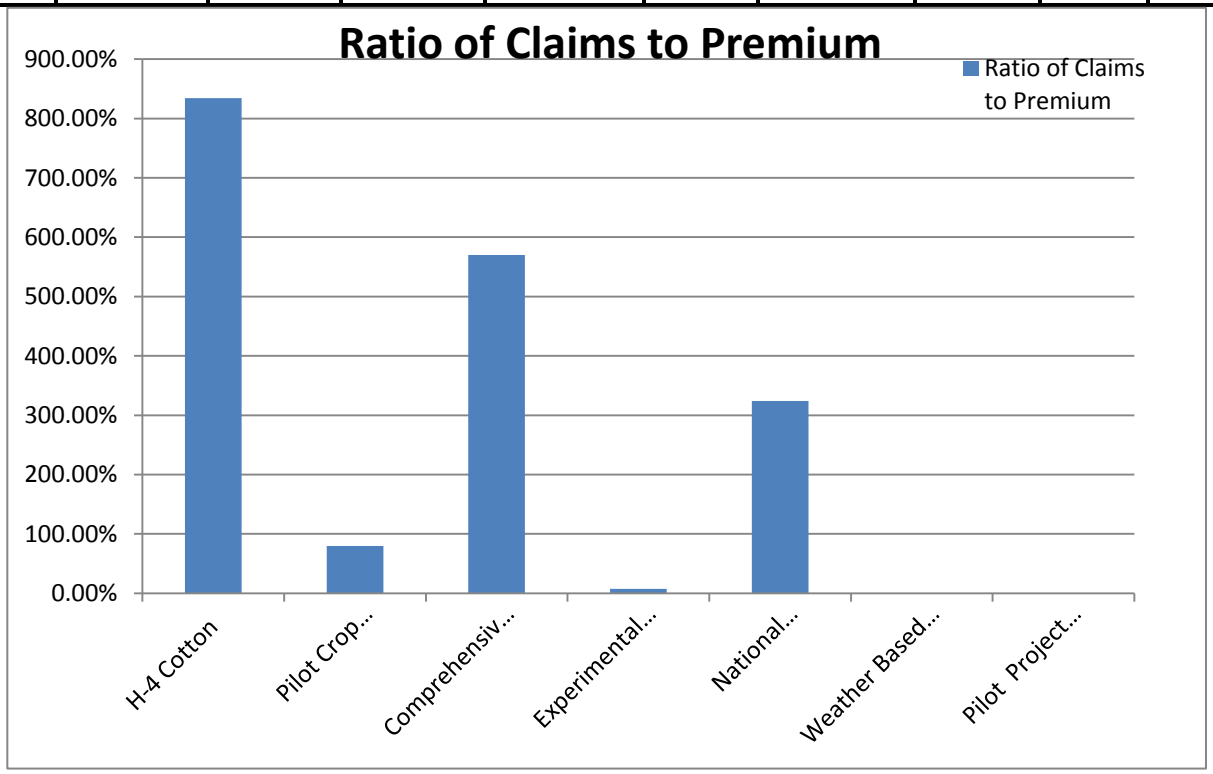
The Syrian government has investigated introducing crop insurance, and is still (in 2004) understood to be undecided as to whether to direct the state-owned insurance company, a monopoly insurer, to develop and market crop policies.

A major constraint to the introduction of crop insurance is that the most important peril by far is drought. As is well known, drought is perhaps the most difficult peril to include in any insurance cover, especially in the early years of a programme, when procedures are still being developed, and when staff are gaining experience. The Syrian position illustrates a classic dilemma that has fairly general applicability in arid and semi-arid countries. Officials understand that drought will be difficult to include at the start of any crop insurance programme, yet are well aware that unless insurance products cover this peril, then there will be a very negative reaction from farmers. This may justify investigating the applicability of one of the new developments in crop insurance, namely index (coupon) insurance products.Thus each country is trying to improve upon its Crop Insurance Policies slowly, learning from their past experiences. In the following page you can find a comparative table of the ratio of claims to premium collected and also the number of farmers covered.

Table no-1 Ratio of claims

Sr No	**Name of the Scheme**	**Year of Launch**	**Approach**	**Type of Scheme**	**Subsidy Given**	**Coverage of No. of Farmers**	**Premium Collected**	**Claims Paid**	**Ratio of Claims to Premium**
				Comp./ Opt			Figures Are in crores		
1	H-4 Cotton	1972-1973	Individual Approach	NA	NA	3,110	0.0454	0.3788	834.36%
2	Pilot Crop Insurance Scheme	1979	Area Approach	Voluntary for Farmers	50% on premium	6,27,000	1.9695	1.5705	79.74%
3	Comprehensive Crop Insurance Scheme	01-Apr-85	Homogeneous Approach	Mandatory for states and compulsory for loanee farmers	50% on premium	7,62,000	404	2,303.00	570.05%
4	Experimental Crop insurance Scheme	1997	Homogeneous Approach	Mandatory for states and comp. for loanee farmers	100% on premium	4,54,000	37.8	2.84	7.51%

5	National Agricultural insurance Scheme - NAIS / RKBY	23-Jun-97	Area Approach	Compulsory For Loanee Farmers	50% on premium	7,51,00,000	2,226.00	7,207.00	323.76%
6	Weather Based Crop Insurance Scheme - WBCIS	2003 Kharif Season	Area Approach	Optional	NA	150 districts out of 650 districts	1,400.00	-	0.00%
7	Pilot Project on farm income insurance	2003-2004	Area Approach	Compulsory For Loanee Farmers	75 % on premium	NA	NA	NA	



It is clear from the above graph, that the claims ratio under area approach is comparatively less than the individual and homogeneous approaches. Thereby also the schemes which have undertaken the respective approach have shown the same results . Hence it can be concluded that the schemes employing the area approach have been successful in achieving a lower claims to premium ratio.

From the Claims Ratio table above and the graphs that follow, it is clear that the claims ratio has improved in the recent schemes as compared to the earlier schemes. It has come down to 323 % from 834 % in the years immediately after independence. Also the coverage of farmers and areas have also increased over the years from mere 3000 to 7.5 crores.. Thus the

Hypothesis being tested in the research Paper that "**Crop Insurance in India has improved over the years in line with the global trend" has** been found to be true

FARMERS' MATRIX - SUGGESTED BY PROF. ANUP RANADE

Labour Tractor	Good Quality Seeds	Water Supply	Fertilizers	Fencing, guarding, pesticides	Labour	Labour	Storage Facility	Trucks	Fair Market & Access
Tilling	Sowing	Irrigation	Fertilizing	Gestation, Pest Control, Securing	Cutting	Cleaning	Storing	Transport	Marketing & Selling
Late Rain fall	Low Rainfall	Untimely, Uneven, Scanty or excess Rainfall	Infestation by pests, Theft, Destruction by animals		Low Quality Product		Damage during Storage, Rotting Rodents	Theft	Low Price
Varsha Bima Policy			Vinash Bima Policy		Upaj Bima Policy			Bajar Bhav Bima	
Expensive Machinery	Expensive Seeds	Uncertain Rains, Lack of Irrigation	Expensive Fertilizers	Expensive Fencing, Expensive Pesticides	Expensive Labour, Expensive Cutting & Cleaning Equipments	Expensive Storage Facilities		Expensive Transportation Facilities	Unco-operative Dealers & Whole sellers, Lack of Knowledge of Market demand & Price, Unavailability of Market Access, Cash Crunch & hence inability to wait long for realising returns

Solutions-

a) Subsidising seeds, fertilisers, pesticides, fencing facility
b) Labour Scheme
c) Drip irrigation
d) Central Storage system
e) Fair pricing regulated Markets,
f) Kissan Call centers
g) Credit Barter system
h) Microfinance

FUTURE FARMER FRIENDLY POLICIES :

From the above Farmers' Matrix it is very clear that the major risks faced by the farmers could be covered by having 4 types of Insurance policies . A few of these have been mentioned below :-

- **VARSHA BIMA :** This policy is specifically related to the rainfall. It would majorly cover the risks which are involved from the tiling phase to the cultivation phase.
- **VINASH BIMA :** This policy would provide a cover against the risk of widescale damage to the standing crops. The time period covered would include the time upto cutting of the grown up crops.
- **Upaj Bima :** This particluar policy would cover the risk of damages to the product. Under this policy the damages caused during the storage of crops of inferior quality.
- **Bajar Bhav Bima :** This policy would deal with the market demand and prices i.e the risk of fluctutation in demand and price. It would cover the time period from the point where the agricultural product is ready for sale and they are actually sold.

For all the farmers , the following regulations should be followed while implementation of the above mentioned Bima Yojanas.

1. Registration of all the farmers should be made mandatory.
2. Land should be real.
3. Two or more farmers should not register the same land.
4. The insurance should be applied for only if the crops are already and actually sown.
5. Insurance should be free of premium i.e 100% subsidy.
6. Farmers need to renew the application every year.
7. An official record must be maintained on an annual basis and should be updated on a monthly basis.
8. Vinash Bima should be converted to Upaj Bima and Varsha Bima should be converted to Bajar Bhav Bima.

Effectiveness of various Schemes:-

Till now we had an overview of various crop insurance schemes practiced in India since Independence and those being adopted in various countries. However from the financial angle most of them have not proved much effective and economical for the nation though they have been quite popular. Crop insurance as a business has been that viable and feasible

financially and economically though they have always been structured after studying the financial aspects that could be affected. However crop insurance is a tool or shield against the losses that arise out of weather conditions, yield etc, which could be treated as unpreventable though not completely unpredictable. Though the losses may be identifiable but the assessment of degree of the impact that may be caused is not an easy task. Insurance as the term denotes is the shield against the happening or non happening of any event/circumstance. Identifying against losses is the basic characteristic of the business of Insurance. However crop insurance is peculiar as far as the business aspect is concerned. It differs from other types of insurances and hence, it is not that viable on financial grounds.

The losses that are required to be shielded by crop insurance can be divided into 5 categories depending on their nature. These 5 types are as follows:-

1) Unpreventable reasons: - Unpreventable reasons can be defined as the causes or acts those are beyond human control.. Ex: - Adverse weather conditions, market demand and pricing fluctuations etc.

2) Unpredictable reasons: - Unpredictable reasons are which cannot be predicted to happen. They may or may not happen. But they can be controlled with proper techniques and methods.

Ex. Pest attack, Unconducive weather conditions.

3) Unknown Reasons - As the term suggests, these reasons are not within the knowledge. Even they may or may not occur but they are not completed uncontrollable if diagnosed within time.

Ex. – Unsuitable soil content, Unidentified causes etc.

4) Technical error: - Usage of improper techniques or upgraded and latest technology is a technical error. A lot of times these are cheaper and affordable but go unused because of lack of awareness. Ex. – usage of improper seed type, soil, fertilizers, pesticides etc.

5) Human error - Last but not the least are the human errors, as it is all well said that "To Err is Human" and agriculture is no exception to this famous quote, rather its quite on a back foot only because of this fact. Lack of education, knowledge of upgraded technology; awareness is the major reasons which lead to losses on account of human mistakes and errors. Hence these are quite controllable losses, though can be subjective at times.

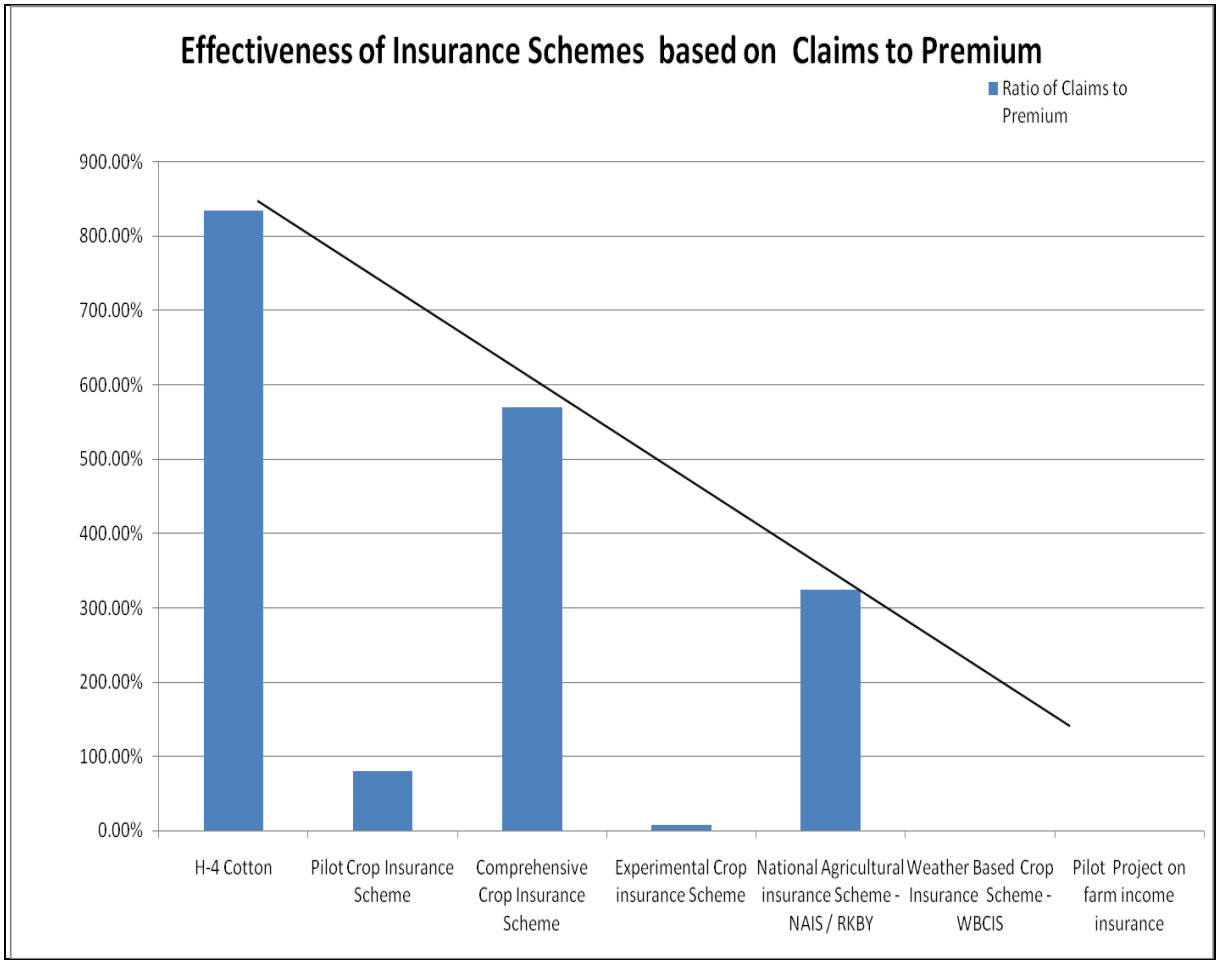
Ex. Faulty and incorrect decisions, lack of knowledge, Negligence, Carelessness, Carefree attitude failing to adapt to preventive measures, untimely actions, financial illiteracy and financial crisis and cash crunches, judgmental errors etc.

