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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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A STUDY OF VILLAGE CONSUMERS' BEHAVIOUR TOWARDS PERISHABLE GOODS OF AURANGABAD DISTRICT IN MARATHWADA REGION

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ABSTRACT

Marketing plays a pivotal role in the growth and development of a country irrespective of size, population and the concepts are so interlinked that, in the absence of one, another virtually cannot survive. It is historical fact that the development of marketing has always kept pace with Economic growth of the country. Both have experienced evolutionary rather than revolutionary change. The objective of modern marketing is to make profits through satisfying consumer's needs and wants. Hence, the marketers have to understand the real needs, wants, beliefs and attitudes of the consumers towards their products and services. Today, network marketing is a multi-billion dollar business. A number of companies have adopted this business model. It has grown into one of the driving forces of the 21st century economy. Network marketing is now regarded by many business leaders as the business for future. But this marketing method was misunderstood as a get rich-quick scheme. It is also too common for network marketer's worldwide to answer the legality and soundness of their business.

KEYWORDS

Aurangabad, village consumer behaviour, perishable goods.

INTRODUCTION

The village sector, which encompasses about 70% of the total population, has an important role to play in the overall development of the country. Village India is now undergoing a sea change resulting from the multi-pronged activities undertaken for overall development of village. There is an indication of increasing prosperity in village India. Prosperity in the rural areas has opened up new opportunities. It leads to certain definite increase in the demand for durable and Perishable goods. Also significant changes have been noticed in the buying and consumption pattern of the village consumers, imbibing new ideas, attitude and way of life. As a result of the "Green Revolution", there is a socio-economic revolution takes place in the Indian villages since last three decades. Increasing knowledge of fertilizers, water resources, pesticides, better quality seeds, modern farm equipments and methods of farming have changed the villages far better. The per capita income of the farmers is on the increase and the manner in which they spend their disposable income has also changed. The rural market is not passive. It is vibrant and growing at a faster pace. It will soon outstrip the urban market if this pace of development continues.

The villages have accepted the modern way of agriculture as a business but have also accepted modern living. Farmer is choosy in his buying. Apart from food and consumable items, he is interested in buying small radios, televisions, two wheelers, mostly bicycles and motorcycles, wrist watches, cooking gas and furniture. Socio-economic changes in villages have led villagers to think of material well being. This change in the attitude of the Indian farmer is sweeping across the countrywide. The expanding village market is important to the growth of economic development of India. With the change in scenario, the marketing focus is also changing towards villages: "Go Rural" is the slogan of marketing gurus.

Prosperity in village areas is very much reflected in the buying and consumption habits of village folks. Their inclination to spend on the modern gadgets has increased as a result of their increase in purchasing power. This necessitates an appraisal of the village marketing environment which is an outgrowth of various socio-economic and cultural forces. For evolving an appropriate marketing strategy, understanding the rural environment is quite essential. Recently attempts were made to define the distinct differences between the urban and village markets on the basis of the various socio-economic factors.

CONSUMER BEHAVIOR

Many of the scholars in marketing have tried to define the consumer and consumer behavior. Adam Smith stated that consumption is the sole end purpose of all production. Consumer behavior may be defined as behavior exhibited by people in planning, purchasing and using economic goods and services. Consumer behavior is an integral part of human behavior and cannot be separated from it. The term "Consumer Behavior" is defined by Leon G. Schieffman and Leslie LzareKanuk as the behavior that consumers display in searching for purchasing, using, evaluating and disposing of product and services that they expect will satisfy their needs. The study of consumer behavior is the study of how individuals make decisions to spend their available resources (money, time, effort) on consumption of related items. It includes the study of what, why, how, when, where they buy and how often they buy any particular product or service. Consumer behavior is the act of individuals in obtaining and using goods and services, which is exhibited through their decision process. Consumer purchases are likely to be influenced by physiological and sociological factors.

VILLAGE CONSUMERS IN INDIA

Village consumers are fundamentally different from their urban counterparts socially, psychologically, physiologically and literally. Village consumers buy only inexpensive products. There is mass consumption among them regarding a particular product or brand since they are homogeneous of village or regional level. In village market, since the women have very little contact with the market, the male makes to purchase decision. The community decision making is quite common in a village market because of strong caste and social structures and low literacy levels. Village consumers generally feel inhibited and ill-equipped to buy confidently since they have only lesser exposure to the product quality, service support and company credentials. A village consumer may be illiterate as per the census definition, but he is not unintelligent. The brand awareness, preference and loyalty among the rural consumers are comparatively less than their urban counterparts. The degree of brand loyalty varies among the village consumer according to the nature of products. It the village consumers are loyal to one brand, it is very difficult to change.

The rural consumer behavior is influenced by several aspects namely socio-economic, cultural, psychological and physiological environment. Various aspects are decided by the level of education of consumers. Apart from these, the rural consumer behavior is molded by the external environment namely opinion leaders, friends and relatives, resource persons, retailers, reach of media, caste and religion etc. The behavior of the rural consumer depends upon the product he wants to purchase. The behavior is highly dynamic even in the consumption of one single product.

STATEMENT OF THE PROBLEM

In the competitive world, there are many problems in marketing of goods. Some problems can be solved, but so many problems may not be solved. India is a developing country. So, most of the people are living in village areas. Village marketing is an important one to develop a country economy. Manufacturers face many problems to market their product in village areas because most of the village consumers earn low income, have low level literacy, low level of brand awareness, communication and transportation facilities in rural areas.

In the recent past, village India has been witnessing a sea change, particularly in the standard of living and life styles. At present the consumers are more dynamic. Their taste, needs and preferences are changing as per the current scenario. The consumer now looks for product differentiation and the convenience offered. The consumer has certain expectation from branded items in terms of quality, price and packaging. The increasing money spent on advertisement makes the consumer aware of the latest brand in the market. Conditions in village markets do not assume an organized functioning pattern. The status of village marketing needs to be understood in view of social dynamics and various economic and operational gap theories. Thus, appropriate planning for rural market in terms of trade for channel infrastructure, technology and behavioral dimensions needs greater emphasis for achieving better economic efficiency.

The consumers are finding various problems to select their non-durable goods. It is identified that there is a need for research work in the field of consumer behavior of Perishable goods in the village areas of Marathwada region particularly Aurangabad District. The research deals with questions like.

1. What are the factors that influence the village consumers in the purchase of Perishable goods?
2. What is the level of awareness of village consumer regarding Perishable goods?
3. What is the level of satisfaction and problems faced by the village consumers?

OBJECTIVES OF STUDY

1. To measure the factors that influences the rural consumers in the purchase of Perishable goods.
2. To analyze the awareness of the village consumer regarding Perishable goods.
3. To examine the satisfactory level and problems of village consumers.

On the basis of knowledge gained during the pilot study and review of the various relevant studies, the present study aims to test the null hypotheses, i.e. There is no significant association between socio-economic characteristics of the sample respondents (age, educational qualification, marital status, nature of family, occupation, size of the family, number of earning members, annual income and annual expenditure) and awareness and satisfaction level of the village consumers. The statistical significance of these hypotheses has been tested with the help of Chi-square test 5% level of significance and co-efficient of contingency.

RESEARCH METHODOLOGY

Universe of the present study is infinite. Hence, it is decided to use convenient sampling method. Originally, it was planned and the data was collected from 200 sample respondents (50 from each selected taluk). Due to irrelevant and contradictory information, it was possible to have only 120 sample respondents as final sample size. The sample chosen consisted of 120 respondents representing different statuses viz. agriculture, business, employee and professional. This study is an empirical research based on the survey method. In Aurangabad District there are eight talukas, out of them four talukas i.e. Kanned, Gangapur, khultabad& vajapur talukas have been purposively selected.

The data collected from primary sources were analyzed with the help of various statistical measures such as percentage; Garrett’s ranking techniques and Chi-square test and Co-efficient of Contingency are used.

FACTORS INFLUENCING THE VILLAGE CONSUMERS IN PURCHASE OF PERISHABLE GOODS

Every consumer is purchasing a particular product due to influence of many factors. The influencing factor may differ from one consumer to another and from product to product also. The present study is an attempt to find the various factors that influence the purchase of Perishable goods and which is one is the most influencing factor. The importance given to a factor by a person may not be same as in the case of another. Some of them are satisfied with one aspect but dissatisfied with another aspect of the Perishable goods.

TABLE 1: FACTORS INFLUENCING THE VILLAGE CONSUMERS GARRETT RANKING TECHNIQUE

| Ranks | Scale Value (x) | Scale and Score Values of Ranks | | | | | | | | | | | | | Total Score | Mean Score |
|-----------------------|-----------------|---------------------------------|----------|-----------|----------|---------|----------|-----------|------------|----------|---------|----------|-----------|------------|-------------|------------|
| | | I 84 | II 73 | III 67 | IV 62 | V 58 | VI 53 | VII 50 | VIII 46 | IX 42 | X 37 | XI 32 | XII 26 | XIII 15 | | |
| Brand Name | f | 5 | 5 | 2 | 9 | 3 | 4 | 5 | 15 | 12 | 14 | 12 | 15 | 19 | 120 | 40.70 |
| | fx | 420 | 365 | 134 | 558 | 174 | 212 | 250 | 690 | 504 | 518 | 384 | 390 | 285 | 4884 | |
| Price | F | 18 | 20 | 21 | 14 | 13 | 10 | 2 | 4 | 5 | 4 | 2 | 6 | 1 | 120 | 61.73 |
| | Fx | 1512 | 1460 | 1407 | 868 | 754 | 530 | 100 | 184 | 210 | 148 | 64 | 156 | 15 | 7408 | |
| Quality | F | 2 | 11 | 7 | 2 | 5 | 5 | 9 | 8 | 10 | 10 | 17 | 24 | 10 | 120 | 42.04 |
| | Fx | 168 | 803 | 469 | 124 | 290 | 265 | 450 | 368 | 420 | 370 | 544 | 624 | 150 | 5045 | |
| Quantity | F | 8 | 8 | 13 | 17 | 15 | 8 | 16 | 7 | 8 | 5 | 7 | 3 | 5 | 120 | 54.12 |
| | Fx | 672 | 584 | 871 | 1054 | 870 | 424 | 800 | 322 | 336 | 184 | 224 | 78 | 75 | 6494 | |
| Package | F | 1 | 2 | 5 | 3 | 7 | 6 | 9 | 6 | 10 | 11 | 13 | 20 | 27 | 120 | 36.43 |
| | Fx | 84 | 146 | 335 | 186 | 406 | 318 | 450 | 276 | 420 | 407 | 416 | 520 | 408 | 4372 | |
| Healthcare | F | 16 | 8 | 13 | 7 | 8 | 16 | 13 | 11 | 7 | 11 | 4 | 2 | 4 | 120 | 55.12 |
| | Fx | 1344 | 584 | 871 | 434 | 436 | 848 | 650 | 506 | 294 | 407 | 128 | 52 | 60 | 6614 | |
| Used by Neighbours | F | 2 | 0 | 4 | 2 | 2 | 6 | 5 | 7 | 6 | 17 | 20 | 22 | 27 | 120 | 33.87 |
| | Fx | 168 | 0 | 268 | 124 | 116 | 318 | 250 | 322 | 252 | 629 | 640 | 572 | 405 | 4064 | |
| Availability | F | 11 | 18 | 9 | 17 | 9 | 9 | 15 | 7 | 9 | 7 | 7 | 2 | 0 | 120 | 57.33 |
| | Fx | 924 | 1314 | 603 | 1054 | 522 | 477 | 750 | 322 | 378 | 259 | 224 | 52 | 0 | 6879 | |
| Nearness | F | 45 | 14 | 13 | 4 | 6 | 6 | 9 | 8 | 6 | 6 | 1 | 1 | 1 | 120 | 66.27 |
| | Fx | 3780 | 1022 | 871 | 248 | 348 | 318 | 450 | 368 | 252 | 222 | 32 | 26 | 15 | 7952 | |
| Gift Offer & Discount | F | 3 | 8 | 9 | 8 | 13 | 8 | 7 | 16 | 13 | 8 | 11 | 9 | 7 | 120 | 47.77 |
| | Fx | 252 | 584 | 603 | 496 | 754 | 424 | 350 | 736 | 546 | 296 | 352 | 234 | 105 | 5732 | |
| Personal Liking | F | 4 | 15 | 16 | 12 | 11 | 4 | 8 | 14 | 13 | 13 | 3 | 5 | 2 | 120 | 51.28 |
| | Fx | 336 | 1095 | 1072 | 744 | 368 | 212 | 400 | 644 | 546 | 481 | 96 | 130 | 30 | 6154 | |
| Smell | F | 2 | 6 | 4 | 15 | 8 | 14 | 16 | 10 | 10 | 11 | 13 | 7 | 4 | 120 | 47.96 |
| | Fx | 168 | 438 | 268 | 930 | 464 | 742 | 800 | 460 | 420 | 407 | 416 | 182 | 60 | 5755 | |
| Habitual | F | 3 | 5 | 4 | 10 | 20 | 24 | 6 | 7 | 11 | 3 | 10 | 4 | 13 | 120 | 47.93 |
| | Fx | 252 | 365 | 268 | 620 | 1160 | 1272 | 300 | 322 | 462 | 111 | 320 | 104 | 195 | 5751 | |
| | Σf | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | | |
| | Total | | | | | | | | | | | | | | | |

Note : x- Scale Value, f- No. of Consumers / No. of Respondents, fx- Score Value

Thus it is difficult task to identify a single factor, which influences the preferences of the consumers. It is found that the factors like Brand name, Price, Quality, Package, Health Care, Used by Neighbors, Availability, Nearness, Gift Offer & Discount, Personal Liking, Smell and Habitual are influencing factors in purchase of Perishable goods. To find out the most significance factors which influence the purchase in Perishable goods consumers, Garrett’s ranking technique was used. As per this method, respondents have been asked to assign the rank for all factors and outcome of such ranking have been converted into score value with the help of following Formula and with the help of Garrett’s table. Findings are shown in Table 1.

Garrett’s Formula

| | | |
|------------------|---|----------------------------------|
| Percent Position | = | $\frac{100 (R_{ij} - 0.5)}{N_j}$ |
|------------------|---|----------------------------------|

Where

R_{ij} = Rank given for the i^{th} factor by the j^{th} respondents.

N_j = Number of factors ranked by the j^{th} respondents.

By referring the Garrett’s Table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and mean value is calculated. The factors having highest mean value is considered to be the most important. Table 1 shows the ranking analysis factors influencing the village consumer in purchase of Perishable goods. The respondents are ranked I to XIII according to their personal view. From the Table 1, nearest location of market factor has highest mean score of 66.26. It is proved to be the most important factor considered by respondents to purchase the Perishable goods. Second price factor with mean score of 61.73 is ranked as second, availability factor with mean score of 57.32 is ranked as third, other factors are followed by health care, quantity, personal liking, smell, habitual, gift offers and discount, quality, brand name, packaged, used by neighbours.

AWARENESS LEVEL OF VILLAGE CONSUMERS REGARDING PERISHABLE GOODS

Consumer awareness is that type of social component, which increases the collective consciousness among the people and generates confidence in the individual to face the problem. Generation of awareness develops conscious attitude in the consumer.

A comprehensive interview schedule is designed to collect the data from the sample respondents. Likert’s type 5 point rating scale is applied. To measure the awareness level of rural consumer regarding Perishable goods, a list of 11 statements like availability of brands, availability of colours, availability of new brand, manufacturers of the brand, price of all product, advertisement of products, quality of products, availability of information about Perishable goods, durability of products, popular brand in market and habit of verifying the expiry dates are prepared. As per Likert’s type 5 point rating scale ranges from 5, 4, 3, 2 and 1 used. The maximum score of respondent would be 55 from all the 11 statements and lowest would be 11. The respondents are grouped on the basis of score into three viz. Less, Moderate and More. Those who have scored between 11 to 26 are classified as less and their opinion about Perishable goods level is less. Those who have scored between 27 to 40 are classified as moderate i.e. their opinion about Perishable goods level is moderate. Those who have scored above 41, the respondents are classified as more aware about non-durable goods. (Lowest score 11, difference between 11 and 55 is 44 and 55 is 44 and $44/3 = 14.67$ i.e.15. This 15 has been adjusted with all levels.

TABLE 2: DISTRIBUTION OF SAMPLE RESPONDENTS ACCORDING TO THEIR AWARENESS LEVEL

| Awareness Level | No. of Respondents | Percentage |
|-----------------|--------------------|------------|
| More | 37 | 31 |
| Moderate | 57 | 47 |
| Low | 26 | 22 |
| Total | 120 | 100 |

In the marketing, of course, the measurement of brand awareness is tedious one and it depends mainly upon communication strategy adopted by the marketers. In the practical field, awareness of consumers is identified by various means such as research, field survey of agency etc. In the present study, awareness level of village consumers regarding Perishable goods has been analyzed by giving 11 statements. Findings relating to awareness level of rural consumers regarding Perishable goods are shown in Table 2.

The Table 2 reveals that high percentages (47%) of sample respondents are having moderate awareness about Perishable goods.

ASSOCIATION BETWEEN SOCIO-ECONOMIC CHARACTERISTICS AND AWARENESS LEVEL

It is expected that socio-economic characteristics of the sample respondents (age, educational qualification, marital status, nature of family, occupation and size of the family, number of earning members, annual income and annual expenditure) would influence the awareness level of village consumers regarding non-durable goods. In this regard a hypothesis has been formed and the same has been statistically tested with the Chi-square test (χ^2) and Co-efficient of Contingency is computed with the following formula.

| | | |
|-----|--|-----------------|
| C = | | χ^2 |
| | | $\chi^2 + \eta$ |

When the value of ‘C’ is equal to or nearest one, it means there is high degree of association between two attributes. Findings are shown in Table 3.

TABLE 3: SOCIO-ECONOMIC CHARACTERISTICS AND LEVEL OF SATISFACTION: CHI-SQUARE & CO-EFFICIENT OF CONTINGENCY

| S. No. | Characteristics | χ^2 | TV @ 0.05 | Df | Result of χ^2 | “C” | Result of “C” |
|--------|---------------------------|----------|-----------|----|--------------------|-------|---------------|
| 1. | Age | 11.19 | 5.99 | 2 | Significant | 0.292 | Low Degree |
| 2. | Educational Level | 9.90 | 5.99 | 2 | Significant | 0.276 | Low Degree |
| 3. | Marital Status | 9.64 | 3.84 | 1 | Significant | 0.273 | Low Degree |
| 4. | Nature of Family | 1.157 | 3.84 | 1 | Insignificant | 0.098 | No |
| 5. | Occupation | 3.64 | 7.81 | 3 | Insignificant | 0.172 | Low Degree |
| 6. | Size of the Family | 0.080 | 3.84 | 1 | Insignificant | 0.026 | No |
| 7. | Number of Earning Members | 7.92 | 3.84 | 1 | Significant | 0.249 | Low Degree |
| 8. | Annual Income | 1.249 | 5.99 | 2 | Insignificant | 0.102 | :Low Degree |
| 9. | Annual Expenditure | 1.34 | 5.99 | 2 | Insignificant | 0.105 | :Low Degree |

On the basis of Table 3, it can be easily inferred that there is an association between awareness level and education, marital status, occupation, size of the family and number of earning members in the family.

SATISFACTORY LEVEL AND PROBLEMS OF VILLAGE CONSUMERS

Satisfaction is the effect of the consumption of the goods and services. However, the human satisfaction cannot be looked upon as a terminal issue, but it must be placed on a continuum, due to the psychological implications. The satisfaction is a psychological factor and it is difficult to measure because it is entirely based on the consumers’ needs and wants, so the manufacturer takes into account many factors like consumer’s needs, desire, income, education, etc. to make the product attractive and acceptable to its consumers. In other words, every individual at every moment of time is dissatisfied to some degree or other. In the present age of liberalization and market economy, the management process needs more apt and appropriate market information to spear head the marketing operations

such as introduction of new products and penetration of new markets and also to retain the customer base. For customer centered companies, customer satisfaction is both a goal and marketing tool. It is not only a decisive component in framing the marketing strategy, but also an inseparable part of the industry as far as its existence is concerned.

A comprehensive interview schedule is designed to collect the data from the sample respondents. Likert's type 5 point rating scale is applied. To measure the satisfaction level about the Perishable goods the sample respondents were asked to indicate 5 point rating scale, the degree of importance would attached to each item as given in interview schedule. A list of 15 statements was prepared on the basis of pilot study and consultation with experts to measure the level of satisfaction. Likert's type 5 point rating scale ranges from 5, 4, 3, 2 and 1 are used. The respondents are grouped on the basis of score into two viz. satisfied and dissatisfied. Those who score above 45 are classified as satisfied and those who scored upto 45 are classified as dissatisfied. (Divided on the basis of undecided score i.e. (15x3 = 45)

Findings relating to satisfaction of non-durable goods are shown in Table 4.

TABLE 4: DISTRIBUTION OF SAMPLES RESPONDENTS ACCORDING TO THEIR SATISFACTION LEVEL

| Satisfaction Level | No. of Respondents | Percentage |
|------------------------------|--------------------|------------|
| Satisfied (Score above 45) | 36 | 30 |
| Dissatisfied (Score upto 45) | 84 | 70 |
| Total | 120 | 100 |

The Table 4 reveals that a high percentage (70%) of the sample respondents is not satisfied with the Perishable goods.

ASSOCIATION BETWEEN SOCIO-ECONOMIC CHARACTERISTICS AND LEVEL OF SATISFACTION

It is expected that the socio-economic characteristics of the sample respondents would influence the level of satisfactory of Perishable goods. To examine the association between satisfaction level socio-economic characteristics a null hypothesis has been framed and the same has been tested with the help of Chi-square test) χ^2 and Co-efficient of Contingency.

TABLE 5: SOCIO-ECONOMIC CHARACTERISTICS AND LEVEL OF SATISFACTION: CHI-SQUARE & CO-EFFICIENT OF CONTINGENCY

| S. No. | Characteristics | χ^2 | TV @ 0.05 | Df | Result of χ^2 | "C" | Result of "C" |
|--------|---------------------------|----------|-----------|----|--------------------|-------|---------------|
| 1. | Age | 11.19 | 5.99 | 2 | Significant | 0.292 | Low Degree |
| 2. | Educational Level | 9.90 | 5.99 | 2 | Significant | 0.276 | Low Degree |
| 3. | Marital Status | 9.64 | 3.84 | 1 | Significant | 0.273 | Low Degree |
| 4. | Nature of Family | 1.157 | 3.84 | 1 | Insignificant | 0.098 | No |
| 5. | Occupation | 3.64 | 7.81 | 3 | Insignificant | 0.172 | Low Degree |
| 6. | Size of the Family | 0.080 | 3.84 | 1 | Insignificant | 0.026 | No |
| 7. | Number of Earning Members | 7.92 | 3.84 | 1 | Significant | 0.249 | Low Degree |
| 8. | Annual Income | 1.249 | 5.99 | 2 | Insignificant | 0.102 | :Low Degree |
| 9. | Annual Expenditure | 1.34 | 5.99 | 2 | Insignificant | 0.105 | :Low Degree |

On the basis of Table 5, it can be easily inferred that there is an association between satisfactory level of the sample respondents and age, education, marital status and number of earning members in the family.

PROBLEMS FACED BY VILLAGE CONSUMERS

In the competitive world, everything is complicated; particularly choosing a brand in a wide scattered market by consumers is still complicated. Of course, no problem come towards consumer by itself but it is created by consumer, that too, depending on various factors like income, age, sex, awareness, experience and social status etc. In the marketing field, problems faced by consumers are numerous, particularly in Perishable goods, consumers face many problems. The present study aims to find out problems faced by consumers of Perishable goods in the study area.

Against this background, it is an attempt to identify the problems faced by sample respondents. On the basis of information collected from respondents through pilot study and consultation with experts, it is found that Perishable goods users are facing following problems like high price, non-availability, lesser quality, color, poor packaging, irregular supply, expected quantity, health problem, transportation problems and adulteration.

It is observed from Table 6 that the major problem felt by the sample respondents is high price as indicated by its highest mean score value of 61.01, this is followed by Health Problem, Transportation Problem, Expected Quantity, Poor Packaging, Lesser Quality, Non-availability, Irregular Supply, Color and Adulteration.

TABLE 6: PROBLEMS- GARRETT RANKING TECHNIQUE

| Ranks | Scale Value (x) | Scale and Score Value of Ranks | | | | | | | | | | Total Score | Mean Score | Rank |
|------------------------|-----------------|--------------------------------|------|------|------|-----|-----|------|------|------|------|-------------|------------|------|
| | | I | II | III | IV | V | VI | VII | VIII | IX | X | | | |
| High Price | f | 14 | 33 | 24 | 18 | 12 | 7 | 5 | 1 | 3 | 3 | 120 | 61.02 | I |
| | fx | 1134 | 2310 | 1512 | 1026 | 624 | 329 | 210 | 36 | 87 | 54 | 7322 | | |
| Non- Availability | F | 11 | 8 | 12 | 11 | 16 | 11 | 26 | 11 | 7 | 7 | 120 | 50.00 | VII |
| | Fx | 891 | 560 | 756 | 627 | 832 | 517 | 1092 | 396 | 203 | 126 | 6000 | | |
| Lesser Quality | F | 8 | 7 | 11 | 19 | 15 | 20 | 16 | 10 | 8 | 6 | 120 | 50.05 | VI |
| | Fx | 648 | 490 | 693 | 1083 | 780 | 940 | 672 | 360 | 232 | 108 | 6006 | | |
| Colour | F | 5 | 2 | 2 | 12 | 9 | 13 | 5 | 13 | 36 | 23 | 120 | 38.08 | IX |
| | Fx | 405 | 140 | 126 | 684 | 468 | 611 | 210 | 468 | 1044 | 414 | 4570 | | |
| Poor Packaging | F | 7 | 8 | 19 | 10 | 16 | 17 | 14 | 17 | 6 | 6 | 120 | 50.06 | V |
| | Fx | 567 | 560 | 1197 | 570 | 832 | 799 | 588 | 612 | 174 | 108 | 6007 | | |
| Irregular Supply | F | 5 | 9 | 8 | 13 | 18 | 14 | 19 | 21 | 10 | 3 | 120 | 48.10 | VIII |
| | Fx | 405 | 630 | 504 | 741 | 936 | 658 | 798 | 756 | 290 | 54 | 5772 | | |
| Expected Quantity | F | 16 | 12 | 17 | 14 | 6 | 9 | 13 | 24 | 8 | 1 | 120 | 53.33 | IV |
| | Fx | 1296 | 840 | 1071 | 798 | 312 | 423 | 546 | 864 | 232 | 18 | 6400 | | |
| Health Problem | F | 34 | 25 | 9 | 7 | 8 | 10 | 11 | 9 | 4 | 3 | 120 | 60.93 | II |
| | Fx | 2754 | 1750 | 567 | 399 | 416 | 470 | 462 | 324 | 116 | 54 | 7312 | | |
| Transportation Problem | F | 18 | 14 | 17 | 14 | 16 | 15 | 5 | 6 | 10 | 5 | 120 | 56.32 | III |
| | Fx | 1458 | 980 | 1071 | 798 | 832 | 705 | 210 | 324 | 290 | 90 | 6758 | | |
| Adulteration | F | 2 | 2 | 1 | 2 | 4 | 4 | 6 | 8 | 28 | 63 | 120 | 28.01 | X |
| | Fx | 162 | 140 | 63 | 114 | 208 | 188 | 252 | 288 | 812 | 1134 | 3361 | | |
| | Σf | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | | | |
| | Total | | | | | | | | | | | | | |

Note : x- Scale Value, f- No. of Consumers / No. of Respondents, fx- Score Value

CONCLUSION AND SUGGESTIONS

Today, the village market is blooming, with increase in the disposable incomes of the households. By nature village marketing is complex oriented and study of perception of village consumers is always a difficult task unlike urban consumers. Village consumers vary not only in their behavior, practices but also in conviction and belief, yet, the general tendency has not changed widely between village and urban consumers as regards to aiming on superior quality of products, branded products etc. It is essential that an effective communication is information about products but also educating them regarding the use of products. Though, village consumers behavior remains constant at least for a particular period, it cannot be taken for granted that they will not change when better opportunities are given to them, thus, village consumers may resort to change and hence their behavior will not remain inactive in the changing market environment. Therefore it is necessary, that village consumers have to be thoroughly studied so as to have better knowledge on village marketing and work out appropriate marketing strategies for the success not only in the short run but also in the long run. On the basis of findings of the present study, the following suggestions are made.

In the present study, it is found that the factor nearness (proximity) has been ranked by all the sample respondents as first and most significant factor to purchase the Perishable goods. Hence, it is suggested that Government has to take all possible steps to make all Perishable goods available in the nearness place of consumers.

It is found that only 31% of the sample respondents are having more level of awareness regarding Perishable goods. Hence, it is suggested that proper steps should be taken by Perishable goods manufacturers and even by dealers to disseminate the facts about Perishable goods to all consumers through all possible Medias.

It is found that 70% of the sample respondents are not satisfied with Perishable goods. Hence, it is suggested that the manufacturers and dealers of various Perishable goods should take necessary steps relating to price, quality, quantity, color and availability to satisfy the village consumers and to advertise their products through various Medias along with factual information.

It is found that high price is an important problem of village consumers. Hence, it is suggested that manufactures of Perishable goods should take necessary steps to reduce the price.

REFERENCES

1. C. Bhattacharji, 'Service Sector Management' - An Indian Perspective, First Jaico Impression, 2005.
2. C.R. Kothari, Research Methodology Methods and Techniques, Vishaka Prakashan, New Delhi, Second Edition.
3. George E. Belch and Michael A. Belch, 'Advertising and Promotion Management', Sixth Edition, 2005.
4. Naresh K. Malhotra, Marketing Research- An Applied Orientation, Prancitise-Hall of India Private Ltd., New Delhi, Fourth Edition, 2005.
5. Philip Kotler, 'Marketing Management', Prancitise-Hall of India Private Ltd., New Delhi, Eleventh Edition, 2003.

ANALYSIS OF CODE CLONE DETECTION OF WEB LANGUAGE USING SUFFIX ARRAY BASED TOKENIZATION**GURVINDER SINGH****RESEARCH SCHOLAR****I. K. GUJRAL PUNJAB TECHNICAL UNIVERSITY****JALANDHAR****JAHID ALI****DIRECTOR****SRI SAI IQBAL COLLEGE OF MANAGEMENT AND IT****BADHANI****ABSTRACT**

In recent time, code clones have gotten much consideration from numerous analysts in the field of software engineering. Code cloning of source code is a noteworthy issue for substantial, industrial systems. The real outcome of cloning is that it risks the maintenance procedure. Cloning is the most essential methods for software reuse. Code cloning has been widely utilized inside the product advancement outline group. A software clone is a code piece indistinguishable or like another in the source code. Clones are viewed as unsafe for programming support and evolution, since it expands complexity of the framework. In the event that a code is altered, it should be checked against all related code clones to check whether they should be modified also. Removal, avoidance or refactoring of cloned code is other essential issues in software maintenance. Detection of software clones minimizes the cost maintenance of software and furthermore builds understand ability of the framework. Many code clone detection procedures have been proposed to distinguish clones. Moreover, we propose a novel method and tool for clone location. The clones are distinguished by utilizing hybrid approach which is utilized to identify clones in different programming languages. The novel part of the approach takes the advantage of metric based and token based methods for clone identification. In the experiment, we compared the proposed tool with the existing tool with performance metrics such as Precision, recall and accuracy. Thus, we affirmed that the proposed instrument was better than the existing tool in simulation measures, which are appeared by utilizing Net Beans.

KEYWORDS

code clone, clone detection, hybrid approach, software metrics, suffix array.

INTRODUCTION

A numerous types of applications created today rely on object-oriented programming (OOP) languages. OOPs are today the predominant worldview in standard programming improvement. As their prerequisite is expanding step by step they are getting to be noticeably bigger and complex. Large scale programming frameworks are costly to build and, are considerably more costly to keep up. A code clone is a code portion in source files that is identical or similar to another [1]. A code clone is a code block in source files which is identical or similar to another code block. Code cloning or the act of copying code fragments and making minor, non-functional alterations, is a well-known problem for evolving software systems leading to duplicated code fragments or code clones. The normal functioning of the system is not affected, but further development may become prohibitively expensive. Cloning mainly occurs because programmers find that it is cheaper and quicker to use the copy and paste feature than writing the code from scratch. Sometimes programmers intent on implementing new functionality find some working code that performs a computation nearly identical to the one desired, copy it entirely and then modify in place [3]. Code cloning, is considered a serious problem in industrial software [2]. Duplicated code proves easy and cheap during the software development phase, but it makes software maintenance much harder. Software clone has a number of negative effects on the quality of the software. Besides increasing the amount of the code, which needs to be maintained, it also increases the bug probability.

TYPES OF CLONE

According to the different similarities, clone can be classified into two categories: One type of similarity considers textual similarity and other second considers the semantic level, which the clone code must have the same behaviors, means the functional similarity.

TEXTUAL SIMILARITY

Two code sections can be comparative in view of the likeness of their program content. The accompanying sorts of clones are examined keeping in mind the end goal to discover textual similarity [3].

- **TYPE I:** In Type I clone, a replicated code piece is the same as the first. Nonetheless, code pieces that is indistinguishable with the exception of changes in whitespace and remarks.
- **TYPE II:** A Type II clone is a code piece that is the same as the first aside from some conceivable variations about the comparing names of user-defined identifiers types, design and remarks.
- **TYPE III:** Copied parts with changes. Statements can be altered, added or removed notwithstanding varieties in identifiers, literals, types, layout and comments are called type III Clones.

FUNCTIONAL SIMILARITY

Two code parts can be comparative in light of the comparability of their functionalities without being textually comparable. On the off chance that the functionalities of the two code sections are indistinguishable or comparable i.e., they have comparative pre and post conditions alluded as Type IV clones [4].

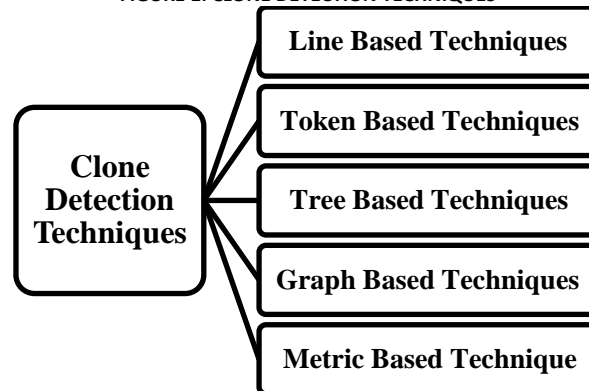
- **TYPE IV:** Type IV clones are the consequences of semantic similitude between at least two code sections. At least two code parts that play out a similar capacity however are executed through various language structure are called type IV clones.

CLONE DETECTION TECHNIQUES

Clone detection is an important topic in the research of clones. Many techniques, including those listed below, detect clones automatically. Clone detection techniques can be categorized into the following categories.