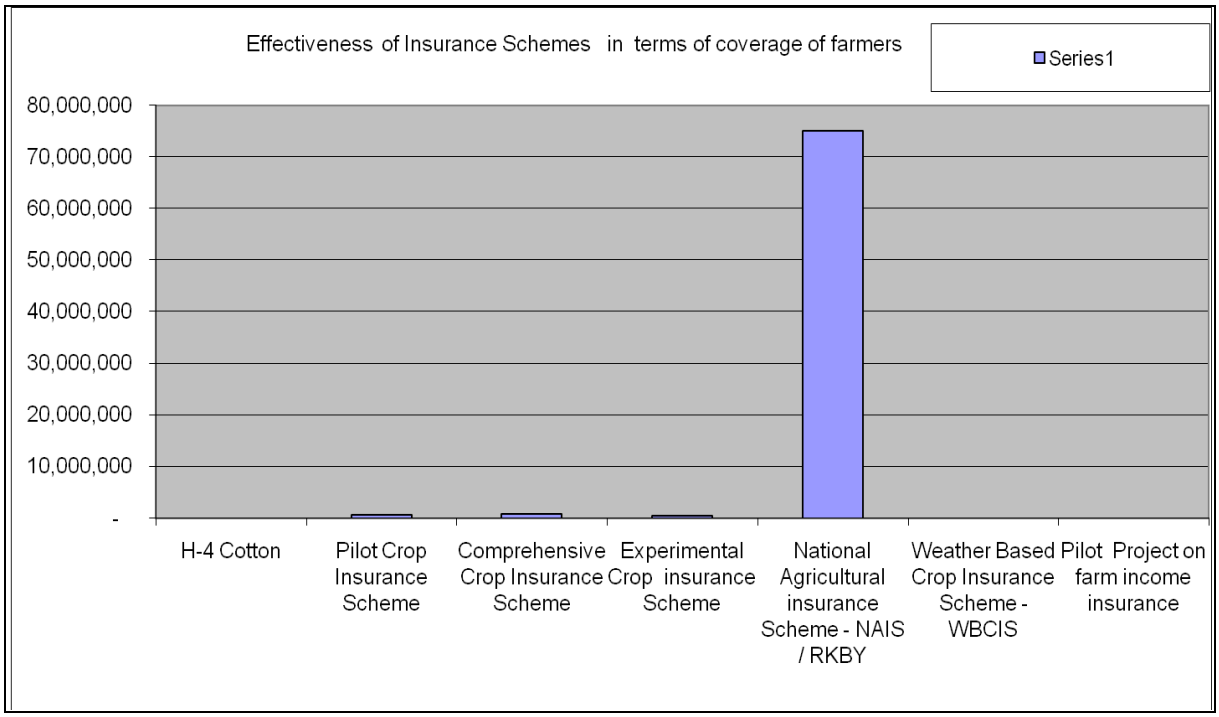
The Insurer agency is not under an obligation to provide a shield against losses arising out to unpreventable reasons, unknown reasons or losses arising out of human/technical errors which are easily preventable if due and timely steps are taken to avoid them from occurring. This is also one of the reasons so that farmers should not take undue advantage of the safety/mitigation tool available in the form of Crop Insurance. Hence ideally the Insurance Agency should provide a cover against unpredictable reasons only and leave out all the other categories of losses that exist.

Thus it is very much visible that striking equilibrium or the right chord is a herculean task. Thus it actually becomes cumbersome & difficult for an Insurance agency to carry out this task on an economical and commercial front. In short to wrap up, we can say that though

agriculture should be viewed as Business activity, Insurance on Agriculture should be looked at as a social activity. So in the earlier stages it is clearly visible that if we expect the Insurance Agency to settle claims at a higher ratio as compared to the premiums collected. Hence the concept of making profits through insuring agriculture at a primitive stage is totally unwise. It still needs to go a long way before generating profits. Total claims are bound to be higher as compared to the premiums collected. These values if interpreted in the normal context, the existence of losses is a fact.

Thus in short the farmers need to get protection against all the genuine risk which exist post all the possible preventive measures have been duly adhered to, thus the agricultural activity and the insurance activity can strike equilibrium and turn to the positive side.





From the above graph which shows the effectiveness of the various schemes in terms of coverage of the number of farmers by the scheme, we find that H-4 Cotton Scheme covered 3110 farmers, Pilot Crop Insurance Scheme covered 6,27,000 farmers, Comprehensive Crop Insurance scheme covered 7,62,000 farmers and Experimental Crop Insurance Scheme covered nearly 4,54,000 farmers. About 7.5 Crore farmers have been covered by NAIS/RKBY. The WBCIS covers about 150 districts out of total 650 districts.

Thus we can conclude that National Crop Insurance Scheme (NAIS/ RKBY) has been most successful in providing cover to a huge number of farmers, and hence it has been the most effective scheme with respect to the coverage of the number of farmers.

Let us now understand the reason behind the occurrence of claims ratio above 100 % in all cases as enumerated through the following example.

Example 1 :

✓ ×

Farmer A	Farmer B
↓ supply ↑ Returns ↑ Price	Returns – Nil or losses (-ve)

In this particular example, farmer A & B both have cultivated the crops however A has been able to achieve a good crop and B has failed to have a good crop. Hence the supply has reduced because B's contribution in the supply is not there. Thus due to lower supply the price has automatically risen up, (theory of supply mechanism) and ultimately the returns to A are enhanced. However to interpret this situation, we can say that A is earning higher returns at the cost of losses incurred by B. If B would have contributed in the supply then A would have not earned these much returns but the returns would get shared between A & B.

Example 2 :

↓ supply ↑ Returns ↑ Price Returns – Nil or losses (-ve)

Similarly to take another example if 'A' is an old supplier and 'B' a new contract. Both have cultivated a good crop, then initially what was earned alone by 'A' gets divided between A & B , thereby B would be earning at the cost of A.

Thus where all the suppliers in the agro market are insured, ultimately the Insurance Agency would be at the losing end. It is a natural phenomenon & thus expecting that Insurance Agency would be able to finance the agro sectoral claims through Insurance premium collected would not be prudent and neither would be feasible.

One method that can be employed by the Government is that, like the civil obligations of security etc are financed through the collection of Direct and Indirect taxes from the general public. Ex. In 1998, to fund the Kargil War, the cess of 2% and surcharge on cess was levied by the government. If the farmers charge risk premium on their products, for the enormous risk involved it would lead to large scale, food inflation and would have a multiplying effect. This would be thus detrimental for the whole population country, agro based industries and for other businesses as well. Thus the rising cost of labour and skill would trigger the food inflation. Thus by not charging for the risk premium, the farmers are not passing on the risk to the people of the country. Thus the population and the business entities are the main beneficiaries of the high risk agricultural activity being undertaken by the farmers. Hence it would be very much justified and correct to pass on the costs of losses in case of risks becoming true, to the people and businesses of the nation, by way of leaving taxes. The tax thus collected must be used to fund the corpus fund of the Insurance Agency used to settle claims above the premium collected from the farmes.

Conclusion

It is a general perception that crop insurance as a business and task is very cumbersome to administer and also due to the peculiarity of not having statistically strong tools, analytical skills, to assess the risk and liabilities, hence it does not provide financially feasible and favorable results as a business. Hence prone to a lot of losses. The main hindrance exists because the estimation of crop loss, potential yield and actual yield is very difficult task.

Crop Insurance is completely dependent on agriculture and the allied activities. Agriculture as we all are aware is the backbone of the Indian economy. It is one of the major contributors to the GDP of the nation.. Though a lot is heard and read about agriculture on a negative note, it has surely taken India from scarcity, imports, droughts and malnutrition to self sufficiency. It does have a lot of positive aspect however those get overpowered because of lack of knowledge and awareness. The available techniques and sciences are not fully explored and hence in spite of handsome rewards and results, the benefits get clustered with few growers

and the rest have to suffer. This tendency has overshadowed the positive and favorable aspects of agriculture.

Agriculture has a wide potential to uplift the nation from self sufficiency to a global leader in the export market. It can surely enjoy a major share in the total export market on a global basis if enchased properly. The future of Indian economy is extremely bright provided agricultural activities are channelized in the proper manner. Thus the agricultural and economical progress would always go hand in hand.

Almost 65-70% of the population of the nation is dependent on agriculture for its daily bread and better. Have we ever thought if India has so much of quantity to export that it has been ranked $3^{rd}/4^{th}$ in exports of agricultural products, why the grower is in a hand to mouth situation. If the people responsible for generation of such handsomely rewarding crops are in dark and starving, how far the economy can go. Thus striking a proper balance is the need of the hour. If we desire to vision a robust and healthy Indian economy, the agricultural sector needs to be uplifted. The generators of such products need to receive their due share. Crop Insurance surely has a big role to play in the development of agriculture and the economy as well.

References

- https://www.insuranceinstituteofindia.com
- http://www.afcindia.org.in
- http://www.nabard.org
- http://agritech.tnau.ac.in/crop_insurance
- http://www.aicofindia.com/
- Crop Insurance by V.P. Kapoor, Bombay; Vora, 1972
- Weather Based Crop Insurance in India by Daniel J.Clarke, Kolli N. Rao, Niraj Verma, Olivier Mahul; Washington DC The World Bank, 2012

Authors Details-

Prof. Anup Ranade*

Asst. Professor

G.H. Raisoni Institute og Management & Research

E mail- anup.ranade@raisoni.net

Dr. P.B.Yenurkar**

Associate Professor

Dr. Punjabrao Deshmukh Arts& Commerce (eve) College,

Nagpur

E-mail- puruyenurkar@gmail.com

A STUDY ON UNDERSTANDING THE IMPACT OF EMPLOYER BRANDING ON EMPLOYEE RECOGNITION AND RETENTION WITH SPECIAL REFERENCE TO MANAGEMENT COLLEGES IN BANGALORE CITY.

Dr.P.Paramashivaiah*
Lakshmi Narayana.K**

Abstract-

Employer brand is "the image of an organization as a 'great place to work' in the mind of current employees and key stakeholders in the external market." Brands are among a firm's most valuable assets and as a result brand management is a key activity in many organizations. The key to developing the employer brand strategy is to arrive at a comprehensive understanding of the organizational culture, key talent drivers (engagement factors), external perceptions, leadership vision, and management practices. Brand Management have been applied by the HR in order to attract, engage and retain employees in the same way as marketing applies such tools to attract and retain customers.

A descriptive research seeks insight into the occidental concept of employer branding in Management Institutes. It identifies parameters and factors in a myriad of areas related to employer branding like factors pertinent in developing the employer brand, attributes considered most important in attracting new talent to the companies, challenges in managing an employer brand, factors an employee considers important about working with the company, communication media considered important for communicating the employer brand, and finally benefits arising from implementing employer brand. Employer branding undoubtedly is a significant precept of modern management, one that offers a fine blending of the science of marketing with the art of enlightened human relations management. It is the key to one of the strongest challenge of rampant employee attrition. The paper tries to describe the branding of management institutes Bangalore city and its impact on satisfaction and retention of employees with the sample of 100 respondents.

Keywords: Branding, Employee Engagement, Recognition, Retention and Attrition

Introduction

"Make work interesting, develop my skills, pay me fairly, consider my personal values and i'll stay" Employer branding is today a focus of every employer, regardless of size. Earlier, it was primarily a concern for large employers in a limited number of industries that faced strong competition for talent. Today, competition for talent is fierce in any number of industries and in any number of regions. For any organization provided with all the financial and strategic support with latest possible technologies and proactive innovative measures, the major driving force to lead it up from one step to another is its workforce. Organizations can

attract better workforce only, when it has a positive image as an employer. Therefore employer branding or organizational image play a vital role in intention to apply and job choice decisions of applicants.

As a result, employer branding has expanded into every industry and corporate size bracket. As employers discover how important the right talent is for their overall business success, employer branding is today an integral part of any successful business plan. It is the strategy companies use to achieve their desired appeal on current and future ideal talent. The employer brand is the most powerful tool for attracting; engaging and retaining the right talent fit that will help leaders grow their organization. In principle, brands can be seen as a set of symbols which represent a variety of ideas and attributes, the net result of which is the public image, character or personality of an organization. Employer brand is understood as a brand which differentiates it from other competitors in the employment market. The term also includes long term strategy that establishes an organization's identity as an employer in the employment market. Ambler and Barrow define employer brand as follows: "The package of functional, economic, and psychological benefits provided by employment, and identified with the employing company." It can stand alone as the only approach corporate recruiting managers can leverage to guarantee an end to their talent shortage problem. Now organizations pay attention on the name of the company as well as its culture because they are facing severe competition from each other and they can win this competition war successfully if they have good corporate image with qualified and talented employees. Therefore this study focuses on some key factors that directly or indirectly add to perceived employer branding of the respective institute in the mind of the potential employees and how these aspects affect their intention to apply in an organization and satisfaction after applying.

Review of Literature

The term *"Employer Brand"* was first used in the early 1990s to denote an organizations' reputation as an employer. As such, branding activities involve constructing particular attributes (e.g. the values on an organization) that are considered to represent the image that accompany wishes to communicate to potential employees, current staff and the public.

Ambler and Barrow (1996) have defined employer branding as the development and communication of an organization's culture as an employer in the marketplace. It is the package of functional, economic and psychological benefits provided by employment, and identified with the employing company. It conveys the "value proposition" the totality of the organization's culture, systems, attitudes, and employee relationship along with encouraging your people to embrace and share goals for success, productivity, and satisfaction both on personal and professional levels.

According to Sullivan (2004), employer branding is a long term strategy to manage the awareness and perceptions of employees, potential employees, and related stakeholders with regards to a particular firm. The employer brand puts forth an image showing the organization as a good place to work.

In the service industry, employees play a critical role in development of brand image (de Chernatony &Segalhorn 2003, Mc Donald, de Chernatony & Harris 2001, Bitner, Boom & Mohr 1994). Therefore, recruiting right type of talent becomes critical, as does the employer brand image in the recruitment market (Ewing et. al. 2002). What is even more critical is whether this image that they carried as an applicant is sustained with their stay in the organization (Knox & Freeman 2006).

According to Backhaus and Tikoo (2004), employer branding is essentially a three step process. First, a firm develops a concept of the particular value it offers to prospective and current employees. This value proposition provides the central message that is conveyed by the employer brand. It is of key importance that this value proposition derives from a thorough audit of the characteristics that make the firm a great place to work. The third step involves carrying the brand "promise" made to recruits in to the firm and incorporating it as part of the organizational culture.

According to Ritson (2002) companies with strong employer brands can potentially reduce the cost of employee acquisition, improve employee relations, increase employee retention and even offer lower salaries for comparable staff to firms with weaker employer brands. Previous literature suggests that positive employer branding increases the applicants' intention to apply, satisfaction and retention.

Conceptual Framework

Employer branding is defined as "a targeted, long term strategy to manage the awareness and perceptions of employees and related stakeholders with regards to a particular firm"(Sullivan 2004). Minchington defines employer brand as "the image of organization as a great place to work in the mind of current employees and key stakeholders in the external market (active and passive candidates, clients, customers and other key stakeholders). The art and science of employer branding is concerned with the attraction, engagement and retention initiatives targeted at enhancing company's employer brand.

At the heart of the Employment branding is the Employee Value Proposition (EVP). EVP is influenced by the organization's values, culture, leadership, environment, talent and reward programs. Employment branding is internally and externally promoting a clear view of what makes a firm different and desirable as an employer (Lievens, 2007).

The key components of employer branding are:

- Culture- Internal Communication,
- Reward and Recognition, Measurement
- System, Training & Development,
- Service Support
- Purpose- Service Leadership, Values/ CSR, External Marketing
- Employment- Working Environment, Team Management, Recruitment and Induction.

- **EMPLOYER BRANDING – A FIVE STEP PROCESS**

An employer branding model is given that identifies key processes which will work for any employer.

Research: to understand where an employer is positioned in the employment market and to determine the appropriate action plan is fundamental.

Employer Value Proposition (EVP): The company or organization needs a unique employer offer. The EVP gives current and future employees a reason to work for an employer and reflects the company's competitive advantage. Employers that manage their EVP effectively benefit from an increase in their talent pool and employee engagement, as well as a potential decrease in salary costs. By analyzing the factors influencing the employer brand, and by defining a strong and true EVP, the employer will be able to deliver sound and consistent communications during the communication phase and develop an attractive, as well as unique, employer brand.

Communication strategy: The EVP is a useful tool used by HR, Marketing or Communications to be able to emphasize the most attractive factors and be consistent in the employer communications

Communication Solutions: the aim at this step is to express the employer value proposition (EVP) by using the right words and images, so it becomes consistent with the corporate identity and branding efforts. Employers should strive to develop consistency throughout their communication material.

Action: implementing all the steps and monitoring closely is the only way to brand the organization.

Objectives of the Study

1. To explore what makes an employer attractive.
2. To explore the channels of employer branding.
3. To study the impact of employer branding on recognition and retention of employees of management colleges.

Research Methodology

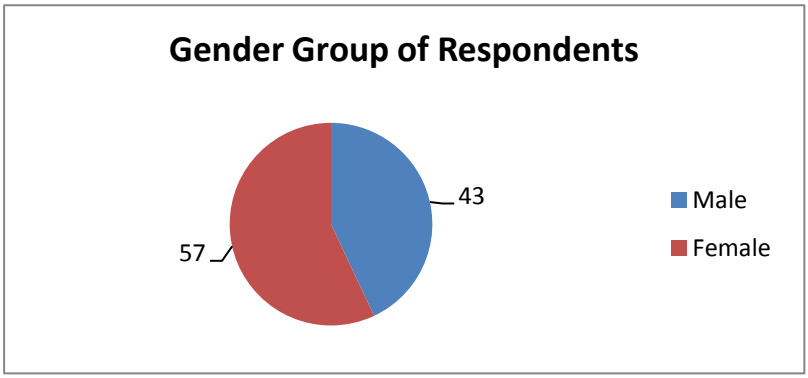
1. **Population**- Faculties of Management colleges in Bangalore city.
2. **Sample Size**- 100 Faculties.
3. **Sampling Technique**- Convenient Sampling
4. **Data Collection** - Primary Data is collected with the help of Structured Questionnaire with close ended questions and 5 point scale i.e. Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree for precise response of the respondents.

Data Analysis and Interpretation

Data were subject to statistical analysis such as descriptive statistics and frequency distribution .for scaled data, reliability analysis is applied before subjecting the data for testing the level of satisfaction and retention using chi-square test.

Table 1. Gender ratio of respondents

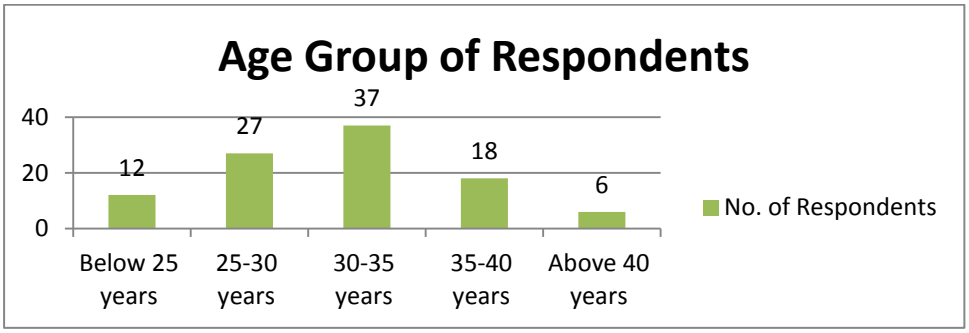
Gender	No. of Respondents
Male	43
Female	57



Interpretation- The above table and graph shows that majority of respondents i.e. 57 % were female and rest 43% were males.

Table 2. Age Group ratio of respondents

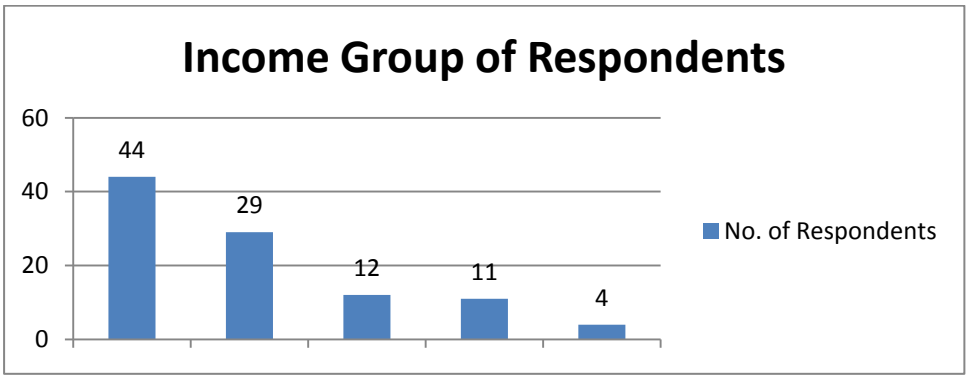
Age Group	No. of Respondents
Below 25 years	12
25-30 years	27
30-35 years	37
35-40 years	18
Above 40 years	6



Interpretation- It is inferred from the above table that maximum 37% respondents were in the age group of 30-35, and minimum 12% were below 25 years.

Table 3. Income Group of respondents

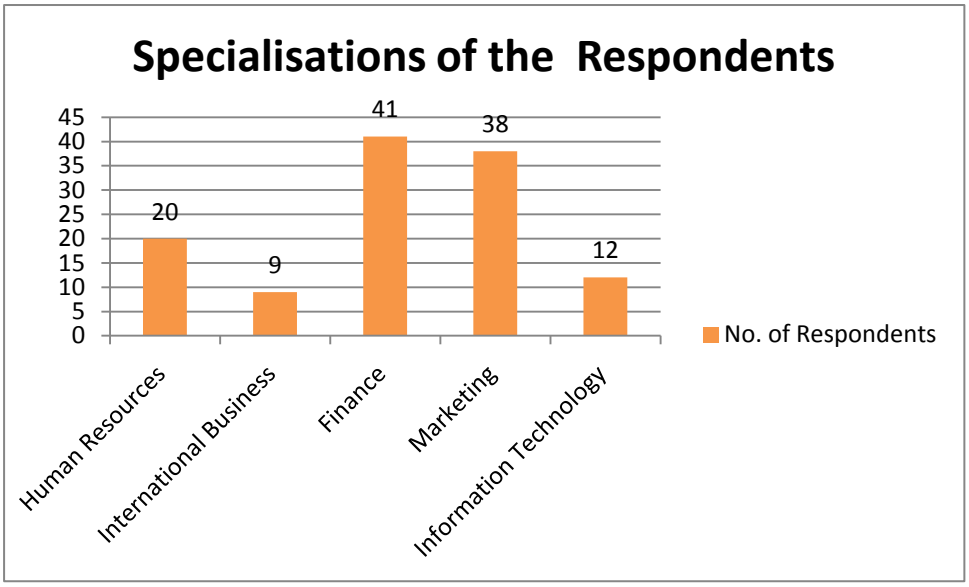
Income Group	No. of Respondents
15000-20000	44
20000-25000	29
25000-30000	12
30000-35000	11
Above 35000	4



Interpretation- From the above graph it is revealed that 44% respondents are in the income slab of Rs.15000-20000 and only 4% respondents have income above Rs. 40000.

Table 4. Specialized field of respondents

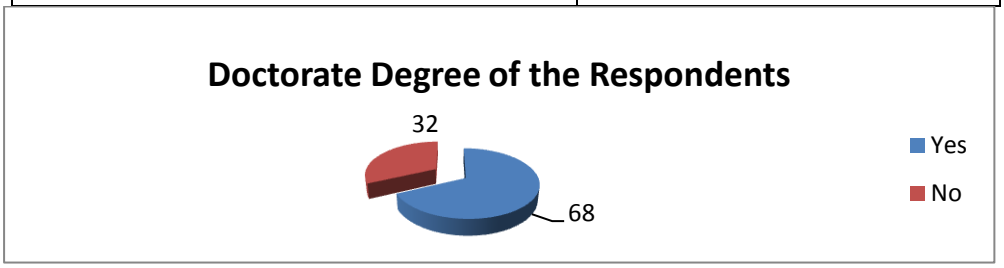
Specialization	No. of Respondents
Human Resources	20
International Business	9
Finance	41
Marketing	38
Information Technology	12



Interpretation- Finance came out as the major specialization of 41%respondents and rest are from different fields like 20% from human resources, 9% from international business, 38% from marketing and 12% from information technology.

Table 5. Respondents holding Doctorate Degree

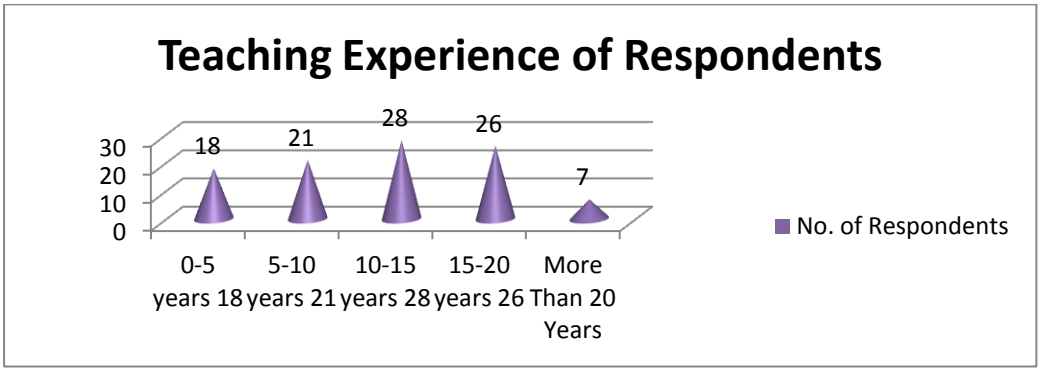
Doctorate	No. of Respondents
Yes	68
No	32



Interpretation- The Graph shows that 68%respondents have completed their doctorate degree.

Table 6. Total teaching experience of respondents

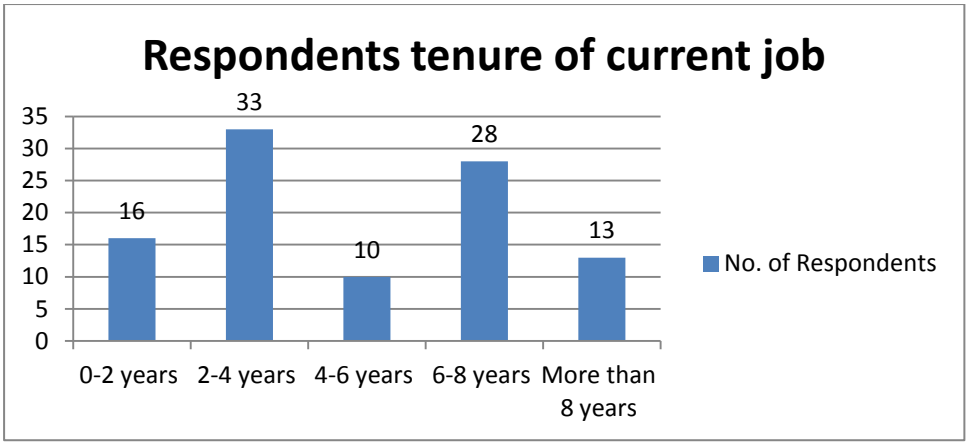
Teaching Experience	No. of Respondent
0-5 years 18	18
5-10 years 21	21
10-15 years 28	28
15-20 years 26	26
More Than 20 Years	7



Interpretation- The above table gave statistics of working experience of the respondents. Maximum 28%respondents have an experience of 10-15 years and 26% have 15-20 years and only 7%respondents are having experience of more than 20 years.

Table 7. Respondent's tenure of current job

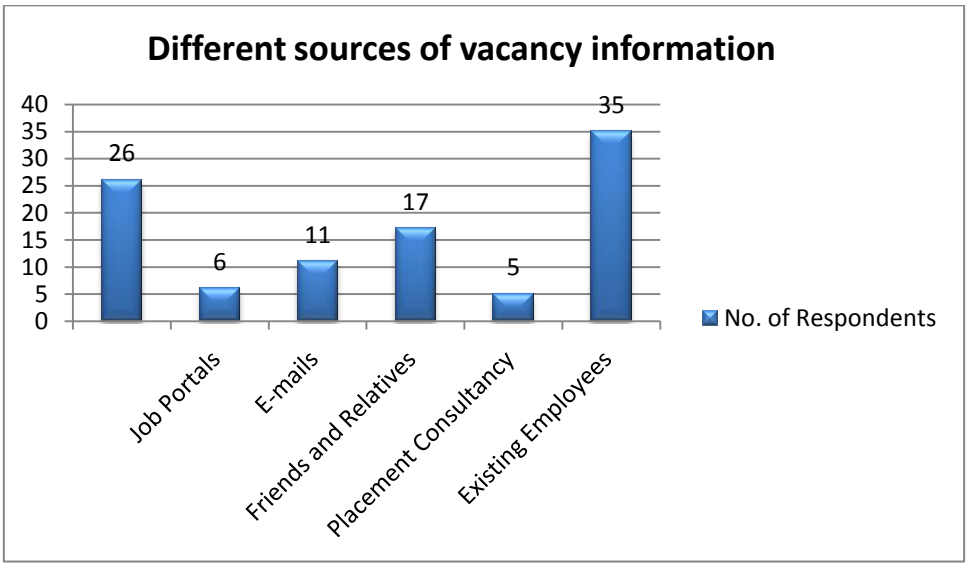
Tenure of Present Job	No. of Respondents
0-2 years	16
2-4 years	33
4-6 years	10
6-8 years	28
More than 8 years	13



Interpretation- The above graph shows that 16% respondents are working in the same institute for less than2 years, 33 % respondents are working from 2-4 years, 10% respondents are working from 4-6 years, 28 % respondents are working from 6-8 years and 13 % respondents are working from more than 8 years.

Table 8. Different sources of vacancy information

Source of Vacancy Information	No. of Respondents
Newspaper Advertisement	26
Job Portals	6
E-mails	11
Friends and Relatives	17
Placement Consultancy	5
Existing Employees	35



Interpretation- The statistics shows that maximum number of respondents got information about vacancy through existing employees i.e. 35% and the minimum number of respondents got information through placement consultancy i.e. 5 %.Vacancy information through job portals was reported by mere 6% respondents, 11%respondents got message through e-mails ,and 26% through newspaper advertisements and 17%respondents were informed through friends and relatives.

Hypothesis Testing

Chi-square test is applied to find out the significant relationship between the level of satisfaction, recognition and retention of employees.

Ho: Satisfaction of employee has significant relation with employee recognition.

H1: Satisfaction of employee does not have significant relation with employee recognition.

Table 9: Employee Recognition

Employee Recognition	Level of Satisfaction		Total
	Satisfied	Dissatisfied	
Yes	60	2	**62**
No	15	23	**38**
Total	**75**	**25**	**100**

Inference

Calculated chi-square value = **3.05**

Table Value = 3.84 (at 5% level of significance)

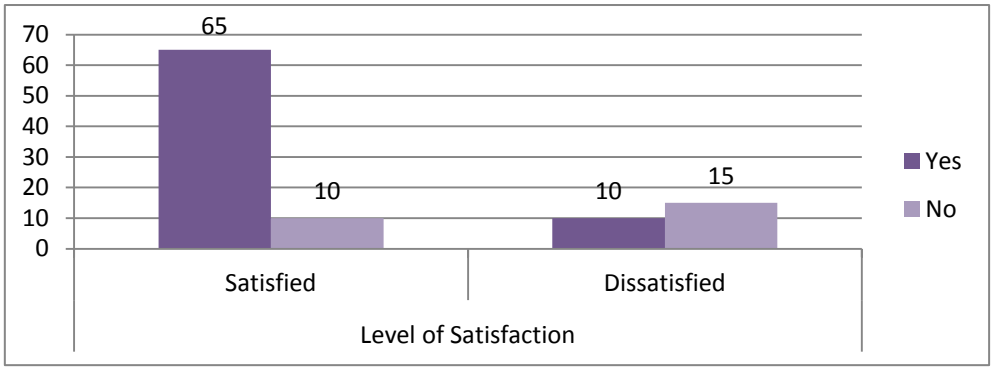
From the above analysis it is inferred that the tabular value of chi-square is more than the calculated value i.e. null hypothesis is accepted. So there is significant relation between employee satisfaction and employee recognition.60% employees are satisfied because they got recognition by the employer.

Ho: There is no significant relationship between employee satisfaction and retention.

H1: There is significant relationship between employee satisfaction and retention.

Table10: Employee Retention

Employee Retention	Level of Satisfaction		Total
	Satisfied	Dissatisfied	
Yes	65	10	**75**
No	10	15	**25**
Total	**75**	**25**	**100**



Inference

Calculated chi-square value = 21.77

Table Value = 3.84 (at 5% level of significance)

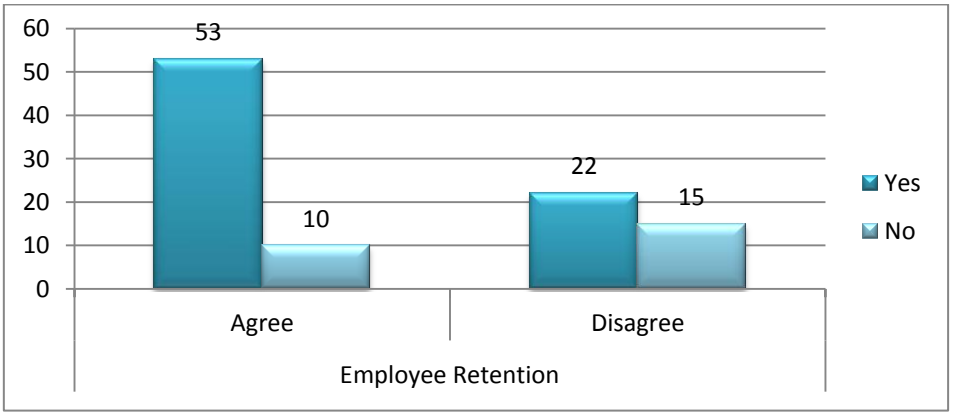
From the above analysis it is inferred that the tabular value of chi-square is less than the calculated value i.e. null hypothesis is rejected. So there is significant relationship between employee satisfaction and employee retention. As satisfaction level increases more is the chances of employee retention (65%).