- Line Based Techniques
- Token Based Techniques
- Tree Based Techniques
- Graph Based Techniques
- Metric Based Techniques

FIGURE 1: CLONE DETECTION TECHNIQUES



- **Line Based Technique:** Line-based methods distinguish clones by looking at each line of code parts as a string [4]. Line-based systems can recognize clones rapidly as contrasted and other discovery strategies, since they don't require any pre-processing of the source code.
- **Token Based Technique:** Token-based systems change source code into a token grouping [5]. At that point, they identify regular sub-groupings of the tokens as clones.
- **Tree Based Technique:** In tree based system, comparative sub trees are searched in the tree. At the point when a match is discovered relating source code of the comparative sub trees are returned as clone combines or clone classes [6].
- **Graph Based Technique:** In diagram based methods, source code is changed into a chart portrayal [7]. A program dependence graph (PDG), which is one of the notable diagram portrayals.
- **Metric Based Technique:** Metric based systems figure different measurements for each program module, for example, method, function, and class and afterward recognize clones by contrasting the likeness of the modules in view of the measurements [8].

RELATED WORK

In Past, a broad number of studies have been finished with respect to numerous approaches for clone.

C.K.Roy ed.s [9] compared the various techniques of clone detection such as textual approach, lexical approach, semantic approach and metric based approach and furthermore comparing and evaluating clone detection tools such as Duploc, simian and NICAD. They proposed that NICAD tool is the best among all others. They use the clone detection process- pre-processing, transformation, match detection, formatting, filtering and aggregation. They also provide examples of how one may utilize the results of this examination to pick the most proper clone discovery apparatus or strategy with regards to a specific arrangement of objectives and limitations.

D.G.Devi ed.s [10] detects the different types of clones using different algorithm like textual analysis, metric based distance algorithm and mapping algorithm. The detected clones are-extract clone, renamed clone, gapped cloned and semantic clone. They utilized clone identification and metrics to assess quality. In situation based algorithm the two strategies are utilized –token based and line based. A token-based technique will be more costly as far as time and space complexity than a line-based one because a source line contains several tokens. Metric based clone detection approach uses the metric based distance algorithm. Then they compared different types of approach using different algorithm and calculate their metrics, speed, cost and quality.

A. De Lucia ed.s [11] illustrate a novel approach for updating Web Applications(WAs) in view of clone analysis that objective at identifying and generalizing static and dynamic pages and navigational examples of a web application. Clone analysis is likewise useful for distinguishing literals that can be produced from a database. A case study is described which indicated how the proposed approach can be utilized for restructuring the navigational structure of a Web Application by removing repetitive code. An instrument to identify and analyze cloned patterns in web applications utilizing clone analysis and clustering of static and dynamic web pages. The tool has been implemented for WAs developed using PHP or JSP technology. It supports the user to filter out details that do not contribute to the analysis of cloned patterns.

G.Gupta ed.s [12] plan and implement a Code Clone Detector instrument to detect clones. The novel aspect of the work is done by utilizing metric based approach on Java source codes. For calculating metrics Java byte code is utilized and after that source code refactoring is done in order to minimizing code clones. Since the byte code is taken which converts the source code into uniform representation and it is given as an input to the tool for calculating metrics value, so up to some extent it is able to identify the semantic clones. Also byte code is platform independent which makes this tool more productive than the already existing tools.

T.Muhammad ed.s [13] displayed Dynamic web pages composed of inter-woven (tangled) source code written in various programming languages (e.g., HTML, PHP, JavaScript, CSS) makes it hard to investigate and manage clones in web applications. They display an exploratory investigation on the patterns of both exact (Type-1) and near-miss (Type-2 and Type- 3) code clones in two industrial web applications, which underwent two different development styles. One was developed using the traditional style where HTML mark-up and PHP code were put together on dynamic web pages. The other was developed following a more sophisticated approach using the MVC (Model-View-Controller) pattern that resulted in a relatively more modularized implementation.

RubalaSivakumar ed.s [14] identified that the code cloning is not only found in software products and programming language but it can also be found in web applications. Scripting languages such as ASP, JSP, PHP etc are used in the development of web sites in which code duplication practice usually involved in making of several web pages. The proposed tool gives its evaluated result in precision and recall parameter which then further compared with the other existing. The result of comparison showed that the value of precision and recall in term of percentage with the proposed tool using.NET gives higher value with accuracy than the other tool.

S.Ur. Rehman ed.s [15] demonstrates a new code clone detection technique. A method is capable for distinguish clones inside vast source codes and is particular in its capacity to detect code duplication independent of the source language. They are additionally working on some of its future directions including the removal of the clones detected from the source code.

OBJECTIVES OF THE STUDY

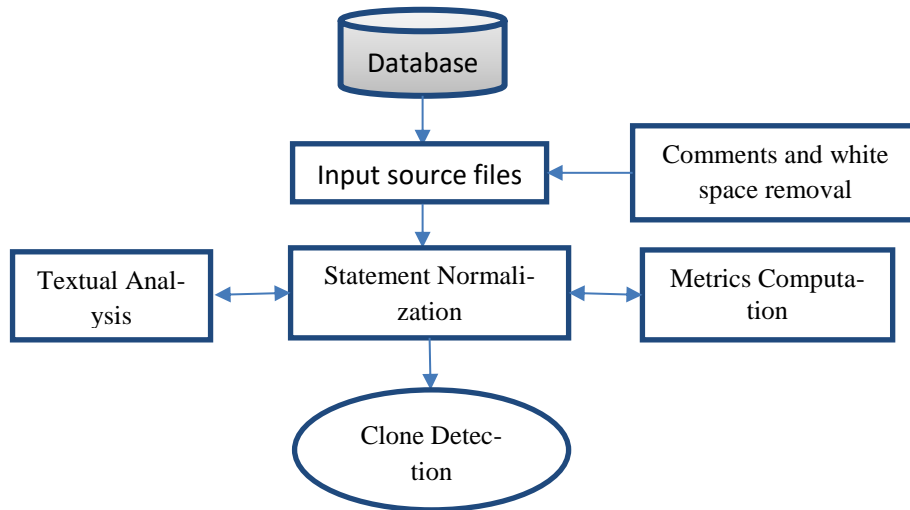
1. Analysis of code clone detection of web language using suffix array based tokenization.
2. To evaluate result to compare with existing technique.

PRESENT WORK

Cloned software is a noteworthy issue in extensive software frameworks that have advanced over along period of time. The issue is not amenable to a straight forward solution to totally reengineer the framework is a conceivable option, but is very cumbersome and involves much cost. Current work presents a practical method, for detecting exact clones for object oriented program source code. In this model a hybrid approach using combination of metrics based and token based technique is used for detection of clone. The approach is divided into two stages. In the primary segment, metric primarily based method is used to hit upon the capability clones. The metrics are calculated primarily based on class degree and characteristic degree and the edge stage is also defined for the matching of

metrics. In the second phase, if the metrics healthy count reaches the edge fee then simplest actual clones are detected through using Suffix array based tokenization technique.

FIGURE 2: CLONE DETECTION ARCHITECTURE



PROPOSED APPROACH INCLUDED FOLLOWING STEPS

- Step 1. Input two source files related to web language like asp.net and php.
- Step 2. Pre-processing and Filtering of file by removing white spaces and all types of comments.
- Step 3. Metric Calculation

List of metrics (Function & Method level)

Class level metrics

- LOC
- No of private variable
- No of public variable
- No of protected variable
- Total no of variable
- No of loop control statements(for+ while+ do-while)
- Redirect statements
- No of conditional statements (if + switch)
- Friend variable
- Private function
- Public function
- Protected function
- Total no of functions

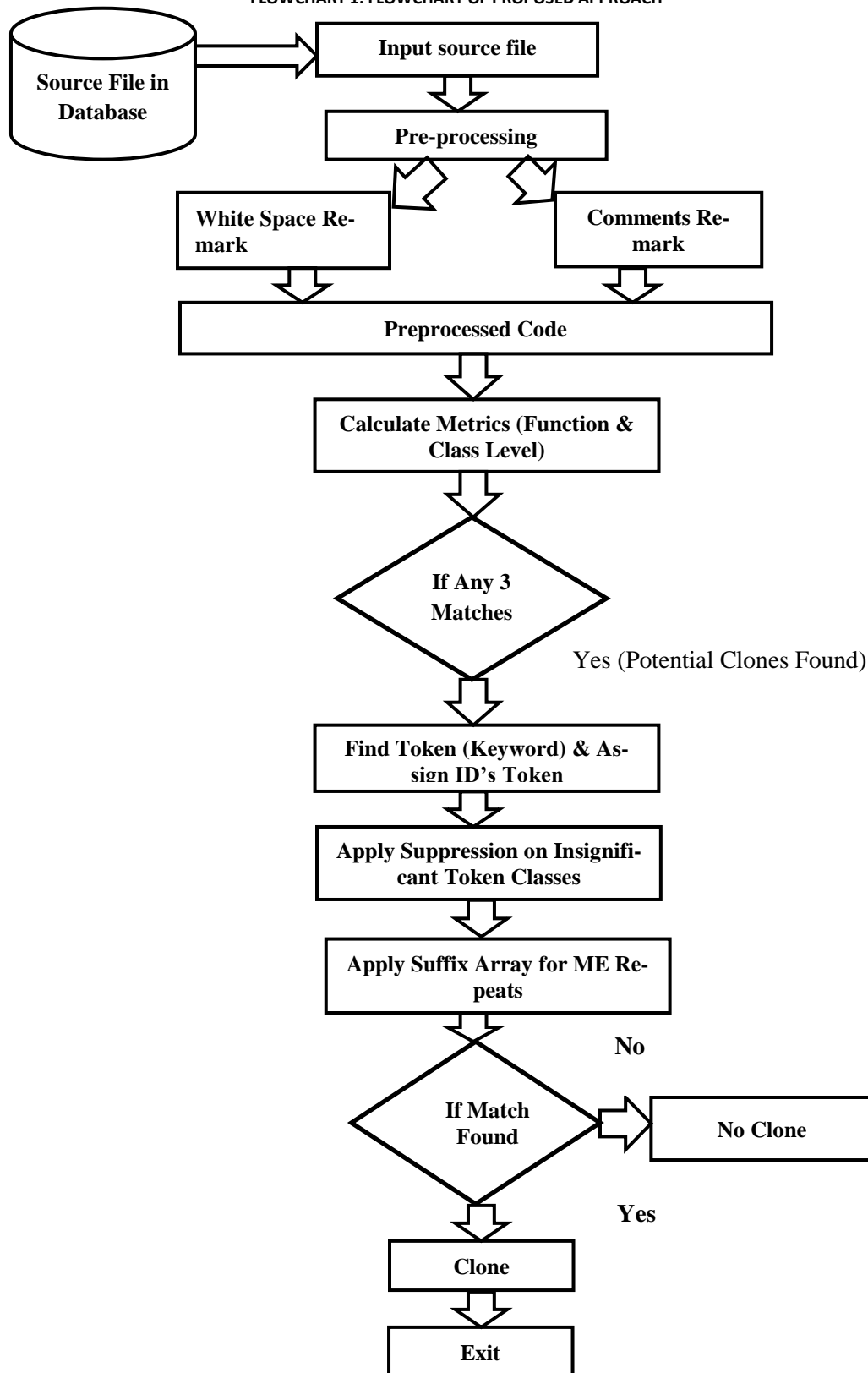
Function level metrics

- Function name
- No of local variables
- No of Function calls
- No of arguments/parameters passed in function
- No of loop controls
- No of return statements.

Step 4: Calculating the tokens and detection of clones using Suffix array based tokenization technique.

Step 5: Analysing the results

FLOWCHART 1: FLOWCHART OF PROPOSED APPROACH



RTF TOKENIZATION MECHANISM

Repeated Tokenization Finder (RTF) likewise enables the client to tailor the token string for better clone detection. The principal probability is the suppression of certain insignificant token classes that may be considered noises in source code for clone recognition. For instance, contrast of get to modifiers like private, protected, public and so forth may not be exceptionally intriguing between two generally indistinguishable techniques and subsequently these tokens can without much of a stretch be stifled. The client can basically demonstrate, from a rundown of all dialect tokens, the tokens that ought to be stifled amid code checking and these tokens won't turn into a piece of the last token string.

TABLE 1: SIMPLY TOKENIZATION SCHEME

| TOKEN CLASS | ID |
|----------------------------|-----|
| Keywords | |
| private | 1 |
| public | 2 |
| protected | 3 |
| return | 4 |
| --- | --- |
| Operators | |
| + | 31 |
| * | 32 |
| --- | --- |
| Identifiers | 40 |
| Constants | 41 |
| Literal strings | 42 |
| Punctuation symbols | |
| (| 51 |
|) | 52 |
| { | 53 |
| } | 54 |
| : | 55 |
| , | 56 |
| --- | --- |
| Type names | |
| int | 71 |
| short | 72 |
| --- | -- |

Another alternative offered is to compare the distinctive token classes. For instance, if the client does not have any desire to separate between the sorts {int, short, long, float, double}, a similar ID can be utilized to speak to each individual from the above arrangement of sorts. Along these lines, every one of those code parts that vary just in the kind of specific factors end up noticeably correct copies of each other in the token string. Clients can likewise liken operators, certain keywords, punctuation symbols, access specifiers and so on. Contingent on the necessity.

1 7140 517140 567140 52 53 4 4031 55 542 72 40 5172 405672 40 52 53 4 4032 55 54

The repetitive parts of the string are underlined. On the off chance that the client chooses to smother tokens private (token ID 1), open (token ID 2) and secured (token ID 3), the resultant token string would progress toward becoming:

71 40 51 71 40 56 71 40 52 53 4 40 31 55 54 72 40 51 72 40 5672 40 52 53 4 40 32 55 54

Presently, if the operators + (token ID 31) and * (token ID 32) are likened, and furthermore sort names int (token ID 71) and short (tokenID 72) are compared, we would get only two indistinguishable substrings covering the two procedures absolutely, plainly demonstrating the abnormal state of similitude introduce between the two system:

71 40 51 71 40 56 71 40 52 53 4 40 31 55 5471 40 51 71 40 5671 40 52 53 4 40 31 55 54

It ought to however be noticed that utilizing these components of controlling the input tokens discretionary and does not hamper the ease of use of the instrument. Rather, it is additional preferred standpoint for advanced users, a classification that we can securely expect that maintenance engineers should fall into. RTF can successfully distinguish helpful clones even with no any user-defined customizations. However, if the users suspect, based on their experience with the source code, that by customizing the input tokens they can show signs of improvement comes about, RTF gives the flexibility to do so.

Clone detection is basically an issue of looking repeated and non-overlapping substrings which are the regular prefix of some suffixes. Along these lines, the key of solving this problem is to use suffix array. The suffix array (SA) is an array SA[0..n-1] in which SA[j] = i if suffix i is the jth in lexicographical order among all the suffixes of S. The suffix array of a string of length n over an integer alphabet can be computed in O(n) time. After building the suffix array, we simply utilize some programming techniques to locate every repeated substring whose lengths are in the interval [max, min].

FIGURE 3: SA AND LCP ARRAYS OF STRING S

| | | | | | | | | | | | | | | | | | | | | | | |
|----------|----|---|---|----|----|---|----|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|
| <i>i</i> | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| <i>S</i> | A | T | G | C | A | A | T | G | C | C | V | G | G | C | A | T | T | G | C | A | T | V |
| SA | 4 | 0 | 5 | 14 | 19 | 3 | 13 | 18 | 8 | 9 | 2 | 12 | 17 | 7 | 11 | 1 | 16 | 6 | 15 | 20 | 10 | 21 |
| LCP | -1 | 1 | 4 | 2 | 2 | 0 | 2 | 3 | 1 | 1 | 0 | 3 | 4 | 2 | 1 | 0 | 4 | 3 | 1 | 1 | 0 | 0 |

Give us a chance to mean the length of the longest common prefix of suffixes i and j by LCP (i, j). At that point, the LCP array contains the lengths of the longest common prefixes between successive suffixes of SA. That is, LCP[i] = lcp(SA[i-1], SA[i]) for 0 <= i < n-1. Given S and SA, LCP can also be computed in Θ(n) time [21]. An example of this is shown in Figure 3.

ALGORITHM 1: PSEUDO CODE OF CRFINDER ALGORITHM

```

CRFinder(S, Pmin, Fmin)
Input: string S of length n, requested minimum repeat length threshold Pmin and minimum frequency Fmin
Output: all complete repeats (p; i, j) in S that appear at least Fmin times and period p ≥ Pmin
Preprocessing: Computer SA[i] and LCP[i] (0 ≤ i ≤ n-1) of string S; let LCP[0] = -1, LCP[n] = -1
1. k=0; push (STALOCH; 0, 0)
  //(location, height) are stored in stack STALOCH, initial values set to 0
2. while (k < n-1)
3. while (LCP[k] ≤ LCP[k+1]) do
  //when LCP[k] < LCP[k+1]: open a potential repeat occurring
4. if (STALOCH[top].height < LCP[k+1]) then
  push (STALOCH; k, LCP[k+1])
5. k++
6. while (LCP[k] > LCP[k+1]) do
  //when LCP[k] > LCP[k+1]: close the repeat previously created
7. j=k
8. k++
9. pop(STALOCH) to (i, h)
10. while (STALOCH[top].height > LCP[k]) do
11. for p = h down to STALOCH[top].height + 1 do
12. Check(p, i, j)
  //check period and occurrence frequency satisfy the requirements
13. pop(STALOCH) to (i, h)
14. for p = h down to LCP[k] + 1 do
15. Check(p, i, j)
16. if (STALOCH[top].height < LCP[k]) then
  push (STALOCH; i, LCP[k])
17. while (LCP[k] = LCP[k+1]) do
  //when LCP[k] = LCP[k+1]: sustain a potential repeat occurring
18. k++
Function Check(p, i, j)
1. f = j-i+1
2. if f ≥ Fmin and p ≥ Pmin then
3. output (p; i, j; f)
    
```

RESULTS AND DISCUSSIONS

This section exhibits the simulation results of the proposed technique. We study that our proposed method detects the clones available within the supply documents in an efficient way. We have compared the proposed technique with the already present clone detection device supply monitor as a way to deliver less precision and take into account charge while as compared to our proposed technique. We have done trials with the existing and proposed system to recognize the clones. The after effects of the methodology have been tried on two web source code records and their resultants are appearing in table 2 and table 3.

EVALUATION PARAMETERS

The evaluation parameters include various terms such as true positives, true negatives, false negatives and false positives. These are the terms that are used to compare the class labels assigned to documents with the classes the items actually belong to by a classifier. True positive terms are truly classified as positive terms. False positive are not labeled by the classifier as positive class but should have been. True negative terms are correctly labeled as in negative class by the classifier. False negative terms are those terms that are not labeled by the classifier as belonging to negative class but should have be classified. Confusion Matrix contains these terms that are used for evaluation.

CONTINGENCY TABLE

| | | Correct Labels | |
|-------------------|----------|--|--|
| | | Positive | Negative |
| Classified Labels | Positive | True Positive ($n_{s \rightarrow s}$) | False Positive ($n_{h \rightarrow s}$) |
| | Negative | False Negative ($n_{s \rightarrow h}$) | True Negative ($n_{h \rightarrow h}$) |

Precision, recall and accuracy parameters are used for evaluating the performance:

PRECISION AND RECALL

It verifies what number of cloned documents is effectively identified as clones among those all that are having clones. It can be measured by number of files cloned that are effectively recognized as clone to the aggregate number of files taken as clones.

$$\text{Precision} = \frac{n_{s \rightarrow s}}{n_{s \rightarrow s} + n_{h \rightarrow s}} \tag{Eq. (1)}$$

$$\text{Recall} = \frac{n_{s \rightarrow s}}{n_{s \rightarrow s} + n_{s \rightarrow h}} \tag{Eq. (2)}$$

ACCURACY

Accuracy is the percentage of effectively identified files as clone. It can be measured as the quantity of correctly classified files as clones to the aggregate number of files. It should be highest for the best technique.

$$\text{Accuracy} = \frac{n_{s \rightarrow s} + n_{h \rightarrow h}}{n_{s \rightarrow s} + n_{s \rightarrow h} + n_{h \rightarrow s} + n_{h \rightarrow h}} \tag{Eq. (3)}$$

We have done trials on 50 files from which 40 files are actual cloned files and 10 are non-cloned files. A few files are taken from different data sources online.

TABLE 2: RESULTS OF EXISTING METRIC WITH TEXTUAL APPROACH

| Existing technique | Predicted Positive | Predicted Negative |
|--------------------|--------------------|--------------------|
| Positive Cases | 32 | 8 |
| Negative Cases | 4 | 6 |

| Proposed technique | Predicted Positive | Predicted Negative |
|--------------------|--------------------|--------------------|
| Positive Cases | 34 | 6 |
| Negative Cases | 2 | 8 |

TABLE 3: RESULTS OF PROPOSED SUFFIX ARRAY TOKENIZATION APPROACH

| Parameters | Metric with Textual Approach | Suffix Array Tokenization Approach |
|------------|------------------------------|------------------------------------|
| Precision | 0.88 | 0.944 |
| Recall | 0.80 | 0.85 |
| Accuracy | 0.76 | 0.84 |

Using the more than four conditions, we have looked at the execution of our proposed approach and existing approach in view of table 2 and table 3. The got results are appearing in table 4. Figure 4, 5 and 6 illustrates the precision, recall and accuracy of the web based cloned files.

FIGURE 4: PRECISION RATIO OF PROPOSED AND EXISTING APPROACH

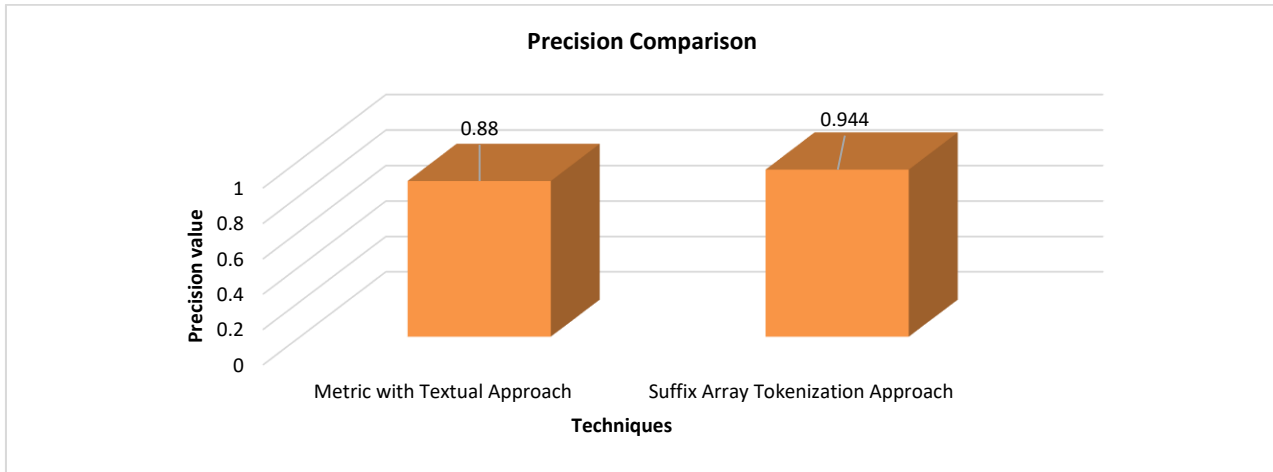


FIGURE 5: COMPARISON OF PROPOSED AND EXISTING APPROACH IN TERM OF RECALL

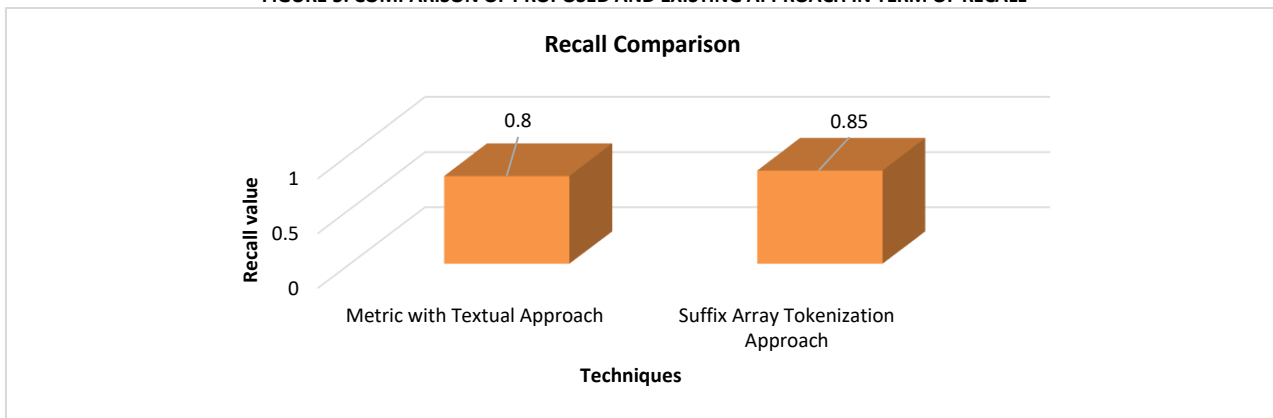
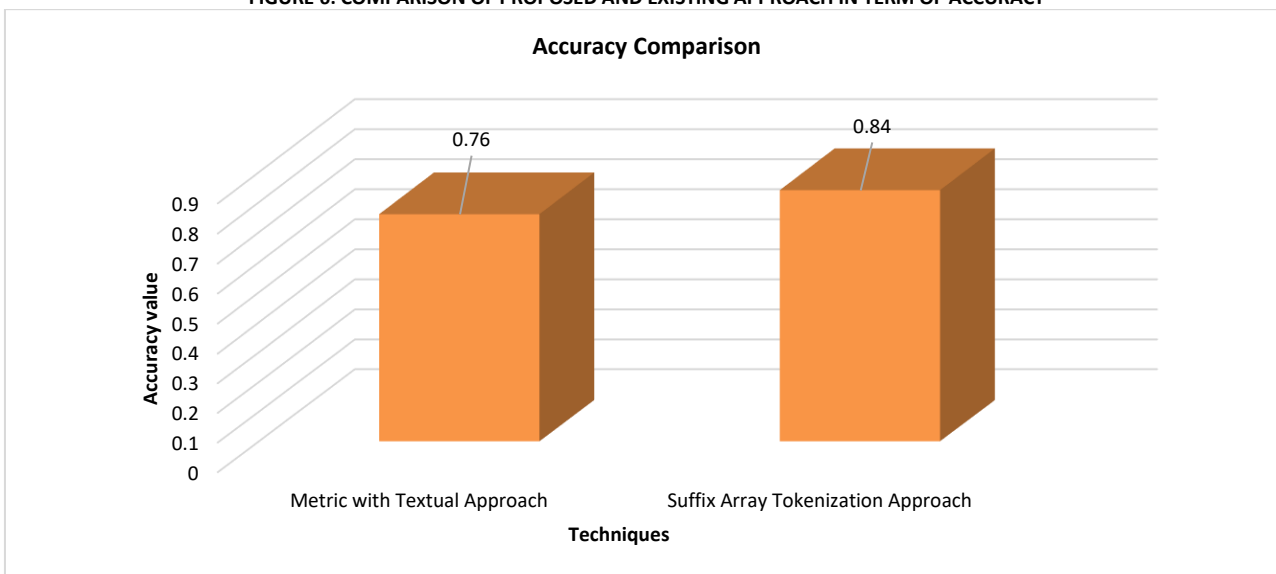


FIGURE 6: COMPARISON OF PROPOSED AND EXISTING APPROACH IN TERM OF ACCURACY



We have performed experiments on some gathered sample files to analyze the precision, recall and accuracy parameters to evaluate the performance of the proposed approach. We have observed that proposed tool is detecting more efficient number of clones as compared to existing technique, so cloning rate ascertained by our clone identifier tool is more.

CONCLUSION

Software clone is a phenomenon in large software system. It is usually caused by programmers copy and paste activities. The reason for the existence of clones in the source code is that making a copy of a code fragment is simpler and faster than writing it from scratch. In this paper, we have concentrated on clone detection systems and tools, giving a concise however extensive study and a speculative assessment in view of altering situations. Our technique can making sense of clones inside enormous supply codes and is unprecedented in its ability to hit upon code duplication free of the supply language. The tool Code Clone Detector created works just for the object oriented language code and it is anything but simple to utilize. In this introduced work metric based approach is utilized to distinguish the potential clones and after that upgrading the clone by means of utilizing token based technique. This approach is compared with source code of netbeans bellon and overshadows bellon individually in term of precision, recall and accuracy. From the simulation comes about it has been noted that the proposed approach give better outcomes as compared with existing methodology.

In future, this approach can be coordinated with different methodologies like abstract syntax tree based approach and the program dependence graph approach to deal with clone efficiently.

REFERENCES

1. Toshihiro Kamiya, Shinji Kusumoto, and KatsuroInoue (2000), "A Token-based Code Clone Detection Tool-ccfinder and its empirical evaluation", Technical report.
2. Cory Kapsner, Michael W. Godfrey, "Cloning Considered Harmful (2006), "Considered Harmful", in proceedings of the 13th Working Conference on Reverse Engineering, pp. 19-28, Washington, DC, USA.
3. C.K. Roy and J.R. Cordy (September 2007), "A Survey on Software Clone Detection Research, "Queen's School of Computing", Technical Report No. 2007-541, vol. 115.
4. J.H. Johnson (1994), "Substring Matching for Clone Detection Tools, "In *Proceedings of the 10th International Conference on Software Maintenance*", pp. 120– 126.
5. T. Kamiya, S. Kusumoto, and K. Inoue(July 2002), "CCFinder: A MultiLinguistic Token- Based Code Clone Detection System for Large Scale Source Code", IEEE Trans. Software Eng., vol. 28, no. 7, pp. 654-670.
6. B. Baker (2007), "Finding Clones with Dup: Analysis of an Experiment", IEEE Transactions on Software Engineering, vol. 33, no. 9, pp. 608–621.
7. Raghavan Komondoor and Susan Horwitz (July 2001), "Using Slicing to Identify Duplication in Source Code", in Proceedings of the 8th International Symposium on Static Analysis (SAS'01), Vol. LNCS 2126, pp. 40-56, Paris, France.
8. J. Mayrand, C. Leblanc and E. Merlo (November 1996), "Experiment on the Automatic Detection of Function Clones in a Software System Using Metrics", in Proceedings of the 12th International Conference on Software Maintenance (ICSM'96), pp. 244–253, Monterey, CA, USA.
9. C. K. Roy, J. R. Cordy, and R. Koschke (2009), "Comparison and Evaluation of Code Clone Detection Techniques and Tools : A Qualitative Approach", Science of Computer Programming, pp 470–495.
10. D. G. Devi, M.Punithavalli (2011) "Comparison and Evaluation on Metrics based Approach for Detecting Code Clone", Indian Journal of Computer Science and Engineering, Vol. 2 No. 5, pp. 747-751.
11. A. De Lucia, R. Francese, G. Scanniello, G.Tortora (2005), "Understanding Cloned Patterns in Web Applications", Proceedings of the 13th International Workshop on Program Comprehension (IWPC'05), IEEE.
12. G. Gupta and I. Singh, "A Novel Approach Towards Code Clone Detection and Redesigning (2013) "International Journal of Advanced Research in Computer Science and Software Engineering", vol. 3, no. 9, pp. 331–338.
13. T. Muhammad, M. F. Zibran, Y. Yamamoto, C. K. Roy (2013), "Near-Miss clone patterns in web applications: AN Empirical study with Industrial Systems", 26th IEEE Canadian Conference of Electrical and Computer Engineering (CCECE).
14. RubalaSivakumar, Kodhai. E (2012), "Code Clones Detection in Websites using Hybrid Approach", International Journal of Computer Applications, Vol. 48, No.13.
15. S. Ur. Rehman, R. khan,S. Fong and R. Biuk-Aghai (2012), " An Efficient New Multi-Language Clone Detection Approach from Large Source Code ",IEEE.

ORGANIC FOOD: CONSUMER ATTITUDE AND BEHAVIOUR WITH REFERENCE TO CUDDALORE CITY

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ABSTRACT

Nature is an endowment of God. Everybody ought to take after the laws of nature to have socially, culturally, financially and sound life as "wellbeing is riches. In any case, to meet requests of expanding populace on the planet, abuse of common assets began. Overabundances of utilization of chemicals have disintegrated soil and its water holding limit and penetration. Pesticides cause passing, handicap, organ brokenness, debilitation and numerous different diseases. Today, India is not in a position to get rid of the utilization of manufactured agro chemicals, particularly the inorganic composts, in perspective of the extensive and expanding populace interest for nourishment items. The present study attempts to find out the extent of utilization, problem faced and satisfaction experienced by consumers of organic food. The study was limited to Cuddalore city. The present research design was descriptive and experimental in nature. The 100 consumers of organic food contacted and gave information about the extent of utilization, problems, satisfaction about organic food. Testing of theory through ANOVA demonstrated that the degree of impact of different purposes behind purchasing natural sustenance. Dominant part of buyers were fulfilled for all parts of appearance of natural nourishment, however the sustenance things were little in estimate, area of shop, taste and cost of natural sustenance.

KEYWORDS

perception, expectation, satisfaction.

INTRODUCTION

Farming is an arrangement of outfitting nature for the sustenance of person. India is a nation where farming plays a critical place in the financial advancement of the country. Today likewise 57.2% of individuals depend on farming in India (Shah, 2004).

Natural compost is a domain well disposed, environmental generation framework that advances and improves biodiversity, organic cycle and organic exercises. It is based on minimal use of off-farm inputs and management practices that restore maintain and enhance ecological balance.

JUSTIFICATION OF THE STUDY

Natural sustenance is the present answer to supportable nourishment generation as well as to the solid and safe nourishment. A deliberate research is required around there to get a thought regarding customer's recognition concerning natural nourishment.

STATEMENT OF THE PROBLEM

The present study attempts to find out the extent of utilization, problem faced and satisfaction experienced by consumers of organic food.

RESEARCH METHODOLOGY**TYPE OF RESEARCH**

Descriptive research design is used in this study. A descriptive study is undertaken in order to ascertain and describe the characteristics of variables of interest in a situation. Descriptive research provides data about the population or universe being studied. But it can only describe the "who, what, when, where and how. Therefore descriptive research is used when the objective is factual and accurate as possible.

OBJECTIVES OF THE STUDY

1. To find the perception of consumer towards organic food.
2. To identify the customer satisfaction towards organic food.

RESEARCH INSTRUMENT

A structured questionnaire has been used as an instrument for this study. Structured questionnaire is those in which there are definite, concrete and predetermined questions relating to the aspects for which the research collects data, same questionnaire has been used for all the respondents.

QUESTIONNAIRE DESIGN

The structured questionnaire consists of open ended, multiple choice, close ended, dichotomous question, ranking question.

DATA COLLECTION**PRIMARY DATA**

Questionnaires are prepared and personal interview was conducted. Most of the questions are multiple choices. The structured interview method was undertaken. The interview was conducted in English as well as in Tamil. Proper care was taken to frame the interview schedule in such a manner it should be easily understood in view of educational level of the customers.

SECONDARY DATA

Secondary data is data collected by someone other than the user. These are second hand information which has been already gathered and stored such as journals, books, websites, and literature.

PERIOD OF STUDY

The study was undertaken for a period of three months from April 2017 to June 2017.

SAMPLE SIZE

100 different respondents have been taken for the study. All the levels of customers were taken into consideration while collecting the data.

SAMPLING PROCEDURE

Convenience sampling is used in this survey. This method of sampling involves selecting the sample elements using some convenient method going through the rigor of sampling method. The researcher may use of any convenient base to select the required number of samples.

LIMITATIONS

- There may be bias in the collected information.
- Few respondents were unwilling to answer due to their busy schedule.
- Some customers hesitate to reveal the details.
- The sample size of the study was limited to 100.
- The data was collected only in Cuddalore.

ANALYSIS AND INTERPRETATION

TABLE NO. 1

| Particulars | No. of respondents | Percentage |
|--------------------|--------------------|------------|
| 0-24 Years | 12 | 12 |
| 25-34 Years | 25 | 25 |
| 35-50 Years | 35 | 35 |
| 50-64 Years | 13 | 13 |
| More than 64 years | 15 | 15 |
| Total | 100 | 100 |

Inference

Out of 100 respondents, 35% of respondents in the age group of 35-50 years are giving importance for the organic food followed by 25% of the respondents in the age group of 25 -34 years and 15% of the respondents in the age group of more than 60 years.

TABLE NO. 2

| Particulars | No. of respondents | Percentage |
|--------------|--------------------|------------|
| Female | 65 | 65 |
| Male | 35 | 35 |
| Total | 100 | 100 |

Inference

Out of 100 respondents, 65% of respondents are females and 35% are males in purchasing the organic food.

TABLE NO. 3

| Particulars | No. of respondents | Percentage |
|---------------------------------|--------------------|------------|
| No education | 09 | 09 |
| Primary education | 17 | 17 |
| Secondary education | 36 | 36 |
| High School | 23 | 23 |
| University education and higher | 15 | 15 |
| Total | 100 | 100 |

Inference

Out of 100 respondents, 36% of respondents are secondary education qualified followed by 23% high school and 17 % are primary education.

TABLE NO. 4

| Particulars | No. of respondents | Percentage |
|----------------|--------------------|------------|
| up to 5000 | 19 | 19 |
| 5001 - 10000 | 42 | 42 |
| 10001 - 15000 | 26 | 26 |
| 15001 to 20000 | 13 | 13 |
| Total | 100 | 100 |

Inference

Out of 100 respondents, 42% of respondents are spending 5001-10000 as maximum monthly net-household income followed by 26% are spending 10001 – 15000 and 19% are spending 5000 for the same.

TABLE NO. 5

| Particulars | No. of respondents | Percentage |
|--|--------------------|------------|
| Supermarket chains | 09 | 09 |
| Discount markets | 17 | 17 |
| Organic shops | 36 | 36 |
| Open/Street Market | 23 | 23 |
| Specialized Shops (Bakery, Butcher...) | 15 | 15 |
| Total | 100 | 100 |

Inference

Out of 100 respondents, 36% of respondents are purchasing organic foods from organic shops followed by 23% from open market and 16% from discount markets.

ONE WAY ANOVA

Aim: To find the significant difference among the factors for purchasing organic foods.

H0: There is no significant difference among factors for purchasing organic foods.

H1: There is significant difference among factors for purchasing organic products.

TABLE 6

| Particulars | strongly agree | Agree | Neutral | Disagree | Strongly Disagree |
|--|----------------|-------|---------|----------|-------------------|
| Healthy for me and my family | 5 | 12 | 6 | 2 | 1 |
| They have high safety level of guarantee and control | 5 | 8 | 0 | 4 | 1 |
| Animals are treated better | 10 | 12 | 3 | 2 | 2 |
| Environment is less polluted | 10 | 8 | 3 | 8 | 0 |
| Taste good | 5 | 8 | 6 | 6 | 0 |
| Fresher than conventional food | 0 | 0 | 6 | 6 | 0 |
| High quality | 5 | 8 | 0 | 6 | 2 |
| Support local / small farmers | 10 | 4 | 3 | 0 | 1 |
| Support organic movement / sustainability | 15 | 4 | 6 | 0 | 3 |
| Not willing to support big multinational companies | 5 | 12 | 3 | 2 | 3 |
| Saving resources for next generations | 5 | 8 | 0 | 2 | 3 |
| It has positive image | 5 | 8 | 3 | 2 | 3 |
| It is fashion to consume | 15 | 4 | 3 | 2 | 3 |

TABLE 7

| ANOVA: Single Factor | | | | | | |
|----------------------|----------|-----|-------------|-------------|----------|----------|
| SUMMARY | | | | | | |
| Groups | Count | Sum | Average | Variance | | |
| strongly agree | 13 | 95 | 7.307692308 | 19.23076923 | | |
| Agree | 13 | 96 | 7.384615385 | 12.92307692 | | |
| Neutral | 13 | 42 | 3.230769231 | 5.192307692 | | |
| Disagree | 13 | 42 | 3.230769231 | 6.358974359 | | |
| Strongly Disagree | 13 | 22 | 1.692307692 | 1.564102564 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | P-value | F crit |
| Between Groups | 354.7077 | 4 | 88.67692308 | 9.794392523 | 3.64E-06 | 2.525215 |
| Within Groups | 543.2308 | 60 | 9.053846154 | | | |
| Total | 897.9385 | 64 | | | | |

RESULT

Since P value > F crit

Reject null hypothesis

There is significant difference among factors for purchasing organic products.

SUMMARY OF FINDINGS

- ❖ 35% of respondents in the age group of 35-50 years are giving importance for the organic food followed by 25% of the respondents in the age group of 25 - 34 years and 15% of the respondents in the age group of more than 60 years.
- ❖ 65% of respondents are females and 35% are males in purchasing the organic food.
- ❖ 36% of respondents are secondary education qualified followed by 23% high school and 17 % are primary education.
- ❖ 42% of respondents are spending 5001-10000 as maximum monthly net-household income followed by 26% are spending 10001 – 15000 and 19% are spending 5000 for the same.
- ❖ Out of 100 respondents, 36% of respondents are purchasing organic foods from organic shops followed by 23% from open market and 16% from discount markets.

STATISTICAL FINDINGS**ANOVA**

- ❖ There is significant difference among factors for purchasing organic products.

SUGGESTIONS

1. Marketers should pay attention to the household structures to promote organic foods.
2. Marketers should pay attention to conventional retail chains are the most preferred place for organic buyers, due to the lack of other sale channels.
3. Baby products need to be introduced to the market due to the high demand from the half of consumers

CONCLUSION

In this paper, organic consumption is examined by the help of questionnaires directed to organic buyers in Cuddalore. Similarities and differences are summarized in the findings. In spite of the limited respondent number, this research can give an overview about consumers' attitude and behavior towards organic products.

REFERENCES

1. **Abbott, J.** (1999). "Quality measurement of fruit and vegetables", Postharvest biology and technology. Vol.15, No. 3, pp. 207-225.
2. **Agarwal, A; Narain, S. and Sen, S.** (1999). "State of India's Environment. The citizens' fifth report. Part I, National Overview." Centre for Science and Environment (CERC). New Delhi, India pp.66-68.
3. **Baharrel, B. and Mac Fie, J. H.** (1991). "Consumer attitude to Organic Food", British Food Journal. Vol-93, pp 25-30.
4. **Carroll, A. M.**(2005). "India's booming organic food bazaar", Internet Article, www.rediff.com/money/2005/Oct/17sepc1.htm,
5. **Ghosh, S.** (1999). "Principles of Organic Farming in the Tropics", The Organic Farming reader, Other India Press, pp. 53-68.
6. **Kothari, C. R.** (2004). "Research Methodology: Methods and Techniques", New Age International Publishers, New Delhi, pp 113-116.
7. **Palaniappan, S. P and Annadurai, K.** (1999). "Organic farming: Theory and practices, Scientific Publishers, Jodhpur, pp-18.
8. **Sharma, A. K.** (2001). "A handbook of organic farming", Agrobios, Jodhpur, India.
9. **Sharma, A. K.** (2004). "Opportunities and Strategies for Promotion of Non certified Organic farming in the Drylands of India", Proceeding of 6m IFOAM Asia Scientific Conference on Safe food and Benign Environment for Asian Countries, 7th-11th September, Korea, pp 406-413.

ANNEXURE

QUESTIONNAIRE

1. How old are you?
 - a) 0-24 Years
 - b) 25-34 Years
 - c) 35-50 Years
 - d) 50-64 Years
 - e) More than 64 years
2. Sex:
 - a) Female
 - b) Male
3. What is the highest education level you have completed?
 - a) No education
 - b) Primary education
 - c) Secondary education
 - d) High School
 - e) University education and higher
4. In what range is your approximate maximum monthly net-household income?
 - a. up to 5000
 - b. 5001 - 10000
 - c. 10001 - 15000
 - d. 15001 to 20000
5. Where do you buy organic foods today?
 - a) Supermarket chains
 - b) Discount markets
 - c) Organic shops
 - d) Open/Street Market
 - e) Specialized Shops (Bakery, Butcher...)
 - f) Farm shop
6. I buy organic products, because of following:

| Particulars | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|--|----------------|-------|---------|----------|-------------------|
| Healthy for me and my family | | | | | |
| They have high safety level of guarantee and control | | | | | |
| Animals are treated better | | | | | |
| Environment is less polluted | | | | | |
| Taste good | | | | | |
| Fresher than conventional food | | | | | |
| High quality | | | | | |
| Support local / small farmers | | | | | |
| Support organic movement / sustainability | | | | | |
| Not willing to support big multinational companies | | | | | |
| Saving resources for next generations | | | | | |
| It has positive image | | | | | |
| It is fashion to consume | | | | | |

Thank You for your participation!

AN EMPIRICAL STUDY OF GENERAL ELECTION IMPACT ON EQUITY MARKET

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ABSTRACT

In democracy country like India, elections place a vital role in financial market. The present study has been emphasize on three elections periods of 2004, 2009 and 2014. The bi-variate correlation indicates that there is an association between liquidity variable of liquidity in the bank and liquidity in the country with nifty returns, granger causality test has been applied and found that liquidity in the country and with the banks are influence the market indicator nifty. The Sharpe performance method role has been applied on three election and found that nifty is performance is well stronger than market returns performance.

KEYWORDS

FTA, NIFTY LIC, LIB, SENSEX, TSE.

INTRODUCTION

The political budget cycle theories indicate that macroeconomic variables like output, unemployment, inflation show a particular pattern during the election year. In India also, we can see political parties change their stances a lot to lure the voters for their benefits. In the Sensex data plot from 1979, we can see that a year before elections, Sensex surges almost all the election periods except for 1998 elections. This trend could be attributed to the fact that investors were afraid of the possibility of coalition government causing the policy paralysis. There is also an observable pattern in the Sensex performance for the post-election years. Except for 1999, Sensex has always surged up after the elections happened. That exception might be there because earlier Atal Bihari Vajpayee led coalition government which failed to get confidence vote because which allied parties removed the support in between. Investors were still not sure that government will last for 5 years.

For the Exchange rate for USD, there is no particular pattern found before or after the elections. Exchange rate has been changing continuously over the years as India's imports are increasing very fast as compared to exports which have been increasing slowly. Government policies rarely have affected the exchange rate changes.

In India, CPI data from 1958 does not give any particular pattern in terms of increase or decrease before and after the elections, but mostly inflation decreases pre-election year. There have been many theories which suggest that inflation increase before the elections. Government increases its spending pre-election year, which specially affects inflation in the manufacturing products. But government controls the inflation in primary articles which affects the common man directly to indicate that they are efficient. In India, Government generally spends money on the schemes that directly benefit to the people. Because of illiteracy, government doesn't spend money on capital investment. But since people are becoming more and more aware government has to think long term before the elections. There is a pattern in the pre-election and post-election year deficits in most of the years. Fiscal deficit goes up pre-election and a drop in the fiscal policy is observed post-election year.

But sometimes an opposite pattern is also observed. This might happen because just before the election, government doesn't spend more money, just divert the money to those schemes which will attract the people's attention. India surely has seen various schemes getting more funding just before the election period

2004: elections this was very important election as India was growing fast and first time and non congress government completed 5 years of their term. But after the election new government with different party was formed. During first year of congress government headed by Dr. Manmohan Singh, Sensex was booming because of good IT development, and high expectations from Dr. Manmohan Singh (Good reputation as an economist) as the prime minister. Gross fiscal deficit shows the exact opposite effect of what political budget cycle explains, but inflation data indicates the existence of political business cycle. Sensex improved because of previous government's policies. Exchange did not show much change after the elections.

2009: election this election happened during the global financial crisis. Many economic factors were affected by this recession. Also before the election, government increased the MSP for agricultural produce, waiving off the farmers' loans which increased the inflation, fiscal deficit as well as affected the exchange rate. We can see the existence of political budget/business cycle in this election. But most probably we can never say that it was due to politics because economy was declining, so government had taken measures to control it which resulted in very high fiscal deficit, high inflation as government was pouring money into markets. Also Sensex was under the pressure from worldwide situation.

2014 elections (2009-14), government announced many schemes to lure the voters as government was facing many corruption charges and government wanted to save face and make a comeback in the election with its subsidies and schemes. But data shows that these all schemes were launched during the full term, not in the pre-election year. New government has taken many strict measures to improve the economy. Also reduction in the crude oil prices helped the new government reduce the deficit, inflation as well exchange rate. By looking at the empirical data, inflation and deficit shows exactly opposite effect what is expected out of political budget/business cycle.

REVIEW OF LITERATURE

Keith, Bruce – 1988: The following article helps to understand the paper and examines the relationship between the Toronto Stock Exchange (TSE) and election polls during the 1988 Canadian General Election campaign. Two hypotheses were investigated: first, did polls influence the TSE, and secondly, if so, did the nature of the influence suggest that investors were reacting to expectations concerning the effect of the Canada -U.S. Free Trade Agreement (FTA)? I find that the TSE was positively related to conservative popularity as measured by polls, but that the differential movement of TSE sub-indices does not offer additional support to an FTA based interpretation of events.

Chandra, Kanchan – 1992: The 1992 British general election took place in the context of a severe housing recession, which hit hardest in those regions from which the government usually drew much of its electoral support. The slump notwithstanding, however, the government went on to win its fourth successive election victory. The paper investigates the impact of the housing recession on the geography of the vote at the 1992 general election. Party fortunes were linked to local housing market conditions, and the failure of the housing market was a factor in reducing support for the government. Negative equity is identified as a particularly important problem in this regard.

The 4 equity market factors from **Fama and French (1993)** and **Carhart (1997)** are pervasive in academia and practice. However, not much is known about their joint distribution and dynamics. We find striking evidence of asymmetric tail dependence across the factors. While the linear factor correlations are small and even negative, the extreme correlations are large and positive, so that the linear correlations drastically overstate the benefits of diversification across the factors. We model the nonlinear factor dependence dynamics and explore their economic importance in a portfolio allocation experiment showing that significant economic value is earned when acknowledging nonlinear dependence.

Kumar Deva B (February 2015): This study is mainly focused on effects of 16th Lok Sabha election on stock market performance in India. Various factors have been analyzed which affect the stock market performance during election period. The study has found that there is significant relationship between Lok Sabha election and Stock market performance. People's sentimental analysis about the companies and also Portfolio optimization for the companies which are listed in BSE

SENSEX index have been done during election time. This study examines that Lok Sabha election affects the stock market performance and also company's endogenous and exogenous factors are affected.

Zuwena Zainabu (November 2014): The main aim of the study was to establish the effect of the general elections on the return of the stock market in Kenya. This is an empirical study that analyzed the stock market returns during electioneering periods in Kenya. The study covered the period between 1997 and 2013. The NSE index performance during this period was analyzed and the performance of the NSE index during election years compared to none election years. Descriptive research design was applied.

AlehMazol (2013): The thesis deals with election cycles in stock returns of 52 developing and developed countries and provides the analysis of influence of information transparency on stock returns and volatility of returns during election periods. The data covers the period from January 1994 to January 2012. The volatility of stock returns is estimated by EGARCH model in order to capture time-varying volatility and the asymmetry effects of "bad news" and "good news" as a result of political shocks caused by election cycles.

Savita A. Ramesh (May 2015): This paper analyses the share price performance around National elections in India during the 2014 general elections. Due to change in the market sentiment, the stock prices react to the changes in the government. We investigate shareholders' returns around national elections for 30 companies of BSE SENSEX.

Dr. Sharon Sophia & Maria Evelyn Jucunda.M (September-October, 2014): This study discusses on effects of Indian general election of 2014 on stock market performance of banking sector. Different factors have been analyzed which affect a stock market performance during this event date. This analysis has found that there is significant relationship between Indian Loksabha election and Stock market performance. Sentimental analyses of people about the Banks is identified and also Portfolio optimization for the Banks which are listed in NSE BANK NIFTY index have been done during this event date. This study examines how Banks financial parameters are affected by this 16th Loksabha election.

Sofia Lehander Frida Lönnqvist (Fall 2011): We perform an event study where we investigate 47 parliamentary elections' impact on short-term stock market returns from 1999 to 2011 in 16 developed countries in Europe. We focus on small-cap indices and the results suggest that parliamentary elections have significant negative impact on small-cap stock market returns. We suggest that this can be explained by the increase in market uncertainty due to the political uncertainty. Hence, investors tend to avoid small-cap stocks in uncertain times because of their lack of liquidity and since larger stocks are seen as a safer alternative. We also find significant negative abnormal returns when looking at small-cap indices and considering only the elections with a centre government outcome, while we neither see a significant reaction when investigating the elections with a right-wing government outcome nor when considering the ones with a left-wing government outcome. Moreover, when considering all the elections that had a non-majority government outcome we find significant negative abnormal returns when considering the small-cap stock market indices. On the contrary, elections with a majority outcome did not generate any significant abnormal returns. We suggest that confusion about what political agenda the new government will adopt can lead to market uncertainty and hence increased investor risk aversion and thereby lower returns, when a non-majority government wins the elections. For mid-cap and large-cap firms we see no significant reaction and the same holds when considering indices including stocks of all market capitalizations. We perform robustness checks and non-parametric tests to ensure the validity of our significant findings. Thus, our findings propose that this type of political event can create market uncertainty that impact investor risk aversion and thereby significantly impact small-cap stock market returns negatively in the short run.

Bc. Tomáš (2011/2012): The thesis deals with electoral and partisan cycles in stock returns of nine CEE countries and checks consistency of observed cycles with efficient market hypothesis. The evidence mostly supports possibility of political influence on stock markets, but the effects often have opposite sign than hypothesized. Electoral cycle has been found in Estonia and Hungary, while returns in four other countries are significantly lower before elections. Markets more often exhibit left-wing premium, it is significant in the Czech Republic, Lithuania Romania. The results are similar between nominal and real returns. Both cycles are also considered significant for the panel of countries. Moreover, cycles are hardly explainable by macroeconomic conditions, which indicates market inefficiency. This is confirmed by analysis of volatility, which reveals that risk does not correspond to changes in returns induced by the cycles.

Andreas Oehler: Election results may influence corporate performance by general changes in government spending and tax changes. In addition, specific companies or sectors might benefit or suffer from sector-specific governmental decisions. Stock market participants will incorporate expectations about political change into stock prices prior to an election and adjust their opinion according to the actual decision making following the election. To date, we do not know whether both the Republican and Democratic parties are associated with particular stock price effects for certain companies or sectors and whether these effects persist over several elections. We analyze abnormal stock price returns around the U.S. presidential elections from 1976 to 2008 with focus on party-specific favoritism. The results demonstrate statistically significant (positive or negative) cumulative abnormal price returns for most industries. Most effects appear to be related to the individual presidents and changes in political decision making per se irrespective of the underlying political ideology.

James Ndungu Kabiru, Duncan Elly Ochieng, Hellen Wairimu Kinyua: The performance of the financial markets is significantly impacted by the political environment during general elections. This paper focused on the effect of general elections on the stock returns at the Nairobi Securities exchange. Empirical results have given inconsistent results on whether general election events negatively or positively impact the stock return. The study adopted event study methodology and analyzed secondary data collected from the NSE around the 1997, 2002, 2007 and 2013 general election dates in Kenya. The study found that market reaction to elections is highly negative or positive depending on the volatility of the election

Environment. Analysis of the cumulative abnormal returns (CAR) found that the 2002 and 2013 general elections were insignificant, while the CAR around the 1997 and 2007 general election events were found to be significant at 5% level of significance. The study, thus recommends that stock market, investors and other stakeholders not to overlook electioneering events, and to implement policies that will cushion the security market against political risks during general elections to enhance investor confidence.

Dolores Furió, Ángel Pardo. (September 2012): This paper examines the influence of Spanish major political events on stock market performance by testing the empirical implications of the existing theories focused on the connection between politics and stock exchanges. On the one hand, our findings give support to the partisan politics theory, since stock returns behave differently depending on the political orientation of the government, not only on the day of the national election but also during their tenure of office. On the other hand, the analytical results demonstrate that there are no abnormal positive returns during the second half of the government's term, which contradicts the opportunistic political business cycle theory. Finally, according to Brown et al.'s (1988) Uncertain Information Hypothesis, volatility of stock returns is shown to increase following the arrival of unexpected information.

Geoff Willcocks: UK equity market returns are described by a component GARCH model and two thirty six year periods of daily short term and long term volatility values are generated. These are aggregated by inter general election quarters. The findings show a reducing level of volatility over the quarters between elections and significant differences in both the temporary and permanent components in relation to the party in power. Volatility is higher under a Labour government, spikes on the day following a general election and is symmetric under Conservative governments but asymmetric under Labour. No similar patterns are found for Germany.

Bialkowski, Jędrzej Gottschalk, Katrin Wisniewski, Tomasz Piotr: This paper investigates a sample of 27 OECD countries to test whether national elections induce higher stock market volatility. It is found that the countryspecific component of index return variance can easily double during the week around an Election Day, which shows that investors are surprised by the election outcome. Several factors, such as a narrow margin of victory, lack of compulsory voting laws, change in the political orientation of the government, or the failure to form a coalition with a majority of seats in parliament significantly contribute to the magnitude of the election shock. Our findings have important implications for the optimal strategies of risk-averse stock market investors and participants of the option markets.

Art Durnev: We show that political uncertainty surrounding elections can affect how corporate investment responds to stock prices. In a large panel of elections around the world, investment is 40% less sensitive to stock prices during election years compared to non-election years. The decrease in investment-to-price sensitivity appears to be due to stock prices becoming less informative during election years making them noisier signals for managers to follow. Further, the drop in investment-to-price sensitivity is larger when election results are less certain, in countries with higher corruption, large state ownership, and weak standards of disclosure by politicians. Finally, we show that election uncertainty leads to inefficient capital allocation, reducing company performance. JEL classification: G15 (international financial markets), G38 (government policy and regulation), P16 (political economy)

Why and how general elections in India have impact on stock market?

The economic, industrial policy of a country is determined by the the government of the day. All these policies have an impact on the stock prices. On 17th May 2009 when the UPA government came to power the bse sensx had gone up by 17% on a single day.

The current Bihar election is important for India, as it will determine if the NDA can get a majority in Rajya Sabha. Members of Rajya Sabha are elected by the MLAs elected in a state assembly election. Currently lot of reforms are in doldrums due to the lack of majority of the government in Rajya Sabha.

Asad Dossani (2014): The 2014 Indian election is officially underway. In just over a month from now, we will know our next Prime Minister, and the composition of the Lok Sabha. An important question for investors is how the results of the election will impact the markets. The election matters both for short and long term market movements.

During the last general election in 2009, Congress won a greater than expected number of seats, and the Indian stock markets rose 17% over the two days following the election result. In the previous general election in 2004, when the BJP unexpectedly lost, the markets fell 17% over the two days after the election results. This information tells us that whatever the result of Indian election, we can expect stock markets to be extremely volatile in the days immediately after the result.

If the BJP win the election comfortably, meaning that they gain enough seats to build a stable coalition expected to push through significant economic reforms, then markets will rally. Markets have been rising in recent weeks in anticipation of this, and a resounding victory for the BJP will confirm these movements.

On the other hand, if other small parties do better than expected, this would hinder the likelihood of economic reforms getting put in place, and will affect the markets negatively as a result. For example, if the Aam Aadmi Party performs well, this would weaken the power of the ruling party. If the BJP does worse than expected, or the Congress does better than expected, markets will likely take a large hit following the elections.

While most analysts do expect the BJP to win comfortably, past history tells us that Indian elections are far from predictable. This is due to the large and diverse electorate that make up the Indian voters. In both the 2009 and 2004 elections, the results ended up surprising everyone, and this caused significant market movements following those results.

In the upcoming election, the greater risk for markets is to the downside. Markets have rallied anticipating that the BJP will win comfortably, and so this event is largely priced into the markets already. However, markets could fall significantly if there was another unexpected result.

In this week's Equitymaster club forum, we are asking the questions: "How will the Election Impact the Markets?" We invite you to please login and post your views.

HOW ELECTION YEARS AFFECT THE STOCK MARKET

The ongoing stock market rally has been primarily supported by foreign investors. The rupee also rose to a near three-month high against the dollar on Friday.

It is rather unusual for the Indian market to jump in pre-election months, particularly after 1996 when coalitions became the new political strategy to make up for shortfalls in parliamentary majority. In most election years, the market had actually fallen just before the elections – in 2004, by more than 10 percent.

There are reasons why the Sensex is behaving differently now.

The market has its own fears and hopes. First, the market detests uncertainty, which is at its peak in coalition times with regional parties vying for power.

Second, the market would like the communist parties to be drowned in political backwaters. Though a few regional parties want to assert their right to influence the government at the centre, the Bharatiya Janata Party (BJP) can still command a good number of seats from the states that it already rules as well as others. This has generated some confidence in investors who are looking to make some quick gains.

That confidence may have come partly from opinion surveys announced recently. Most of them forecast that the BJP may capture more seats than the Congress did in 2009 and be in a good position to form the government with support from old and new friends. If that happens, how will the market respond to the political change?

Well, the BJP-led National Democratic Alliance had come to power in 1999. At the time, the market responded well in the three months before the elections (the Sensex jumped nearly 17 percent) as also in the three months following the elections (the Sensex jumped another 6.4 percent). But the euphoria did not last long. In the one year after the elections, the Sensex dropped 13 percent.

The market trend was different in 2004 when a Congress-led coalition formed the government. That is because it had to rely on the communist parties to remain in power. In the first three months, the Sensex was down 6 percent, though over the year it was up 16 percent.

This year, investors seem excited with expectations that the BJP will form the next government with Narendra Modi as the prime minister. They hope he will give priority to development by reforming policies and governance.

The present rally may not continue for long and the market is more likely to move sideways. Political uncertainty is high. But if the BJP comes to power, the Sensex is bound to jump with enough support coming from foreign institutional investors. That will also harden the rupee further. However, over a longer period, it is possible that the Sensex can slide, depending on how much a new government remains true to its word.

CAN ELECTIONS HELP MARKETS TURN AROUND?

With markets tumbling like nine-pins since the past few months on global and domestic issues and the economy gasping for breath, there has been a growing chorus that the fortunes are likely to change post the general elections (scheduled for May 2014) and formation of a new government.

In two out of the past three occasions, the BSE S&P Sensex has recorded a gain of over 50 per cent during the 12-month period before the Lok Sabha elections. Except the last general elections held in 2009, the benchmark index had surged 61 per cent in 1999 and a whopping 93 per cent in 2004 during the one year prior to elections, data compiled by BS Research Bureau shows. Five stocks from the BSE-30 Sensex companies, Tata Motors, Mahindra and Mahindra, Hero MotoCorp, Hindalco Industries, Larsen and Toubro and Sun Pharmaceutical Industries appreciated more than 100 per cent in both these years.

However, in the year the market did not rally before the elections, it rallied after the elections. In 2009, while the Sensex declined 33 per cent before elections, it rallied 61 per cent in the next one-year after the new government took charge.

WILL A CONGRESS WIN DISAPPOINT STOCK MARKETS?

A Congress-led government may disappoint markets, at least initially, says UBS in its latest report. The global investment bank says the statement is based on the existing government not meeting heightened expectations of the markets, which it displayed by the gap-up move in 2009 when Congress-led UPA government secured a thumping victory.

On May 18, 2009, both Sensex and Nifty hit their respective upper circuits, and trading was halted. After two hours, when trading resumed, the indices hit the upper circuit again. Bombay Stock Exchange's Sensex was locked at 14,272.62, up 2,099.21 points, or 17.24 per cent. National Stock Exchange's Nifty was locked at 4,308.05, up 636.40 points, or 17.33 per cent.

"The weak investment cycle, loose fiscal policy, policy flip-flops, etc, are known negatives as far as the present government is concerned," the report says.

NEED FOR STUDY

This study analyses the stock markets condition during the general elections period. This study is made to know how the liquidity is during before and after the elections period. i.e., whether it increased or decreased and this study is also done to know the investors interest in different types of investments. i.e., shares, bank deposits and post office deposits and also to find the performance of NIFTY before and after the general elections period in India.

SCOPE OF THE STUDY

This study has been emphasized on 3 general elections periods. The analysis has been bifurcated into 3 phase's. before and after period analyses has been considered for 1 year.

TABLE 1

| elections | 2004 | 2009 | 2014 |
|----------------------|-------------|-------------|-------------|
| NIFTY | NSE india | NSE india | NSE india |
| liquidity | RBI website | RBI website | RBI website |
| bank deposits | RBI website | RBI website | RBI website |
| post office deposits | RBI website | RBI website | RBI website |

OBJECTIVES OF THE STUDY

1. To know the relationship between liquidity in country, banks and market returns.
2. To know the impact of liquidity of bank and liquidity in the country on nifty returns.
3. To know the performance of the nifty during the election period.

RESEARCH METHODOLOGY

The study "general elections impact on NIFTY and market returns" uses secondary data.

SOURCE OF SECONDARY DATA

1. Three past elections (i.e., 2014, 2009 and 2014 elections) details has been taken from the elections commission website.
2. The NIFTY values of this period have been taken from the NSE India website
3. The liquidity, bank deposits and post office deposits of this period have been taken from the RBI website.

METHODOLOGY

The formulae that are used in this study are

STANDARD DEVIATION

The standard deviation (SD, also represented by the Greek letter sigma σ or s) is a measure that is used to quantify the amount of variation or dispersion of a set of data values. A standard deviation close to 0 indicates that the data points tend to be very close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values.

Let X be a random variable with mean value μ :

$$E[X] = \mu.$$

Here the operator E denotes the average or expected value of X . Then the standard deviation of X is the quantity

$$\begin{aligned}\sigma &= \sqrt{E[(X - \mu)^2]} \\ &= \sqrt{E[X^2] + E[(-2\mu X)] + E[\mu^2]} = \sqrt{E[X^2] - 2\mu E[X] + \mu^2} \\ &= \sqrt{E[X^2] - 2\mu^2 + \mu^2} = \sqrt{E[X^2] - \mu^2} \\ &= \sqrt{E[X^2] - (E[X])^2}\end{aligned}$$

(Derived using the properties of expected value).

In other words, the standard deviation σ (sigma) is the square root of the variance of X ; i.e., it is the square root of the average value of $(X - \mu)^2$.

The standard deviation of a (univariate) probability distribution is the same as that of a random variable having that distribution. Not all random variables have a standard deviation, since these expected values need not exist. For example, the standard deviation of a random variable that follows a Cauchy distribution is undefined because its expected value μ is undefined.

VOLATILITY

In finance, volatility is the degree of variation of a trading price series over time as measured by the standard deviation of returns.

Historic volatility is derived from time series of past market prices. An implied volatility is derived from the market price of a market traded derivative (in particular an option). The symbol σ is used for volatility, and corresponds to standard deviation, which should not be confused with the similarly named variance, which is instead the square, σ^2 .

The generalized volatility σ_T for time horizon T in years is expressed as:

$$\sigma_T = \sigma \sqrt{T}.$$

Therefore, if the daily logarithmic returns of a stock have a standard deviation of σ_{SD} and the time period of returns is P , the annualized volatility is

$$\sigma = \frac{\sigma_{SD}}{\sqrt{P}}.$$

RESIDUAL TEST

Mathematically, a residual is the difference between an observed data point and the expected -- or estimated -- value for what that data point should have been. The formula for a residual is $R = O - E$, where "O" means the observed value and "E" means the expected value. This means that positive values of R show values higher than expected, whereas negative values show values lower than expected. For example, you might have a statistical model that says when a man's weight is 140 pounds, his height should be 6 feet, or 72 inches. When you go out and collect data, you might find someone who weighs 140 pounds but is 5 feet 9 inches, or 69 inches. The residual is then 69 inches minus 72 inches, giving you a value of negative 3 inches. In other words, the observed data point is 3 inches below the expected value.

VECTOR AUTO REGRESSION

The vector auto regression (VAR) is an econometric model used to capture the linear interdependencies among multiple time series. VAR models generalize the univariate autoregressive model (AR model) by allowing for more than one evolving variable. All variables in a VAR are treated symmetrically in a structural sense (although the estimated quantitative response coefficients will not in general be the same); each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables. VAR modeling does not require as much knowledge about the forces influencing a variable as do structural models with simultaneous equations: The only prior knowledge required is a list of variables which can be hypothesized to affect each other intertemporally.

A VAR model describes the evolution of a set of k variables (called *endogenous variables*) over the same sample period ($t = 1, \dots, T$) as a linear function of only their past values. The variables are collected in a $k \times 1$ vector y_t , which has as the i^{th} element, $y_{i,t}$, the observation at time "t" of the i^{th} variable. For example, if the i^{th} variable is GDP, then $y_{i,t}$ is the value of GDP at time t .

A p -th order VAR, denoted VAR(p), is

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

where the l -periods back observation y_{t-l} is called the l -th lag of y , c is a $k \times 1$ vector of constants (intercepts), A_l is a time-invariant $k \times k$ matrix and e_t is a $k \times 1$ vector of error terms satisfying

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

A p th-order VAR is also called a VAR with p lags. The process of choosing the maximum lag p in the VAR model requires special attention because inference is dependent on correctness of the selected lag order.

AUGMENTED DICKEY-FULLER TEST

In statistics and econometrics, an augmented Dickey–Fuller test (ADF) is a test for a unit root in a time series sample. It is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit root at some level of confidence

The testing procedure for the ADF test is the same as for the Dickey–Fuller test but it is applied to the model

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \dots + \delta_{p-1} \Delta y_{t-p+1} + \epsilon_t,$$

where α is a constant, β the coefficient on a time trend and p the lag order of the autoregressive process. Imposing the constraints $\alpha = 0$ and $\beta = 0$

corresponds to modelling a random walk and using the constraint $\beta = 0$ corresponds to modeling a random walk with a drift. Consequently, there are three main versions of the test, analogous to the ones discussed on Dickey–Fuller test (see that page for a discussion on dealing with uncertainty about including the intercept and deterministic time trend terms in the test equation.)

By including lags of the order p the ADF formulation allows for higher-order autoregressive processes. This means that the lag length p has to be determined when applying the test. One possible approach is to test down from high orders and examine the t -values on coefficients. An alternative approach is to examine information criteria such as the Akaike information criterion, Bayesian information criterion or the Hannan–Quinn information criterion.

The unit root test is then carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$. Once a value for the test statistic

$$DF_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})}$$

is computed it can be compared to the relevant critical value for the Dickey–Fuller Test. If the test statistic is less (this test is non symmetrical so we do not consider an absolute value) than the (larger negative) critical value, then the null hypothesis of $\gamma = 0$ is rejected and no unit root is present.