Ho: There is no significant relationship between employer branding and employee retention.

H1: There is significant relationship between employer branding and employee retention.

Table 11: Employer Brand

Employer Brand	**Employee Retention**		**Total**
	Agree	**Disagree**	
Yes	53	22	75
No	10	15	25
Total	75	25	100



Inference

Calculated chi-square value = **7.56**

Table Value = 3.84 (at 5% level of significance)

From the above analysis it is inferred that the tabular value of chi-square is less than the calculated value i.e. null hypothesis is rejected. So there is significant relationship between

employer branding and employee retention. Employees working with good employer brand agree to retain (53%) more than in organizations where employer is not having a brand image.

Findings

- Maximum number of respondents got information about vacancy through existing employees i.e. 35% and the minimum number of respondents got information through placement consultancy i.e. 5 %.
- There is significant relation between employee satisfaction and employee recognition.
- There is significant relation between employee satisfaction and employee retention.
- There is significant relationship between employer branding and employee retention.

Conclusion

Employer branding, however, is the process of generating appeal, creating an identity communicating that identity and ensuring that the identity remains authentic and true. It's about ensuring that your organization is known, respected and considered to be a great place to have a career and work.

Employer branding in a nutshell is match-making, creating the perfect relationship between the employer and the employee. Employers should research their environment to know how their target group perceives them, understand what they want and need from them and understand their market position. They will need to develop or update their EVP to be consistent in their communications and help people in the organization be the brand. They will need to communicate or implement tactics to build or reinforce the desired employer image. For example, understanding what professionals want will help you to attract them. If you do not know the answers to these questions, it is probably time to find out.

Organizations need strategic integration for building an employer brand. In fact, it is hardly possible to create a successful employer branding without integrating the initiative closely with the greater organizational missions, values and strategies. And if it succeeds the advantages are numerous – a successful employer branding makes it easy for the organization to recruit & engage people, increase creativity, satisfaction and thus increases.

References

- Backhaus, K and S. Tikoo, 2004 "Conceptualizing and Researching Employer Branding".
- Cable D.M. and D.B. Turban, 2003 "The Value of Organizational Reputation in the Recruitment Context: A Brand Equity Perspective".
- Lievens, F. and G. Van Hoye, 2005 "Examining the relationship between Employer Knowledge Dimensions and Organizational Attractiveness: An Application in a Military Context", J. Occupational and Organizational Psychology.

- Lievens, F. and G. Van Hoye, 2007, "Organizational Identity and Employer Image: Towards a Unifying Framework".
- Barrow, S., Richard M. (2005): "The Employer Brand: Bring the Best of Brand Management.
- M. M., Torricelli, D. G., &Karg, R. F. (2002): "Employer of choice branding for knowledge workers", South African Journal of Business Management,33(4), pp.1320.
- Ambler, T. and Barrow, S. (1996): "The Employer Brand", Journal of Brand Management.
- Luthans F. & Peterson S.J. (2002): "Employee engagement and manager self-efficacy: Implications for Managerial Effectiveness and Development", Journal of Management Development, 21(5), pp. 376–387.

Author Details

Dr.P.Paramashivaiah*

Professor and Dean

P.G.Department of Studies in Commerce and Research

Tumkur University, Tumkur

E-mail-paramashivaiah@gmail.com

Mob- 91-9448533326

Laxmi Narayana K**

Asst. Professor & Head

Department of Management Studies

K.S.School of Engineering & Management

Mallasandra, Bangalore-560062

E-mail-appinarayan@gmail.com, klnreddymsec@gmail.com

Mob- 919741101011

OPTIMIZING PORTFOLIO RETURNS BY ACTIVE RISK MANAGEMENT STRATEGIES AN ANALYTICAL STUDY

Dr. Parizad Dungore*

Abstract:

Volatility is a characteristic feature of any stock market. Though long term investors may adapt buy and hold strategy in order to be profitable, to obtain abnormal profits, investors look for skewed prices resulting from varying market volatility. Interesting observations about investor preferences in Nagpur are revealed after studying their investment patterns. As the stock market normally exhibit high level of price volatility, the dynamics of volatility has been adhered to.

To study the impact of volatility clustering the arch (1) model is used. For stocks which don't exhibit the arch effect, the f test is used to determine if volatility has increased or declined in the current period.

The application of Arch (1) model to value at risk gives a clear picture of the decreased level of volatility for select stocks in the recent times. Further, the VAR (vector autoregressive) technique is used to forecast the future value of the portfolio.

Keywords- Arch, VAR, Volatility, F-test.

Introduction

The basic objective of developing this paper is to determine how a portfolio should be designed and weighed, so that it outperforms the target benchmark portfolio to which it is compared. The problem of dynamic portfolio management is dealt with in order to attain a trade off between the expected risk (probability of underperformance related to the bench mark portfolio) measured in terms of Beta. Return (expected time to reach the required goals). The risk associated with portfolio management is not just the operating environment but also the psychology of the investors. The trade off between risk and returns will provide new insights as it will consider the risk appetite of the investors, who will want to minimize the time to attain a predetermined goal subject to certain limitations in order to maximize returns on their investments. In order to determine the risk in the portfolio, arch (autoregressive conditional hetroscedasticity) model will be used. Considering macroeconomic scenarios and the industry in which the company operates the arch analysis reveals interesting observations about investment patterns.

The paper is divided into two sections.

Section I deals with analyzing data of investment patterns of 50 investors in Nagpur. The behavioral aspect of the investors is studied in relation to volatility as exhibited by the stocks. Data is compiled on the basis of stocks which are most actively traded by investors. A few stocks not popular with the investors are also assessed.

Section II deals with estimating Beta of a stock, Using Garch technique to assess value at risk, and the vector auto regressive technique to assess the downside risk of a portfolio.
Section III deals with Application of Arch/Garch to Value At Risk and the vector autoregressive technique to determine the downside risk in the portfolio.

Review Of Literature:

Pretimaya Samantha's paper "Impact of Future trading on the underlying spot market volatility" A case of SandP CNX Nifty seeks to asses the impact of introducing index futures and stock futures on the volatility of the underlying spot market in India. The study uses the standard univariate Garch model to capture time varying volatility and volatility clustering phenomena. The empirical evidence suggests that there is no significant change in the volatility of the spot market and the CNX Nifty Index but the structure of volatility has changed considering the way news is received in the market. However in case of individual stocks, most showed a reduction in volatility, but in a few cases volatility has marginally increased. Hence, mixed results in case of increase /decrease of volatility are seen.

Karimullah in his paper on "Derivative trading and its Impact on the Indian Spot Market Volatility" examines the impact of financial derivatives introduced on cash /spot market volatility. It examines the impact of trading in major derivative products like index futures, stock futures and index options on the conditional volatility on stock market return. Arch /Garch technique has been employed to analyze conditional volatility of intra day market returns before and after the introduction of derivative products. It explicitly models the volatility process over time, rather than using standard deviation to measure volatility.

Ali, RAhman and Maosen (2002) studied the impact of introducing index futures on spot market volatility in India and a causal relation between volume in the spot and futures market. They found that volatility in the spot market produced volatility in the futures market, however their findings also suggested that there were other factors apart from futures trading were also responsible for increasing spot market volatility.

"Portfolio construction with downside risk" by Harald Lohre, Thorsten Neumaan andThomas Winterfeldt seeks an optimal trade-off between a portfolio's mean return and its associated risk The reductions in downside risk are most convincing for semi variance, semi deviation, CVaR and loss penalty while value at risk and measures related to skew ness appear rather useless for portfolio construction purposes.

"Arch/Garch models in Applied Financial Econometrics" by Robert F Engle suggests that volatility is a key parameter in many financial applications. Moving from single assets to portfolios the paper suggests that not only idiosyncratic volatilities but also correlation and covariance between assets are time varying and predictable.

Section I

In order to derive ways for active portfolio management strategies, a data base of 50 investors has been assessed for a span of seven months, from 1st Jan 2009 to 31st July 2009. Eleven most commonly traded stocks were assessed to see if they exhibited the Garch effect.

Daily stock prices of individual stocks for a span of one year , from 1st Jan 2008 to 31st July 2009 were downloaded from yahoo finance website. Daily stock return or price change at time t, R(t) was converted to daily compounded return taking the logarithmic price relatives. Return R(t) at time t is given by the following formulae R_t = In (P_t/P_t-1) where P_t is the closing price for day t.

The regression equation used for determining the Arch (1) effect was as follows: The Arch (1,) process or ARIMA (1,0,0) model is as follows:

$Y_t = \beta_0 + \beta_1 Y_{t-1} + U_n$ ….1

Where

Y_t= Return on the individual stocks (measure of volatility)

Y_{t-1}= One period lag of the stock return.

U_n = the Error Term.

The stocks chosen to study the arch effect are on the basis of the preference of the 50 investors under observation.

The table below exhibits whether the stock exhibits the arch effect or not based on the OLS estimates and significance of the p values exhibited in the arch(1) process (Equation 1).

The returns on the stock estimated for the period the investor held a buy position was calculated by the following equation.

$Y_t = \beta_1 + U_n$ ….2

Where:

Y_t = % change in the stock returns

β_1= coefficient of the intercept term

Table no 1- OLS Estimates

Company	**OLS Estimates**	**Arch Coefficient**	**Historical Returns (%)**
	T-Ratio[Prob]	**T-Ratio[Prob]**	
Satyam Computers	β_0=1.6283[.004]	β_0 = -.87049[.004]	1.1
	β_1=321.9498[.000]	β_1 = 521.8122[.000]	
ICICI Bank	β_0=.25174[.001]	β_0=.5174[.001]	3.12
	β_1=166.4715[.000]	β_1=815.4715[.000]	

Mahindra and Mahindra ltd.	β_0 =.1743[.002]	β_0= -.27514[.002]	7.23
	β_1=216.4715[.000]	β_1=766.4715[.000]	
Suzlon Energy Limited	β_0=.274[.001]	β_0=.95171[.001]	-3.2
	β_1=317.4715[.000]	β_1=548.4715[.000]	
Unitech ltd.	β_0=.436[.001]	β_0=.55174[.000]	-4.6
	β_1=436.4715[.000]	β_1=931.4715[.000]	
Zee News ltd.	β_0=.5172[.001]	β_0=.75174[.000]	2.56
	β_1=112.4715[.000]	β_1=.975[.000]	

Source : (Closing Share Price Data from yahoo finance.com)

Interpretation- Wipro ltd., Reliance Natural resources ltd, Power Grid corp. of ind. Ltd, Indusind bank ltd. Amtek Auto ltd, Larsen and Toubro ltd, Bosch Mico do not reveal any arch effect.

The script summary of the 12 most frequently traded stocks in the sample of 50 investors in Nagpur is presented in the table below.

Table no-2- Most frequently traded stocks

Scrip	Buy			Sell			Net	
	Qty	Value	Avg Rt	Qty	Value	Avg Rt	Qty	Value
Icici Bank ltd.	2090	1399037	669	2090	1517832	726.24	0	-118795
RNRL	3500	220402	63	3500	240299.7	68.66	0	-19897
Wipro ltd.	300	98149.4	327	300	98673.52	328.91	0	-524.17
Power Grid Corp. of Ind. ltd.	1000	99911	100	1000	99969.16	99.97	0	-58.16
Indusind Bank ltd.	1000	91898.1	92	1000	93971.16	93.97	0	-2073
Mahindra and Mahindra ltd.	15	8522.5	568	15	9338.91	622.59	0	-816.41
Larsen and Toubro ltd.	337	310450	921	337	308147.4	914.38	0	2302.92
Suzlon Energy Limited	8100	697746	86	6100	494778.8	81.11	2000	202967
Satyam Computer Ser. ltd.	14600	1107057	76	14700	1079455	73.43	-100	27602.2

Unitech ltd.	7600	540499	71	6800	382375.5	56.23	800	158123
Zee News ltd.	2000	84625.8	42	1000	35184.07	35.18	1000	49441.8
Amtek Auto Ltd.	25	3225	129	25	3300	132	25	-75
Bosch Ltd.	12	44688	3724	12	44736	3728	12	-48

(Source: Local Stock Broker)

The summery of stocks where there was a gain/ loss is summarized in the following table:

Table no-3- Gain of the stocks

Script	Quantity Sold	Value	%Gain
Icici Bank ltd.	2090	118795	56.84
Mahindra and Mahindra ltd.	15	816.41	54.427
RNRL	3500	19897.3	5.685
Indusind Bank ltd.	1000	2073.02	2.073
Wipro ltd.	300	524.17	1.7472
Amtek auto	25	75	3
Bosch mico ltd.	12	48	4
Power grid corp. of ind. ltd.	1000	58.16	0.0582

Table no-4- Loss of the stocks

Scrip	Quantity Sold	Value	% Loss
Zee News ltd.	1000	49441.8	49.442
Suzlon Energy Limited	6100	202967	33.273
Unitech ltd.	6800	158123	23.253
Larsen and Toubro ltd.	337	2302.92	6.8336
Satyam Computer ser. ltd.	14700	27602.2	1.8777

(Source: Local Stock Broker)

The observations reveal that the stocks which are most actively traded are the ones that reveal volatility clustering. The most popular stocks which have high weight age in the portfolio of the investors are Satyam, Unitech and Suzlon Energy although in the stipulated period of six months, investing in these stocks has resulted in losses. Though Mahindra and Mahindra reveal volatility clustering it is not very popular with the investors, although in the stipulated period the stock revealed profits. Another interesting observation is Reliance Natural Energy, which although is not showing volatility clustering in the stipulated period is popular with the investors and has resulted in profits. The two stocks of the auto ancillary industry show no

volatility clustering, are least subscribed by the investors and are just reveling marginal profits.

Section IIA:

After considering investor preferences, this section specifically analysis those stocks where there is no volatility clustering i.e. volatility in the current period is not related to volatility in the past, hence volatility is not time dependent. There is absence of volatility clustering seen from the OLS estimates of the stocks. Hence an analysis is made to see if volatility has increased or declined in the current period. Beta of the stocks is assessed to see how risky the stock is compared to the auto index.

The F test is used to see if volatility has increased in the recent years. For this purpose, the data set is split up into two halves.

S_1^2 is the standard deviation in the time series data range of a stock from Jan 1, 2000 to June 30 2004 (Pre volatility period)

S_2^2 is the standard deviation in the time series data range of a stock from July 2004 to May 2009 (Post volatility period)

N_1 = the number of observations in S_1 -1

N_2 = the number of observations in S_2 -1

In order to see if volatility has increased in the post volatility period, the following procedure is devised:

S_2^2 / S_1^2 □ $F_{1\ N2\ ,\ N1}$

The Table below represents stock wise variance calculated and F test statistics at different degrees of freedom.

Table no-5- F-test statistics

Company	Variance S_2^2 / S_1^2	F statistics	
		Df	Value
MRF Tyres Ltd.	1.671461	52 , 57	1.56413
Bharat Forge Ltd.	0.621996703	53,56	1.56532
Amtek Auto Ltd.	0.409014	53,57	1.56549
Exide Industries Ltd.	1.78723	54,56	1.56278
Sunderam Clayton Ltd.	1.058013	54,56	1.56278
Apllo Tyres Ltd.	1.230807	53,46	1.6127
Cummins Ltd.	0.545246	52,62	1.54682

Bosch Ltd.	0.227615	53,57	1.56149

Interpretation -We find that in two stocks i.e. MRF Tyres and Exide industries, volatility has increased in the recent times. However for the remaining stocks, we see that the value of the F statistics is much higher than the variance calculated. Hence it is concluded that volatility has decreased to a significant extent, in the current period.

Section II B

After studying the volatility pattern, a beta analysis of major stocks in the ancillary industry is carried out to assess the risk. Ancillary industry stocks compared to stocks in other industries are less risky as seen from the analysis in section I.

In the analysis carried out in the study the following table states how risky the stock is compared to the market index, in this case the auto index.

Table no-6- Descriptive statistics

Companies	covar	std dev	beta	coeff corel
Apollo Tyres ltd.	0.000232	0.00509	0.45514	0.269622
Bosch ltd	0.000234	0.00509	0.46075	0.463462
MRF Tyres Ltd.	0.000445	0.00509	0.87691	0.641683
Exide Industries Ltd.	0.000287	0.00509	0.56909	0.423748
Bharat Forge Ltd.	0.00045	0.00509	0.08845	0.53477
Amtek Auto Ltd.	0.000416	0.00509	0.08175	0.420987
Sunderam Clayton Ltd.	0.000831	0.00509	0.16319	0.463492
Cummins Ltd.	0.000123	0.00509	0.02417	0.193045

Most stocks exhibit a beta of < one indicating that auto ancillary stocks listed above are less risky than the market.

The next assessment is regarding the stability of Beta. The stability of beta is assessed for a period of six months and also for shorter periods of three months.

For a span of six months (from 1st Jan 2008 – 31st Aug 2008 and from 1st Sept 2008 to 31st March 2009) beta is assessed with the help of a regression equation using a dummy variable.

The regression equation is as follows:

$$SR_t = \alpha_1 + \alpha_2 D_t + \beta_1 M_t + \beta_2 D_t M_i + U_t$$

Where SR_t = stock return at time t

α_1 = intercept

α_2 = differential slope

β_1 = slope co efficient

β_2 = differential intercept

M_t = market return, i.e. return on auto index
D = 1 for observations from 1st Sept 2008 to 31st March 2009 and 0 for observations from 1st Jan 2008 – 31st Aug 2008

If the differential slope (α_2) and differential intercept (β_2) are statistically significant the regression for the two time periods are statistically different.
Interpreting Regression Results: The results show that the differential slope (β_2) and differential intercept (α_2) are statistically significant proving that the betas are different in the two time periods. Hence for a period of six months beta values are statistically stable.

Table no-7- Differential intercepts

Companies	Differential intercept	Differential slope
	T ratio (P values)	T ratio(P values)
Bosch ltd	-19.7738[.000]	14.0965[.000]
Apollo Tyres ltd.	-20.0137[.000]	13.8814[.000]
MRF Tyres Ltd.	-16.0039[.000]	9.4472[.000]
Exide Industries Ltd.	-28.8447[.000]	19.4059[.000]
Bharat Forge Ltd.	-34.7258[.000]	23.5204[.000]
Amtek Auto Ltd.	-20.5516[.000]	11.4755[.000]
Cummins Ltd.	-16.6132[.000]	12.1658[.000]

Interpretation- Beta is also assessed for shorter time periods to study stability. The time span selected are, (1st Jan to 31st March 2008, 1st April- 30th June, 1st July- 30th Sept, 1st Oct – 31st Dec, 1st Jan – 30th April 2009)
The chow test is used to study the stability of beta over a time span of three months.

Table no-8- Chow test results

Time Period	1st Jan to 31st March 2008	$SR_t = \alpha_1 + \alpha_2 M_t + u1_t$	n1=60
Time Period	1st April to 30th June 2008	SRt = β1+ β2 Mt +u2t	n2=60
Time Period	1st July to 30th Sept 2008	SRt = γ1+ γ2 Mt +u3t	n3=64
Time Period	1st Oct to 31st Dec 2008	SRt = δ1+ δ2 Mt +u4t	n4=58
Time Period	1st Jan – 31st April 2009	SRt = λ1+ λ2 Mt +u5t	n5=75

where the error terms in the sub period regressions are normally distributed with the same variance σ^2 and the 5 error terms are independently distributed.

Calculation of the pooled function of SR_t on M_t is given by the regression equation

1st Jan 2008 to 30th April 2009 $SR_t = \omega_1 + \omega_2 M_t + u_t$ n = 317 ---------- Eq 6

The pooled function suggests that there is no difference between the 5 time periods, i.e. the intercept and the slope coefficients remain the same in the different time periods.

Equations 1 to 5 assume that the regressions are different in different time periods i.e. the slope and coefficients in the 5 time periods are different. u's represent the error terms and n represent the number of observations.

The test statistics is calculated in the following manner

$$\frac{(RSS_r - RSS_{ur})/K}{(\overline{RSS_{ur}})/(n_1 + n_2 - 2K)}$$

where

RSS_r = the residual sum of squares of (Eq.6) 1st Jan 2008 to 30th April 2009

RSS_{ur} = the residual sum of squares of (Eq1+ Eq2 + Eq3+ Eq4+ Eq5)

n = number of observations

k = no. of predictors in the equation.

The null hypothesis of parameter stability states that there is no structural change i.e. $\alpha_2 = \beta_2 = \gamma_2 = \delta_2 = \lambda_2$ if the computed f value is less than the critical f value obtained from the table.

The table below represents the calculated F and the compute F

Table no-9- F statistics

Companies	Calculated F
Apollo Tyres ltd.	14.26
Bosch ltd	16.27
MRF Tyres Ltd.	15.38
Exide Industries Ltd.	19.5
Bharat Forge Ltd.	12.65
Amtek Auto Ltd.	8.26
Sunderam Clayton Ltd.	7.77
Cummins Ltd.	9.83

Interpretation- The computed f for 2/317 df = 3.024588 (all companies). Since the calculated F is larger than the computed F it is concluded the for very short time spans of three months betas are not stable.

Section III A

After assessing the beta of a portfolio the Value at Risk or downside risk of the portfolio is assessed. In order to estimate the VAR of the portfolio, the historical simulation and Variance covariance method is used.

The VAR for the portfolio is calculated using a one day time horizon, 99% confidence level, and 344 days of data. The market variables affecting the portfolio considered are the fluctuating US dollar rates, the Price to earnings ratio, the price to book value and the dividend yield affecting all auto index stocks, the spot prices of steel, the SandP 500 index and the prime lending rates. The data on the movements of these variables were collected over a period of 245 days. This provides us with 245 alternative scenarios of what could happen between today and tomorrow. Thus we calculate the rupee change in the portfolio between today and tomorrow. Thus a probability distribution for the daily changes in the portfolio is determined. The 2.44 or 3rd worst daily change is the first percentile of the distribution. Assuming that the last 244 days is a good estimate to what could happen during the next day; we are 99% certain we will not make a loss greater than the VAR estimate.

Appendix 1 shows the values of market variables calculated in the following way. V_i is defined as the market variable on day I and if today is day m, the ith scenario assumes the value of the market variable tomorrow is calculated as $V_i = V_m/V_{m-1}$ Considering the value of the portfolio known today in known which in our example is Rs.5,592.20. For scenario 1 the value calculated is Rs.13022.85. Similarly 244 different scenarios are calculated and then ranked. The 2nd worst loss (1% of 244) is the 1day 99% var at 2,043.27. The 244 day 99% var is = 31,916.8 Hence over the next 244 days the loss on the portfolio is not likely to exceed Rs.31, 916.8

Section III B

Application of Arch/Garch to Value at Risk:

This implication is widespread when volatility is the aspect under consideration. As the 1% Value is already defined, the Arch (1) tool is used to estimate the 1% VAR for a seven lakh portfolio as on April 29, 2009. The portfolio consists of 7 auto ancillary stocks which represent stocks in the auto index. All stocks in the portfolio are given equal weight age. The illustrative statistics for the individual stocks along with the entire portfolio is given in the table below-

Table no-10-Decsriptive statistics

Descriptive Statistics								
	Mrf Ltd.	Apollo Tyres	Exide Ind..	Bosch ltd.	Bharat forge.	Amtek ltd	Cummins	Portfolio
Mean	0.995	0.996	0.996	0.996	1	0.995	0.9964	0.234
Std Dev	0.04	0.04	0.03	0.02	0	0.04	0.028	0.0433
Skewness	-0.28	-16.74	-17.37	-17.77	-17.36	-17.03	-17.611	5.8539
Kurtosis	4.46	292.46	306.96	316.44	306.88	299.1	312.737	44.676

The Standard deviation is used to estimate the percentage change in the rate of return of the portfolio for the entire time period, 1st Jan 2008 to 30th April 2009 (observation 1) and is

compared to the estimated percentage change in the rate of return for the last quantile 1st Jan to 30th April 2009 (Observation II).
X_t = portfolio value at time t.
X_t* = log of X_t
dX_t = mean of X_t*
$Y_t = X_t^* - DX_t$ ..... Equation 3

Thus Y_t gives the mean adjusted relative change in the portfolio value. Now Y_t^2 can be used as a measure of volatility. Being a squared quantity its value will be higher in periods where there are big changes in price of the portfolio value, and its value will be comparatively small where there are modest changes in the prices of the individual stocks affecting the portfolio value. Y_t has been modeled in a similar way as described in Section 1, equation 1

Interpretation-

Observation 1- The Arch (1) coefficient for the entire sample period 1st Jan2008 to 30th April 2009 turns out to be 0.0013217 This when multiplied by 7 lakhs, gives a standard deviation of daily changes as Rs.925.19 Hence the 1 day 99% VAR Over the entire sample period, 1st Jan 08 to 29th April of a 7 lakh portfolio amounts to Rs. 2155.6927
Observation II- The Arch (1) coefficient for the period 1st Jan to 30th April 2009 is estimated at 0.0011387 The standard deviation of daily changes is calculated at Rs.797.09. Hence the 1 day 99% Var for a seven lakh portfolio is calculated as Rs.1857.2197.Hence it is seen that the downside risk has declined in the first quantile of 2009. A similar indication is made by the F test (section II) where volatility in most stocks declined in the current period.

Section III C

Forecasting Portfolio Value with (VAR) Vector Auto Regressive Technique:
In order to be able to forecast the value of a portfolio considering a number market factors affecting the portfolio, the vector autoregressive method is used. As the name suggests, V in VAR relates to the term vector due to the fact that we are dealing with a vector of two or more variables and auto regressive is due to the appearance of lagged values on the right hand side of the non linier regression equation.

In order to study how the portfolio value is affected, seven endogenous variables such as Price to earning ratio, price to book ratio, dividend yield on auto ancillary stocks along with change in the dollar rate, spot prices of steel, SandP 500 Index and the prime lending rate is considered. Considering these changing market dynamics it is observed how the value of the portfolio is affected and how a future value can be predicted using VAR.
The estimation of VAR is done in the following way:

Assuming that there is bilateral causality between the variables, and that they are jointly statistically significant (as shown by the F statistics appendix II), and the variables are endogenous, the following regression equation is estimated, where α is the constant and β_j γ_j

λ_j ν_j ω_j μ_j o_j ψ_j is the partial slope coefficient of the endogenous variables PV (Portfolio value) P/E (price to earning ratio) P/B (Price to book value) DY (dividend yield) USD (Dollar rate),SP(spot prices of steel),SandP 500(SandP 500 Index) andPLR (the prime lending rate)

The following 8 regression equations are estimated, before which the lag length had to be estimated by the trial and error method. To estimate the lag length initially 3 lags of each variable was used and the parameters were estimated using software program micro fit 4. The results of the parameters are shown in appendix II . As we have 240 observations, including too many lags will account for consuming more degrees of freedom, and include the possibility of multi co linearity. Including few lags will lead to specification errors. Hence the lag length is decided based on the criterions like the Akaike Information criterion or Schwarz and choose the model that gives the lowest values of these criteria. In the estimation it is seen that at lag 2 the AIC is -1326.1 and at lag 3 AIC is -1300. Hence 2 lag values are selected.
Appendix II(a) gives the vector auto regression results based on 2 lags for the following regression equation.

Equations-

$PV_t = \alpha^1 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{1t}$

$PE_t = \alpha^2 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{2t}$

$PB_t = \alpha^3 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{3t}$

$DY_t = \alpha^4 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{4t}$

$USD_t = \alpha^5 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{5t}$

$SPS_t = \alpha^6 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{6t}$

$Sand\ P500_t = \alpha^7 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{7t}$

$PLR_t = \alpha^8 + \sum\beta_j PV_{t-j} + \sum \gamma_j PE_{t-j} + \sum \lambda_j PB_{t-j} + \sum\nu_j DY_{t-j} + \sum\omega_j USD_{t-j} + \sum\mu_j SPS_{t-j} + \sum o_j Sand\ P500_{t-j} + \sum\psi_j PLR_{t-j} + u_{8t}$

The above eight regression equations can be concisely represented by the following VAR(p) metrics denoted by the following regression equation

: $y_t = c + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + e_t,$

$$\begin{bmatrix} y_{1,t} \\ y_{2,t} \\ \vdots \\ y_{k,t} \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \\ \vdots \\ c_k \end{bmatrix} + \begin{bmatrix} a^1_{1,1} & a^1_{1,2} & \cdots & a^1_{1,k} \\ a^1_{2,1} & a^1_{2,2} & \cdots & a^1_{2,k} \\ \vdots & \vdots & \ddots & \vdots \\ a^1_{k,1} & a^1_{k,2} & \cdots & a^1_{k,k} \end{bmatrix} \begin{bmatrix} y_{1,t-1} \\ y_{2,t-1} \\ \vdots \\ y_{k,t-1} \end{bmatrix} + \cdots + \begin{bmatrix} a^p_{1,1} & a^p_{1,2} & \cdots & a^p_{1,k} \\ a^p_{2,1} & a^p_{2,2} & \cdots & a^p_{2,k} \\ \vdots & \vdots & \ddots & \vdots \\ a^p_{k,1} & a^p_{k,2} & \cdots & a^p_{k,k} \end{bmatrix} \begin{bmatrix} y_{1,t-p} \\ y_{2,t-p} \\ \vdots \\ y_{k,t-p} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \\ \vdots \\ e_{k,t} \end{bmatrix}$$

where c is a $k \times 1$ vector of constants (**intercept**), A_i is a $k \times k$ matrix (for every $i = 1, ..., p$) and e_t is a $k \times 1$ vector of error terms satisfying

1. $\mathrm{E}(e_t) = 0$ i.e. every error term has mean zero;
2. $\mathrm{E}(e_t e_t') = \Omega$— the contemporaneous covariance matrix of error terms is Ω (a $n \times n$ positive definite matrix);
3. $\mathrm{E}(e_t e_{t-k}') = 0$ for any non-zero k — there is no correlation across time; in particular, no serial correlation in individual error terms.

The l-periods back observation y_{t-l} is called the l-th ***lag*** of y. Thus, a pth-order VAR is also called a **VAR with *p* lags**

Using appropriate values (Appendix I) of the eight variables for two lag periods, i.e. 23rd April 2009 and 22nd April 2009 we estimate the value of the portfolio for 24th April 2009 by multiplying the appropriate coefficients (Appendix II) with the appropriate values of the 8 variables considering 2 lags to arrive at the estimated value of the portfolio for 24th April 2009. The estimated value is reflected at Rs.6361.558

The calculation is shown in Appendix II.

Conclusion:

- As volatility clustering is intermittently present in most time series analysis, various statistical devices can be used to measure volatility, which can be used to predict return on investment.
- The arch (1) model which fitted the auto Index helped to understand that volatility was not time dependent, and that the market impact on the stocks was the least as revealed by a low beta for most stocks. Moreover as not all investors are aggressive, various risk averse asymmetric measures concentrating on the downside risk of a portfolio are suggested.
- The skew ness measures are highly unpredictable in indicating volatility over time, and hence alternative measures are used. Considering N number of market variables that affect the value of a portfolio over a specified period the 244 day 99% VAR is calculated to arrive at the downside risk of a portfolio.
- Another method used to calculate the downside risk is the application of the arch model to Value at risk. The arch coefficient is multiplied by the initial investment of a portfolio to arrive at the downside risk.
- A third measure is the vector auto regressive method. The coefficients of the variables in the regression equation are multiplied with the appropriate values of the variables to arrive at the estimate portfolio value for the next quarter. Thus, Alternate ways of predicting the value of a portfolio help in optimizing the portfolio process.