AUTOREGRESSIVE CONDITIONAL HETEROSKEDASTICITY

In econometrics, autoregressive conditional heteroskedasticity (ARCH) models are used to characterize and model time series. They are used at any point in a series, the error terms are thought to have a characteristic size or variance. In particular ARCH models assume the variance of the current error term or innovation to be a function of the actual sizes of the previous time periods' error terms: often the variance is related to the squares of the previous innovations.

Such models are often called ARCH models (Engle, 1982),^[1] although a variety of other acronyms are applied to particular structures that have a similar basis. ARCH models are commonly employed in modeling financial time series that exhibit time-varying volatility clustering, i.e. periods of swings interspersed with periods of relative calm. ARCH-type models are sometimes considered to be in the family of stochastic volatility models, although this is strictly incorrect since at time t the volatility is completely pre-determined (deterministic) given previous values.

ARCH(q) MODEL SPECIFICATION

Suppose one wishes to model a time series using an ARCH process. Let ϵ_t denote the error terms (return residuals, with respect to a mean process), i.e. the series terms. These ϵ_t are split into a stochastic piece z_t and a time-dependent standard deviation σ_t characterizing the typical size of the terms so that $\epsilon_t = \sigma_t z_t$

The random variable z_t is a strong white noise process. The series σ_t^2 is modeled by

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \dots + \alpha_q \epsilon_{t-q}^2 = \alpha_0 + \sum_{i=1}^q \alpha_i \epsilon_{t-i}^2$$

where $\alpha_0 > 0$ and $\alpha_i \geq 0, i > 0$.

An ARCH(q) model can be estimated using ordinary least squares. A methodology to test for the lag length of ARCH errors using the Lagrange multiplier test was proposed by Engle (1982). This procedure is as follows:

1. Estimate the best fitting autoregressive model AR(q)

$$y_t = a_0 + a_1 y_{t-1} + \dots + a_q y_{t-q} + \epsilon_t = a_0 + \sum_{i=1}^q a_i y_{t-i} + \epsilon_t$$

2. Obtain the squares of the error $\hat{\epsilon}_t^2$ and regress them on a constant and q lagged values:

$$\hat{\epsilon}_t^2 = \hat{\alpha}_0 + \sum_{i=1}^q \hat{\alpha}_i \hat{\epsilon}_{t-i}^2$$

where q is the length of ARCH lags.

3. The null hypothesis is that, in the absence of ARCH components, we have $\alpha_i = 0$ for all $i = 1, \dots, q$. The alternative hypothesis is that, in the presence of ARCH components, at least one of the estimated α_i coefficients must be significant. In a sample of T residuals under the null hypothesis of no

ARCH errors, the test statistic $T'R^2$ follows χ^2 distribution with q degrees of freedom, where T' is the number of equations in the model which fits the residuals vs the lags (i.e. $T' = T - q$). If $T'R^2$ is greater than the Chi-square table value, we reject the null hypothesis and conclude there is an ARCH effect in the ARMA model. If $T'R^2$ is smaller than the Chi-square table value, we do not reject the null hypothesis.

GARCH (p, q) model specification

The lag length p of a GARCH(p, q) process is established in three steps:

1. Estimate the best fitting AR(q) model

$$y_t = a_0 + a_1 y_{t-1} + \dots + a_q y_{t-q} + \epsilon_t = a_0 + \sum_{i=1}^q a_i y_{t-i} + \epsilon_t$$

2. Compute and plot the autocorrelations of ϵ_t^2 by

$$\rho = \frac{\sum_{t=i+1}^T (\hat{\epsilon}_t^2 - \hat{\sigma}_t^2)(\hat{\epsilon}_{t-1}^2 - \hat{\sigma}_{t-1}^2)}{\sum_{t=1}^T (\hat{\epsilon}_t^2 - \hat{\sigma}_t^2)^2}$$

3. The asymptotic, that is for large samples, standard deviation of $\rho(i)$ is $1/\sqrt{T}$. Individual values that are larger than this indicate GARCH errors. To estimate the total number of lags, use the Ljung-Box test until the value of these are less than, say, 10% significant. The Ljung-Box Q-statistic follows χ^2 distribution with n degrees of freedom if the squared residuals ϵ_t^2 are uncorrelated. It is recommended to consider up to $T/4$ values of n . The null hypothesis states that there are no ARCH or GARCH errors. Rejecting the null thus means that such errors exist in the conditional variance.

TGARCH

The Threshold GARCH (TGARCH) model by Zakoian (1994) is similar to GJR GARCH. The specification is one on conditional standard deviation instead of conditional variance

$$\sigma_t = K + \delta \sigma_{t-1} + \alpha_1^+ \epsilon_{t-1}^+ + \alpha_1^- \epsilon_{t-1}^-$$

where $\epsilon_{t-1}^+ = \epsilon_{t-1}$ if $\epsilon_{t-1} > 0$, and $\epsilon_{t-1}^+ = 0$ if $\epsilon_{t-1} \leq 0$. Likewise, $\epsilon_{t-1}^- = \epsilon_{t-1}$ if $\epsilon_{t-1} \leq 0$, and $\epsilon_{t-1}^- = 0$ if $\epsilon_{t-1} > 0$.

EGARCH

The exponential generalized autoregressive conditional heteroskedastic (EGARCH) model by Nelson (1991) is another form of the GARCH model. Formally, an EGARCH(p,q):

$$\log \sigma_t^2 = \omega + \sum_{k=1}^q \beta_k g(Z_{t-k}) + \sum_{k=1}^p \alpha_k \log \sigma_{t-k}^2$$

where $g(Z_t) = \theta Z_t + \lambda(|Z_t| - E(|Z_t|))$, σ_t^2 is the conditional variance, $\omega, \beta, \alpha, \theta$ and λ are coefficients. Z_t may be a standard normal variable or come from a generalized error distribution. The formulation for $g(Z_t)$ allows the sign and the magnitude of Z_t to have separate effects on the volatility. This is particularly useful in an asset pricing context.

Since $\log \sigma_t^2$ may be negative there are no (fewer) restrictions on the parameters.

DATA ANALYSIS

1. To know the relationship between liquidity in country, banks and market returns.

TABLE 2

| election years | liquidity in the country | liquidity with banks | Market returns | SD of nifty |
|----------------|--------------------------|----------------------|----------------|-------------|
| 2004 | 2.370134364 | -45.84615385 | 14.63318569 | 503.58406 |
| 2009 | 3.232819978 | -99.16881628 | 7.542664055 | 125.54896 |
| 2014 | 5.579447445 | 5.540092067 | 4.767704562 | 110.91224 |

Interpretation: The above table depicts picture of liquidity can market return during the election period. Liquidity in the country is observe to growing 2004, 2009, 2014 elections some during election period liquidity in the banks. It is observe to be negative 2004, 2009 but 2014 liquidity in the banks staid in positive. Market returns in all three elections period staid in positive with higher standard deviation.

TABLE 3

| | LIB | LIC | NIFTY |
|-------|-----------|----------|-------|
| LIB | 1 | | |
| LIC | -0.969842 | 1 | |
| NIFTY | 0.0978999 | -0.25429 | 1 |

Interpretation: The above analyses of bivariate correlation has been apply between liquidity of banks on the country. Along with the nifty returns the analyses, output reveals that liquidity in the country is having negative correlation with liquidity in the banks in nifty returns.

2009

TABLE 4

| | LIB | LIC | NIFTY |
|-------|-----------|---------|-------|
| LIB | 1 | | |
| LIC | -0.91923 | 1 | |
| NIFTY | -0.774942 | 0.93359 | 1 |

Interpretation: Liquidity in the banks is observed to negative correlation with liquidity in the country and nifty returns. According to bivariate correlation liquidity in the country is having correlation with nifty returns.

2014

TABLE 5

| | LIB | LIC | NIFTY |
|-------|-----------|---------|-------|
| LIB | 1 | | |
| LIC | -0.084939 | 1 | |
| NIFTY | 0.30199 | 0.56184 | 1 |

Interpretation The above table bivariate correlation results indicate that nifty having positive correlation with liquidity in the bank and liquidity in the country.

2. To know the impact of liquidity of bank and liquidity in the country on nifty returns**TABLE 6**

| Pairwise Granger Causality Tests | | | |
|---|-----|----------------|---------------|
| Sample: 1 18 | | | |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
| NIFTY does not Granger Cause LIC | 16 | 0.22415 | 0.8028 |
| LIC does not Granger Cause NIFTY | | 0.90421 | 0.4329 |
| NIFTY does not Granger Cause LIB | 16 | 2.89389 | 0.0978 |
| LIB does not Granger Cause NIFTY | | 0.49199 | 0.6242 |

Interpretation: The above table of granger has been applied to measures to the influence the liquidity on equity market.

- The null hypothesis indicates the probability value 0.4329 > 0.05. Hence null hypothesis is rejected, accepted the alternative hypothesis H1.
- Liquidity in the bank null hypothesis with nifty has been rejected the cost probability value is 0.6242 > 0.05. Hence, H1 alternative hypothesis has been accepted.

INFERENCE:- Liquidity in the bank and liquidity in the country. Both variables are having influence on equity market returns.

3. To know the performance of the nifty during the election period.**TABLE 7**

| Years | | Mkt returns | Risk | | Market Sharpe | nifty returns |
|-------|--------|-------------|--------------|--------------|---------------|---------------|
| 2004 | sharpe | 0.047008453 | 0.036840079 | 0.550789215 | -0.30576917 | 0.000764202 |
| 2009 | sharpe | 0.002654931 | -0.031609341 | -0.062039924 | -0.46551074 | 0.000899391 |
| 2014 | sharpe | 0.031433224 | -0.140692741 | -0.036916788 | -0.332287959 | 0.000512181 |

Interpretation: The above table of performance measure to as been applied on nifty returns during the election period. According to sharpe methodology nifty performance is observed to be positive in all three election period and compare with the market performance.

FINDINGS OF THE STUDY

1. The study found that liquidity in the country is growing during the election period when its compare with non-election period.
2. Liquidity in the banks in the 2004 and 2009 staying negative but in the year 2014. The study observe that it has staying positive.
3. The present study bivariate a correlation result reveals that in the 2009 liquidity in the bank is negative correlation with nifty and liquidity in the country.
4. In the year 2014 election period nifty with positive correlation with liquidity in the country and with the bank.
5. This study observes that equity market branch mark nifty returns got influence liquidity in the country and liquidity with the bank.
6. The performance the market in three elections found that nifty return performance sufferer than the market performance.

CONCLUSION

In democracy country like India, elections place a vital role in financial market. The present study has been emphasize on three elections periods of 2004, 2009 and 2014. The bi-variate correlation indicates that there is an association between liquidity variable of liquidity in the bank and liquidity in the country with nifty returns, granger causality test has been applied and found that liquidity in the country and with the banks are influence the market indicator nifty. The Sharpe performance method role has been applied on three election and found that nifty is performance is well stronger than market returns performance.

LIMITATIONS

1. In the process of converting data stationary under ADF lag variable has been considered for 1 year period for all the past, pre and during the elections period for all the general elections period.
2. Only commercial bank deposits are considered for the study.

FURTHER RESEARCH

Liquidity in the bank and with the system data has been consider in RBI and found that the market influence by this two liquidity variable. Hence there is the further scope to do reserve in the area by consider various economic factors influence during the elections period.

REFERENCES

1. Aleh Mazol Kyiv School of Economics 2013, The influence of election cycles on stock market fluctuations in developing <http://www.kse.org.ua/download.php?downloadid=314>
2. Frida Lönnqvist, Sofia Lehander, Parliamentary Elections Impact on Stock Market Returns <http://arc.hhs.se/download.aspx?MediumId=1395>
3. <http://eci.nic.in/eci/eci.html>
4. <https://www.rbi.org>
5. James Ndungu Kabiru, The effect of general elections on stock returns at the nairobi securities exchange file:///C:/Users/Samsung%20PC/Downloads/6400-18611-1-PB.pdf
6. Javed Khan, Shafiq Ur Rehman and Altaf Hussain, impact of general election 2013 on the share prices of public listed firms: evidence from paki-stan. <http://www.cityuniversity.edu.pk/curj/Journals/Journal/Jan%202016/artcile%2008a.pdf>

'BIG DATA' PRIVACY CHALLENGE AND DATA PROTECTION: A GLOBAL CONCERN

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ABSTRACT

First section of the paper gives the brief about the Big Data and the traditional core privacy approaches and assumptions after that a critical analysis of these approaches are successful in meeting the challenges created by Big Data. in the next section describes the personal data services "PDS" and the extent it is able to cop-up with new business innovation, its application in new business strategy and to regulate the business and how it is help full in developing new business model with risk minimization.

KEYWORDS

big data, data protection, privacy challenges.

INTRODUCTION

What is Big Data?

Big data in general are the group of data set that are so big and complex that routine application software are not able to properly deal with features of database like capture, store and process. The big data analytics is mainly used to find out the behavior analysis data or the size of data is too big, by playing these a projections regarding the business trends can be spotted.

Big Data' refers to a new modern method where organizations, mingles the electronic data base with the use of mathematics and statistics and then with the help of data mining, the information is extracted, and correlation is established in different variables, which results in surprising relation. In other way it helps in deriving the management strategy in a new way with the help of new data management technique and integration of old data.

As per the (www.sas.com) "Big data is a term that describes the large volume of data – both structured and unstructured – that inundates a business on a day-to-day basis. But it's not the amount of data that's important. It's what organizations do with the data that matters."

(www.webopedia.com) defines this another way "big Data is a phrase used to mean a massive volume of both structured and unstructured data that is so large it is difficult to process using traditional database and software techniques"

"Forbes magazine" also stated in its article "Big data is a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis."

Gartner an American research firm states this in a different way ""Big data is high volume, high velocity, and/or high variety information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimization."

The big data can be classified by 4 V's like: Variety, volume, velocity and value this can be described by the diagram.

FIGURE 1: CLASSIFICATION OF BIG DATA

- **Velocity:** it is the pace at which data is being fetched from data base, analyzed and acted in data analysis application based on the query and afterwards the result is declared, this can be only done with the proper understanding of the data available and the desired out put as per the requirement is stated, then the correlation is established between the goals and the interpretation. there are applications which requires the data in real time and action like in health services, ecommerce applications, mobile applications and internet of things. GPS based tr applications are the best example where the user need the help to resolve the query instantly and well in time. various startups like smart24x7 are using this services for fire, women safety and in case of any emergency services to traced out the velocity plays a vital role.
- **Volume.** The size of data should have a unique nature so that the processing can be faster. High volume of data requires high speed and low density. At this level or time now the Haddop nature came in the picture, before the processing the data should be converted in useful information reason being the data

collected from social media it is very difficult to find out the useful information from data. The data from such sources of unknown value, the size could be varies in n perabyte, xetabyte or petabyte range.

- **Variety.** Types of data may be structured or unstructured or semi structured. This data types may be varies from normal as text, audio and video. Video and audio data needs extra processing to get information in a meaningful valued way can be supportable to metadata. Once the data is converted into desired form which can be understood this can be fulfill various requirement or different purpose, especially privacy purposed. when the things changes from un-structured to structured from a known source without the user notice at that point special care should be taken, that's why analytical environment should not be disturbed during this process.
- **Value.** Every Data contains some intrinsic value—which should be discovered by various techniques available in the market whether is quantitative or qualitative, therefore the by finding the exact value will decrease the cost of data storage and its computation, when the data volume is very high like in weather forecasting for various applications. The key issue in is value determination since human behavior changes very fast and the information received wart to human behavior is variable in nature.

OPPORTUNITY

The emergence of cloud concept brought various new features in Information technology services with new techniques for data storage basically it can be said that it a collection of group of resources combined through virtual concept and being served with business model like pay per resources like hardware, software and remotely located data centre, services are being made available on request through internet. Due to the location of these data centre is spread in various countries and even continent, the usage of resource management, tracking of resources which are being utilized is become very difficult here come the compliance with rules and regulations related to data handling as the rules in different country is different, even polices differ for multi tenancy, resource utilization, auditing security, privacy and use. These all should be fully understood and addressed and shared.

PRIVACY

The application and usage of big data provides a number of economic and social benefits at the same time it raises serious concern about privacy also. The basic privacy norms are related to 'personal data', of an individual only and they provide the information about a recognized person. These principals are restricted to data quality variables only. These quality variables can be applied in terms of data minimization, accuracy, completeness, transparency, security, secretes, completeness and transparency. Beside these the DPD ensure the free flow of Individual data within the norms for various measures. there is mainly few pit fall in the foundation or basic solitude matters or principles, this policy purely relied on the informed alternatives, these can be modified by anybody very easily, other one is the data minimization, as per the firms requirement the software's can be easily redesigned as per the need of concerns, the chances are low that data protection authorities used their arms to stop the redesigning the packages, processes used in business and hardware to such system secretly and lastly to keep pace with globalization because as per the technical advancement are happening very fast, the way individuals use the data, produce the data, create the data and share the data is very different and as per the web 2.0 application are increasing day by day the technical capabilities of is also changing at very fast pace.

IOT application and mobile application, RFID, GPS application also bringing these privacy tools more specifically in various domains of big data in new shape and standard data measures is not applicable in such cases.

All these a requires a new set of Data rules for protection due to these technical advancement even though the first set of directives were framed, these were most influential privacy directives are from European Union known as DPD but in the current scenario the DPD lags in the issues like suspect, Profiling and, targeting of the consumer in various e means due to the dependency on informed choice working. There are challenges regarding personal data ecosystem. This ecosystem should be supported by consumer empowerment also so that new model can be framed which can use the personal data in a better way for all the purposes, whether it is social legal, economical or technical. Which can enable business to new height and a new era of services which are data centered with new privacy rules.

PROTECTION THE BIGGEST CHALLENGE

The creation of knowledge world through the Big data brought so many challenges in the front of IT world, among them privacy is the centre point or it can be said the privacy become the key for all the companies and their executives who are dealing with Big data like Google, face book, Microsoft and many more who are in similar field.

Emergence of social media and its acceptance popularity among all over the world and the data from this media treated as major assets for the organization and source of value creation. This value creation not only helps in wealth creation but also in enhancement of technical and business development capabilities for data intensive services.

The data collected from massive scale through apps being shared with multiple parties and having interaction with multiple parties in multiple environment of friend and families.

Web 2.0 features in social media and high growth of net capabilities the digital data captured through cookies and beacons creating the high profusion of electronic, in this profusion intensify the existing privacy rules and regulation of tracking and profiling. The analysis of this data sometimes gives interesting results sometimes it may useful for the society but some time creates problem. Individual pictures, interest is being tracked various sources without the permission and used without notice.

THE IMPACT OF BIG DATA ON DATA PROTECTION LAW

The data extracted from personal/non personal data sources and others type created regulatory concern. DPD laws do not gives insight on the extraction data treatment. It may over look regulation and can permits the inferences about private information, anonymization and data minimization, data breaching is the other challenges have a great concern over data protection laws

RECOMMENDATIONS AND CONCLUSION

A new business model is the need of today to achieve the privacy goals solely through rules and universally accepted regulation which supports the personal empowerment since DPD failed to protect the privacy laws at the same time there are business reasons to empower control over Personal data and privacy conditions. Any rule made for regulation in the eve of a data revolution able to regulate this new technical revolution, able to operate in new context, able to understand society in great sense in new ethical code of with balancing of human rights issues.

REFERENCES

1. http://www.debrauw.com/wpcontent/uploads/NEWS%20%20PUBLICATIONS/Moerel_oratie.pdf
2. <http://www.saintylaw.com.au/expertise-old/privacy-security-advice/>
3. <https://en.wikipedia.org/wiki/Gartner>
4. <https://ico.org.uk/for-organisations/guide-to-data-protection/big-data/>
5. <https://oup.silverchair-cdn.com/>
6. <https://www.forbes.com/sites/lisaarthur/2013/08/15/what-is-big-data/#4b11f1db5c85>
7. https://www.sas.com/en_us/insights/big-data/what-is-big-data.html

A STUDY OF FACTORS AFFECTING QUALITY OF HEALTHCARE AND ITS EFFECTS ON CUSTOMER SATISFACTION: WITH REFERENCE TO ALL CORPORATE HOSPITALS IN NAGPUR CITY

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ABSTRACT

A modern health system which provides high quality care has trickle-down effect on the quality of life of the individual citizens and the overall economic development of the country. Quality care has become an important aspect in the development of healthcare services. Customer/Patient satisfaction on healthcare quality plays a vital part on the assessment of healthcare frequently. Improvement in quality reflects on the satisfaction level of the patients. The higher the quality the higher the satisfaction level of the patient This study focuses on finding out the factors affecting quality of healthcare and its effects on customer/Patient satisfaction with special reference to a private hospital in Nagpur city, Maharashtra, India.

KEYWORDS

customer/patient satisfaction, economic development, quality of healthcare, modern health system, satisfaction level.

INTRODUCTION

Customer/Patient satisfaction is a **marketing term** that measures how products or services supplied by a company meet or surpass a customer's expectation. Customer satisfaction is important because it provides marketers and business owners with a metric that they can use to manage and improve their businesses. It can be also defined as The degree of satisfaction provided by the goods or services of a company as measured by the number of repeat customers.

It is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals". Customer satisfaction provides a leading indicator of consumer purchase intentions and loyalty. Customer satisfaction data are among the most frequently collected indicators of market perceptions. In most of the cases the consideration is focused on two basic constructs as customer's expectations prior to purchase or use of a product and his relative perception of the performance of that product after using it.

IMPORTANCE OF CUSTOMER SATISFACTION

1. Customer satisfaction is a gateway to earning loyalty.

Measuring customer satisfaction and loyalty are like comparing apples to oranges because the former is a function of attitude while the latter goes much deeper. Loyalty is a belief that was formed from having a customer encounter good experiences from a particular brand. Ensuring that a client is satisfied with every point of interaction is a process that leads to loyalty down the road.

2. You must keep customers satisfied to maintain their loyalty.

On average, it takes up to three years for a customer to become loyal to your business. Once loyalty has been earned, it's important not to slack off because these are clients that can give insights for improvement to the marketer. More importantly, they are the best candidates for becoming ambassadors, and those who'll keep coming back to buy from the same marketer during their lifetime—as long as the marketer keeps them satisfied.

3. It's a key metric for project management success.

In project management, the key factors that are often given priority are time, scope, and budget. Client satisfaction is important but it's usually given mere lip service, and not tied into the day-to-day decision-making process.

4. Measuring satisfaction lets you know if a client will buy from you again.

There's a strong correlation between satisfaction and repeat business. Keeping new customers happy will increase the likelihood of them buying from you again while poor customer service on marketer's part, then lowers the chances of them coming back.

5. Clients leave because of poor quality service more than price considerations.

The main reason for attrition is not changes in marketer's price points, but bad customer service experience. The good news here is that as long as marketer pays attention to his customer's needs and continue to "wow" them by exceeding their expectations, it's easier to justify price increases when the time comes.

6. It keeps you ahead of your competitors.

As a market differentiator, nothing beats consistently delivering excellent service, and always going above and beyond marketer's customer needs. Take the case of brands like Starbucks, the Ritz-Carlton, or Disney. One needs only mention the names of these successful brands and services to know that it's their commitment to customer satisfaction that has kept them miles ahead from their peers.

7. It promotes customer retention.

Retention is closely tied to loyalty. Satisfaction keeps clients coming back for more and doing business with the marketer in the future. They're more likely to stick with marketer's brand longer and eventually turn into the kind of advocates that will help spread the word for marketer, thereby earning more customers down the road.

8. Acquiring new clients is more expensive than keeping the ones you already have.

It's an oft-repeated statistic among customer service practitioners that it costs up to seven times more to acquire new clients than it does to retain the ones you already have. This is why marketer's should put more of resources toward keeping your existing marketer customers happy, instead of trying to reach out cold to new ones.

9. Disgruntled customers will spread the word about your business.

Negative word of mouth can be a death knell to a company, especially in today's wired and interconnected world. It's so much easier to spread negative reviews on various platforms.

10. It improves customer lifetime value.

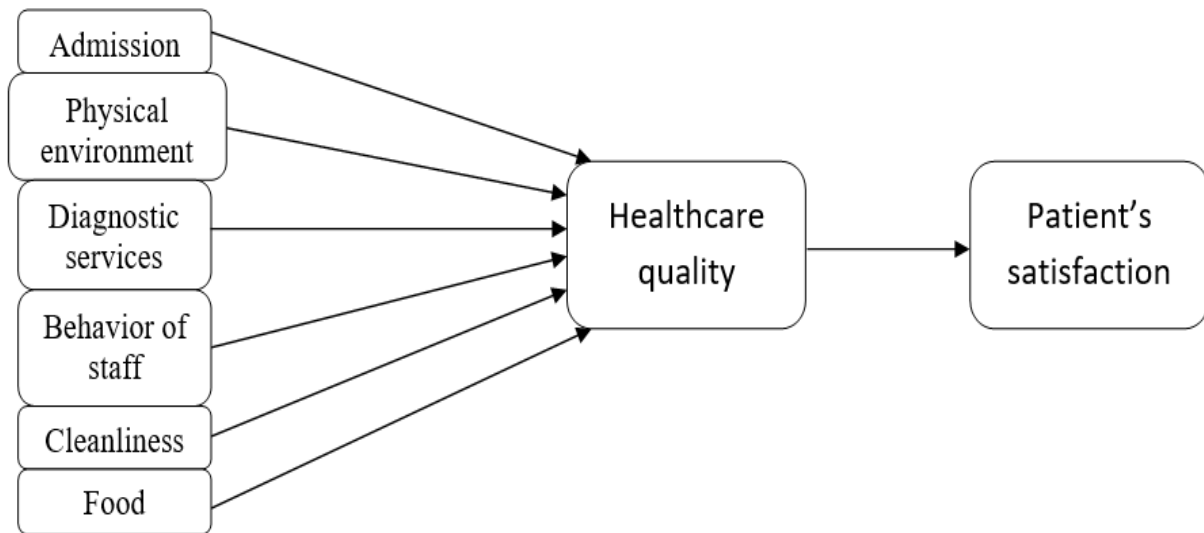
Customer lifetime value is a marketing term that predicts the net profit attributed to the entire future relationship with a customer. The longer a client remains satisfied with a product or service, the longer they'll stay with it, which in turn increases the chances of getting a return for the amount of time and money it took to acquire that customer.

WHAT IS HEALTHCARE QUALITY?

Measuring the value of any healthcare resources level refers to healthcare quality. The main aim of healthcare is to provide medical resources of high quality to all. Most people would define healthcare quality as receiving best care possible for one's illness or condition, and for many, it also includes the entire experience

of receiving care including the avoidance of errors or mistakes. Quality measures enable us to see how we perform against benchmark. Quality reflects patient satisfaction, while patient satisfaction depends on several factors like, admission procedure, physical facilities, diagnostics services, behavior of staff, cleanliness, food.

FIG. 1



FACTORS AFFECTING PATIENT'S SATISFACTION

- **Admission procedure**

If the admission procedure is too lengthy or time consuming is too complicated, then it might create bad impression in the minds of the patients and it may lead to patients dissatisfaction in the whole process of treatment.

- **Physical Environment**

A patient/attendant judges a hospital, the moment they lay eyes on it. Before a service experience even begins, the patient usually has already decided whether they will be returning to the hospital again. On understanding the connection between the quality in physical facilities and patient satisfaction, one can know that, it can have lasting

impact on both hospital's performance and its ability to provide quality care. Quality in lobby, out-patient clinics, inpatient rooms, operating rooms, exam/procedure rooms, support areas, reception counters, and administrative areas contributes to patient satisfaction.

- **Diagnostic Services**

Delay in diagnostic services leads to dissatisfaction amongst patients. Diagnostic facilities include laboratory and radiology services.

- **Behaviour of Staff**

This dimension measures patients' experience in respect to the quality of care delivered by doctors, nurses, paramedical. Staff and support staff. The medical encounter between a doctor and a patient requires intensive levels of interaction where it has a greater impact on patient satisfaction. As mentioned by Bitner in 1990, there is a long term relationship between the doctor and patient with the doctor having a significant discretion in meeting patient needs. Many studies have highlighted the vital contribution of nurses to the quality of patient care. Skills and behavior of the para-medical and support staff also plays a major role in measuring quality, with regard to the behavior of staff that influences patient satisfaction.

- **Cleanliness**

One area that has greater impact on hospital quality is patient perception towards cleanliness. Cleanliness includes environmental cleanliness, hygiene, hand washing techniques and everything. Interaction by administrators to patients will make them understand the efforts taken by staff to keep their hospital clean. This helps in boosting the satisfaction of patients on cleanliness which serves as a key element in attaining quality services.

- **Food**

Hospital administrators say the focus on food has gained extra importance among patients. There are many food management companies that specialize in healthcare facilities since they are getting more requests from hospitals. Food plays a vital role of game changer in the hospitals. Many patients hate dietary food style in hospitals. So management has taken steps along with dietary counselors in order to satisfy the patient taste without disturbing their nutritious diet.

REVIEW OF LITERATURE

Parasuraman, Zeithaml, & Berry, 1985, Over the past thirty years, the nature, dimensionality and measurement of service quality has been debated by academics. The concept of service quality has been described as elusive and abstract. This elusiveness is attributable to the unique characteristics of services: *intangibility*, *inseparability* of production and consumption, *heterogeneity*, and *perishability*.

Berwick, 1989, Today's quality movement in health care draws on disparate roots in medicine and other industries. Medicine historically has taken a watchdog approach, relying on government licensing, professional credentials, internal audits, and, more recently, external inspections to maintain standards solve problems and quality management. Other industries have adopted a different philosophy over the past 50 years: training employees to prevent problems, strengthening organizational systems, continually improving performance, and patient safety and satisfaction.

Brown, 1991, Quality is especially difficult to define, describe and measure in services. While quality control measures have long existed for tangible goods, few such measures have traditionally existed for services. In essence, quality is determined by imprecise individual factors: perceptions, expectations, and experiences of customers and providers, and in some cases, additional parties such as public officials.

Madeline, 1991, Customers inability to form accurate judgment based on objective evaluation of technical outcome often makes them bank upon the tangential cues that are encountered during the services delivery process. The functional quality dimensions become the basis of judging the technical outcome. For instance, the quality of services provided by physicians is likely to be judged by the impressions of his behavior, listening openness, accessibility and empathy.

Vera, 1993, Assuring the good quality of health care services is an ethical obligation of health care providers. Research is showing that good quality also offers practical benefits to patients. Good- quality care makes, for example, contraception safer and more effective. Poorly delivered services can cause infections, injuries, and even death. Poor services, in family planning clients and programmes also can lead to incorrect, inconsistent, or discontinued contraceptive use and thus to unwanted pregnancies. Interviews with clients in Chile, for example, found that good quality clinical services reduced clients' fears, increased their confidence in the care received, and generated loyalty to the clinic.

Zineldin, 1998, 2000a, 2000b, 2004, argues that total relationship management (TRM) highlights the role of quality and customers/patients service, the impact of the external environment on business rules and performance, on relationships and networks, on communications and interactions with different actors, other collaborators and employees in different departments/functions.

Campbell J, 1999, Patient satisfaction is generally defined as the consumer’s view of services received and the results of the treatment. The importance of patient satisfaction has had a long history of debate, beginning, over two millenniums ago in ancient Rome. Plato suggested in a statement that since the doctor “cuts us up, and orders us to bring him money.. as if he were exacting tribute.. he should be put under rigid control,” and that this could be done by calling an assembly of the people and inviting opinions about “disease and how drugs and surgical instruments should be applied to patients”.

Sofaer and Firminger, 2005, identified seven categories or dimensions that were important to patients:

1. Patient-centred care
2. Access
3. Courtesy and emotional support
4. Communication and information
5. Technical quality
6. Efficiency of care Organization
7. Structure and facilities

Hollis, 2006, argued that there was a strong link between service quality and satisfaction, to the extent that it is believed that quality has been defined in other consumer-orientated industries as perceived satisfaction.

Tam, 2007, argued that satisfaction arises from a process of comparing perceptions of service with expectations. The initial expectations that patients have about care and services act as a major determinant of satisfaction. If perceived care falls short of expectations, the likely outcome is dissatisfaction. On the other hand, when those meet or exceed expectations, the result is likely to be an increase in the level of satisfaction.

Badri, Attia, & Ustadi, 2008, believed that patients and their satisfaction are considered the most crucial point in the planning, implementation and evaluation of service delivery and that meeting the needs of the patient and creating healthcare standards were imperative towards achieving high quality.

Saila, 2008, rated effective communication as the key to patient satisfaction. Informed consent has been routinely performed by care providers in countries where litigation against care providers is common. Informed consent is becoming equally important, where medical scheme patients are now on savings plans and are thus more responsible with the funds allocated. Thus, with patients making informed decisions about their health, it becomes imperative that communication between the care provider and patient is clear.

OBJECTIVES

1. To analyze factors influencing quality in healthcare and patient satisfaction in all corporate hospitals in Nagpur city of Maharashtra, India.
2. To study patient perception towards factors influencing quality in all corporate hospitals in Nagpur city of Maharashtra, India.
3. To assess the role of hospital administrators towards quality and patient satisfaction quality in all corporate hospitals in Nagpur city of Maharashtra, India.

METHODOLOGY

The study adopted a questionnaire survey amongst patient/attendants and administrators. The hospital chosen for study were all corporate hospitals in Nagpur city of Maharashtra, India. These hospitals provide a wide range of healthcare and research services through various health professionals and trainers to diverse patient populations. Quantitative and qualitative data were collected using standardized questionnaire. The questionnaire specifically addresses the patient perception towards quality in services, factors influencing patient satisfaction, role of hospital administrators in providing quality services. Totally 272 samples were collected, 208 from patients/ attendants and 64 from hospital administrators using simple random sampling technique. Friedman test and chi-square test were used for statistical analysis.

DATA ANALYSIS

TABLE 1: PERCEPTION OF PATIENTS ON FACTORS INFLUENCING HEALTHCARE QUALITY AND PATIENT SATISFACTION (FRIEDMAN TEST)

| Factors influencing quality of healthcare | Mean Rank | Chi-Square Value | P-Value |
|---|-----------|------------------|---------|
| Physical environment | 4.80 | 775.930 | <0.001 |
| Food | 4.50 | 775.930 | <0.001 |
| Behavior of staff | 4.50 | 775.930 | <0.001 |
| Admission procedure | 4.20 | 775.930 | <0.001 |
| Cleanliness | 2.00 | 775.930 | <0.001 |
| Diagnostic services | 1.00 | 775.930 | <0.001 |

H0: There is no significance between perception of patient on factors influencing healthcare quality and patient satisfaction.

H1: There is significance between perception of patient on factors influencing healthcare quality and patient satisfaction.

Since P value is less than 0.01, H0 is rejected at 1% level of significance, where H0 is no significance between perception of patient on factors influencing healthcare quality and patient satisfaction. There is significance difference between mean ranks of factors influencing quality of healthcare and patient satisfaction. Based on mean rank, (4.80) physical facilities is the most important factor on quality, followed by food (4.50) and behavior of staff and admission procedure (4.20).