References:

- Damodar N Gujarati, Sangeetha Basic Econometrics Tata MacGraw –Hill Publishing Company Ltd., New Delhi pg 855-886.
- Robert F Engle, Sergio M Focardi, Frank J fabozzi Arch/Garch Models in Applied Financial Econometrics, Chapter 60
- John Maheu, Can GARCH Models Capture Long-Range Dependence? Studies in Nonlinear Dynamics and Econometrics. 01/02/200502/2005; 9(4).
- Markus Haas, Volatility Components and Long Memory-Effects Revisited Studies in Nonlinear Dynamics and Econometrics. 01/02/200702/2007; 11(2).
- Lohre, Harald Newmann, Thorsten and Winterfieldt, Thomas, Portfolio Construction with Downside Risk (March 18,2009)
- P Srinivasan, K Sham Bhatt, The impact of futures Trading on the Spot Market volatility of Selected Commercial Banks in India. European journal of Economics, Finance and Administrative Sciences ISSN 1450 – 2887 Issue 14(2008)
- M.T.Raju, Anirban Ghosh (April 2004) Stock Market Volatility – An international comparison SEBI Working paper series No.8
- John Hull and Allan White Incorporating volatility updating into the historical simulation method for value at risk., University of Toronto Journal of Risk Fall 1998
- Dr. Brian J Use of downside risk Measures in Portfolio Construction and Evaluation Jacobsen JEL Codes: G11
- Thomas Linsmeier and Neil D Peirson Risk Measurement An Introduction to Value at Risk University of Illinois at Urbana Champaign July 1996
- Chin Wen Cheong " Asymmetry and Persistence Volatility Predictability of Malaysian Stock Market", The ICFAI journal of Applied Finance. Vol 13 No.10
- Lokanandha Reddy Irala "Stationary and Regression Tendencies of Security and Portfolio Betas In India". The ICFAI journal of Applied Finance. Vol 13 No.10
- Vanita Tripathi and Shalani Gupta,"Estimating the Accuracy of Value at Risk in Measuring risk in Equity investments in India" The ICFAI journal of Applied Finance, Vol.14 No.7

Appendix I

OLS estimation of a single equation in the Unrestricted VAR

****

Dependent variable is PV

238 observations used for estimation from 3 to 240

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
PV(-1)	1.0532	.025643	41.0715[.000]
PV(-2)	-.058792	.025393	-

			2.3153[.022]
PE(-1)	.0072706	.0047443	1.5325[.127]
PE(-2)	.20707	.0056754	36.4860[.000]
PB(-1)	261.0546	116.7653	2.2357[.026]
PB(-2)	119.4554	115.7767	1.0318[.303]
USD(-1)	8.7269	4.2682	2.0447[.042]
USD(-2)	.32106	4.3171	.074369[.941]
DY(-1)	409.7458	199.0811	2.0582[.041]
DY(-2)	215.3101	202.0064	1.0659[.288]
SPOT(-1)	-.0043324	.012849	-.33718[.736]
SPOT(-2)	-.0025040	.012910	-.19396[.846]
SP(-1)	-.059683	.063504	-.93983[.348]
SP(-2)	-.080908	.062276	-1.2992[.195]
PLR(-1)	-38.8246	29.5218	-1.3151[.190]
PLR(-2)	41.7023	29.5361	1.4119[.159]
C	-10440.0	1188.5	-8.7845[.000]

****

R-Squared .99910 R-Bar-Squared .99903

S.E. of Regression 61.4643 F-stat. F(16, 221) 15278.1[.000]

Mean of Dependent Variable 7374.2 S.D. of Dependent Variable 1974.9

Residual Sum of Squares 834907.8 Equation Log-likelihood -1309.1

Akaike Info. Criterion -1326.1 Schwarz Bayesian Criterion -1355.6

DW-statistic 1.6809 System Log-likelihood -5562.0

****

OLS estimation of a single equation in the Unrestricted VAR

****

Dependent variable is PV

237 observations used for estimation from 4 to 240

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
PV(-1)	1.2230	.063804	19.1681[.000]
PV(-2)	-.29546	.072355	-4.0835[.000]
PV(-3)	.067671	.023974	2.8227[.005]
PE(-1)	.0078229	.0044104	1.7737[.078]
PE(-2)	.19382	.0058270	33.2620[.000]
PE(-3)	-.041530	.014278	-2.9086[.004]
PB(-1)	213.7624	109.1370	1.9587[.051]
PB(-2)	17.1847	107.6502	.15963[.873]
PB(-3)	39.1114	107.4256	.36408[.716]
USD(-1)	8.3114	3.9999	2.0779[.039]
USD(-2)	-19.5495	5.0710	-3.8552[.000]
USD(-3)	-24.7721	3.9444	-6.2803[.000]
DY(-1)	332.2032	187.9367	1.7676[.079]
DY(-2)	30.2561	186.3210	.16239[.871]
DY(-3)	139.6972	190.0762	.73495[.463]
SPOT(-1)	-.0084113	.011896	-.70705[.480]
SPOT(-2)	-.0064726	.011772	-.54984[.583]
SPOT(-3)	.0040427	.011912	.33938[.735]
SP(-1)	-.014620	.060766	-.24060[.810]
SP(-2)	-.032781	.063616	-.51529[.607]
SP(-3)	.049785	.057867	.86033[.391]
PLR(-1)	-28.6420	27.0109	-1.0604[.290]
PLR(-2)	-2.4111	37.2350	-.064753[.948]
PLR(-3)	32.8092	27.1685	1.2076[.229]
C	-5782.9	1570.0	-3.6833[.000]

********** *****

R-Squared	.99926	R-Bar-Squared	.99918
S.E. of Regression	55.6592	F-stat. F(24, 212)	11917.0[.000]
Mean of Dependent Variable	7348.4	S.D. of Dependent Variable	1938.3
Residual Sum of Squares	656763.7	Equation Log-likelihood	-1275.6

Akaike Info. Criterion	-1300.6	Schwarz Bayesian Criterion	-1344.0
DW-statistic	1.8655	System Log-likelihood	-5464.0

****

			Appendix II				
	Predicting value for 24th Apr foro 2 lagged periods						
Portfolio value for 24th April = constant + 8 variables 2 lagged periods							
			1st lag	23rd April			
Constant(C)	-10440	PV	1.0523	5,823.95	6128.543		
		P/E	0.00727	13.8	0.100334		
		USD	8.7269	50.44	440.1848		
		PB	261.055	2.40234	627.1429		
		DY	409.746	1.75171	717.7547		
		Spot Steel	-0.0043	29379.1	-127.282		
		SP	-0.0597	2604.98	-155.473		
		PLR	38.8246	12.5	485.3075	8116.278	(A)
			2 nd lag	22nd April			
		PV	-0.0588	5,823.65	-342.384		
		P/E	0.20707	39229.2	8123.192		
		USD	0.32106	50.24	16.13006		
		PB	119.455	2.5	298.6385		
		DY	215.31	1.68	361.721		
		Spot Steel	-0.0025	29053.5	-72.7498		
		S&P500	-0.0809	2725.9	-220.547		
		PLR	41.7023	12.5	521.2788	8685.28	(B)
		Predicted Value of the portfolio on 24th April				6361.558	(A+B+C)

Author Details

Dr. Parizad Feroze Dungore*

Asst.Professor (Commerce)

G.S.College of Commerce and Economics, Nagpur

E-mail-paridungore@gmail.com

Research of the Region

IMPACT OF CORPORATE ANNOUNCEMENTS ON STOCK PRICES- A MARKET EFFICIENCY APPROACH

Dr. Kiran Nerkar*

Abstract-

Corporate announcements have impact on the stock market, as it is demonstrated by several events in the history. In this regard this paper aims to study the efficiency of Indian stock market, with the help of 'Event Analysis Approach'. The event considered in this paper is 'The announcement of inclusion of the companies in composition of Sensex' from 2000 to 2012. This event is tested for possibility of supernormal profits due to possibility non interpretation and non-reflection of news, in the stock prices. The data considered here is free from confounding events (highly turbulent period of -7 and +7 days from the event), -21 to +21 days' window is considered for 'Event Analysis'. The results calculated using paired t-test shows that the event hardly causes any impact on returns annulling the possibility of earning supernormal profits defining Semi-strong form of market efficiency.

Key Words- Event Analysis, Market efficiency, Semi-strong form

Introduction-

An efficient market is one in which the market price of the security is an unbiased estimate of intrinsic value. But market efficiency does not imply that the market price equals intrinsic value at every point of time. All that it suggests is that the errors in the market price are unbiased. It implies that the price may deviate from intrinsic value but the deviations may not be planned that is random and not correlated with any variable. And if such deviations of market price from intrinsic value are random in that case it is not possible to consistently identify over and undervalued security. Hence market efficiency is defined in context to information that is reflected in the security prices. Fama (1970) recognized three forms of market efficiency explicitly: the weak, semi-strong and strong. Weak form of market efficiency says that current stock prices fully reflect all the past information. Any attempt to forecast prices based on historical prices or information is completely futile, as the prices follow random walk process. Semi-strong form expands the idea of efficiency a little further and describes that current stock prices replicate all the publicly available information. Prices adjust very quickly to such information, so the above normal returns cannot be earned on a consistent basis. The strong form is a situation where all the pertinent information, whether it is within the public domain or private domain, will be reflected in the stock market price. The efficient market hypothesis does not itself imply that market has perfect forecasting abilities; it merely implies the prices impound all the available information. In Indian market it is assumed that prices of the security reflects the information found in the record of past prices of the security or volumes of trade of security or the open interest build around the security.

The market efficiency in semi-strong form suggests that no investor is able to earn abnormal profit due to publicly available information. By explaining the event studies, one can measure how quickly stock prices respond to different pieces of news, such as corporate earnings or dividend announcement, news of a merger and takeover, or macroeconomic news. The aim of the paper is to observe the stock price (returns) reaction to the announcement of inclusion of these companies in the Sensitive Index, and thereby examine if the Indian Stock Market is efficient in its Semi-Strong form or not.

Study of existing review literature

Sr. no	Authors	Year of the study	Findings
1	Fama and Peterson	1971	An increase in price of stock following an event can occur because of a bonus issue which may have a beneficial content.
2	Basu	1977	This study proposed that P/E ratios have considerable forecasting power. The study emphasized that high P/E firms underperformed & low P/E firms over performed.
3	Foster & Vickrey	1978	In this study the signalling hypothesis using daily return data and information content of 82 stock dividend announcement was done. It was found that there is a considerable positive abnormal return around the announcement date.
4	Reinganum	1981	This study proposed that P/E effect is related to the size of the firm. Even though small firms are likely to be exposed to greater operational risks, small firms tend to outperform large firms
5.	Woolridge	1983	The study was an observation that positive average abnormal ex-date return of 0.98 % percent for a sample of 317 stocks dividend and proposed that the ex-date effect could arise from market flaws such as taxes and odd- lot transaction costs.
6	Grinblatt	1984	The study considered the 1967 to 1976 ex-dates of stock dividends distributed and found average abnormal returns of 1.1 returns.
7	Eades et al	1984	The study signified that there is a significant positive ex-date return by the companies

			listed on New- York Stock Exchange during the study period between 1962 to 1980 for a sample of 2110 stock dividends and stock split.
8	Ramchandran	1985	This study aims at finding out the impact of bonus issue announcement on Indian equity stock prices. The helped to find out a varied evidence of semi- strong form efficiency in the Indian stock market.
9	Lakonishok & Vermalen	1986	The study signified a substantial positive abnormal return for a sample of 2558 stock dividend and stock splits.
10	McNichols & Dravid	1990	The study found out a positive relationship between bonus issue announcement and related abnormal return.
11	Obaidullah	1992	This study accounted a positive stock market reaction to bonus issue announcement and supported the semi-strong form of market efficiency
12	Srinivasan	1993	This study established enormously large positive abnormal returns on ex- bonus and ex- rights dates for announcements.
13	Rao	1994	This study suggested that the Indian equity market responds in an expected direction to firm announcement and supported the semi-strong form of efficient market in India. The study projected a cumulative abnormal return of 6.3% around three days of bonus issue announcement.
14	Masse et al.	1997	The study was carried on US market (NASDAQ and NYSE respectively) on rights issues and volatility in the market. Kothare finds that there is no change in volatility in the stock price after rights issue announcement whereas, Bae and Jo find decreasing volatility following rights issues
15	Tsangarakis (1996) for Greece market, Bohren et al (1997) for Norway	1996	These studies on right issues have accounted positive announcement.

	market, and Kang and Stulz (1996) for Japanese market		
16	Kothare (1997) & Bae & Jo (1999)	1999	This study was carried on US market (NASDAQ & NYSE respectively) on rights issue and volatility of the market. Kothare finds that there is no change in volatility in stock prices after rights issue announcement whereas, Bae and Jo finds decreasing volatility in rights issue.
17	Bohren et al & Hansson	1999	In same framework some researcher argue that there is a small increase in the number of shareholders following rights issue for Norwegian and Finnish stock market.
18	Burton et al (2000), Suzuki et al (2000) for UK; Singh (1997) for US; Marsden (2000) for New Zealand; Kabir and Roosenboom (2003) for Netherland.	2003	These studies on right issues have accounted negative announcement period return.
19	Mishra	2005	It was found in this study that there is a significant positive abnormal return for a five- day period prior to bonus announcements.
20	Kaustubh Kanti Roy	2011	The paper examined the announcement effects of bonus issues and stock splits on the Indian stock market

Statement of Problem

The information about the companies like dividend declaration or past prices, bonus, buyback or splits, are used extensively used in valuing the securities, so as to know the correct intrinsic value of the security. That is how quickly and correctly the security prices reflect

this reflect this information shows the efficiency of the capital market. If the prices of the security are found very adjustable on the basis of the available information the market is said to be highly efficient. As Indian capital market are supposed to be semi-strong in its nature as it suggests that prices of the securities reflects all information found in the records of past prices of the securities. This study attempts to test the efficiency of the Indian capital market with respect to the information available regarding the inclusion of different companies in the barometer of the economy.

Need of the study-

Many studies have raised concern over the efficient market hypothesis, but most of them were focussed on the New York Stock Exchange, and London Stock Market but a very few concerns were raised to check efficiency of Indian Stock Market. The present study tries to examine market efficiency of an emerging stock market like India. Further there are studies which are made by keeping announcement of buy-back, merger & acquisition, bonus issues, dividend declaration, stock splits by companies as their focus. The maximum attempts which were made, were made in the form of 'Event Analysis'. This paper is an attempt to study the efficiency of Indian stock market by taking into consideration, the companies which are included in Sensitive Index through the method of Event Analysis.

Research Design

The research methodology adopted in this paper in 'Event analysis' methodology, wherein the window of 42 days is considered for companies considered as sample. The duration considered for study is of 12 years (1st April 2000- 31st March 2012) I,e 12 financial years. The companies considered for studies are taken from companies included in Sensex.

A) Sampling Universe-

Indian stock market has started working from 1875, since then there are several companies which included or excluded from the composition of Sensex. For this study researcher have considered the companies which are included in 30 companies of Sensex from time to time.

B) Sample Design-

In all there were 53 companies which were included in BSE SENSEX from time to time. Researcher has considered the data of 12 financial years from 2000 to 2012. The data considered for the study is quite contemporary as it will give a clearer picture about efficiency of market. When considered for 12 years there were 33 companies which were included in Sensex.

C) Research Methodology-

As mentioned above the methodology adopted in this paper is 'Event Analysis'. For doing this analysis a window of 42 days is considered. The rational behind considering 42 days is to calculate returns of -21 and + 21 days from the event happening. The window of 21 days is considered, so as to check the turbulence of -7 and +7 days from the date of event happening.

D) Data sources

- ✓ http://www.bseindia.com/indices/IndicesWatch_Scrip.aspx?iname=BSE30&sensid=30&type=SENS&graphpath=/sensexview/charts/graf_appSENSEX.gif
- ✓ www.moneycontrol.com

E) Research Tools-

- ✓ Microsoft Excel- 2007- For calculation of returns
- ✓ SPSS package (IBM-20 version)- Paired T test.

F) Objective-

- ✓ To study the impact of news of inclusion of the companies in Sensex on the returns of the same companies.
- ✓ To study the efficiency of Indian stock market.