TABLE 2: YEARS OF EXPERIENCE AND ADMINISTRATORS’ UNDERSTANDING ON HEALTHCARE QUALITY (CHI- SQUARE)

| Years of experience | Chi-Square | Value |
|---------------------|------------|--------|
| 1-7 years | 1.280 | <0.001 |
| 8-15 years | 1.280 | <0.001 |
| 16-25 years | 1.280 | <0.001 |
| 26 years & above | 1.280 | <0.001 |

H0: There is no significance between years of experience and administrators understanding on healthcare quality.

H1: There is significance between years of experience and administrators understanding on healthcare quality.

Since P value is less than 0.01, H0 is rejected at 1% level of significance, where H0 is no significance between years of experience and administrators understanding on healthcare quality. Based on the years of experience administrators’ understanding on healthcare quality differs widely.

TABLE 3: ADMINISTRATOR UNDERSTANDING ON HEALTHCARE QUALITY (FRIEDMAN TEST)

| Administrators understanding on healthcare quality Mean | Mean Rank | Chi-Square | Value |
|--|-----------|------------|--------|
| Service outcomes are regularly communicated to all employees | 12.74 | 728.42 | <0.001 |
| Progress towards achieving hospital wide quality indicates goals is tracked and communicated, to medical and paramedical personnel | 11.79 | 728.42 | <0.001 |
| Clinicians, administrators involve patients and families in effort to improve patient care quality | 11.79 | 728.42 | <0.001 |
| Physical environment improves the mood and boosts the morale of both patient and provider | 11.79 | 728.42 | <0.001 |

H0: There is no significance on administrators understanding on healthcare quality and patient satisfaction

H1: There is significance on administrators understanding on healthcare quality and patient satisfaction

Since P value is less than 0.01, H₀ is rejected at 1% level of significance. There is significance difference between mean ranks on administrators' understanding of healthcare quality. Based on mean rank communication of services outcomes (12.74) is most important factor followed by progress toward achieving hospital wide quality indicators goals is tracked and communicated, to medical and paramedical personnel (11.79), clinicians, administrators involve patients and families in efforts to improve patient care quality (11.79) and physical environment improves the mood and boosts the morale of both patient and provider (11.79).

TABLE 4: QUALITY IMPROVEMENT INITIATIVES (FRIEDMAN TEST)

| Quality improvement initiatives | Mean Rank | Chi-Square | P Value |
|---|-----------|------------|---------|
| Hospital has established an organization wide quality mission statement | 9.55 | 728.42 | <0.001 |
| Work process redesign or reengineering is done regularly for quality | 8.61 | 728.42 | <0.001 |
| Bench marking within the hospital | 8.34 | 728.42 | <0.001 |
| Management walk around to identify quality problems or issues | 7.92 | 728.42 | <0.001 |

H₀: There is no significance on quality improvement initiative and healthcare quality

H₁: There is significance on quality improvement initiative and healthcare quality

Since P value is less than 0.01, H₀ is rejected at 1% level of significance. There is significance difference between mean ranks on quality improvement initiatives. Based on mean rank quality mission statement established by hospital is most important with mean rank of 9.55, followed by work process redesign and reengineering with 8.61, bench marking within the hospital with 8.34 and management walk around to identify quality problems and issues with mean rank of 7.92.

CONCLUSION

Regarding the importance of healthcare quality dimensions, the study concludes that physical facilities is the most important factor on healthcare quality, followed by food and behavior of staff and admission procedure from patient perspective. Based on the years of experience of staff the level of understanding on healthcare quality differs widely with high experienced staff with more knowledge on healthcare quality. Quality improvement initiatives like quality mission statement of the organization, redesigning and reengineering in hospital regularly, bench marking within the hospital and management walk around to identify problems and issues on quality helps the administrators to work towards quality.

REFERENCES

1. Badri, M.A., Attia, S.T. and Ustadi, A.M (2008) Testing the not so obvious models of healthcare quality. *International Journal of Healthcare Quality Assurance*, 21 (2), 159-174.
2. Berwick, D.M. (1989), "Continuous improvement as an ideal in health care", *New England Journal of Medicine*, Vol. 320 No. 1, pp. 1424-5.
3. Brown, S.W., E. Gummesson, B. Edvardson and B. Gustavsson, *Service Quality: Multidisciplinary and Multinational Perspective*, Lexington, D.C. Health and Company, 1991. P. XIII.
4. Campbell J. Explanatory practice for measuring consumer satisfaction: A Review of the literature. St. Louis MO; 1999.
5. Hollis, C. (2006) Service quality evaluations in internal healthcare service chains. Queensland University of Technology, Australasian Digital Thesis Program.
6. Madeline, J. and G. M. Zinkhan, "Emotional response to Professional Service Encounter", *Journal of Service Marketing*, Spring 1991, pp. 5-15.
7. Parasuraman, A., Zeithaml, V.A and Berry, L.L. (1985), "A Conceptual Model of Service Quality and its Implications for Future Research, *Journal of Marketing*, 46 (Fall), 41-50.
8. Saila, T., Mattila, E., Kaila, M., Aalto, P and Kauninen, M. (2008) Measuring patient assessment of quality of outpatient care: a systemic review. *Journal of Evaluation in Clinical Practice*, 14, 148-154.
9. Sofaer, S. and Firminger, K. (2005) patient perceptions of the quality of health services. *Annual Review of Public Health*, 26, 513-559.
10. Tam, J.L.M. (2007) Linking quality improvement with patient satisfaction: a study of health service centre. *Marketing Intelligence and Planning*, 25 (7), 732-745.
11. Vera, H. (1993), "The client's view of high-quality care in Santiago, Chile", *Studies in Family Planning*, Vol. 24 No. 1, pp. 40-9
12. Zinedlin, M. (1998), "Towards an ecological collaborative relationship management", *European Journal of Marketing*, Vol. 32 Nos 11/12, pp. 1138-64.
13. Zinedlin, M. (2000a), *Total Relationship Management*, Studentlitteratur, Sweden.
14. Zinedlin, M. (2000b), "Total relationship management (TRM) and total quality management (TQM)", *Managerial Auditing Journal*, Vol. 15 Nos 1-2, pp. 20-8.
15. Zinedlin, M. (2004), "Co-opetition: the organization of the future", *Marketing Intelligence & Planning*, Vol. 22 No. 7, pp. 780-7.

A STUDY OF MONETARY POLICY IMPACT ON PMI (PRODUCTION MANAGER INDEX)

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ABSTRACT

In any economy, maintaining the liquidity by the central bank to keep the momentum in the economy intact will be a big challenge. In the modern economy, industrial growth is playing the key role for the growth of the economy. The present scenario has been emphasized how monetary policy is having an influence on PMI of India. The Granger causality test has been applied on Johansen co integrated data and result reveals that CRR, Repo rate, reverse repo rate and SLR Granger causing the PMI. The linear regression model indicated that the PMI influence the GDP but it has failed to influence the IIP. The VAR model predicted the IIP future Momentum downwards but gold is expected to go upside based on the PMI. This study is useful to the industries production manager's investors of the equity, bankers and regulators.

KEYWORDS

PMI, SLR, CRR, investors, economy, liquidity, growth.

INTRODUCTION

The pace of growth in India's manufacturing sector improved to a four-month high in January, climbing into expansion territory after the contraction seen at the end of last year. The seasonally Manufacturing production Managers' Index (PMI) posted a reading of 51.1 in January, compared with 49.1 in December, data released on Monday showed. A reading above 50 denotes expansion.

Data showed that levels of production and total new business registered mild increases following contractions in the prior survey month. The consumer goods sub-sector remained the principal growth engine at the start of the year, seeing substantial expansions of both output and new orders. In contrast, producers of investment goods saw a fall in output and new orders, while production volumes stagnated in the intermediate goods category.

Moreover, the levels of incoming new export business has now risen in each of the past 28 months. Although there was some job creation in January, the survey noted that this increase was insufficient to reduce the pressure on manufacturers' capacity.

"The opening month of 2016 saw a rebound in new business - from both domestic and external clients - leading manufacturers in India to scale up output following a short-lived downturn recorded in December," said Pollyanna De Lima, economist at Market, the agency that compiles the index. "Whereas the trends in the growth rates are relatively weak in comparison with the long-run series averages, January's PMI data paints a brighter picture of the Indian economy." In its outlook, the survey indicated an unchanged repo rate at 6.75% by the Reserve Bank of India in its policy review on Tuesday, even though the central bank is likely to continue its monetary policy loosening cycle in 2016.

OBJECTIVES OF THE STUDY

1. To study the long-run relationship of monetary policy Key rates with PMI.
2. To know the monetary policy key rates influence on PMI.
3. To study the PMI impact on IIP and GDP.
4. To predict the future moment of IIP and gold price based on PMI.

REVIEW OF LITERATURE**Robert Killins (2016)**

This paper investigates the reaction of equity and volatility indices in the U.S. and Canada to changes in monetary policy by each respective country. The results confirm previous literature that suggests contractionary changes in monetary policy in the U.S. results in downward pressure on U.S. equity indices. Additionally, this research finds that monetary policy changes do not have any significant impact on the volatility index in the U.S. (VIX). The results from the Canadian data show a much different picture. Contractionary changes of monetary policy in both Canada and the U.S. seem to drive Canadian equity markets in an upward manner. These monetary policy shocks also have a significant impact on volatility indices in Canada. This research documents the dynamic relationship monetary policy has on equity markets in the U.S. and Canada.

Reinder Haitzma, Deren Unalmis & Jakob de Haan (2016)

Using an event study method, we examine how stock markets respond to the policies of the European Central Bank during 1999-2015. We use market prices of futures (government bonds) to identify surprises in (un)conventional monetary policy. Our results suggest that especially unconventional monetary policy surprises affect the EURO STOXX 50 index. We also find evidence for the credit channel, notably for unconventional monetary policy surprises. Our results also suggest that value and past loser stocks show a larger reaction to monetary policy surprises. These results are confirmed if identification of monetary policy surprises is based on the Rigobon-Sack heteroscedasticity approach.

Owolabi A. Usman, Ph. D. (2014)

The study empirically examines the impact of monetary policy on industrial growth in Nigerian economy, in line with the objectives of this study, secondary data were obtained from central bank of Nigeria statistical bulletin covering the period of 1970 to 2010. In concluding the analysis, multiple regressions were employed to analyze data on such variables, manufacturing output, Treasury Bills, Deposit & leading and Rediscount Rate for Nigeria over the period 1970 to 2010 were all found have significant effects on the industrial Growth with the Adjusted R2 of 0.8156 (81.56%) Following the outcome of this study, it is therefore concluded that Rediscount Rate, and Deposit have significant positive effect on industrial output but Treasury Bills has the negative impact on industrial output. All the variables are statistically significant. It is order to improve economic growth; it is recommended that government should develop the industrial sectors of the economy through its capital expenditure. With this, capital expenditure on productive activities and social overheads capital will contribute positively to industrial growth which will invariably enhance economic growth.

Yong Ma & Xingkai Lin (2016)

This paper investigates the relationship between financial development and the effectiveness of monetary policy using panel data from 41 economies. The results show that the effects of monetary policy on output and inflation are significantly and negatively correlated with financial development, indicating that the effectiveness of monetary policy declines as the financial system becomes more developed. This finding is robust across all the different specifications and estimation methods examined. Our paper provides new evidence and insights to the long-standing debate on the relationship between financial development and the effectiveness of monetary policy.

Jean Boivin, Marc Giannoni & Ilian Mihov (2007)

This paper disentangles fluctuations in disaggregated prices due to macroeconomic and sectoral conditions using a factor-augmented vector auto regression estimated on a large data set. On the basis of this estimation, we establish eight facts: (1) Macroeconomic shocks explain only about 15% of sectoral inflation fluctuations; (2) The persistence of sectoral inflation is driven by macroeconomic factors; (3) While disaggregated prices respond quickly to sector-specific shocks,

their responses to aggregate shocks are small on impact and larger thereafter; (4) Most prices respond with a significant delay to identified monetary policy shocks, and show little evidence of a "price puzzle," contrary to existing studies based on traditional VARs; (5) Categories in which consumer prices fall the most following a monetary policy shock tend to be those in which quantities consumed fall the least; (6) The observed dispersion in the reaction of producer prices is relatively well explained by the degree of market power; (7) Prices in sectors with volatile idiosyncratic shocks react rapidly to aggregate monetary policy shocks; (8) The sector-specific components of prices and quantities move in opposite directions.

Imoughele Lawrence Ehikioya (2014)

Monetary policy is one of the macroeconomic instruments with which monetary authority in a country employed in the management of their economy to attained fundamental objectives of price stability, maintenance of balance of payments equilibrium, and promotion of employment, output growth and sustainable development. These objectives are necessary for the attainment of internal and external balance of value of money and promotion of long run growth of the real economic sectors such as the manufacturing sector. It is against this background, that this study examines the impact of monetary policy on Nigeria's manufacturing sector performance for the period 1986- 2012. Data were collected from the Statistical Bulletin and Annual Report and Statement of Accounts of the Central Bank of Nigeria as well as the Annual Abstracts of statistics (various issues) published by the National Bureau of Statistics (NBS). Unit root test, Granger Causality test, co integration and VAR model were some of the econometrics techniques used for data estimation. Augmented Dickey Fuller (ADF) test statistic revealed that the time series properties of the variables attained stationarity at level and first order. The variables were co integrated at most 2 with at least 3 co integrating equations. The individual variables: external reserve, exchange rate and inflation rate were statistically significant to manufacturing sector output while broad money supply and interest rate were not statistically significant to manufacturing sector output in the previous and current year. However, interest rate, exchange rate and external reserve impacted negatively on the sector output but broad money supply and inflation rate affect the sector positively. The pair-wise Granger Causality results suggest that real exchange rate and external reserves granger cause Nigeria's manufacturing output to each other unidirectional. The paper also found that the manufacturing sector contribute insignificantly to the Nigerian economy. Therefore, the study recommended among others that monetary authority should create and implement monetary policies that favored efficient provider of favorable investment climate by facilitating the emergency of market based interest rate and exchange rate regimes that attract both domestic and foreign investment to the manufacturing industrial sector that are currently operating far below installed capacity. However, in order to maintain and exploit the current investment climate, the Central Bank of Nigeria should introduce more monetary instruments that are flexible enough to meet the supply and demands needs of the manufacturing sector.

Anamika Singh (2014)

The study of monetary policy impact on market volatility has been done by considering 15 years data. Monetary policy is the fixed event where market will wait to take fix direction based on the policy rates changes. CRR and SLR are the two key liquid rates playing vital role in controlling of liquidity in India. This analysis had proven that IIP influenced by changes of CRR. Interest rates found to be non-significant when it comes to be NIFTY volatility. Augmented Dickey Fuller Test (ADF) has been applied for the stationary of the data which were averaged yearly. Arch model had proven that NIFTY volatility is getting influenced whenever monetary policy announced. This analysis is useful for the traders, investors, pension funds, mutual funds, portfolio managers and investment bankers.

Himani (2014)

In every country government takes some actions in Economic field that cover the systems for setting Interest Rates & Government Budget as well as labor market, National ownership & many other areas of government interventions into the Economy. Such policies are often influenced by International Institutions like IMF or World Bank as well as political beliefs & consequent policies of parties. There are many types of Economic policy. A few examples of the kind of economic policies that exist include: Macro Economic Stabilization Policy, Individual Policy, Fiscal Policy and Monetary Policy.

Irfan Hameed and Amen Ume (2011)

This research article focuses on the impact of Monetary Policy on GDP. GDP no doubt is affected by the Monetary Policy of the state. The research papers of various authors have been studied in this regard to prove the Hypothesis and after in depth analysis by applying Regression Analysis technique it has been observed that the relationship between the two exists. The data of past 30 years of Pakistan has been used for driving the conclusion. The study proved that the interest rate has minor relationship with GDP but the Growth in Money Supply greatly affects the GDP of an economy, obviously various unknown factors also affects the GDP. Growth in Money Supply has a huge impact on GDP. The Research study can further be used for developmental projects for the Growth of Economy, Quality improvements, Household production, the underground economy, Health and life expectancy, the environment, Political immunity and ethnic justice.

Georgios Chortareas & Christos Mavrodimitrakis (2016)

We consider the ability of monetary policy to fully stabilize pure demand shocks in a monetary union with strategically acting fiscal authorities. We show that when one national fiscal authority enjoys a strategic advantage over the other and fiscal policy can directly affect inflation, monetary policy cannot fully stabilize pure demand shocks at the union level, unless they are common. Moreover, we characterize a situation where country specific fiscal policies diverge, being counter-cyclical for one country and pro-cyclical for the other, for high enough values of the direct effect of fiscal policy on the inflation parameter. The coordination of national fiscal policies becomes desirable for the union central bank.

Ben S. Bernanke & Jean Boivin (2003)

Structural vector auto regressions (VARs) are widely used to trace out the effect of monetary policy innovations on the economy. However, the sparse information sets typically used in these empirical models lead to at least two potential problems with the results. First, to the extent that central banks and the private sector have information not reflected in the VAR, the measurement of policy innovations is likely to be contaminated. A second problem is that impulse responses can be observed only for the included variables, which generally constitute only a small subset of the variables that the researcher and policymaker care about. In this paper, we investigate one potential solution to this limited information problem, which combines the standard structural VAR analysis with recent developments in factor analysis for large data sets. We find that the information that our factor-augmented VAR (FAVAR) methodology exploits is indeed important to properly identify the monetary transmission mechanism. Overall, our results provide a comprehensive and coherent picture of the effect of monetary policy on the economy.

NEED OF THE STUDY

Monetary policy aim is to manage the liquidity in order to fuel the growth of the country by controlling the key economic factors. Production manager index is the future production estimation index through which country growth momentum can be identified. Central bank decisions will have impact on IIP which gives the monthly production activity. Many research papers focused on IIP but no research has been found in future production activity influenced by the central bank monetary policy.

SCOPE OF THE STUDY

The present analyses has considered the data from the year 2012 to 2016.

In this study all the variables where converted into stationary and the same are as per following:

- Repo rates
- Reverse Repo rates
- Inflation
- Gold price
- SLR (Statutory Liquidity Ratio)
- PLR (Prime Lending Rate)
- PMI (Production Manager Index)
- CRR (Cash Reserve Ratio)

- IIP (Index Of Industrial Production)
- GDP (Gross Domestic Product)

RESEARCH METHODOLOGY

TOOLS FOR ANALYSIS

AUTO REGRESSIVE DISTRIBUTED LAG (ADRL) METHOD

In statistics and econometrics, a distributed lag model is a model for time series data in which a regression equation is used to predict current values of a dependent variable based on both the current values of an explanatory and the lagged (past period) values of this explanatory variable.

$$y_t = a + w_0x_t + w_1x_{t-1} + w_2x_{t-2} + \dots + \text{error term}$$

or the form

$$y_t = a + w_0x_t + w_1x_{t-1} + w_2x_{t-2} + \dots + w_nx_{t-n} + \text{error term},$$

where y_t is the value at time period t of the dependent variable y , a is the intercept term to be estimated, and w_i is called the lag weight (also to be estimated) placed on the value i periods previously of the explanatory variable x . In the first equation, the dependent variable is assumed to be affected by values of the independent variable arbitrarily far in the past, so the number of lag weights is infinite and the model is called an *infinite distributed lag model*. In the alternative, second, equation, there are only a finite number of lag weights, indicating an assumption that there is a maximum lag beyond which values of the independent variable do not affect the dependent variable; a model based on this assumption is called a *finite distributed lag model*.

In an infinite distributed lag model, an infinite number of lag weights need to be estimated; clearly this can be done only if some structure is assumed for the relation between the various lag weights, with the entire infinitude of them expressible in terms of a finite number of assumed underlying parameters. In a finite distributed lag model, the parameters could be directly estimated by ordinary least squares (assuming the number of data points sufficiently exceeds the number of lag weights); nevertheless, such estimation may give very imprecise results due to extreme multicollinearity among the various lagged values of the independent variable, so again it may be necessary to assume some structure for the relation between the various lag weights.

JOHANSEN TEST

In statistics, the Johansen test, named after Soren Johansen, is a procedure for testing co-integration of several, $I(1)$ time series. This test permits more than one co-integrating relationship so is more generally applicable than the Engle–Granger test which is based on the Dickey–Fuller (or the augmented) test for unit roots in the residuals from a single (estimated) co-integrating relationship

There are two types of Johansen test, either with trace or with eigenvalue, and the inferences might be a little bit different. The null hypothesis for the trace test is that the number of cointegration vectors is $r=r^* < k$, vs. the alternative that $r=k$. Testing proceeds sequentially for $r^*=1, 2$, etc. and the first non-rejection of the null is taken as an estimate of r . The null hypothesis for the "maximum eigenvalue" test is as for the trace test but the alternative is $r=r^*+1$ and, again, testing proceeds sequentially for $r^*=1, 2$, etc., with the first non-rejection used as an estimator for r .

Just like a unit root test, there can be a constant term, a trend term, both, or neither in the model. For a general VAR(p) model:

$$X_t = \mu + \Phi D_t + \Pi_p X_{t-p} + \dots + \Pi_1 X_{t-1} + e_t, \quad t = 1, \dots, T$$

There are two possible specifications for error correction: that is, two VECM (vector error correction models):

1. The longrun VECM:

$$\Delta X_t = \mu + \Phi D_t + \Pi X_{t-p} + \Gamma_{p-1} \Delta X_{t-p+1} + \dots + \Gamma_1 \Delta X_{t-1} + \varepsilon_t, \quad t = 1, \dots, T$$

Where

$$\Gamma_i = \Pi_1 + \dots + \Pi_i - I, \quad i = 1, \dots, p-1.$$

2. The transitory VECM:

$$\Delta X_t = \mu + \Phi D_t - \Gamma_{p-1} \Delta X_{t-p+1} - \dots - \Gamma_1 \Delta X_{t-1} + \Pi X_{t-1} + \varepsilon_t, \quad t = 1, \dots, T$$

Where

$$\Gamma_i = (\Pi_{i+1} + \dots + \Pi_p), \quad i = 1, \dots, p-1.$$

Be aware that the two are the same. In both VECM (Vector Error Correction Model),

$$\Pi = \Pi_1 + \dots + \Pi_p - I.$$

Inferences are drawn on Π , and they will be the same, so is the explanatory power.

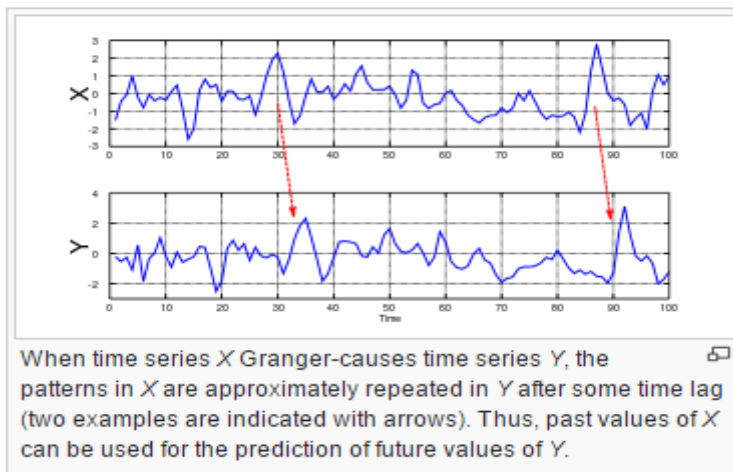
GRANGER CAUSALITY

The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another, first proposed in 1969. Ordinarily, regressions reflect "mere" correlations, but Clive Granger argued that causality in economics could be tested for by measuring the ability to predict the future values of a time series using prior values of another time series. Since the question of "true causality" is deeply philosophical, and because of the post hoc ergo propter hoc fallacy of assuming that one thing preceding another can be used as a proof of causation, econometricians assert that the Granger test finds only "predictive causality".

A time series X is said to Granger-cause Y if it can be shown, usually through a series of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide statistically significant information about future values of Y .

Granger also stressed that some studies using "Granger causality" testing in areas outside economics reached "ridiculous" conclusions. "Of course, many ridiculous papers appeared", he said in his Nobel lecture. However, it remains a popular method for causality analysis in time series due to its computational simplicity. The original definition of Granger causality does not account for latent confounding effects and does not capture instantaneous and non-linear causal relationships, though several extensions have been proposed to address these issues.

FIG. 1



Granger defined the causality relationship based on two principles:

1. The cause happens prior to its effect.
2. The cause has *unique* information about the future values of its effect.

Given these two assumptions about causality, Granger proposed to test the following hypothesis for identification of a causal effect of X on Y :

$$P[Y(t + 1) \in A | \mathcal{I}(t)] \neq P[Y(t + 1) \in A | \mathcal{I}_{-X}(t)],$$

where P refers to probability, A is an arbitrary non-empty set, and $\mathcal{I}(t)$ and $\mathcal{I}_{-X}(t)$ respectively denote the information available as of time t in the entire universe, and that in the modified universe in which X is excluded. If the above hypothesis is accepted, we say that X Granger-causes Y.

TWO WAY ANNOVA

In statistics, the two-way analysis of variance (ANOVA) is an extension of the one-way ANOVA that examines the influence of two different categorical independent variables on one continuous dependent variable. The two-way ANOVA not only aims at assessing the main effect of each independent variable but also if there is any interaction between them.

DATA SET

Let us imagine a **data set** for which a dependent variable may be influenced by two **factors** which are potential sources of variation. The first factor has **I** levels ($i \in \{1, \dots, I\}$) and the second has **J** levels ($j \in \{1, \dots, J\}$). Each combination (*i, j*) defines a **treatment**, for a total of **I × J** treatments. We represent the number of **replicates** for treatment (*i, j*) by n_{ij} , and let **k** be the index of the replicate in this treatment ($k \in \{1, \dots, n_{ij}\}$).

From these data, we can build a **contingency table**, where $n_{i+} = \sum_{j=1}^J n_{ij}$ and $n_{+j} = \sum_{i=1}^I n_{ij}$, and the total number of replicates is equal to $n = \sum_{i,j} n_{ij} = \sum_i n_{i+} = \sum_j n_{+j}$.

The **experimental design** is **balanced** if each treatment has the same number of replicates, **K**. In such a case, the design is also said to be **orthogonal**, allowing to fully distinguish the effects of both factors. We hence can write $\forall i, j \ n_{ij} = K$, and $\forall i, j \ n_{ij} = \frac{n_{i+} \cdot n_{+j}}{n}$.

MODEL

Upon observing variation among all **n** data points, for instance via a **histogram**, "probability may be used to describe such variation".^[4] Let us hence denote by Y_{ijk} the **random variable** which observed value y_{ijk} is the **k**-th measure for treatment (*i, j*). The **two-way ANOVA** models all these variables as varying **independently** and **normally** around a mean, μ_{ij} , with a constant variance, σ^2 (**homoscedasticity**):

$$Y_{ijk} | \mu_{ij}, \sigma^2 \stackrel{i.i.d.}{\sim} \mathcal{N}(\mu_{ij}, \sigma^2).$$

Specifically, the mean of the response variable is modeled as a **linear combination** of the explanatory variables:

$$\mu_{ij} = \mu + \alpha_i + \beta_j + \gamma_{ij},$$

where μ is the grand mean, α_i is the additive main effect of level *i* from the first factor (i-th row in the contingency table), β_j is the additive main effect of level *j* from the second factor (j-th column in the contingency table) and γ_{ij} is the non-additive interaction effect of treatment (*i, j*) from both factors (cell at row i and column j in the contingency table).

An other, equivalent way of describing the two-way ANOVA is by mentioning that, besides the variation explained by the factors, there remains some **statistical noise**. This amount of unexplained variation is handled via the introduction of one random variable per data point, ϵ_{ijk} , called **error**. These **n** random variables are seen as deviations from the means, and are assumed to be independent and normally distributed:

$$Y_{ijk} = \mu_{ij} + \epsilon_{ijk} \text{ with } \epsilon_{ijk} \stackrel{i.i.d.}{\sim} \mathcal{N}(0, \sigma^2).$$

VAR MODEL

Vector autoregression (VAR) is an econometric model used to capture the linear interdependencies among multiple time series. VAR models generalize the univariate autoregressive model (AR model) by allowing for more than one evolving variable. All variables in a VAR enter the model in the same way: each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables. VAR modeling does not require as much knowledge about the forces influencing a variable as do structural models with simultaneous equations: The only prior knowledge required is a list of variables which can be hypothesized to affect each other intertemporally.

A VAR model describes the evolution of a set of *k* variables (called *endogenous variables*) over the same sample period ($t = 1, \dots, T$) as a linear function of only their past values. The variables are collected in a $k \times 1$ vector y_t , which has as the i^{th} element, $y_{i,t}$, the observation at time "t" of the i^{th} variable. For example, if the i^{th} variable is GDP, then $y_{i,t}$ is the value of GDP at time *t*.

A *p*-th order VAR, denoted VAR(*p*)

Formula

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

CALCULATIONS

Collected Data

TABLE 1

| Month | Year | PMI | PLR | Inflation | Repo rates | Reverse repo rates | CRR | SLR | GOLD | GDP | IIP |
|-------|------|------|-------|-----------|------------|--------------------|------|------|----------|----------|----------|
| Apr | 2012 | 54.9 | 10.75 | 10.21 | 8 | 7 | 4.75 | 24 | 17390293 | 1.267973 | 188.65 |
| May | 2012 | 54.8 | 10.5 | 10.16 | 8 | 7 | 4.75 | 24 | 29372177 | 1.267973 | 194.55 |
| Jun | 2012 | 55 | 10.5 | 10.05 | 8 | 7 | 4.75 | 24 | 29861659 | 1.267973 | 193.7167 |
| Jul | 2012 | 52.9 | 10.5 | 9.84 | 8 | 7 | 4.75 | 24 | 27455529 | 1.799113 | 192.5833 |
| Aug | 2012 | 52.8 | 10.5 | 10.31 | 8 | 7 | 4.75 | 23 | 22566645 | 1.799113 | 188.35 |
| Sep | 2012 | 52.8 | 10.5 | 9.14 | 8 | 7 | 4.5 | 23 | 29445024 | 1.799113 | 190.7167 |
| Oct | 2012 | 52.9 | 10.5 | 9.60 | 8 | 7 | 4.5 | 23 | 22518401 | 1.329112 | 200.65 |
| Nov | 2012 | 53.6 | 10.5 | 9.55 | 8 | 7 | 4.25 | 23 | 27475189 | 1.329112 | 191.25 |
| Dec | 2012 | 54.8 | 10.5 | 11.17 | 8 | 7 | 4.25 | 23 | 24214794 | 1.329112 | 202.7 |
| Jan | 2013 | 53.3 | 10.5 | 11.62 | 7.75 | 6.75 | 4.25 | 23 | 27770797 | 1.56012 | 205.6167 |
| Feb | 2013 | 54.3 | 10.5 | 12.06 | 7.75 | 6.75 | 4 | 23 | 24919063 | 1.56012 | 205.9667 |
| Mar | 2013 | 52 | 10.25 | 11.44 | 7.5 | 6.5 | 4 | 23 | 23043838 | 1.56012 | 226.2167 |
| Apr | 2013 | 51 | 10.25 | 10.24 | 7.5 | 6.5 | 4 | 23 | 31588018 | 1.653434 | 187.75 |
| May | 2013 | 50.1 | 10.25 | 10.68 | 7.25 | 6.25 | 4 | 23 | 31858179 | 1.653434 | 182.7 |
| Jun | 2013 | 50.2 | 10.25 | 11.06 | 7.25 | 6.25 | 4 | 23 | 29393079 | 1.653434 | 186.7833 |
| Jul | 2013 | 50.1 | 10.25 | 10.85 | 7.25 | 6.25 | 4 | 23 | 19768105 | 1.645063 | 196.3833 |
| Aug | 2013 | 48.5 | 10.25 | 10.75 | 7.25 | 6.25 | 4 | 23 | 18419356 | 1.645063 | 185.7167 |
| Sep | 2013 | 49.6 | 9.5 | 10.70 | 7.5 | 6.5 | 4 | 23 | 15445776 | 1.645063 | 188.1 |
| Oct | 2013 | 49.7 | 8.75 | 11.06 | 7.625 | 6.625 | 4 | 23 | 12834054 | 1.844664 | 194.3 |
| Nov | 2013 | 51.3 | 8.75 | 11.47 | 7.75 | 6.75 | 4 | 23 | 10721733 | 1.844664 | 179.7 |
| Dec | 2013 | 50.8 | 10.25 | 9.13 | 7.75 | 6.75 | 4 | 23 | 10623616 | 1.844664 | 195.5167 |
| Jan | 2014 | 51.3 | 10.25 | 7.24 | 8 | 7 | 4 | 23 | 11266943 | 1.532241 | 203.0333 |
| Feb | 2014 | 52.6 | 10.25 | 6.73 | 8 | 7 | 4 | 23 | 8958410 | 1.532241 | 192.6167 |
| Mar | 2014 | 51.3 | 10.25 | 6.70 | 8 | 7 | 4 | 23 | 10864836 | 1.532241 | 215.7667 |
| Apr | 2014 | 51.2 | 10.25 | 7.08 | 8 | 7 | 4 | 23 | 7691112 | 1.938651 | 189.4667 |
| May | 2014 | 51.4 | 10.25 | 7.02 | 8 | 7 | 4 | 23 | 8735641 | 1.938651 | 191.1667 |
| Jun | 2014 | 51.5 | 10.25 | 6.49 | 8 | 7 | 4 | 22.5 | 8020296 | 1.938651 | 185.5333 |
| Jul | 2014 | 53 | 10.25 | 7.23 | 8 | 7 | 4 | 22.5 | 10356115 | 1.917222 | 187.55 |
| Aug | 2014 | 52.4 | 10.25 | 6.75 | 8 | 7 | 4 | 22 | 7717367 | 1.917222 | 175.7833 |
| Sep | 2014 | 51 | 10.25 | 6.30 | 8 | 7 | 4 | 22 | 10140085 | 1.917222 | 188.7333 |
| Oct | 2014 | 51.6 | 10.25 | 4.98 | 8 | 7 | 4 | 22 | 7506124 | 1.542313 | 170.9 |
| Nov | 2014 | 53.3 | 10.25 | 4.12 | 8 | 7 | 4 | 22 | 10053571 | 1.542313 | 181.5 |
| Dec | 2014 | 54.5 | 10.25 | 5.86 | 8 | 7 | 4 | 22 | 9356017 | 1.542313 | 198.3167 |
| Jan | 2015 | 52.9 | 10.25 | 7.17 | 7.75 | 6.75 | 4 | 22 | 10846907 | 1.698012 | 206.3167 |
| Feb | 2015 | 51.2 | 10.25 | 6.30 | 7.75 | 6.75 | 4 | 21.5 | 8414733 | 1.698012 | 200.2167 |
| Mar | 2015 | 52.1 | 10.25 | 6.28 | 7.75 | 6.5 | 4 | 21.5 | 9967725 | 1.698012 | 220.1667 |
| Apr | 2015 | 51.2 | 10.25 | 5.79 | 7.75 | 6.5 | 4 | 21.5 | 7381059 | 1.955176 | 195.2667 |
| May | 2015 | 52.4 | 10 | 5.74 | 7.75 | 6.5 | 4 | 21.5 | 7863679 | 1.955176 | 191.7167 |
| Jun | 2015 | 51.3 | 10 | 6.10 | 7.25 | 6.25 | 4 | 21.5 | 7157999 | 1.955176 | 194.65 |
| Jul | 2015 | 52.6 | 10 | 4.37 | 7.25 | 6.25 | 4 | 21.5 | 9494957 | 1.898831 | 197.0833 |
| Aug | 2015 | 52.3 | 10 | 4.35 | 7.25 | 6.25 | 4 | 21.5 | 9880286 | 1.898831 | 192.9167 |
| Sep | 2015 | 51.2 | 10 | 5.14 | 6.75 | 5.75 | 4 | 21.5 | 9160210 | 1.898831 | 197.5833 |
| Oct | 2015 | 50.8 | 9.95 | 6.32 | 6.75 | 5.75 | 4 | 21.5 | 8469180 | 1.842798 | 199.1833 |
| Nov | 2015 | 50.3 | 9.7 | 6.72 | 6.75 | 5.75 | 4 | 21.5 | 7548431 | 1.842798 | 173.8833 |
| Dec | 2015 | 49.1 | 9.7 | 6.32 | 6.75 | 5.75 | 4 | 21.5 | 7854824 | 1.842798 | 196.5 |
| Jan | 2016 | 51.1 | 9.7 | 5.91 | 6.75 | 5.75 | 4 | 21.5 | 9292779 | 2.113006 | 199.6167 |
| Feb | 2016 | 51.1 | 9.7 | 5.53 | 6.75 | 5.75 | 4 | 21.5 | 12746101 | 2.113006 | 202 |
| Mar | 2016 | 52.4 | 9.7 | 5.51 | 6.75 | 5.75 | 4 | 21.5 | 13095677 | 2.113006 | 216.55 |

Comparison & Interpretation

➤ To study the long-run relationship of monetary policy Key rates with PMI. To calculate this, the formula used is Auto Regressive Distributed lag Method

$$y_t = a + w_0 x_t + w_1 x_{t-1} + w_2 x_{t-2} + \dots + \text{error term}$$

or the form

$$y_t = a + w_0 x_t + w_1 x_{t-1} + w_2 x_{t-2} + \dots + w_n x_{t-n} + \text{error term},$$

Using the Key rates and PMI apply this formula in the E-views we get the below result.