G) Hypothesis-

H_0= The returns of the companies before and after announcement of their inclusion in Sensex are equal.

H_1= There is a significant difference in the returns of the companies before and after announcement of their inclusion in Sensex.

Data Collection-

The excel sheet below depicts the companies which are included in Sensex after 2000 till 2012.

Sr.No.	Date & Year of Inclusion	Index Name	Companies included in Sensex
1	10-04-2000	BSE SENSEX	DR. REDDY'S LABORATORIES
2	10-04-2000	BSE SENSEX	RELIANCE PETROLEUM
3	10-04-2000	BSE SENSEX	SATYAM COMPUTERS
4	10-04-2000	BSE SENSEX	ZEE TELEFILMS
5	08-01-2001	BSE SENSEX	CIPLA LTD.
6	07-01-2002	BSE SENSEX	HCL TECHNOLOGIES
7	07-01-2002	BSE SENSEX	HERO HONDA MOTORS LTD.
8	31-05-2002	BSE SENSEX	ICICI BANK LTD.
9	10-10-2002	BSE SENSEX	HDFC LTD.
10	10-11-2003	BSE SENSEX	BHARTI-TELE-VENTURES LTD.
11	10-11-2003	BSE SENSEX	HDFC BANK LTD.
12	10-11-2003	BSE SENSEX	ONGC LTD.
13	10-11-2003	BSE SENSEX	TATA POWER COMPANY LTD.
14	10-11-2003	BSE SENSEX	WIPRO LTD.
15	19-05-2004	BSE SENSEX	MARUTI UDYOG LTD.
16	27-09-2004	BSE SENSEX	LARSEN & TOUBRO LTD.
17	06-06-2005	BSE SENSEX	NATIONAL THERMAL POWER CORPN. LTD.
18	06-06-2005	BSE SENSEX	TATA CONSULTANCY SERVICES LTD.
19	12-06-2006	BSE SENSEX	RELIANCE COMMUNICATION LTD.

20	09-07-2007	BSE SENSEX	MAHINDRA & MAHINDRA LTD.
21	19-11-2007	BSE SENSEX	DLF LTD.
22	14-03-2008	BSE SENSEX	JAIPRAKASH ASSOCIATES LTD.
23	28-07-2008	BSE SENSEX	STERLITE INDUSTRIES LTD
24	28-07-2008	BSE SENSEX	TATA POWER CO. LTD.
25	12-01-2009	BSE SENSEX	SUN PHARMACEUTICAL INDUSTRIES LTD.
26	29-06-2009	BSE SENSEX	HERO HONDA MOTORS LTD.
27	03-05-2010	BSE SENSEX	CIPLA LTD.
28	26-05-2010	BSE SENSEX	JINDAL STEEL & POWER LTD.
29	06-12-2010	BSE SENSEX	BAJAJ AUTO LTD.
30	08-08-2011	BSE SENSEX	COAL INDIA LTD.
31	08-08-2011	BSE SENSEX	SUN PHARMACEUTICAL INDUSTRIES LTD.
32	09-01-2012	BSE SENSEX	GAIL INDIA LTD.

- ✓ Returns for these companies are calculated for -21 and +21 days and then analysed with the help of paired t test.

Data Analysis-

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	DRREDDY - DRREDDY1	.02056	.07162	.01563	-.01204	.05316	1.315	20	.203
Pair 2	RPL - RPL1	-.02910	.09930	.02167	-.07431	.01610	-1.343	20	.194
Pair 3	satyamcomp - satyamcomp1	-.00977	.08605	.01878	-.04894	.02940	-.520	20	.609
Pair 4	zeetelee - zeetele1	-.00440	.09200	.02008	-.04628	.03748	-.219	20	.829
Pair 5	cipla - cipla1	.00158	.04713	.01028	-.01987	.02303	.153	20	.880
Pair 6	HCL - HCL1	.02059	.06650	.01451	-.00968	.05086	1.419	20	.171
Pair 7	HERO - HERO1	.00467	.04015	.00876	-.01361	.02295	.533	20	.600
Pair 8	ICICI - ICICI1	.00703	.03552	.00775	-.00914	.02320	.907	20	.375
Pair 9	HDFC - HDFC1	-.00072	.01593	.00348	-.00797	.00654	-.206	20	.839
Pair 10	BHARATI - BHARATI1	-.00090	.04390	.00958	-.02088	.01908	-.094	20	.926
Pair 11	HDFCBNK - HDFCBNK1	-.00289	.02210	.00482	-.01295	.00717	-.599	20	.556
Pair 12	ONGC - ONGC1	.00307	.02808	.00613	-.00971	.01585	.501	20	.622

Pair 13	TATAPOWER - TATAPOWER1	.00385	.03700	.00807	-.01299	.02069	.477	20	.639
Pair 14	WIPRO - WIPRO1	-.00120	.03892	.00849	-.01892	.01651	-.142	20	.889
Pair 16	LnT - LnT1	.00826	.01292	.00282	.00238	.01415	2.929	20	.008
Pair 17	ntpc - ntpc1	.12344	5.69163	1.24201	-2.46736	2.71424	.099	20	.922
Pair 18	tcs - tcs1	.30667	2.22493	.48552	-.70610	1.31945	.632	20	.535
Pair 19	rcom - rcom1	-2.66128	6.70612	1.46339	-5.71387	.39131	-1.819	20	.084
Pair 20	MnM - MnM1	.94348	3.12141	.68115	-.47736	2.36433	1.385	20	.181
Pair 21	DLF - DLF1	.48287	5.24030	1.14353	-1.90249	2.86822	.422	20	.677
Pair 22	JP - JP1	-1.03476	8.24997	1.80029	-4.79010	2.72058	-.575	20	.572
Pair 23	STER - STER1	-1.08378	4.49191	.98022	-3.12847	.96091	-1.106	20	.282
Pair 24	SunPharma - SunPharma1	.39313	3.66806	.80044	-1.27655	2.06281	.491	20	.629
Pair 25	HeroHonda - HeroHonda1	-.63259	3.30693	.72163	-2.13789	.87271	-.877	20	.391
Pair 26	CIP - CIP1	.25758	1.83224	.39983	-.57645	1.09161	.644	20	.527
Pair 27	JSW - JSW1	-1.03129	3.45882	.75478	-2.60572	.54315	-1.366	20	.187
Pair 28	Bajauto - Bajauto1	.70851	2.58453	.56399	-.46796	1.88497	1.256	20	.224
Pair 29	SuPharma - Supharma1	.12652	3.11268	.67924	-1.29035	1.54340	.186	20	.854
Pair 30	Gail - Gail1	-.22521	1.98206	.43252	-1.12743	.67702	-.521	20	.608
Pair 31	tatapow - tatapow1	-.21972	5.98314	1.30563	-2.94322	2.50377	-.168	20	.868
Pair 32	coal - coal1	.12652	3.11268	.67924	-1.29035	1.54340	.186	20	.854

- ✓ **Interpretation**- Above table shows the result of paired t test carried out on the sample to check the possibility of variation in returns due to the event happened. For analyzing the same, researcher have set the null hypothesis as, 'The returns of the companies before and after announcement of their inclusion in Sensex are equal', the result in the above table shows that, null hypothesis can be accepted. As all the significant values are more than 0.05, which indicates that null hypothesis for the impugned sample fall in the acceptance area (Level of significance= 5%) and hence we cannot reject null hypothesis.

- ✓ **Analysis**- If the acceptance of null hypothesis is analysed then it can be concluded that the event (announcement of inclusion of companies in Sensex) has not caused much effect on the returns of the companies, which shows investors were not able to make supernormal profit, and market is efficient in Semi- strong form.

Findings-

1. The test statistics used in the paper aided to find that announcement of the inclusion of the companies in the Index has not caused much impact on its returns.
2. The correlation table which was carried in due course to carry paired t test shows that the returns were significantly correlated.
3. The returns does not follow random path.
4. Sig. value (P-value) is more than 0.05 in case of every company included in sample. Hence null hypothesis can be accepted.

Conclusion-

This paper aimed to check the form of market efficiency in case of Indian stock market, based on 'Event analysis' methodology. The conclusion derived out of statistical test shows that, the event has not caused much impact on the returns of the company, which clearly reduced the possibility of earning supernormal profits by investors'. Further the correlation analysis which was a prior test to paired T test showed that the returns are significantly correlated and hence it can be said that they do not follow random walk, which discard the possibility of weak form efficiency of the market too. Hence it can be concluded that the information which comes to the market is interpreted by the investors and is reflected into the prices of the securities, and it defines the Semi-strong form of market efficiency.

Bibliography-

- www.bseindia.com
- http://www.bseindia.com/indices/IndicesWatch_Scrip.aspx?iname=BSE30&sensid=30&type=SENS&graphpath=/sensexview/charts/graf_appSENSEX.gif
- http://www.investopedia.com/search/default/?key=market%20efficiency
- http://www.bseindia.com/markets/equity/EQReports/StockPrcHistori.aspx?flag=0&expandable=7
- http://www.mckinsey.com/insights/corporate_finance/how_markets_view_m_and_a_a_mckinsey_interpretive_tool
- Gupta A (2008), "Market Response to Merger Announcements", *The IUP Journal of Applied Finance*, Vol. 14, No. 8, pp. 5-17
- Gujarati D N (2004), *Basic Econometrics*, 4th Edition, McGraw-Hill, New Delhi.

Author Details

Dr. Kiran Nerkar*
Associate Professor and Head of Department (Business Administration)
Women's College, Nandanvan, Nagpur
E-mail- kirannerkar@gmail.com

Mob- 9822561933

CASE STUDY

KAIZEN- CARBON FOOT PRINT CALCULATOR PROMOTION

Dr Sanjeevani Gogavale*
Prof Vijaya Hake**

Introduction :

The term "carbon footprint" refers to the amount of carbon (C02) we emit individually in any one-year period. C02 is produced from many sources and is the primary gas responsible for Global warming and the resulting alarming changes in our climate.

What is a carbon footprint?

The term carbon footprint is commonly used to describe the total amount of CO2 and other greenhouse gas emissions such as methane (CH4) for which an organization is responsible1. An organization's footprint includes both direct emissions sources (e.g. direct use of fuels) and indirect impacts (e.g. emissions from the extended supply chain). When calculating an organization's footprint it is important to include the full range of emissions sources so as to provide a comprehensive assessment of the organization's impact.

Why calculate a carbon footprint?

There are normally two reasons for an organization to calculate its carbon footprint:
To use as a management tool to reduce emissions over time
To report the footprint accurately to a third party.

Prime Minister Manmohan Singh has mentioned in his speech that climate change has become an urgent concern across the globe, ways and means should be developed to reduce India's carbon footprint as it would be among the nations to be "most seriously" impacted.

"We need to develop ways and means to reduce our carbon foot-print through technological innovation. In our country, more than 50 per cent of power comes from coal-based generation, which is a major emitter of greenhouse gases,".

Reckitt Benckiser has released its second annual sustainability report validated by PriceWaterHouseCoopers. A statement by Reckitt Benckiser said it has reduced per unit dose in the carbon impact across its products' lifecycles by 11%.

So it is very important aspect & It is a corporate social responsibility.

Organization : Aadishakti Foundation has initiated number of short term and long term improvement projects through QC, kaizen, QMS. EMS, Safety drives, & projects with the Vision of BEST – Behavioral effectiveness and systematic transformation. Every year we have received an excellent Award in the national Conventions since inception (year 2005). During NCQC 07 we have achieved par excellent award. In year 2010 in ICQC two technical papers were presented, & we have achieved Gold awards.

Project : Carbon Foot print calculator promotion: by Team Iccha - The Circle formed in April 12th 12, It is a Trio team, where in Aadishakti Mentors, Samuchit envirotech , VIM team have joined. Meetings are conducted on every Thursday; Participation 100%, Team leader is Avinash.

Explanation of the concept:

Theme finalization:

With the crises of global warming we wanted to promote the concept of protecting environment by reducing adverse impact. The awareness of the impact and the monitoring of the impact was possible through **Carbon Foot print calculator promotion.**

This was the new idea a small improvement for betterment of self and society the kaizen. **Kaizen is to introduce concept of Carbon Foot print calculator promotion using QCC and Kaizen.**

Identification of the problem:

- **Brainstorming –**

Team has brain stormed to identify the problems related for non effective control of impact on environment and also categorized into attribute as follows.

- **Individual**

1. Attitude
2. Status
3. Lack of awareness.
4. Not for me approach
5. Fear of being ridiculed
6. Why think of tomorrow
7. I'm not contributing
8. I'll start from tomorrow
9. My family does not expected
10. Lack of commitment
11. I forgot
12. Nobody told me
13. I can't do it because of health
14. My topic is important
15. It will not add value
16. Lack of discipline
17. Why do everyday

18. Plastic bags are ready to use
19. One bag won't matter
20. Lack of self control

- **Society:**

1. No fixed guideline.
2. Too many people to control.
3. No support on doing extra.
4. Everyone are busy with other task.
5. No adequate time.
6. Who will follow the norms ?
7. Why not let the government do it.
8. We do not have space to share such project.
9. No fixed budget.
10. No fix staff.
11. No co-ordination method.
12. No extra set-up.
13. No extra time,
14. No method to deploy it.
15. No resources,
16. No NGO

- **Government**

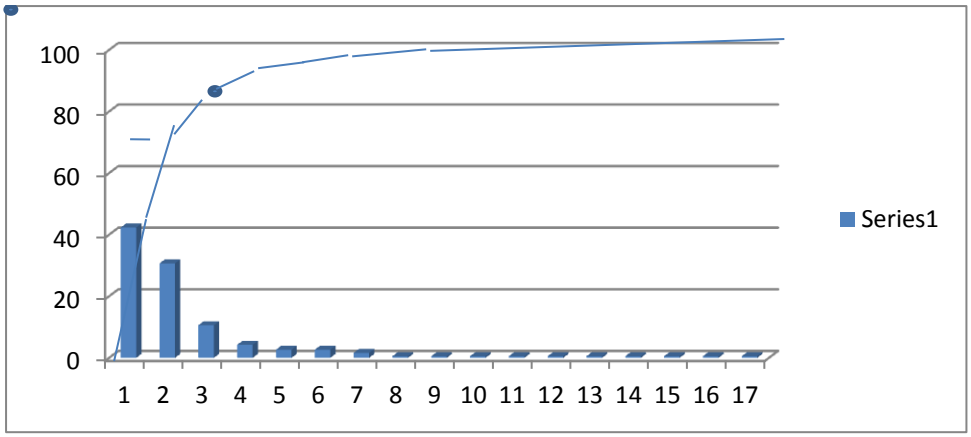
1. Lack of role model to emulating.
2. No platform to share.
3. Easy to manage
4. Bribing is easy than compiling
5. Not a priority
6. Lack of budget
7. No staff
8. No role model
9. No technology

- **Resources :**

1. Lack of deployment method.
2. Concept of sharing, caring, leading was missing.
3. Laws are not known
4. Alternate energy is costly
5. Product are not readily available
6. Repairing is a problem
7. Use is not easy
8. Waste disposal is a problem
9. Government give subsidy only for a short time
10. Lack of sustainable ideas

- **Selection of the project:**

Allocating and re arranging the by categorization further causes we could identify 17 major attributes for which data is collected and Pareto is drawn.



We did a Pareto analysis to identify the main most repeat concern as per the data collection based on survey given to all. The Pareto showed the main concern as lack of awareness and Focused Mentoring.

Definition of the problem:

Most of the drive on environment training and project in school were not effective. NGO like Samuchit envirotech and corporate like green build were too busy to promote this. We thought this project can be promoted as a social initiative. A pilot project was launched in VIM. The Kaizen here is to use MBA students to spread the concept of environment and convert them in protecting environment called earth guard here after.