TABLE 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | -0.001046 | 0.022724 | -0.046015 | 0.9634 |
| D(CRR(-1)) | 0.008467 | 0.100656 | 0.084123 | 0.9331 |
| D(CRR(-2)) | 0.000903 | 0.117646 | 0.007678 | 0.9939 |
| D(CRR(-3)) | 0.124719 | 0.125094 | 0.997002 | 0.321 |
| D(CRR(-4)) | 0.284644 | 0.117306 | 2.4265 | 0.0169 |
| D(REPO(-1)) | 0.645436 | 0.278593 | 2.316774 | 0.0224 |
| D(REPO(-2)) | 0.719625 | 0.279626 | -2.573529 | 0.0114 |
| D(REPO(-3)) | 0.327515 | 0.198018 | -1.653961 | 0.101 |
| D(REPO(-4)) | 0.305825 | 0.206681 | -1.479695 | 0.1418 |
| D(REVERSEREPO(-1)) | 0.580303 | 0.276645 | -2.097647 | 0.0382 |
| D(REVERSEREPO(-2)) | 0.73848 | 0.291542 | 2.533014 | 0.0127 |
| D(REVERSEREPO(-3)) | 0.28079 | 0.233035 | 1.204928 | 0.2308 |
| D(REVERSEREPO(-4)) | 0.24128 | 0.237258 | 1.016953 | 0.3114 |
| D(LPMI(-1)) | -0.010911 | 0.008581 | -1.271557 | 0.2062 |
| D(LPMI(-2)) | -0.021776 | 0.007943 | 2.741427 | 0.0072 |
| D(LPMI(-3)) | -0.013465 | 0.007834 | -1.718692 | 0.0885 |
| D(LPMI(-4)) | -0.002672 | 0.007808 | -0.342173 | 0.7329 |
| R-squared | 0.616666 | Mean dependent var | | -0.00352 |
| Adjusted R-squared | 0.245412 | S.D. dependent var | | 0.274532 |
| S.E. of regression | 0.238478 | Akaike info criterion | | 0.171229 |
| Sum squared resid | 6.199014 | Schwarz criterion | | 0.858146 |
| Log likelihood | 20.84275 | Hannan-Quinn criter. | | 0.450364 |
| F-statistic | 2.433028 | Durbin-Watson stat | | 2.026295 |
| Prob(F-statistic) | 0.000347 | | | |

Interpretation: The above table depicts the auto regressive distributed lag methodology to measure the long run association of PMI with monetary policy key rates. The study result reveals that production manager index is having long and also short run association with all the key policy rates because the coefficient values were observed negative in 4 lags.

➤ To know the monetary policy key rates influence on PMI.

To calculate this, the formula used is Johansson co integration test.

$$X_t = \mu + \Phi D_t + \Pi_p X_{t-p} + \dots + \Pi_1 X_{t-1} + e_t, \quad t = 1, \dots, T$$

Using the Key rates and PMI apply this formula in the E-views we get the below result.

TABLE 4

| Data Trend: | None | None | Linear | Linear | Quadratic |
|---|--------------|-----------|-----------|-----------|-----------|
| Rank or | No Intercept | Intercept | Intercept | Intercept | Intercept |
| No. of CEs | No Trend | No Trend | No Trend | Trend | Trend |
| Log Likelihood by Rank (rows) and Model (columns) | | | | | |
| 0 | 21.31603 | 21.31603 | 23.0321 | 23.0321 | 28.23287 |
| 1 | 33.70782 | 34.27575 | 34.71143 | 38.24465 | 41.58271 |
| 2 | 38.70698 | 45.19505 | 45.37508 | 48.91594 | 49.80646 |
| 3 | 39.12463 | 49.23054 | 49.23054 | 52.96535 | 52.96535 |
| 4 | -35.2356 | -35.2356 | -35.1231 | -35.1231 | -34.597 |
| 5 | -24.5378 | -20.8838 | -20.7714 | -19.2004 | -18.6874 |
| 6 | -17.9786 | -14.3122 | -14.2063 | -11.0643 | -10.6367 |
| 7 | -17.846 | -9.59708 | -9.59708 | -6.44924 | -6.44924 |
| AIC | | | | | |
| 0 | -0.54738 | -0.54738 | -0.49032 | -0.49032 | -0.58813 |
| 1 | -0.83146 | -0.81226 | -0.74273 | -0.85532 | -0.91479 |
| 2 | -0.78698 | -0.98645 | -0.95 | -1.018486 | -1.01362 |
| 3 | -0.53887 | -0.85469 | -0.85469 | -0.88735 | -0.88735 |
| SIC | | | | | |
| 0 | -0.18605 | -0.18605 | -0.00854 | -0.00854 | 0.014093 |
| 1 | -0.229238 | -0.16989 | -0.02007 | -0.09251 | -0.07168 |
| 2 | 0.056132 | -0.06304 | 0.01355 | 0.025363 | 0.070377 |
| 3 | 0.545125 | 0.349751 | 0.349751 | 0.437537 | 0.437537 |

Interpretation: The above analysis of Johansen co integration been applied between the monetary policy key rates and PMI. The Johansen co integration test results reveals that the log likelihood values in both non linear and quadratic intercept trend values found to be increasing mode in both Alpha levels and hence the data is said to be co integrated.

➤ The below result is found by using granger causality test.
Formula for granger causality test is

$$P[Y(t + 1) \in A | \mathcal{I}(t)] \neq P[Y(t + 1) \in A | \mathcal{I}_{-X}(t)],$$

and the values used are monetary policy key rates and PMI

TABLE 5

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|-----|-------------|--------|
| PMI does not Granger Cause CRR | 46 | 0.03331 | 0.9673 |
| CRR does not Granger Cause PMI | | 1.1518 | 0.3261 |
| PMI does not Granger Cause DREPO | 45 | 5.54315 | 0.0075 |
| DREPO does not Granger Cause PMI | | 0.70133 | 0.5019 |
| PMI does not Granger Cause DREVERSEREPO | 45 | 5.54315 | 0.0075 |
| DREVERSEREPO does not Granger Cause PMI | | 0.70133 | 0.5019 |
| PMI does not Granger Cause DSLR | 45 | 2.4578 | 0.0985 |
| DSLR does not Granger Cause PMI | | 0.28251 | 0.7554 |

Interpretation:- The above analysis of Granger causality test has been applied and the null hypothesis results reveals that CRR, repo rate, reverse repo rate and SLR P values were found to be non significant because P values were observed more than more than 0.05. Hence the alternative hypothesis H1 has been accepted all the monetary policy key rate of CRR, repo rate, reverse repo rate and SLR influencing the PMI.

➤ To study the PMI impact on IIP and GDP.

To calculate this, the formula used is 2 way Annova.

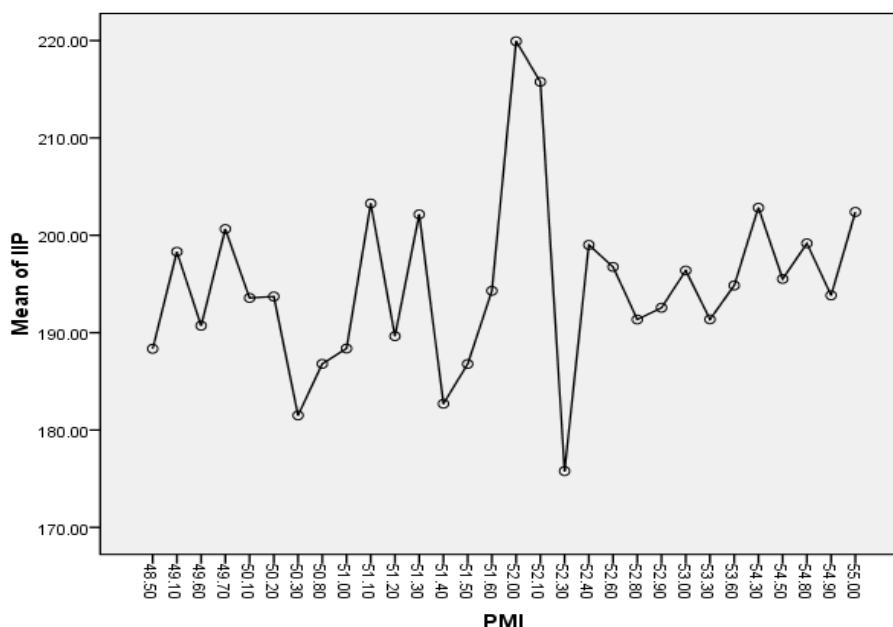
Using the Key rates, IIP and GDP apply this formula in the SPSS we get the below result.

TABLE 6

| | | | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|----------------|----------------|-----------|----------------|----|-------------|--------|-------|
| GDP | Between Groups | (Combined) | | 2.044 | 29 | 0.07 | 2.94 | 0.01 |
| | | Linear Term | Weighted | 0.609 | 1 | 0.609 | 25.399 | 0 |
| | | | Deviation | 1.435 | 28 | 0.051 | 2.138 | 0.048 |
| | | Quadratic Term | Weighted | 0.543 | 1 | 0.543 | 22.627 | 0 |
| | | | Deviation | 0.893 | 27 | 0.033 | 1.379 | 0.242 |
| | | Within Groups | | 0.432 | 18 | 0.024 | | |
| Total | | 2.476 | 47 | | | | | |
| IIP | Between Groups | (Combined) | | 2893.289 | 29 | 99.769 | 0.576 | 0.909 |
| | | Linear Term | Weighted | 111.704 | 1 | 111.704 | 0.645 | 0.432 |
| | | | Deviation | 2781.585 | 28 | 99.342 | 0.574 | 0.909 |
| | | Quadratic Term | Weighted | 0.051 | 1 | 0.051 | 0 | 0.987 |
| | | | Deviation | 2781.534 | 27 | 103.02 | 0.595 | 0.892 |
| | | Within Groups | | 3115.434 | 18 | 173.08 | | |
| Total | | 6008.723 | 47 | | | | | |

Interpretation:- The above table of linear regression model result reveals that GDP is influenced by the PMI because the probability value is found to be significant as the key value is 0.01 which is less than 0.05 the IP probability value with PMI is observed to be non significant because the P value is 0.909 greater than 0.05 hence the PMI is not influencing the IIP during the analysis period.

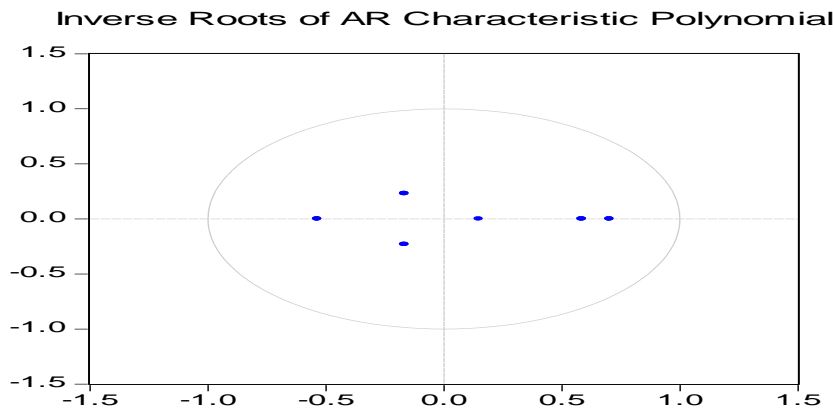
FIG. 1



Interpretation:- The above graph of linear regression trend line with GDP and PMI shows that the influence of these two variables is observed in the middle period as a trend line moved upward and downward in the middle range.

4 To predict the future moment of IIP and gold price based on PMI.

FIG. 2



Interpretation: The above polynomial graphs indicate that Universe roots of PMI, AP, gold are fallen inside the circle, which indicates that the data is stated to be normally distributed.

➤ To calculate this, the formula used is Jarque-bera.

$$JB = \frac{n - k + 1}{6} \left(S^2 + \frac{1}{4}(C - 3)^2 \right)$$

Applying this formula we get the below result

TABLE 7

| Compone | Jarque-Bera | df | Prob. |
|---------|-------------|----|--------|
| 1 | 4.152543 | 2 | 0.1254 |
| 2 | 2.542287 | 2 | 0.2805 |
| 3 | 0.802473 | 2 | 0.6695 |
| Joint | 7.497302 | 6 | 0.2773 |

Interpretation:- The above table of jarque bera test has been applied to find data is normally distributed are not the P value is 0.2773 which is less than 0.5 for the joint component. Hence the Data stated to be normally distributed.

➤ To calculate this, the formula used is Vector auto regression model(VAR).

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

Applying this formula we get the below result.

TABLE 8

| | PMI | IIP | DGOLD |
|---------|------------|------------|------------|
| PMI(-1) | 0.654415 | 2.071004 | 273817.1 |
| | -0.16483 | -1.81093 | -506538 |
| | [3.97013] | [1.14361] | [0.54057] |
| PMI(-2) | 0.021042 | -2.21346 | 69180.58 |
| | -0.15275 | -1.67812 | -469390 |
| | [0.13776] | [-1.31901] | [0.14738] |

Interpretation:- The above table of VAR model has been applied to predict the future movement based on PMI the analysis result reveals that the IIP is expected to go down in the near future because Coefficient value is -2.2134 the gold price is expected to go up is found to be positive.

➤ To calculate this, the formula used is T-test.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Applying this formula we get the below result.

ONE-SAMPLE STATISTICS

TABLE 9

| | N | Mean | Std. Deviation | Std. Error Mean |
|-----|----|---------|----------------|-----------------|
| IIP | 60 | 195.24 | 10.91728 | 1.40941 |
| GDP | 48 | 1.7211 | 0.22952 | 0.03313 |
| PMI | 48 | 51.9271 | 1.55176 | 0.22398 |

ONE-SAMPLE TEST

TABLE 10

| Test Value = 0 | | | | | | |
|----------------|---------|----|---------------|-----------------|---|----------|
| | T | df | Sig. (2-tail) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| IIP | 138.527 | 59 | 0 | 195.24222 | 192.422 | 198.0625 |
| GDP | 51.952 | 47 | 0 | 1.72111 | 1.6545 | 1.7878 |
| PMI | 231.84 | 47 | 0 | 51.92708 | 51.4765 | 52.3777 |

Interpretation:- The above table of one sample t-test depicts the significant change between the variables the mean difference has been observed between upper and lower confidence of internal of 95% all the P values per IIP,GDP and PMI is found to be significant.Hence the analysis proved that all the three variables influence change has been found.

LIMITATIONS OF STUDY

1. The PMI data is available from 2012 onwards in India so the analysis has been Limited only for 4 years the production activity depends on overall economy which is vast hence the output of this study may not give the perfect picture.
2. IIP data calculation methodology has been changed in the year 2012.But in the base year 2004 and 2005 has considered.
3. Consumer Non-durable data has not been considered in IIP data calculation.
4. CPI calculated Inflation data has been considered for the study.

FINDINGS

1. It has been found all the key monetary policy rates are influencing the PMI during analysis period.
2. The linear regression model found that PMI is having influence on GDP but it had failed to influence IIP.
3. The study observed that PMI is predicted to go down side in the near future based on PMI but the gold price expected to go up.

SUGGESTION

1. The studies suggest that GDP is expected to go down side based on PMI. Hence, there is a need to focus on manufacturing sector so that GDP growth will not be effected.
2. Many countries central banks are offering interest rates on CRR but in India RBI are not offering interest rate but banks are paying interest to the deposit holders. The study suggests offering interest rate to the banks on CRR.
3. Raise of inflation may dampen the GDP growth rate, hence the study suggest the RBI to manage the monetary policy to keep the control on inflation.
4. There is a need to decrease the SLR further down to easy off the liquidity in the system so that growth rate will not be effected due to tight liquidity.

CONCLUSION

This study has been concluded for the title monetary policy impact on PMI. The production manager index information gives the overall industrial production activities so that future outputs can be analyzed. Production activity plays a crucial role in growth of economy but due to uncertainty in the system liquidity crunch may take place. In order to maintain the momentum of economy monetary policy will act as life line. The RBI monetary policy key rates will be targeted towards IIP and PMI by maintaining the liquidity but production manager index will be the base to take the decision so that economy Momentum will continue smoothly. The present study has been done how monetary policy is influencing the PMI and its associate economic variables and observed that the PMI is getting influenced by the key policy rates hence there is a further scope to do research in the area by considering external factors influence on PMI So that industrial output will be predicted in the proper way.

REFERENCES

1. ANAMIKA SINGH <http://www.indianresearchjournal.com/wp-content/uploads/2014/10/Anamika.pdf> A Study of Monetary Policy Impact on Stock Market Returns. Oct(2014)
2. Ben S. Bernanke & Jean Boivin <http://www.nber.org/papers/w10220> Measuring the Effects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach*Jan(2003)
3. Georgios Chortareas& Christos Mavrodimitrakis <http://www.sciencedirect.com/science/article/pii/S0264999316300098> Can monetary policy fully stabilize pure demand shocks in a monetary union with a fiscal leader?(2016)
4. Himani <http://www.iosrjournals.org/iosr-jef/papers/vol4-issue6/B0461120.pdf> Role of Monetary Policy in Combating Inflation. (Jul-Aug. 2014)
5. Ilian Mihov, Jean Boivin& Marc Giannoni <http://www.ingentaconnect.com/content/aea/aer/2009/00000099/00000001/art00013> STICKY PRICES AND MONETARY POLICY: EVIDENCE FROM DISAGGREGATED U.S. DATA(2007)
6. Irfan Hameed and Amen Ume http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1857413 Impact of monetary policy on gross domestic product (GDP) (2011)
7. Lawrence Ehikioya &Imoughele <http://www.ijern.com/journal/January-2014/09.pdf> EMPIRICAL INVESTIGATION OF THE IMPACT OF MONETARY POLICY ON MANUFACTURING SECTOR PERFORMANCE INNIGERIA (2014)
8. Owolabi A. Usman, Ph. d., <http://search.proquest.com/openview/3fb47a41cfb8600d5b42f8e22fb08307/1?pq-origsite=gscholar> Impact of Monetary Policy on Industrial Growth in Nigeria. Jan(2014)
9. Reinder Haitsma, Deren Unalmis & Jakob de Haan <http://www.sciencedirect.com/science/article/pii/S0164070416000276> The Impact of the ECB's Conventional and Unconventional Monetary Policies on Stock Markets. Feb(2016)
10. Robert Killins: <http://ccsenet.org/journal/index.php/ijef/article/view/56558/31261> The Influence of Monetary Policy on Equity and Volatility Indices in the U.S. and Canada. Feb (2016)
11. Yong ma& Xingkai Lin <http://www.sciencedirect.com/science/article/pii/S0378426616300048> Financial Development and the Effectiveness of Monetary Policy(2016)

BOOKS

12. Business environment text and cases, Francis cherunilam, 2007, 7th, Himalaya publishing house
13. Business environment, Justin Paul, 2013, 3rd, Tata McGraw Hill education
14. Essentials of business environment, K Aswathappa, 2011, 11th, Himalaya publishing house

WEBSITES

15. <http://dbie.rbi.org.in/DBIE/dbie.rbi?site=home>
16. <http://www.inflation.eu/inflation-rates/india/historic-inflation/cpi-inflation-india-2000.aspx>
17. <http://www.tradingeconomics.com/>
18. <https://data.oecd.org/gdp/quarterly-gdp.htm>
19. <https://www.mcxindia.com/>

A STUDY ON FINANCIAL STATEMENT ANALYSIS OF AMARA RAJA BATTERIES LTD.

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ABSTRACT

Financial Statement Analysis is done at Amara Raja Batteries Ltd, the main objective of this study to get the managerial performance of this firm relating to financial statement. The financial statement analysis will give the firm financial position. This study result will give an idea about the functioning of finance Department.

KEYWORDS

financial analysis, liquidity, profitability, ratio analysis.

INTRODUCTION OF AMARA RAJA BATTERIES LTD.


 Net revenue from operations increased by 16.15% from Rs 29,589.15 million in 2012-13 to Rs 34,366.59 million in 2013-14. This increase was due to rise in sales volumes across both business divisions. The company continued to strengthen; it's financial and live up to its commitment to grow shareholders value. The firm achieving below given returns to the shareholders related revenues in past five years.

TABLE 1

| Year | EPS in Rs | Return on Net worth % | Dividend Per share in Rs | Return on Asset % |
|---------|-----------|-----------------------|--------------------------|-------------------|
| 2013-14 | 21.51 | 30.33 | 3.23 | 64.56 |
| 2012-13 | 16.78 | 30.45 | 2.52 | 59.75 |
| 2011-12 | 25.18 | 29.28 | 3.78 | 45.76 |
| 2010-11 | 17.34 | 24.90 | 4.60 | 34.61 |
| 2009-10 | 19.56 | 35.18 | 2.90 | 44.51 |

Source: Annual Report 2013-14

FINANCE DEPARTMENT

Modern day's successive organizations are following Departmentalization structure, it is the key factor of their success. Any kind of organization following Necessary following Finance Department, it is helpful for smooth running of the firm. The finance department supporting to Maximum productivity, through procurements of suitable fund and utilization of the available fund in efficient. The finance department is preparing periodical financial statement, for knowing the financial states or position of the firm. This study, we are going to analyses Amara Raja Batteries Limited.

FINANCIAL ANALYSIS

Financial analysis or financial statement analysis refers to an assessment of the stability and profitability of a business and sub-business. It is performed by professionals who prepare reports using ratio. The financial ratios are supporting to find the strength and weakness of firm.

Liquidity Position is required for smooth running of the firm and fulfillment of short term financial requirements. Liquidity means the debt repaying capacity of an undertaking. It refers to the firm's ability to meet the claims of Suppliers of goods services and capital.

Profitability to earn income and sustain growth in both the short and long term, a company degree of profitability is usually based on the Company's results of operations. Mostly all firms looking profitability position for ever.

OBJECTIVES OF THE STUDY

- To evaluation of financial position of the Amara Raja Batteries Limited.
- To evaluate liquidity position of the Amara Raja Batteries Limited.
- To determine resources utilization of the Amara Raja Batteries Limited.

SCOPE OF THE STUDY

The present study is designed to cover the analysis of financial position of Amara Raja Batteries Ltd. It covers Liquid position, profitability position, and Resources Utilization through Ratio analysis and Return Positions analysis through trend analysis.

RESEARCH METHODOLOGY

It is an analytical research and evaluate financial performance of the firm. This report based on the Amara Raja batteries Ltd Five year's annual reports, Reference books, and Journals.

Tools used for analysis

- Ratio analysis
- Trend analysis

Limitations of the study

- This Study is conducted on limited period only
- This Study we consider only Annual reports only
- This study only the Amara Raja Batteries Limited

DATA ANALYSIS

- The Current Ratio can be expressed as the relationship of Current Assets and current Liabilities. The Current ratio has ideal or standard of 2:1, it means that Current Assets are 2 times and Current Liabilities are one time. Table 1 showing, The Amara Raja Batteries Ltd. finance manager managing firm’s liquidity positions in suitable manner.
- The Current Asset Turnover Ratio Express the finance managers utilization of the Current Assets and Sales. Table 4 showing the Amara Raja Batteries Ltd. finance manager Current Assets Utilizations are good.
- The Net Profit Ratio Expressing the Firm financial returns (excluding all expenses of the firm). Table 2 Showing, The Amara Raja Batteries Ltd finance managers getting success to earn profits of the firm. The firm finance managers are earning profit continuously positive growth from 2010-11 to 2013-14.
- Generally proprietary ratio expresses the ability of the company. It helps to the creditor of the company as it helps them to ascertain the shareholders fund in the total assets of the business. A higher ratio denotes safety to the creditors on others side a low ratio show s greater risk factor to the creditors. A ratio below 0.5 is a red single for the creditors since they have to lose heavily in the event of company liquidation as it indicates more of creditors fund and less shareholders fund in the total assets of the company. Table 3 Shows Proprietary Ratio of Amara Raja Batteries Ltd, it has Very low result of the Proprietary Ratio and not suitable for the firm financial position.
- An Earnings Per Share (EPS) is the monetary value of earning per outstanding of common stock for a company. Chart 3 Showing Earning per Share of Amara Raja Batteries Ltd is yearly fluctuating more than 5, It is indicating Better performance.
- The Net worth Ratio measure, how well a company is utilizing the shareholder investment to Create return for them. Chart 4 Showing Return on Net worth of the Amara Raja Batteries Ltd achieving Maximum Net worth is 35.18 in 2009-10 and least Achievements is 24.90 in 2010-11. Remaining period its achieving 29.28 to 30.45. Finally the net worth ratio indicates good performance.
- Return on asset tells, how efficiently a company turns assets into net income. It indicates the how much percentage of amounts earning the invested amount to the firm. Chart 1 Return on Asset Showing performance of the Amara Raja Batteries Ltd. the finance management department Performing Effectively and Achieving 64.56% of return on asset in 2013 – 14.
- The dividends are a form of profit distribution to the shareholder. The firm having a growing dividend per share can be a sign that the company’ management believes that the growth can be sustained. Chart 2 dividends per share showing performance of Amara Raja Batteries Ltd. the dividend share value is continuously fluctuating; it is achieving 4.6 in 2010-11 and fold own immediately in 2.52 from coming two years and again increasing 3.23 in 2013-14.

RECOMMENDATIONS

- The current Ratio, Current asset Turnover Ratio and Return on Asset ratios are good, the finance management continues for its success.
- The firm net profit is good, the finance management to concentrate to improve some more.
- The firm needs to improve Shareholders fund.
- The finance managers need to concentrate continues growth for earning per share (EPS) and Dividend per share.

CONCLUSION

From the above analysis of Amara Raja Batteries Ltd has sound financial position. The firm operative results indicate a positive and growth oriented trend annually. The finance managers’ achieving every year profit. Financial it is having good healthy position.

REFERENCES

1. Annual Reports of the Amara Raja Batteries Ltd. (2013-14, 2013-12.2012-11, 2011-10 and 2010-09).
2. Mohammed Roshif U, (2015). “A Study on financial Statement analysis of Appollo Tyres Limited, Kochi”, International Journal of Research in Commerce & Management (IJRCM), Volume No. 6, Issue No 06, ISSN 0976-2183
3. Dr Kailash P. Damor, (2012). “Profitability analysis of Cement Industries”, SUMEDHA Journal of Management, Vol. No. 1. No. 3 July- September 2012.
4. <http://www.accountingtools.com>
5. <http://www.investopedia.com>
6. <http://stocks.about.com/od/evaluatingstocks/a/062908ROA.htm>
7. <http://www.efinancemanagement.com/financial-analysis/advantages-and-disadvantages-of-current-ratio>

ANNEXURE

TABLE 1: SHOWING CURRENT RATIO

| Year | Current Asset | Current Liabilities | Ratio |
|---------|---------------|---------------------|-------|
| 2013-14 | 12986.10 | 6337.03 | 2.05 |
| 2012-13 | 12568.52 | 5761.93 | 2.18 |
| 2011-12 | 9395.94 | 4129.98 | 2.28 |
| 2010-11 | 7324.61 | 3689.81 | 1.99 |
| 2009-10 | 6310.63 | 1656.39 | 3.81 |

CHART 1: RETURN ON ASSET

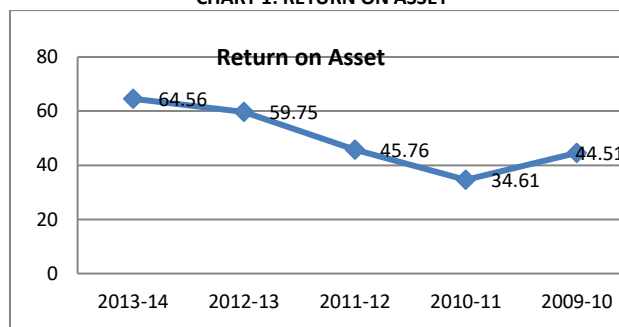


TABLE 2: SHOWING NET PROFIT RATIO

| Year | Sales | Net Profit | Ratio |
|---------|----------|------------|-------|
| 2013-14 | 34366.59 | 3674.36 | 0.11 |
| 2012-13 | 29589.15 | 2867.05 | 0.10 |
| 2011-12 | 23645.00 | 2150.63 | 0.09 |
| 2010-11 | 17611.00 | 1480.96 | 0.08 |
| 2009-10 | 14645.00 | 1670.33 | 0.11 |

CHART 2: DIVIDEND PER SHARE

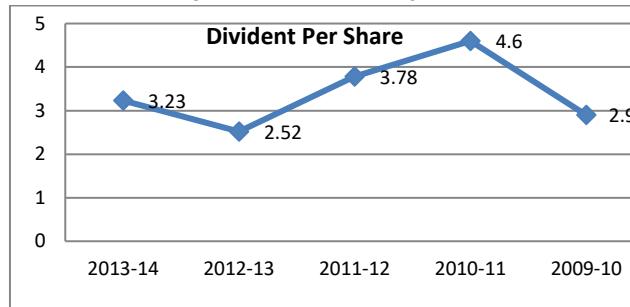


TABLE 3: PROPRIETARY RATIO

| Year | Shareholder fund | Total Asset | Ratio |
|---------|------------------|-------------|-------|
| 2013-14 | 170.81 | 21394.41 | 0.008 |
| 2012-13 | 170.81 | 17704.70 | 0.010 |
| 2011-12 | 170.81 | 13515.17 | 0.013 |
| 2010-11 | 170.81 | 11159.20 | 0.015 |
| 2009-10 | 170.81 | 65646.75 | 0.003 |

CHART 3: EARNINGS PER SHARE

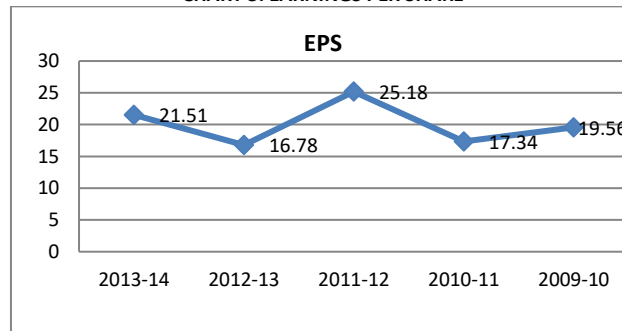
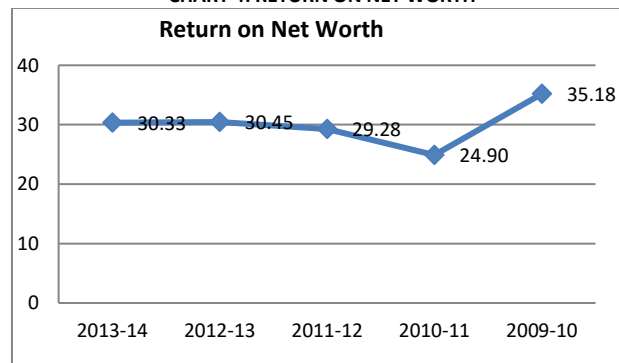


TABLE 4: CURRENT ASSET TURNOVER RATIO

| Year | Sales | Current Asset | Ratio |
|---------|----------|---------------|-------|
| 2013-14 | 34366.59 | 12986.10 | 2.65 |
| 2012-13 | 29589.15 | 12568.52 | 2.35 |
| 2011-12 | 23645.00 | 9395.94 | 2.52 |
| 2010-11 | 17611.00 | 7324.61 | 2.40 |
| 2009-10 | 14645.00 | 6310.63 | 2.32 |

CHART 4: RETURN ON NET WORTH



THE FOURTH INDUSTRIAL REVOLUTION: THE DIGITAL STORM IMPACT ON EMPLOYMENT

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ABSTRACT

India is being pushed towards a fourth industrial revolution emerging out of integration of digitization and technology, which will benefit all segments of society, however will hit Indian labor the hardest on the planet in the here and now by cutting occupations. The Fourth Industrial Revolution is associating with other financial and demographic components to make a perfect storm of plan of action change in all industries, bringing about significant interruptions to labor markets. New classifications of occupations will rise; halfway or entirely get out others. The skill sets required in both old and new positions will change in many industries and change how and where individuals work. It might likewise influence male and female workers diversely and change the elements of the industry gender gap. Rapid technological expansions like automation and digitization are set to influence careers of professionals in the coming years and will significantly affect job security. Even some of the industries like apparel and leather capable of creating half a million jobs, automation impacts on jobs in India.

KEYWORDS

automation, digitization, fourth industrial revolution, labour markets and employment.

INTRODUCTION

The world has experienced a progression of 'industrial revolutions' since the 18th century. The cause well known of the initial two was coal; the essence of the present two is PCs. The first industrial revolution saw the might of human and creature quality offer approach to steam engines and locomotive capacity in the 1700s. The second was driven by electricity, getting greater machines and advances in the manufacturing sector around 1870, including large scale production. Fast-forward to 1969 and computers, IT, electronics and automated production were at the core of the third industrial revolution. And now, IoT, anytime connectivity and the (im)perfect mix of the physical with the computerized are ready to drive the Fourth Industrial Revolution, or FIR.

The current revolution is literally disrupting every business, as we know it, and yet integrating every business in an odd way. Artificial intelligence, robotics, autonomous cars, advancement in biotech and genomics will all be part of the 'industrial revolution 4.0'.

It is comforting to think that the job you currently hold is a permanent fixture in the landscape of work. Perhaps you think that your children may even follow in your footsteps, or maybe you are considering mentoring young people in the same career. So, when you hear that the Fourth Industrial Revolution is upon us and radically changing employment in the next five years—leading to a net loss of more than 5 million jobs worldwide—you're probably a little uneasy.

The future of jobs has become a major issue of concern. The world today is at an inflection point due to rapid technological advancement leading to economic, social and political turmoil. Developed countries have now seen almost two decades of stagnation in economic growth with outsourcing of jobs in manufacturing and the services sector to less expensive destinations in the developing countries like India, China, Philippines and Indonesia etc. Unemployment, high cost of healthcare, large-scale immigration leading to cuts in social security etc. have been some of the key reasons for the reversal of the trend from globalization to protectionism now being seen in developed countries particularly in UK, USA and most recently in Italy.

Increasing productivity and efficiencies leading to improved customer experience has encouraged industry to push for technological innovation and find solutions through robotics, automation, cloud computing, 3D printing, Internet of Things, machine to machine and human to machine learning. Due to this reason, the manufacturing and services sectors, which have been the traditional job creators, are seeing tremendous transformation at the shop floor today with reduced human interface. Advanced manufacturing technologies such as Google's self-driving electric cars using LIDAR technology that enables mapping of its surroundings and Amazon's Go, dubbed as the world's most advanced shopping technology which requires you to simply turn on the app as you walk into the store, pick the products you want and simply walk out of the store without standing in lines for checkout, gives a glimpse of the emerging future. These technological advancements threaten to decimate jobs and increase the rich and poor divide further. The famous physicist Stephen Hawking in a recent op-ed has claimed that this is the most dangerous time for our planet. The very technology that has been an enabler for mankind in the past has the potential to destroy the world with economic inequality and climate change challenges.

India, not an exceptional, too reflects the universal scenario and is in middle of transformation. With 65% of our population being young, India cannot afford to have jobless growth. Recent initiatives of government from Make in India to demonetization are an attempt to improve India's economic fundamentals. While the economic growth of most of the developed world stagnated, India continued to grow at 7% plus in the last few years. However, fresh data released by the Labour Bureau shows a decline of jobs across eight labour intensive sectors in the last quarter of 2015, which is a cause to worry. The technologies of the Fourth Industrial Revolution or Industry 4.0 as it is popularly known, are leading to redundancy of many low-skilled jobs being replaced by technology and automation.

FIG. 1

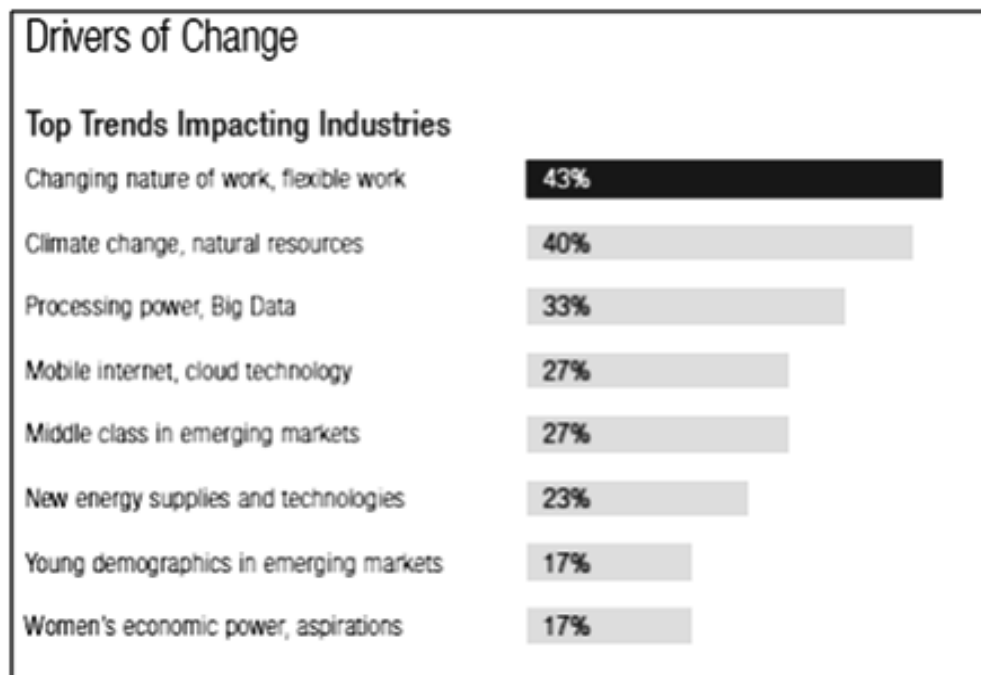
IMPACT ON EMPLOYMENT IN INDIA

Rapid technological advancements like automation and digital technologies are set to affect careers of professionals in the coming years and will have a significant impact on job security, a report said.

According to Simplilearn's State of India Technology Skills Report, which compiled inputs from over 9,200 mid-level IT/ITeS professionals, over 60 per cent believe that rapid technology advancements are set to impact their careers by 2017-18.

The World Economic Forum had also revealed that the Fourth Industrial Revolution is in progress and this development is expected to affect millions of jobs over the next 5-10 years.

FIG. 2



Source: Global Challenge Insight Report, World Economic Forum

Around 62 per cent believe that the impact will be due to automation, artificial intelligence and digital technologies, 48 per cent believe the impact will be due to globalization and changing consumer perceptions, the report that covered professionals working at tier-I & -II companies in Bangalore, Mumbai, New Delhi, Hyderabad, Chennai, Pune and Kolkata said.

With regards to digital technologies and its impact on job security, nearly half (49 per cent) believe their job is at risk due to the change introduced by emerging technologies, 32 per cent believe they already have the skills to cope with change brought in by emerging technologies, while 19 per cent of IT professionals think it would not impact their careers.

The impact would be more prominent on low and middle skilled jobs, which are under threat of replacement; accordingly experts suggest regular up-skilling to improve job prospects.

"More than 50 per cent of IT industry professionals believe that future growth is in emerging and new technology areas like cloud computing, big data, cyber security, data science and mobile and a vast majority of them are keen to upgrade their skills," Simplilearn Chief Business Officer Kashyap Dalal said.

Interestingly, 62 per cent did not invest into learning newer technologies in the last 12 months, however, going forward, more than 35 per cent respondents want to up-skill with online courses over the next 6 months and digital marketing, big data and analytics are some popular domains professionals want to build their skills. But at IT and BPO multinationals, large numbers of employees are being asked to leave. According to analyst firm Sanford Bernstein, IBM is looking to lay off 14,000 employees, rendered surplus by automation.

WHEN BANKS TURN TO ROBOTS TO MANAGE THEIR BRANCHES

Two of India's largest private sector banks, ICICI Bank Ltd. and HDFC Bank Ltd. are turning to artificial intelligence for a whole host of services, which would otherwise need a stronger workforce, be it for compliance or customer service.

While ICICI Bank's Software Robotics is completing over 500 day-to-day banking processes, primarily focusing on compliance and verification work, its peer HDFC Bank has roped in a new employee – a humanoid, named IRA (Intelligent Robotic Assistant), who stands at the branch's welcome desk, and is programmed to guide customers to the requisite counters.

The philosophy is let's automate whatever we think can be automated.

NS Kannan, Executive Director, ICICI Bank

Artificial intelligence and automation are now considered to be amongst the biggest threats to job creation and industry voices across the board agree that so-called traditional jobs may soon cease to exist. According to Infosys' chief executive officer, Vishal Sikka, advances in technology removing a lot of mechanical and scripted jobs, besides many related to business process outsourcing, IT and IT infrastructure operations. But automation will also lead to creation of a new set of jobs, Sikka added.

Around 20 crore middle class young people would have no jobs by 2025 if our education system doesn't keep pace with the changes in automation and technology, Mohandas Pai, the chairman of Manipal Global Education Services told Bloomberg Quint in an interview.

And the level of automation is only going to get higher. Both ICICI and HDFC Bank say this is only the start, and there's a lot more to come.

IRA's developer, Asimov Robotics, believes that robots will definitely replace blue collar jobs in future.

If you look at India, India is very rich in human resources. But the fact is that for a lot of jobs like blue collar jobs, you won't find resources. You won't find people to work. Like security guards. People don't want to work in that space. These are all the areas where robots will dominate in the coming future. Whether we digest it now. It will be there for sure.

Jayakrishnan T, CEO, ASIMOV Robotics

Apparel, leather industries capable of creating half a million jobs annually: Economic Survey 2017, recently released by the Ministry of Finance, agrees to the fact that 'creating jobs is India's central challenge' and with that, it says that India needs to generate jobs by promoting the apparel, leather and footwear sectors.

The survey says that the two sectors have immense opportunities to generate jobs that are formal and productive, provide bang-for-buck in terms of job creation relative to investment, have the potential for broader social transformation, and can generate exports and growth. Recognizing this possibility, the government has already announced important steps to incentivize the production and exports of apparel.

However, throughout history, people have lost their jobs to machines. First the manual, then the clerical and now – it is feared – the intellectual and conceptual. The US study suggests that computerization's effects will spread to encompass service occupations as well as transportation, logistics, office and administrative support. And it supports the idea the more educated you are, the less likely your job is to be computerized.

Automation to impact 69% jobs in India: World Bank research

According to a recent World Bank research, automation will impact 69 per cent of the jobs in India and 77 per cent in China. The research states that technology could fundamentally disrupt the traditional economic growth paths/patterns in developing countries. To prevent that from negatively impacting people, such countries will have to focus a lot more on enhancing their human capital as well.

Based on what the research predicts about how automation will replace a significant number of jobs in India and China, and as high as 85 per cent jobs in Ethiopia, Kim says, World Bank president, "If this is true, we need to understand the paths to economic growth that will be available for these countries and then adapt our approach to infrastructure accordingly. Moreover, with increasing reliance on private-sector investments, we will have to increase our vigilance to ensure that privatization does not equal exclusion of the poor and marginalized."

Investing in the earliest part of people's lives will significantly impact the countries' ability to compete. The cost of falling short in equipping children with foundational skills is unacceptably high, and the evidence supporting this conclusion grows every day. Also, "Governments that do not invest early in a skilled, healthy and productive workforce are undermining their current and future economic growth," explains Kim.

According to IT industry insiders, hiring was all right when the going was good. But as the operating environment gets tougher, client expectations are changing. Clients tell them that if they don't get 30 per cent savings, they are not interested. Automation is one way of achieving this. Optimists argue that automation could speed up the growth of the \$143-billion sector into newer areas, and lead to demand for a new kind of workforce.

CONCLUSION

The upgrading of skills and re-skilling then becomes mandatory for employees at every level. Without urgent and targeted action today, to manage the near-term transition and build a workforce with future-proof skills, governments will have to cope with ever-growing unemployment and inequality, and businesses with a shrinking consumer base. Government may need to extensively revamp its economic structures to sustain development and prevent mass disruption.

REFERENCES

1. David Rotman How Technology Is Destroying Jobs, MIT Technology Review, June 12, 2013
2. Economist Intelligence Unit (2005a), India. Country profile 2005.
3. Global Challenge Insight Report, The Future of Jobs - Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, World Economic Forum, January 2016.
4. Jae-Hee Chang and Phu Huynh, Asean in Transformation – The future of jobs at risk of automation, International Labour Organization, July 2016.
5. Patti Shank, The Fourth Industrial Revolution: What Happens With Employment? Tuesday, May 24, 2016
6. Peter Marsh, Author, "The New Industrial Revolution: Consumers, Globalization and the End of Mass Production", Yale University Press, 2012

HUMAN RESOURCE ACCOUNTING PRACTICES IN HPCL

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ABSTRACT

Despite the technological advances and the increasing importance of computerization, human resources continue to play a dominating role in the effective use of physical and financial resources. Infact the value of human resources is invaluable and cannot be measured accurately. They are the key elements of the knowledge economy. Human resources are recognized as an integral part of the total worth of an organization. Employees are assets that appreciate in value through the skill, knowledge and experience they acquire while working in the organization. Their departure from the organization makes the business lose an essential element of intellectual capital. This loss becomes great if such intellectual element is acquired by a rival business concern. This makes valuation of this asset essential for the success of the company and by reporting it to the public it enhances the image of the company. HRA helps the management to frame policies for human resources. Measurement of investment in human resources will help evaluate the change in human resource investment over a period of time. This paper attempts to discuss in detail the human resource accounting practices followed by HPCL.

KEYWORDS

HPCL, Lev & Schwartz, human resources, human resource accounting, annual report, HR Value.

INTRODUCTION

The twenty first century has witnessed globalization of business and service. The role of human forces in the success of any business concern has gained importance as each requires both physical assets and human resources for its success. In the absence of human resources and efforts all the physical assets like buildings, offices, computers etc. become unproductive. Human resources are a true valuable resource that a firm must possess as they are responsible for the effective utilization of all physical and financial resources. Better the quality of human resources better the management and utilization of other resources. They are the key elements of the knowledge economy. It therefore becomes essential that human resources are recognized to be an integral part of the total worth of an organization in the knowledge driven economies. Failure of conventional accounting to treat human resource as an asset has led to the development of 'Human Resource Accounting'.

American Accounting Association (1973) defines Human Resource Accounting as "the process of identifying and measuring data about human resources and communicating this information to the interested parties".

Human Resource Accounting emphasizes the fact that human resources should be treated as assets like physical and financial assets because the quality and caliber of the people working in an organization are the real assets of a firm. Human Resource Accounting is mainly concerned with:

- Identification of data regarding human resources of an organization.
- Measurement of the data in terms of cost and value.
- Communicating this information to the interested parties.

REVIEW OF LITERATURE

The concept of human capital is not a recent discovery. Its origin dates back to the late seventeenth century when the economist, Sir William Petty first attempted to estimate the monetary value of population of England in 1681. He considered labour as the 'father of wealth' and stressed that it should be included in the estimate of the total national wealth. The credit for recognizing the value of human resources as an asset goes to William Paton (1962) when he commented, "in a business a well organized and loyal personnel may be a more important asset than a stock of merchandise". However the fact remains that it was Rensis Likert (1967), a Social Psychologist at The institute for Social Research, University of Michigan, who first used the term 'human asset' a term since replaced by human resources. So he originally developed it. Different techniques have been developed to measure the value of human resources. The two main approaches Human Resource Cost Accounting (HRCA) and Human Resource Value Accounting (HRVA) are usually employed for this.

In HRCA, the expenses incurred on acquisition, training and development of human resources are treated as investment and hence shown in the balance sheet as an asset and periodical write offs out of these investments are charged to profit and loss account. The original cost model of Brummet and others (1968) made the suggestion to capitalize the firm's expenditure on recruitment, selection, training and development of human resources, amortizing such costs over a period and then reporting the net investment in human resources in the Balance Sheet under the heading 'human assets'. During 1968-74 R.G Barry Corporation of U.S.A implemented this method for valuation of human resources and reported the information externally. In 1973 'Replacement Cost Approach' was developed by Rensis Likert and Eric G. Flamholtz. As per this approach the cost of alternative use of employee is value of human resource. Hekimian and Jones (1967) give an 'Opportunity Cost Approach' based on the principle that human assets will be valued while it is scarce.

HRVA is based upon the economic value of human resources to an organization. Hermanson (1964) proposed an 'Adjusted Present Value' model to quantify the value of human capital of a company. He suggested that the amount of future wages payable represent a liability whereas human resources is an asset in the Balance Sheet.

Lev and Schwartz (1971) valued human capital as the present value of future earnings of employee till retirement. Flamholtz (1971) developed 'Stochastic Rewards Valuation' model and determined the value of human assets by aggregating the present value of expected future services of employees. Jaggi and Lau (1974) model considers groups for valuation rather than individuals.

As per Giles and Robinsons (1972) Human Asset Multiplier Model the capitalized value of the company calculated on the basis of price earnings ratio minus net assets are the human resource. Morse (1973) in his 'Net Benefit' method considers that human resources value is equal to the present value of the gross value of services to be rendered by human beings minus present value of the future payments to human beings. Pekin Ogan's (1976) suggested a model known as 'Certainty Equivalent Net Benefit Model' that is the extension of net benefit model of Morse. Certainty with which the net benefit in future will accrue to the organization is the value of human resources. Chakraborty (1976) suggested a model for valuation of human resources known as 'Aggregate Payment Approach'. The value of human resources is calculated by multiplying the average salary with the average tenure of the employee.

Gupta, D.K (1990), Patra, R and Khalik, S.K (2003), Sonara, C.K and Patel, A (2009) conducted a study to know the current status of human resource accounting in the Indian context.

Joshi, U and Reeta (2012) in their paper did a comparative study of HRA system in selected Indian companies. Two public sector and two private sector companies were taken on the basis of their reporting of HRA information in their annual reports. Scores were assigned to the organizations and mean scores for these organizations were calculated on the basis of some important variables. Ranks to the organizations were also given based upon the extent of HRA information reported in the annual reports.

Garg, J (2015) in his study made an attempt to find out the companies reporting HRA information in India and highlight the significance of human resource valuation and methods to measure human resource value.

All the above studies were conducted to find out the current practices followed by the Indian organizations for Human Resource Accounting. The studies concluded that very few companies come forward for reporting Human Resource Accounting as it is not compulsory for them to disclose human resources information in their annual reports. The present paper is an attempt to do the case study of HPCL in detail so that companies not reporting HRA should come forward to do the valuation of HRA as it supplies useful information to take various decisions.

OBJECTIVES OF THE STUDY

Human capital is now considered to be a critical component that forms the basis of other forms of capital. This led to the emergence of knowledge based industries that viewed human asset valuation as a trend. Through HR valuation the companies are in a position to know the value they would forgo when they are about to lose a person.

The human resource valuation in India is mostly based on the present value of the future earnings of the employees. Despite the fact that it is neither mandatory for the Indian companies to value their human resources nor there are any accepted standards for its valuation the Indian corporate world is evincing a keen interest in accounting for human resource value. In the financial year 1981-82 HPCL started valuing its human resources. Therefore this company is chosen for the study. The specific objectives of the present study are:

- To examine the prevailing HRA reporting practices in HPCL.
- To examine the model used for the valuation of human resources in HPCL.
- To critically evaluate the HRA system of HPCL.

RESEARCH METHODOLOGY

In the present study most of the secondary data needed has been collected from the published annual reports of the company. The annual reports of HPCL for 2003-04 to 2010-11 were scanned to critically evaluate the human resource accounting information disclosed by the company. The table of trends in structure and value of human resources is prepared after scanning the annual reports to find the reason of variation in the value of human resources of that organization. Various ratios were also calculated to find out that how human resource valuation helps in judging the productivity and performance of human resources of particular organization.

ABOUT HINDUSTAN PETROLEUM CORPORATION LIMITED

Hindustan Petroleum Corporation Limited, a Fortune 500 company is one of the major integrated oil refining and marketing companies in India. It is a Mega Public Sector Undertaking (PSU) with a navratna status. On July 05, 1952 this company was incorporated in the name of Standard Vacuum Refining Company of India under the Companies Act V11 of 1913. In March 1962 the company name was changed to ESSO Rising Company of India Limited. Finally in July 1974 by virtue of the Lube India and ESSO Standard Refining Company of India Limited Amalgamation Order passed by the Company Law Board the company got its present name Hindustan Petroleum Corporation Limited (HPCL). In 1976 with nationalization the Government of India took over the Caltex Undertaking in India and merged it with HPCL. As HPCL owns the country’s largest lube refinery with its world class standard of lube base oils it has given India a firm ground in this sector. HPCL accounts for about 20% of the world market share and 10% of the nation’s refining capacity with two coastal refineries, one each at Mumbai and Vishakhapatnam. Since the signing of the first MOU with the Ministry of Petroleum and Natural Gas, Government of India, it has shown excellent performance for fifteen consecutive years up to 2005-06. For excellent overall performance and for being one of the top ten public sector enterprises that fall under the ‘Excellent’ category it won the prestigious MOU Award for the year 2007-08. The consistent excellent performance of HPCL is attributable to it’s highly motivated all India workforce of over 11248 employees (2010-11) working at its various refining and marketing locations. It is a Government of India Undertaking with a strong market infrastructure having an annual turnover of Rs.132670 crores and Rs.143396 crores as sales/income from operations during the financial year 2010-11 that is about 20% marketing share in India among the PSUs.

HUMAN RESOURCE ACCOUNTING SYSTEM OF HPCL

HPCL considers human dimensions as the key to organization’s success. Several initiatives have gained momentum for the development of human resources to meet the new challenges in the competitive business environment. HPCL recognizes the value of human assets that are committed to achieve excellence in all spheres. In the year 1981-82 HPCL started the process of valuation of human resources. Table1 indicates the various variables considered by HPCL for the purpose of valuation of human resources. The data relating to 2006-07 has not been shown as the HRA information has not been disclosed by HPCL in its annual report of the relevant period. The annual report of 2007-08 also does not include the data related to human resource value but relevant information is considered from annual report of 2008-09 onwards.

THE MODEL USED FOR VALUATION

HPCL uses the Lev and Schwartz model to compute the value of Human Resource assets. The valuation is based on the present value of future earnings of the employees assuming that:

- Employee compensation represented by direct and indirect benefits earned by them on cost to company basis
- Earnings up to the age of superannuation are considered on incremental basis taking the corporation’s policies into consideration
- Such future earnings are discounted @ 8.25% during the year 2010-11

TABLE 1: VARIOUS ASPECTS CONSIDERED FOR HUMAN RESOURCE VALUATION BY HPCL

| Year | Title of HRA Information | Average Age | Model used for valuation | Discount Rate per annum | Criteria For Discount Rate | Determinants of learn-ings | Treatment of HR costs Reve-nue/Capital | Other aspects considered |
|---------|--------------------------|-------------|--------------------------|-------------------------|-------------------------------|---|--|---|
| 2003-04 | HRA | 43 | Lev & Schwartz | 11% | Weighted Avg. cost of capital | Direct & Indirect bene-fits earned on cost to company basis | Not Reported | Earnings up to age of super-annuation incremental basis as per company policies |
| 2004-05 | HRA | 43 | Lev & Schwartz | 11% | Same as above | Same as above | Not Reported | Same as above |
| 2005-06 | HRA | 44 | Lev & Schwartz | 8% | Not Reported | Same as above | Not Reported | Same as above |
| 2007-08 | HRA | 44 | Lev & Schwartz | 8% | Not Reported | Same as above | Not Reported | Same as above |
| 2008-09 | HRA | 44 | Lev & Schwartz | 8% | Not Reported | Same as above | Not Reported | Same as above |
| 2009-10 | HRA | 44 | Lev & Schwartz | 8.25% | Not Reported | Same as above | Not Reported | Same as above |
| 2010-11 | HRA | 46 | Lev & Schwartz | 8.25% | Not Reported | Same as above | Not Reported | Same as above |

Source: Annual Reports of HPCL from 2003-04 to 2010-11.

DISCOUNT RATE AND CRITERIA FOR DISCOUNT RATE

To find the present value of future earnings of an employee it has to be discounted at a particular discount rate. The disclosure of the discount rate is essential from the point of view of the analysts e.g. consider human resource in two organizations with same level of future earnings each using different discount rates for

valuation of human resources. The organization that uses higher discount rates has lesser value of its human resource and vice-versa. From Table1 it is clear that HPCL uses different discount rates in different years. The criteria used by the organization for discount rate is weighted average cost of capital for the year 2003-04 and 2004-05. But there is no reporting for this in the annual reports from 2005-06 onwards.

DETERMINANTS OF EARNINGS

The value of human resources is measured primarily on the basis of their future earnings. Thus disclosure of what is included in the earnings of human resources is important for the purpose of comparison of human resource value of two organizations. The human resources get both direct and indirect monetary benefits from the organizations in which they are employed. The value of human resources would obviously be greater if both the direct and indirect monetary benefits are included in the future earnings. HPCL clearly indicates in assumptions considered for valuation of HRs that it considers both direct and indirect monetary benefits earned as basis for determination of earnings. Table1 clearly indicates that this basis applies from 2003-04 to 2010-11.

OTHER ASPECTS CONSIDERED

Assessing the value of human resources really is a complex task that requires a number of aspects to be considered. HPCL disclosed that earnings up to the age of superannuation on incremental basis are considered.

TREATMENT OF HR COSTS-REVENUE/CAPITAL

The central idea of human resource accounting is that human resource constitute an investment rather than an expense for a firm i.e. employee costs should be capitalized rather than expensed. Some writers state that training is indeed an expense but education and development costs are investments. HPCL has not disclosed this aspect in the annual reports as to how to treat HR costs. The current practice among accountants is to generally treat all such expenditure as expense of the period in which such expenditure is made and accordingly debited to income statements.

TRENDS IN STRUCTURE AND VALUATION OF HUMAN RESOURCES OF HPCL

Table 2 shows the trends in structure and value of HRs for the year 2003-04 to 2010-11 except the year 2006-07.

CATEGORIES OF EMPLOYEES

Human Resource profile of HPCL divides its employees into four age groups that are 21-30, 31-40, and 41-50 years and above. Human Resource profile for the year 2010-11 indicates that out of a total employee strength of 11248, 1586 employees belong to the age group 21-30, 1317 employees to the age group 31-40 years, 4421 fall in the 41-50 years age group and the rest 3924 belong to the above 50 years age group. This shows that HPCL has a mix of energetic youth and experienced seniors who harmonize the efforts to achieve the corporation’s goals. Two categories of employees i.e. management and non-management are disclosed in different age groups. Human resource valuation is made only for management and non-management employees in total, ignoring age wise categorization.

NUMBER OF EMPLOYEES AND VALUE OF HUMAN RESOURCES

The trend of human resource value and number of employees shows the reason of the increase or decrease of the value of human resources. It is clear from the table that in the year 2003-04 the total number of management employees was 3594 which ultimately increased to 4938 in the year 2010-11. The percentage of management employees in the total number of personnel has increased from 32.41 to 43.90 during the period of eight years from 2003-04 to 2010-11. This rising trend speaks of the increasing relative importance of management in the organization. The non-management category of employees that numbered 7494 in the year 2003-04 came down to 6310 in 2010-11. The percentage of non-management employees in the total number of staff came down from 67.59 in 2003-04 to 56.10 in the year 2010-11. The table also depicts the value of human resources that was Rs. 4206 crores in 2003-04 that increased to Rs. 11781 crores during the year 2010-11 for the management personnel. The percentage of management value of human resources that was 55.46 in 2003-04 increased to 63.71 during the year 2007-08. The total human resource value for the management and the non-management human resources was Rs. 7548 crores in the year 2003-04 and it increased to Rs. 18493 in 2010-11. Human assets value went up partly due to rise in emoluments and partly due to the growing number of human resources.

TABLE 2: TRENDS IN STRUCTURE AND VALUE OF HUMAN RESOURCES OF HPCL

| Year | 2003-04 | | 2004-05 | | 2005-06 | | 2007-08 * | | 2008-09 | | 2009-10 | | 2010-11 | |
|----------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|-----------------|-----------------------------|
| | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores | No. of Empls' | Value of HR's Rs. In Crores |
| Management | 3594 (32.41) | 4206 (55.46) | 3562 (33.73) | 4540 (54.94) | 3866 (35.87) | 6162 (58.10) | 4157 (37.97) | 7233 (56.82) | 4551 (40.47) | 8523 (64.83) | 4779 (43.33) | 9341 (59.67) | 4938 (43.90) | 11781 (63.71) |
| Non-Management | 7494 (67.59) | 3378 (44.54) | 6999 (66.27) | 3724 (45.06) | 6912 (64.13) | 4444 (41.90) | 6792 (62.03) | 5497 (43.18) | 6695 (59.53) | 4624 (35.17) | 6512 (57.67) | 6313 (40.33) | 6310 (56.10) | 6712 (36.49) |
| Total | 11088 | 7584 | 10561 | 8264 | 10778 | 10606 | 10949 | 12730 | 11246 | 13147 | 11291 | 15654 | 11248 | 18493 |

Source: Annual Reports of HPCL for 2003-04 to 2010-11

Note: *Though HPCL does not provide HRA information for the year 2006-07 and 2007-08. The value of HR And other relevant information is available in the Annual reports of 2008-09 for the year 2007-08. For the year 2006-07 information is not available.

PRODUCTIVITY AND PERFORMANCE RATIOS OF HUMAN RESOURCES OF HPCL

The human resource value data provided by the human resource accounting system when considered along with the traditional accounting data affects various accounting ratios. With the help of valuation of human resources a total picture regarding the resource position of an organization can be perceived.

In the Table 3, an attempt has been made to analyze productivity and performance of the human resources of HPCL by selecting a few parameters such as value per employee, value added per employee, value added to human resources, value per employee to value added per employee ratio, human resource value to total resources and profit before tax to human resources. These ratios for a seven year period from 2003-04 to 2010-11 have been calculated.

TABLE 3: PRODUCTIVITY AND PERFORMANCE RATIOS OF HUMAN RESOURCES OF HPCL

| Year | 2003-04 | 2004-05 | 2005-06 | 2007-08 | 2008-09 | 2009-10 | 2010-11 |
|--|-----------|-----------|----------|----------|----------|---------|---------|
| Ratio | | | | | | | |
| Value per employee (Rs. in Crores) | .68 | .78 | .98 | 1.16 | 1.17 | 1.39 | 1.64 |
| | (14.71%) | (25.64%) | (18.37%) | (0.86%) | (18.80) | (17.98) | |
| Value added per employee (Rs in Crores) | .52 | .49 | .39 | .55 | .74 | .83 | .89 |
| | (-5.71) | (-20.40%) | (41.03%) | (34.55%) | (12.16%) | (7.23%) | |
| Value added/Human Resources (Rs. in crores) | .76 | .63 | .40 | .47 | .63 | .60 | .54 |
| | (-17.10%) | (-36.50%) | (17.5%) | (34.04%) | (-4.76%) | (-10%) | |
| Value per employee/value added per employee (No. of years) | 1.31 | 1.59 | 2.51 | 2.11 | 1.58 | 1.67 | 1.84 |
| Human Resources value/Total Resources value | 40.25% | 40.78% | 38.56% | 33.19% | 30.41% | 33.39% | 33.35% |
| Profits before tax/Human Resources | 39.29% | 19.86% | 2.69% | 8.71% | 5.42% | 13.58% | 12.69% |

Source: Annual Reports of HPCL for 2003-04 to 2010-11.

VALUE ADDED PER EMPLOYEE AND VALUE PER EMPLOYEE

A comparison of value added per employee with the value per employee has been made in order to find out whether or not the value added per employee has kept pace with the value per employee over a period of time. Value added is a good indicator of the contribution made by human resources though not entirely or solely. By comparing the growth in value added per employee with the growth in the value per employee, conclusions can be drawn as to whether the human resources are generating the desired return for the organization in relation to the compensation paid to them. Meaningful conclusions can be derived from the comparison of these two ratios that can provide a base for taking strategic decisions.

There is an upward trend in the value of human resources per employee over the period of study. The value per employee increased 2.41 times during this study period. The percentage increase over the previous year in the value of human resources per employee varies from 0.86 to 25.64. The lowest increase over the previous year was in 2008-09 and the highest in 2005-06. The value added per employee stepped up from Rs. 0.52 crores in 2003-04 to Rs. 0.89 crores in 2010-11. If value added per employee is to be compared with the value per employee then we can see that the percentage increase in value per employee over the last year in 2007-08 was 18.37 and this increase in value added per employee during the same period was 41.03. It implies that during this period the employees of HPCL have contributed to the organization at a rate greater than at which their salaries increased. During the year 2004-05 and 2005-06 the percent growth in value added is negative over the previous year whereas there is an increase in the value per employee which means in these years the employees are not able to contribute to the organization despite an increase in their salaries and the same is the position during the period 2010-11. The percent increase in value per employee is 17.98 whereas for value added per employee it is only 7.23. This means that during this period employees of HPCL have generated lesser returns to the organization in comparison to the increase in compensation paid to them.

RATIO OF VALUE ADDED TO HUMAN RESOURCES

Another use of the human resource accounting data can be to compute the rate at which the organization is deriving the return in the form of value added on its investment base of human resource value. The decrease in the ratio of value added to human resources of HPCL from Rs 0.76 crores in 2003-04 to Rs. 0.54 crores in 2010-11 shows the decrease in productivity of human resources.

RATIO OF VALUE PER EMPLOYEE TO VALUE ADDED PER EMPLOYEE

The above ratio helps the organization to know the number of years it will take to recover the amount invested in its human resources. As the ratio of value added to human resources shows the decrease in productivity of human resources, therefore it takes more time in terms of number of years to recover the investment made in human resources i.e. from 1.31 to 1.84 years.

RATIO OF HUMAN RESOURCES VALUE TO TOTAL RESOURCES VALUE

To know the real capital intensity of an organization both physical capital and human capital should be considered. The ratio of human resources to total resources highlights the proportion of human resources in relation to the total resources of the organization. The human resources of HPCL constituted 40.25% of its total resource value in 2003-04. This ratio has declined to 33.35 in 2010-11. This declining percentage shows that the organization has made a higher investment in the physical resources as compared to that in human resources.

RATIO OF PROFIT BEFORE TAX TO HUMAN RESOURCES

The profit before tax to human resources is an indicator of productivity of human resources. The ratio of profit before tax to human resources has reduced to 12.69% in 2010-11 from 39.29% in 2003-04. This indicates the decrease in the productivity of human resources.

EVALUATION OF HUMAN RESOURCE ACCOUNTING SYSTEM OF HPCL

HPCL followed Lev and Schwartz model for valuation of its human resources. This model has inherent limitations. By determining the value as the present value of all future salaries accruable to the employees till their retirement the exercise did not take into account the possibility of an employee leaving the organization before retirement. Similarly it was assumed that the employee occupying a particular level would continue to occupy the same till retirement and as a result the possibility of an employee moving from one level to another was not recognized. These two variables are vital for determining the fair value of human resources. Information relating to human resources has been reported by HPCL as supplementary information in its annual report. The human resource information is not included in the financial statement of the company. The data are unaudited and have no significant value at all.

CONCLUSION

In India, many organizations introduced the system of HRA but the number of these is very low. In spite of the benefits of HRA many organizations stopped reporting HRA information. BHEL that was pioneer in the introduction of HRA in India and R.G. Barry Corporation in the USA both stopped valuing human resources. Human Resource Accounting has a great potential in the modern age of professionalization particularly in the case of labour intensive service industry where human resource constitutes prime resource. HRA information thus would be of immense help in decision making both for internal and external users. Therefore organizations should adopt HRA system.

The conceptual thinking about valuation of human resources is still in a developing stage. No model of HRA is accepted by the accounting bodies all over the world. The models devised so far for valuation of HRA have been developed in the USA taking into consideration the prevailing environment. Most of the companies are using the Lev and Schwartz model with or without modifications as per their convenience. Considering the significance of human resources in knowledge based sectors initiatives should be taken by the government along with other professionals, researchers and accounting bodies both at the national and international levels for the measurement and reporting of such valuable assets. Researchers should come forward to review the models as per the requirements of our country.