Plan of action:

Table no-1- Activity and Targets

Activity	Target
Develop basic teams and start training	15th April 12
Brain storm and identify projects and depute earth guard and mentors	15 June 12
Actual monitory of the projects and impacts that of	June End 12
Share the problems/ achievements encountered with rest in the kaizen team	July 09-13
Validate it in different school	Whole academic year of -12
Follow up visit and feedbacks	14 July 12 onwards

Chart no-1- Activity flow chart

SR. NO.	ACTIVITIES	NO. OF WEEKS													
		4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th
1.	Definition of Problem														
2.	Analysis of problem														
3.	Identifying the causes														
4.	Root cause finding														
5.	Data analysis														
6.	Developing solutions														
7.	Foreseeing possible resistance														
8.	Trial implementation and check performance														
9.	Regular implementation														
10.	Follow- up/ Review														

Pre project Situation:

1. Environment is considered as filler, allocated the free time.
2. The visiting faculty was for leave management, as added resource.
3. Impact monitoring was subjecting and not linked to money saving
4. Simple changes creating future was demonstrated

Short term impact: -

Individuals were not aware of the impact cost by them. They were carried away with false ideas of presentations and not bother about tomorrow.

Long term impact:-

The lack of involvement, lack of mentoring, lack of understanding the concept may lead to a behavior that may create many problems and ill effect in self, families & society. Society may create problem of resource non availability.

Objective:

1. Identify different projects/methods to promote awareness of Carbon foot print calculator by June 12 end.

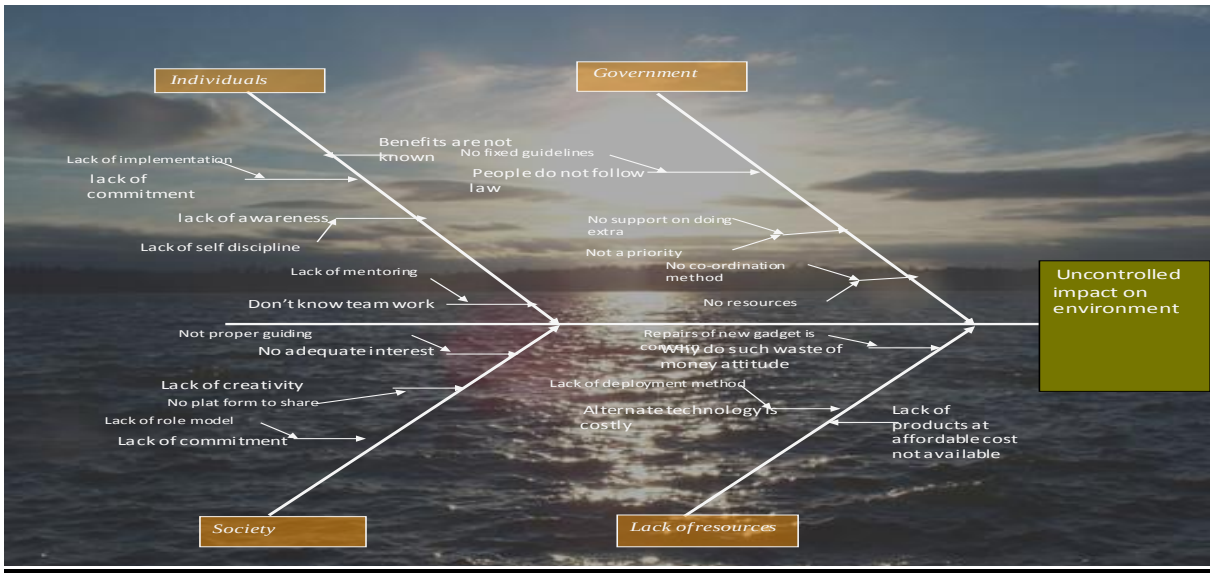
2. Identify the method to evaluate that students have learnt it, & minimized the impact by July 12 End.
3. Validate the same at list with one more team / school by mid August 12.

Target

1. Brain storm in developing concept with them so known to unknown journey is initiated.
2. Identify the change required in them in a open class, and allow them to use Kaizen methodology for the change management.
3. Help them in defining the check sheet for monitoring the change in a group.
4. Monitor and mentor where in the problems are encountered, & award for achievers.

Analysis of the problem: why -why analysis to get the root cause

1. Lack of concept of Carbon Foot print calculator promotion– Why
2. Children were not interested – why
3. No one developed/ provoked their interest – why
4. The idea of promotion not initiated by any one – why
5. This was never thought of before– Why
6. No adequate methodology for monitoring the performance mentoring, resources, and support from school / college/ society or any other way was available.



So we decided to mentor the students to drive this noble idea which will not only shape their life, develop a positive attitude, utilize their energy, to save the mother earth.

Table no-2- The analysis of the problem in 5 W 1 H as to develop Solution –

Activity	Cause of concern	Probable solution
Why previously such education not	The impact was not known	Importance of the conservation though known, the methods were not known, a

successful		possibility to use Kaizen methodology for the self change management could be used.
When this can be implemented.	The time allocated to us, as otherwise all are busy in their schedule.	In addition to children time slot the mentors slot Thursday in evening 7 to 8.30 is the meeting time so same can be used.
Where it needs to be implemented	In pilot batches to start with in VIM	A pilot project identification with commitment from College team.
Who will be involved	The teachers team Aadishakti mentors and coordinators from College	All the teachers coordinated by Avinash,Dr.Karve from Samuchit got involved.
How it will be monitored for its effectiveness	The involvement, reach, effectiveness & sustainability are the parameters to be monitored where in the method for monitoring and criteria were difficult to be defined.	Target was given: minimum 3 projects by July end & sustainability was to be monitored all throughout the years. Feedbacks to be maintained in writing, Students participation logs could be a tool to monitor their effective involvement.
What is the focus	Use of 3R and other identified project implementation, for gas, electricity, & Petrol reduction.	Selecting & mentoring a proper project and theme for learning and team work than just for submissions, reducing the impact & getting Children involved was focused.

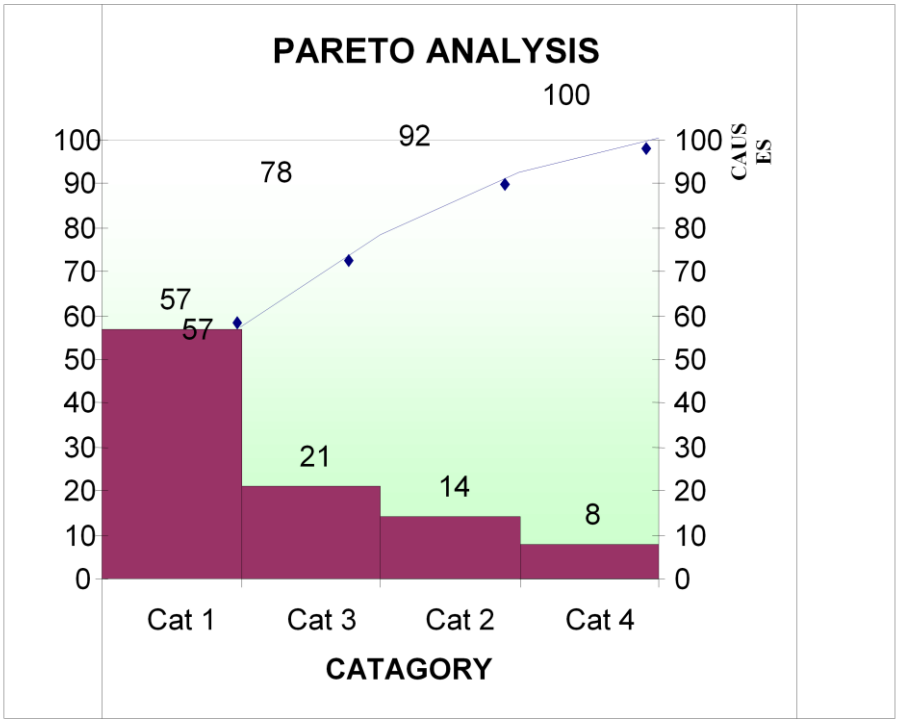
Table no-3- Attributes & Occurences

Redefined attribute	Occurrences
Mentoring effectiveness	18 –Cat 1
Mentors availability	39 - Cat 1
Mentors credibility	6 Cat 2
Mentors rapport with children	8 Cat 2
Children's creativity	7 Cat 2
No Goal Clarity	3 Cat 3
No Commitment	3 Cat 3
No Involvement	3 Cat 3
No Resources	3 Cat 3
Parents involvement	2 Cat 3
School's approvals	1 Cat 4
No understanding	1 Cat 4
Lack of effective method	1 Cat 4
No sharing	1 Cat 4
No concern	2 Cat 4

Other situations as defined	2 Cat 4

As there is no major attributor again with correlation of mentors influence new attributes were defined & data was collected to draw a Pareto analysis

Chart no-2- Pareto analysis



From the Pareto it was evident that mentoring was the main contributor

1. a) Development of Solutions :

We decided to use the mentoring by Aadishakti to overcome the concern. As every Thursday we were meeting we took this as an opportunity to develop & mentor their kaizen team for promotion of environment friendliness .

Brainstormed for methods and check sheet for monitoring & self control for various themes related to self control in minimizing impact on our actions on environment was identified. Alternate project to minimize the same were identified.

b) The focus was:

Resource conservation Control of electricity bill using meter readings by use of alternate products like LED and CFC in place tube lights.

2. Change of life style: Not to use iron cloths unless essential, not to use cars unless essential. Pool cars etc

3. Impact Society by training and promotion of Green products

Table no-5-Plan of Actions

Activity	Target
Develop basic training of impacts and projects to minimize the impacts on and identify teams	15th April 12
start monitoring the impact by Carbon footprint calculator	15 June 12
Plan competitions for reduced impacts	June End 12
Develop & monitor the check & self declaration sheets	July 12-13
Award the changes and help the defaulters	Whole academic year of -12
Follow up visit, and feedbacks to other classes	14 August 12 onwards

Probable problems anticipated:

The students may not respond favorably as this may affect their regular study.

Budget for promotion may be a problem.

The parents may not like the idea of focusing on such extracurricular activities.

Mentors may not be available

Students may give up as this will involve lot of self control

The permission for promotion may be concern

However during execution, as this was carefully mentored activity students started enjoying it. Even parents liked this idea & all support was extended for promotion.

Trial run & performance monitoring

VIM all MBA students, teachers & staff got involved, in training and implementation . Dr. Karve demonstrated the use of calculator and Green build promoted and sponsored the projects.

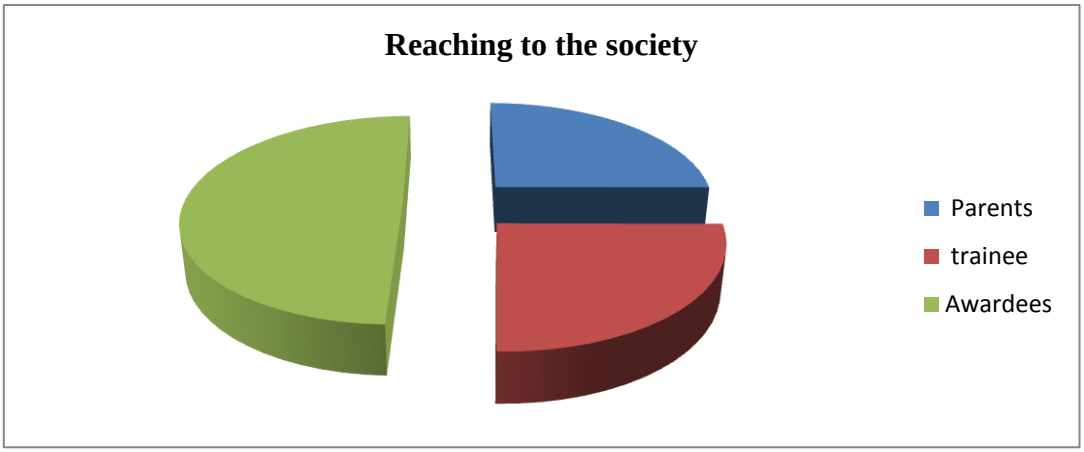
Data classification for the teams we could reach:

Number of individuals involved - 410

Number of students participated in competitions= 180

Number of Parents/ teachers involved = 405

Graph no-1- Categories of reaching towards society



Checking & Concerns : Although the reach can be still increased, a pilot drive is initiated and all teachers , students and parents are happy, if for some reason we could not go, there are enquires , why we have not gone..

Table no-6- Comparison before and after:

Children were not aware of the power of small changes and the impacts that of on environment	Now they think twice before printing
Were creating negative impact	Now are positive impact contributors
Students never listen to elders and follow instruction and cost control was parents' complaint	Parents are happy as students are more self controlled and follow instruction and not only control cost are now guarding Earth ..

Act & Regular implementation:

Training and copy of Carbon footprint calculator was given to all & the monitoring of impact was done by all, under mentoring of Aadishakti.

Table no-7-Data analysis of the feedbacks from the children

Number of projects initiated by the students	379
Projects on petrol saving	100
Projects on electricity saving	95
Project for Cooking gas saving	100
Project on concept promotion	84

All agreed that their goal in life and to use the values learnt.

Graph no-2 Data post implementation

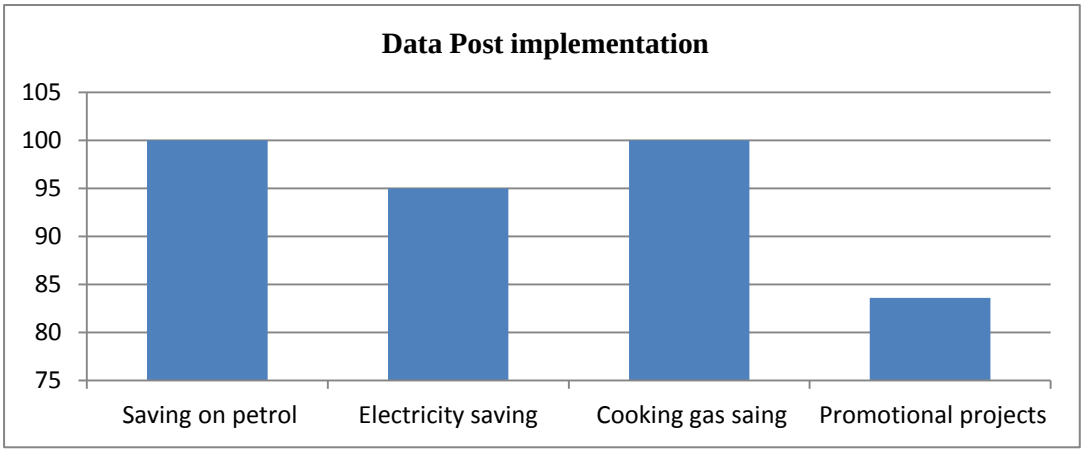


Chart no-3- Activities flow chart

Sr. no.	Activities	No. of weeks													
		4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th
1.	Definition of Problem														
2.	Analysis of problem														
3.	Identifying the causes														
4.	Root cause finding														
5.	Data analysis														
6.	Developing solutions														
7.	Foreseeing possible resistance														
8.	Trial implementation and check performance														
9.	Regular implementation														
10.	Follow- up/ Review														

- **Benefits**

Tangible benefits :
Could reach to 410 students by direct training
Could reach to 405 parents by associated / secondary training
Could complete the 379 projects
Non tangible benefits :
Developed earth guards
Introduce to green concept
Stage confidence and team work in children increased.
Could get students involved in saving mother earth
Re occurrence prevention:
The Thursday meeting will include the school & related reviews also.
Mentoring for the other values related problem will be the agenda.
A speak up concept and revised check list for the students started.
Fool proofing:
Mentors will continue being available every Thursday for review.
The remarkable projects will be promoted on web sites.
Follow up:
Promote the similar concept in other schools./ Collages * corporate. Mr. Shitole from BIL tech building element has agreed to sponsor promotion of such projects. Mr. Avinash has joined for some eco friend Cooking material and building material drives.
Feedback abstract:
Few selected reactions from the students -
We know we can do it.
We will be positive in every aspect.
We will like to save earth
You have shaped our future.

References:

- www.carbondecision.ie
- Manmohan Singh, (2013), Need to develop ways to reduce Carban Foot Print, The Economic Times.
- Reckit Benckiser,(2011), Reckit Benckiser:Has reduced 11% carbon footprint, The Economic Times.

Authors Details-

Dr. Sanjeevani Gogavale*
Dean- Hiraben Nanavati Institute of Management Research Pune
E-mail- sanjeevanigogawale@gmail.com
Mob- 9422522322
Prof Vijaya Hake**
Asst.Professor

Vishwakarma Institute of Management.Pune
E-mail- vijayahake@vim.ac.in
Mob- 8975964212.