REFERENCES

1. AAA Committee, Report of the AAA Committee on Accounting for Human Resources, *The Accounting Review*, 48, 1973, 189.
2. Annual reports of HPCL for a period of 2003-04 to 2010-11.
3. Batra, G.S, Trends in Accounting Research, Vol.1 Deep and Deep Publication, New Delhi, 1997.
4. Brummet, R.L, Eric G. Flamholtz and William C. Pyle, Human Resource Management: A Challenge for Accountant. *The Accounting Review*, 43 (2), 1968, 217-224.
5. Chakraborty, S.K, *Human Asset Accounting: The Indian Context in Topics in Accounting and Finance*, (Oxford University Press, 1976).
6. Flamholtz, Eric G. A, Model for Human Resource Valuation: A Stochastic Process with Services Rewards, *Accounting Review*, 1971, 253.
7. Garg, J, Human Resource Accounting Practices In India. *Inspira Journal of Modern Management & Entrepreneurship*, 5(3), July 2015, 169-176.
8. Giles, W.J. and Robinson, D.F. *Human Asset Accountants*, (Institute of Personnel Management and Institute of Cost and Management Accountants, London, 1972).
9. Gupta, D.K, The Lev and Schwartz Model Based Human Resource Accounting in India: Some Issues. *Indian Journal of Accounting*, 20(1), 1990, 79-81.
10. Hekimian, J.S and Jones, C.H, Put People on Your Balance Sheet. *Harvard Business Review*, 1967, 107-108.
11. Hermanson, Roger H, Accounting for Human Assets, *Occasional Paper No. 14, Graduate School of Business Administration, Michigan State University*, 1964, 1-69
12. Jaggi, Bikki and Hon-Shiang Lau, Towards a Model for Human Resource Valuation. *The Accounting Review*, 1974, 321.
13. Khandelwal, M.C & Sujan C., *Human Resource Accounting: Contemporary Issues In Accounting*, Pointer Publishers, Jaipur, 1993.
14. Likert R and Bowers, D.G, Organization Theory and Human Resource Accounting, *American Psychologist*, 1969, 588.
15. Likert, Rensis, *The Human Organization: In Management and Value*, (McGraw Hill Book Co, New York, 1967, 83-84).
16. Morse, W. J, A Note on the Relationship between Human Asset and Capital. *The Accounting Review*, 5, 1973.
17. Ogan, Pekin.A Human Resource Value Model for Professional Service Organizations *The Accounting Review*, 51 (2), 1976, 306.
18. Patra, R and Khatik, S.K, HRA Policies and Practices: A Case Study of BHEL Limited, Bhopal, India. *International Journal of HRD and Management*, 3(4), 2003, 285-296.
19. Patra, R.K., *Human Resource Accounting in Public Enterprises*, Himalaya Publishing House, Mumbai, 2005.
20. Sonara, C.K and Patel, A, Valuation and Reporting Practices of Human Resource Accounting in India, *The Management Accountant*, 2009, 16-19.
21. Upasna, J and Reeta, Human Resource Accounting System in Selected Indian Companies, *Journal of Social and Development Sciences* 3(2), Feb, 2012, 69-76.

MAKE IN INDIA: AN OVERVIEW OF VARIOUS SECTORS

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ABSTRACT

On 25th September, 2014 our honorable Prime Minister Narendra Modi launched an initiative program **Make in India** to encourage Multinational Companies as well as domestic companies to manufacture their products in India. The major objective behind this program is to focus on major 25 sectors of the economy for job creation and skill enhancement and development. This paper takes an overview of the various sectors on which Make in India campaign is focused and it also tells the reasons for investment, growth driver and policy of those sectors.

KEYWORDS

make in India, sectors, growth driver, policy.

INTRODUCTION

The GOI campaign, Make in India is a program designed to facilitate investment, foster innovation, enhance skill development and build best-in-class manufacturing infrastructure. The Make in India national program ensures that skilled manpower is available for manufacturing. It is an initiative program designed to transform India into a global manufacturing hub for manufacturing of goods ranging from cars to soft-wares, satellites to submarines, pharmaceuticals to ports and paper to power. It contains a lot of proposals designed to urge companies local and overseas to invest in India and make the country a manufacturing power house. The focus of Make in India program is on creating jobs and skill enhancement in 25 various sectors.

OBJECTIVES OF THE STUDY

1. To know about Make in India.
2. To give an overview on various sectors.

RESEARCH METHODOLOGY

The data has been collected from reliable secondary sources from website pertaining to- Make in India in order to ensure complete reliability.

OVERVIEW OF SECTORS

| SECTORS | Reason to invest | Growth Driver | Sector/FDI Policy |
|------------------------------|---|---|---|
| Automobile | By 2026, India is expected to be the 3 rd largest automotive market by volume in the world. | A growing working population and an expanding middle-class are expected to remain key demand drivers. | Automatic approval for foreign equity investment up to 100% with no minimum investment criteria. |
| Automobile Components | 6 th largest vehicles manufacturer in the world that produced 23.9 million vehicles in FY 16. | Fastest growing major economy in the world with GDP growth rate of above 7% | Faster Adoption & Manufacturing of Electric Hybrid Vehicles (FAME) Scheme. |
| Aviation | India is one of the fastest growing aviation markets and currently the ninth largest civil aviation market in the world. 2. India is projected to be the third largest aviation market by 2020. | Five international airports (Delhi, Mumbai, Cochin, Hyderabad, Bengaluru) have been completed and are operational under Public Private Partnership (PPP) mode. | The extant FDI policy on Airports permits 100% FDI under automatic route in Greenfield Projects and 74% FDI in Brownfield Projects under automatic route. FDI beyond 74% for Brownfield Projects. |
| Biotechnology | India is amongst the top 12 biotech destinations in the world and ranks third in the Asia Pacific region. | The sector has seen high growth with a CAGR in excess of 20% and the key drivers for growth in the biotech sector are increasing investments, outsourcing activities, exports and the government's focus on the sector. | 1. 100% Foreign Direct Investment (FDI) is allowed under the automatic route for Greenfield pharmacy. 2. National Intellectual Property Rights Policy 2016 (IPR Policy 2016). |
| Chemicals | The chemicals industry is a key constituent of the Indian economy, accounting for about 1.38% of the nation's GVA (Gross Value Addition) in 2013-14. | 1. A large population, huge domestic market dependence on agriculture and strong exports are the key growth drivers for the industry. | Industrial licensing has been abolished for most sub-sectors except for certain hazardous chemicals. |
| Construction | <ul style="list-style-type: none"> • Construction sector in India will remain buoyant due to increased demand from real estate and infrastructure projects. • Construction activities contribute more than 8% of India's GDP. | India has an estimated urban housing shortage of 18.8 Million dwelling units. The housing shortage in rural India is estimated at 47.4 Million units, in 2012. | Construction - Development projects 100% FDI through automatic route is permitted. |
| Defence manufacturing | Contractual offset obligations worth approximately USD 4.53 billion in next 5-6 years | Defence Production Policy, 2011 has encouraged indigenous manufacturing of defence equipment. Defence Procurement Procedure (DPP) has been amended in 2016 | 100% FDI in defence sector: Up to 49% under automatic route; FDI above 49%, through Government route where it is likely to result in access to modern technology. |
| Electrical machinery | Market-oriented reforms, such as the target of 'Power for All' and plans to add 88.5 GW of capacity by 2017 and 93 GW by 2022, which will generate huge demand for power transmission & distribution equipment. | Rapid increases in infrastructure investment and industrial production will fuel further growth. | 100% FDI is allowed under the automatic route in the electrical machinery sector, subject to all applicable regulations and laws. |

| | | | |
|--------------------------------|--|--|--|
| Electronic systems | Indian market size is expected to reach USD 400 Billion by 2020. | Rising manufacturing costs in other major manufacturing economies. | 100% Foreign Direct Investment (FDI) is allowed under the automatic route in the ESDM sector. |
| Food processing | A rich agriculture resource base-India was ranked No. 1 in the world in 2013 A total of 127 agro-climatic zones have been identified in India. | Rising income levels, affluence and a growing middle-class. One-third of the population will be living in urban areas by 2020. | Food processing is recognized as a priority sector in the new manufacturing policy in 2011. |
| IT & BPM | India's IT – BPM industry amounts for 56% of the global outsourcing market size. | Emerging geographies and verticals, non-linear growth due to platforms, products and automation. | The setting up of IT services, BPM, software product companies, shared service centers. |
| Leather | Skilled/trained manpower available for a new production unit or existing production unit. | Increasing domestic market for Fashion Accessories like Hand Bags, Wallets, Purses etc. | Imported leather too is now available to the industry at competitive prices. |
| Media and Entertainment | The industry is expected to register a CAGR of 13.9%, reaching INR 1,964 Billion in 2019. | Growth in the number and spread of multiplexes. Increasing liberalization and tariff relaxation. | In December 2011, the Indian government passed 'The Cable Television Networks (Regulation) Amendment Act' for digitization of cable television networks by 2014. |
| Mining | India has vast mineral potential with mining leases granted for longer and stable tenure of 50 years. | India has an advantage in the cost of production and in conversion costs of steel and alumina. | The MMDR Act, which governs the mineral sector, has been amended recently, by the Government. |
| Oil & Gas | Import content in oil & gas sector is in the range of 15% for refinery to 67% for upstream. | Oil and gas sector plays a predominant role as over one third of the energy required is met by the hydrocarbons. | Government has approved Hydrocarbon Exploration & Licensing Policy (HELP) and same has been notified on March 30, 2016. |
| Pharmaceuticals | India will become the sixth largest market globally in terms of absolute size by zero. | Over USD 200 Billion is to be spent on medical infrastructure in the next decade. | The National Pharmaceutical Pricing Policy, 2012 has notified on December 7, 2012. |
| Ports and Shipping | Total 2422 million metric tons of cargo handling capacity would be required in Indian Ports by 2021-22. | Increase trade activity and private participation in port infrastructure development. | Non-major ports are under the jurisdiction of the respective state government's maritime boards. |
| Railways | Indian Railways envisages a prospective investment of USD 130.76 billion in the next five years. | The long-term strategic plan of the Ministry of Railways is to construct six high-capacity, high-speed dedicated freight corridors along the Golden Quadrilateral and its diagonals. | Policy on Participative Models for Rail Connectivity & Capacity Augmentation Projects |
| Renewable Energy | India has the fifth largest power generation portfolio worldwide with a power generation capacity of 304.76 GW. | India is the fourth largest importer of oil and the 15th largest importer of petroleum products and Liquefied Natural Gas (LNG) globally. | Guidelines for Green Large-Area Developments by MNRE. The Provision of Central Financial Assistance for Small/Micro Hydro-Power Projects. |
| Roads and Highways | The transport sector contributes 6% of the country's GDP with road transport having around 70% share. More than 60% of freight and 90% of the passenger traffic in the country is handled by roadways. | During 2016-17, around 10,000 kms of National Highways are targeted to be completed. During 2016-17, around 25,000 kms of National Highways are targeted to be awarded. | 100% Foreign Direct Investment (FDI) is allowed under the automatic route in the road and highways sector, subject to applicable laws and regulation. |
| Space | India's cost-effective space programme has launched 51 satellites for 20 countries to date and has the potential to serve as the world's launch pad. | THE INDIAN SPACE RESEARCH ORGANISATION (ISRO): The prime objective of ISRO is to develop space technology and its application to various national tasks. | <ul style="list-style-type: none"> A policy framework for Satellite Communication in India (approved by Government in 1997). 1) Remote Sensing Data Policy 2011. |
| Textiles and Garments | Abundant availability of raw materials such as cotton, wool, silk, jute and manmade fibers. | Favorable government policies and incentives for manufacturers. | 100% FDI is allowed under the automatic route in the textile sector; investment is subject to all applicable regulations and laws. |
| Thermal Power | The Government has set a generation capacity addition target of 88.5 GW during 2012-17. | Expansion in industrial activity to boost demand for electricity. | Elimination of licensing for electricity generation projects. Increased competition through international competitive bidding. |
| Tourism and Hospitality | India registered 8.03 million foreign tourist arrivals in 2015, making an annual growth of 4.5% over the previous year | More than half of the Ministry of Tourism's Plan budget is utilized for funding the development of destinations, circuits, mega projects as well as rural tourism infrastructure projects | Ministry of Tourism channelized more than 50% of its budget for funding. National Tourism Policy, 2002 |
| Wellness | India has an unmatched heritage represented by its ancient systems of medicine, which are a treasure house of knowledge for both preventive and curative healthcare. | The Government of India has set up a dedicated Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) with the aim of providing impetus to these ancient healthcare systems with a targeted thrust. | A National Health Assurance Mission is to be launched in order to promote the sector. A number of AYUSH clusters across the country will provide plug-and-play facilities for setting up AYUSH units. |

CONCLUSION

To conclude this paper, an overview of all the sectors has been focused and all the 25 sectors reasons for the investment, their growth drivers as well as sector/FDI policy has also been gone through and its very useful for the development of our nation.

REFERENCE

1. www.makeinindia.com

STATISTICAL STUDY ON WOMEN EMPOWERMENT THROUGH SELF HELP GROUP IN ATTUR, SALEM DISTRICT

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ABSTRACT

The women in the rural sector in India have immense potential and expertise in art and craft, handloom, food products, bamboo related articles, honey bee, and the like. Small scale units create more self-employment opportunities with less capital investment requirements. The raw materials are locally collected and there is less environmental pollution. It also requires simple technology and low managerial skills. The finished products are exported that help to earn valuable foreign exchange and preserve the balance of payment status. The credit worthiness in the international monetary front will also improve. But, largely the women are neglected group in the society in India. At this juncture, the need of the hour is that the women should be empowered. So, the present study has focused to examine the impact of Self Help Groups on the empowerment of women at a micro level.

KEYWORDS

Salem district, empowerment, self help group.

1. INTRODUCTION

In India, the population already crosses one billion and nearly one third of its population is living under below poverty line. In rural areas, the scenario is deplorably worse, where almost half of its residents live hand to mouth life and below poverty line. Self Help Groups (SHGs) have become the vehicle of change in the rural areas in India, transforming the lives of the underprivileged and marginalized. SHGs organize the poor, downtrodden and marginalized to join hands to solve their problems and the method has been very successfully used by the government and Non-Governmental Organization (NGOs) in achieving several goals by empowering them. In the international arena, out of 1.3 billion people who live in absolute poverty, 70 percent are women. In India, rural women though constitute almost half of the population the participation in the labour force is only 33 per cent, while it is 56 per cent for male. Thus 67 per cent of the female population is not gainfully employed. Majority of them are poverty ridden. The government should take earnest efforts to utilize women force into productive employment.

For these women, poverty does not just mean scarcity and want. It means rights denied, opportunities entailed and voices silenced. In fact women work two third of the World's working hours, earning only 10 per cent of world's income, own less than one per cent of world's property and accounts for two-third of the world illiterate adults and 60 per cent of the world's children who are not going to schools. Former President of Tanzania Julius Nyerere rightly observed that 'a person can't walk very far or very fast on one leg. How can we expect half the people to be able to develop a nation?' Here, he sorrowfully pointed out the negligence of women, when the development needs are discussed. He further emphasized the role of women in building the nation to a new height.

In India, even though the share of women population is equivalent to that of male, the entrepreneurial world is still a male dominated one. In advanced countries women entrepreneurs are well organized. They are venturing into the challenging fields also. The women in the rural sector in India have immense potential and expertise in art and craft, handloom, food products, bamboo related articles, honey bee, and the like. Small scale units create more self-employment opportunities with less capital investment requirements. The raw materials are locally collected and there is less environmental pollution. It also requires simple technology and low managerial skills. The finished products are exported that help to earn valuable foreign exchange and preserve the balance of payment status. The credit worthiness in the international monetary front will also improve. But, largely the women are neglected group in the society in India. At this juncture, the need of the hour is that the women should be empowered. In this article to study and analyze the impact of SHGs on women empowerment with respect to the Ward No.32 in Attur town, Salem District, Tamilnadu.

2. OBJECTIVE OF THE STUDY

The following are the objectives of the present study.

1. To study about the trend and growth of SHGs in ward 32, Attur town, the study area.
2. To assess the nature and extent of distribution of income and expenditure irrespective of the sample respondents before and after joining SHG.
3. To analyze the personal profile of the sample respondents of women SHGs in the study area.
4. To evolve the opinion of women members of SHGs on their empowerment.
5. To examine the effect of SHG on women empowerment on various factors.

3. SCOPE OF THE STUDY

The present study is to find out whether there is any impact on SHGs members due to their involvement in SHG activities, and if so, the stage at which the impact has taken place. In this respect, the study attempts to evaluate the changes in the sample respondents on their income and expenditure.

The present study looks into the socio, economic, religious, cultural factors like Age profile, Marital status, Religion, Educational background, Economic status, Caste, Type of family, Family size, Nature of house, Place of origin, Occupational status, Number of earning members, Periodicity of savings, Reasons for joining SHG, Motivational factors to join SHG, Duration of membership, Purpose of availing loan, Quantum of loan, Repayment of loan and Periodicity of borrowings in order to find the status of members of SHG in the study area and thereby develop a suitable model at macro level to promote women community.

The opinion about the factors like Income propagation, Bank Linkage Programmes, Upgradation in Education and Skill, Development of Saving Habit, Involvement in Decision Making, Awareness in Health Care and Education, Leadership Quality and Public Participation, Economic Independence, Government Support Activities, Possession of Basic Need Qualities and Family Expenditure have been collected from the sample respondents to assess their level of empowerment in order to make necessary policy transformation based on the results.

It is hoped that the results of the study would help to increase the awareness of the benefits of SHG schemes among the poor. Besides, the safety, security and profitability in lending to SHGs from the recovery point of bankers will also be assessed.

4. STATEMENT OF THE PROBLEM

In Indian society, women are deprived of their opportunities to a large extent. The educational levels of the women are less when compared to that of men. Women are discriminated in wage terms even for the same work they have performed. They are employed as a cheap substitute manual labour. The socio-economic status is also at a lower level for women. The women often fail to identify themselves as workers. They are treated like slaves not only in working places but also in their own families. Even though, the central and state governments legally provide equal rights and opportunities to women, they are unaware of it.

Awareness on the part of women of their rights is the need of the hour to empower them. This could be possible only by making women as groups at local levels. Such a local level group formation is termed as Self Help Group (SHG). The very purpose of SHG is to alleviate poverty by generating more income through establishing productive work in one way or other. The government of India presently provide ample scope for SHGs particularly women SHGs by providing micro credit facilities to pave way for starting small investment ventures. This attempt improves the standard of living, self-reliance, independency, and autonomy status in every respect, confidence, participatory level, equal opportunity and the like of women in India. From this, it is to be clearly understood that the empowerment of women lies in the working of SHGs. In this context the researcher has made an attempt to study the impact of Self Help Group on the empowerment of women particularly with reference to the sample respondents in ward 32 in Attur.

5. HYPOTHESES OF THE STUDY

The present study is focused into the following hypotheses.

- There is no relationship between income and women empowerment after joining SHG in the study area.
- There is no relationship between expenditure and women empowerment after joining SHG in the study area.

6. RESEARCH METHODOLOGY

Research design is the blueprint for descriptive research work that guides the researchers in a scientific way towards the achievement of the objectives. The research instrument used for this study was a self-administrated questionnaire that was circulated to people respondents in the form of a survey, and the data collected in this way were the primary data for the analysis. In this phase, based on the review of literature, different questions have been employed to study the women empowerment through self help group in ward 32 in Attur town.

The area of this study has a representation of people in Ambethkar Nagar area, in Attur town. The following table represents the population of the study. Since 500 people are in the above joint in self-help group, it was found quite unwieldy to select certain percentage of the population as the sample frame. So I have selected half of the sample size 150 on the basis of simple random sampling through the sample size $n = \frac{N}{1+N(e^2)}$, Yamane (1967).

6.1 CONSTRUCTION OF THE RESEARCH INSTRUMENTS

The present study is descriptive in nature. To carry out this study, a survey questionnaire method was employed to collect relevant information from the respondents. This involved the collection of data that provided description of individuals, groups or situations. One of the instruments which the researcher used to collect data for the descriptive study was questionnaire. Substantial amount of time and efforts were taken to design the final questionnaire for respondents after further careful revision and refinement of the pilot survey questionnaire. A number of researchers argue in favour of the five-point likert scale, since it is believed to give a more precise measure of the participant's evaluation. The benefits of a five-point likert scale are that it provides the users with more options and it is equipped to record more accurately. This survey questionnaire comprise only close-ended questions for the purpose of generating statistical data and they use mainly the five-point likert scale which indicated the women's empowerment through self help group in ward 32, Attur.

6.2 FINALIZATION OF RESEARCH INSTRUMENT

The questions were designed in such a way as to study on women's empowerment through self-group in ward 32 in Attur. The questionnaire was pre-examined by my project guide. Based on the valuable inputs from the guide, the final version of questionnaire was used for data collection.

6.3 PERIOD OF THE STUDY

The study was carried out based on the data collected from primary and sources. The primary data were collected from respondents with the help of a structured questionnaire and the same was collected during the period from December 2016 to February 2017 from in ward 32 in Attur town while the primary and secondary data were collected from various books, journals, periodicals, magazines, newsletters, newspapers and earlier research works.

6.4 DATA COLLECTION

The primary data were collected by visiting the Ambethkar Nagar area. The researcher has adopted simple random sampling method to select the respondents for this study. Self-administrated questionnaires were circulated in the form of a survey to respondents. Overall, 150 people were chosen from across in ward 32 in Attur town. The respondents were aware that participation in this survey was voluntary in nature and their responses would remain confidential and used for research purpose only.

6.5 DATA ANALYSIS

In this study, the researcher has adopted quantitative data analysis. Quantitative data analysis is the process of presenting and interpreting numerical data. Questionnaire method of data analysis can be of great value to the researchers who attempt to draw meaningful results from large body of qualitative data.

6.6 FRAME WORK ANALYSIS

The researcher has adopted the following statistical tools to analyse the collected data and achieve the objective of the research. This study has used Microsoft Excel and Statistical Package for Social Science (SPSS) computer software for analyzing the primary data of this study. These tools have been used to run the statistical analysis end to create suitable tables and figures. The data collected from people were tabulated and used for interpreting the findings. The following are the statistical tools that were used for analyzing collected data of this research study.

7. STATISTICAL TOOLS

7.1 PERCENTAGE ANALYSIS, SIMPLE BAR DIAGRAM AND PIE CHART

The frequencies procedure provides statistics and graphical displays that are useful for describing many types of variables. For a first look at our data, the frequencies based on percentage are a good place to start. The frequencies report can be suppressed when a variable has many distinct values.

In simple bar chart, we make bars of equal width but variable length, i.e. the magnitude of a quantity is represented by the height or length of the bars.

A pie chart (or a circle chart) is a circular statistical graphic, which is divided into slices to illustrate numerical proportion.

7.2 ANALYSIS OF VARIANCE

It is a statistical method used to test differences between two or more means. This technique is called "Analysis of Variance" rather than "Analysis of Means." As we see, the name is appropriate because inferences about means are made by analyzing variance for research.

8. ANALYSIS AND INTERPRETATION

8.1 PERCENTAGE TABULATIONS FOR WOMEN'S EMPOWERMENT THROUGH SELF-HELP GROUP

- The maximum of 32.7% respondents are participating in study of women's empowerment through self-help group, the maximum of 62% respondents are participating of married women, the maximum of 85.3% respondents are participating in study of belonging to Hindu religion, the maximum of 26% respondents are illiterate women, the maximum of 59% respondents are participating in study of monthly family income, the maximum of 74.7% respondents are nuclear participate in study, the maximum of 80% respondents are own house, the maximum of 80% respondents are living in urban, the maximum of 85.3% respondents are SC participates, the maximum of 44% respondents are 2 members are earning in family, the maximum of 52.7 % respondents are weekly saving and the maximum of 38.7% respondents are 5,000 to 10,000 loan availed participate in study.
- The highest respondents are giving first rank for the ranking variable of "fulfilment of basic necessities like food, cloth and shelter". The highest respondents are giving third rank for the ranking variable of "Reasonable income with dignity in work place". The highest respondents are giving second rank for the ranking variable of "Getting out of clutches of money lender". The highest respondents are giving second rank for the ranking variable of "to create productive assets". The highest respondents are giving fifth rank for the ranking variable of "Elimination of rural poverty". The highest respondents are giving first rank for the ranking variable of "Reservation in local body election". The highest respondents are giving forth rank for the ranking variable of "Legal protection". The highest respondents are giving second rank for the ranking variable of "Free education for girl student". The highest respondents are giving second rank

for the ranking variable of "Reservation for women in employment". The highest respondents are giving forth rank for the ranking variable of "Welfare for widows and parentless children".

8.2 ASSESSING THE LEVEL OF OPINION/ INFORMATION OF THE DIFFERENT CATEGORY OF RESPONDENTS ON THE VARIOUS ASPECTS RELATING TO THE STUDY USING ANALYSIS OF VARIANCE

- The calculated ANOVA for one-way p-value 0.106 is greater than 0.05. Therefore, we accept our null hypothesis. So, we conclude that there is no significance between the age groups with respect to women's empowerment through self-help groups.
- The calculated ANOVA for one-way p-value 0.854 is greater than 0.05. Therefore, we accept our null hypothesis. So, we conclude that there is no significance difference between the religion groups with respect to women's empowerment through self-help groups.
- The calculated p-value 0.382 is greater than 0.05. Therefore, we accept our null hypothesis. We conclude that there is no significance difference between the Education groups with respect to women's empowerment through self help groups.

9. SUGGESTIONS

- There is a need for coordinated, constant effort and action oriented plan on the part of all towards empowerment of women.
- Empowerment of women is an empowerment of family and the nation. This basic idea is fulfilled only when SHGs are strengthened.
- To strengthen SHGs literacy and numeric training should be provided to the poor women. The success of group operation rests in training and guidance. So training in literacy, gender awareness and guidance about their rights should be provided.
- Women in general, particularly in India are the neglected group in the society. To create awareness and empower them social issues like gender discrimination, dowry menace, sex torture, poverty related crimes and the need to be discussed and addressed in the women's forum.

10. CONCLUSION

Empowering women puts the spotlight on education and employment, which are an essential element to sustainable development. A woman is said to be powerful only when she has a control over a large portion of power resources in the society. The study reveals that it is possible through SHG. But as of date, women were lacking behind in so many factors in realizing empowerment. So attention by the government as well as other agencies should be needed to improve their empowerment. It is hoped that the study might be useful to the policy makers, academicians and the government for their future course of action.

REFERENCES

1. Balapap S.R. and Hosmani S.B., Megeri S.N, (2001), "Self Help Groups in Karnataka: Trends and Implications", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 469.
2. Barman.N and R.Das, (2001), "Performance of SHGs in Sonitpur District of Assam", *Indian Journal of Agricultural Economics*, Hosmani S.B., Balapap S.R. and Megeri S.N., "Self Help Groups in Karnataka: Trends and Implications", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 469.
3. Dharmalingam.B and Murugan K.R, (2000), "SHGs – New Women's Movement in Tamil Nadu", *Social Welfare*, Vol. 47, No. 5, August, pp. 9-12.
4. Kallur M.S, (2001), "Empowerment of Women through NGOs", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 465-466.
5. Kundu K.K., K.S. Sha, U.K. Pandey and Kusum Jain, (2001), "Sustainable Micro Financing Through SHGs in Gurgaon District (Haryana)", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 483.
6. Namboodiri N.V. and Shiyani R.L, (2001), "Potential Role of SHGs in Rural Financial Deepening", *Indian Journal of Agricultural Economics*, Vol.56, No.3, July-September, pp. 457.

PREVENTION AND DETECTION OF FINANCIAL STATEMENTS FRAUD: A STUDY

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ABSTRACT

Financial statement fraud is a deliberate misstatement of material facts by management in the books of accounts of a company with the aim of deceiving investors and creditors. This illegitimate task performed by management has a severe impact on the economy because it significantly dampens the confidence of investors. Every day, news of financial statement fraud is adversely affecting the economy worldwide, considering the influence of the loss incurred due to fraud, Prevention and detection of financial statement fraud has become a major concern for almost all organizations globally. However, it is a fact that prevention of financial statement fraud is the best way to reduce it, but detection of fraudulent financial reporting is critical in case of failure of prevention mechanism. Effective measures and methods should be employed for prevention and detection of financial statement fraud. This study of detecting financial statement fraud helps auditors, tax authorities and bankers to identify the false financial statements during the scrutiny. The aim of this paper is to provide a methodology for prevention and detection of financial statement fraud and to present the empirical results by implementing the framework.

KEYWORDS

financial statements, fraud detection, vertical and horizontal analysis.

INTRODUCTION

Financial statement fraud is a deliberate misstatement of material facts by management in the books of accounts of a company with the aim of deceiving investors and creditors. This illegitimate task performed by management has a severe impact on the economy because it significantly dampens the confidence of investors. The percentage of financial statements that contained false information is quite high. Against this background, researchers, management, lenders, workers, suppliers, clients and the community at large have demonstrated a great interest in the detection of false financial statements.

Association of Certified Fraud Examiners (ACFE), in its report to the nation on occupational fraud and abuse (2012) suggests that, the typical organization loses 5 per cent of its revenue to fraud each year and reveals that perpetrators with higher levels of authority tend to cause much larger losses. The report by the ACFE also measured the common methods of detecting fraud and found that in more than 43 per cent cases tips and complaints have been the most effective means of detecting frauds. Prevention and detection of financial statement fraud has become a major concern for almost all organizations globally. Though, it is a fact that prevention of financial statement fraud is the best way to reduce it, but detection of fraudulent financial reporting is critical in case of failure of prevention mechanism. The aim of this paper is to provide a methodology for prevention and detection of financial statement fraud and to present the empirical results by implementing the framework.

While there is strong research concerns for detecting false financial statement fraud in developed countries. Financial statement fraud has been dominating the newspapers and news channels. Satyam Computers, one of biggest financial statement fraud in Indian listed companies, led by its founder, was identified in the recent past. This has eroded badly the trust of investors as well as the value of the stock price. Ketan Parekh case followed by the Unit Trust of India case and in the recent past, the Satyam and World Bank-Wipro cases that have not just tested the Indian business framework, but also sent ripples across the global scene. These cases underscore the need for investors and companies to protect their investments by detecting fraud in its earliest stages by distinguishing between truthful and misleading information.

In practice, financial statement fraud might involve: (1) Manipulation of financial records, (2) Intentional omission of events, transactions, accounts, or other significant information from which financial statements are prepared, (3) Misapplication of accounting principles, policies, and procedures used to measure, recognize, report, and disclose business transactions reiterates the idea that fraud is an intentional act, and fraud frequently includes the perpetrator(s) feeling pressure or having an incentive to commit fraud and also perceiving an opportunity to do so.

REVIEW OF RELATED LITERATURE

Financial statement serves as a tool for communicating to users and stakeholders the true and fair view of the company. The review of literature reveals the various researches have been conducted so far related to financial statements fraud in order to examine the effectiveness and limitations of these techniques in detection of financial statement fraud.

Okoye (2000), opines that the basic tool in financial statement analysis is the ratio, which is a percentage or decimal relationship of one figure to another. Financial ratios describing all aspects of financial performance, including profitability, solvency, leverage, liquidity and managerial performance are indicators of the company's health and means to deceive creditors and investors.

According to Spathis (2002), financial statements fraud falls into different categories and consists of manipulating elements by overstating assets, sales and profit or understating liabilities, expenses or losses. And explained these types of financial statement fraud briefly: i) Improper revenue recognition: The most common scheme used in financial statement fraud involves manipulation of revenue figures. This involves posting sales before they are made or prior to payment. ii) Manipulating expenses: Another fraud involving financial statements is the deliberate manipulation of expenses. An example of manipulating expense is to capitalise normal operating expense. This is an improper method to delay recognition of the expense and artificially raise income figures. iii) Overstating assets: Overstatement of current assets on financial statements and failure to record depreciation expense are often employed as methods of fraud. This fraud can cause significant losses and have far reaching effects, not only the financial statements fraud bring down the business, but also hurt the organizations employees, clients, investors and third parties.

ACFE (2003), claims that financial statement fraud is the deliberate misrepresentation of the financial condition of an enterprise accomplished through the intentional misstatement or omission of amounts or disclosures in the financial statements to deceive financial statement users. Managers may exploit the ambiguities and available choices to present the financial picture that meets their financial targets. Thus, the dividing line between "Earnings Management" and "Earnings Manipulation" is indeed narrow (Brennan & McGrath, 2007). Public and private business commit financial statement fraud to secure investors interest or obtain bank approvals for financing as justification for bonuses or increased salaries or to meet expectations of its shareholders.

Warfield (2007), assert that financial statements are useful for the assessment of a company's liquidity, solvency, financial flexibility and performance. Financial statements have been viewed in connection with avenue to perpetuate fraudulent activities and deception.

Asset management ratios are indicators of management efficiency in the utilization of business assets. The ratio relates the business assets to volume of operation to determine whether there is over or under utilization. Under-utilization results in high maintenance cost which in turn has a reducing effect on the operating profit of the organization, while over-utilization results in frequent breakdown or disruption in operations and high cost of repairs (Ilaboya, 2008).

Kapoor (2011), applied four data mining techniques namely regression, decision trees, neural network and Bayesian networks in order to examine the effectiveness and limitations of these techniques in detection of financial statement fraud.

NEED AND IMPORTANCE OF THE STUDY

Financial statement serves as a tool for communicating to users and stakeholders the true and fair view of the company. Financial statement shows where the company is, and where it is heading.

Financial statement analysis is a process that enables readers of a company's financial reports to develop and answer questions regarding the data presented. Financial statements express the economic condition of a company in three ways: (1) The Balance Sheet reports assets, liabilities, and owners' equity, (2) The Income Statement accounts for the income or loss of the company, (3) and the Cash Flow Statement displays the sources and uses of cash.

Financial analysis techniques can help investigators discover and examine unexpected relationships in financial information. These analytical procedures are based on the premise that relatively stable relationships exist among economic events in the absence of conditions to the contrary. Known contrary conditions which cause unstable relationships to exist might include unusual or nonrecurring transactions or events, and accounting, environmental, or technological changes. Public companies experiencing these events must disclose and explain the facts in their financial statements. Increasingly, Private and Not-for-Profit Companies follow best practices and do the same.

Unexpected deviations in relationships most likely indicate errors, but also might indicate illegal acts or fraud. Therefore, deviations in expected relationships warrant further investigation to determine the exact cause. Several methods of analysis assist the reader of financial reports in highlighting the areas that most likely represent fraudulent accounting methods.

OBJECTIVES OF THE STUDY

The broad objective of the study is to investigate accounting ratios and false financial statements detection, while the specific objectives are:

1. To ascertain the extent to which Leverage Ratios significantly relate to the probability of financial statement fraud occurrence
2. To determine the extent to which Profitability Ratios significantly relate to the probability of financial statement fraud occurrence
3. To examine the extent to which Asset Management Ratios significantly relate to the probability of financial statement fraud occurrence
4. To examine the Liquidity Ratios significantly relates to the probability of financial statement fraud occurrence.

METHODOLOGY

The present study is descriptive in nature. The data used for the study is secondary in nature and has been collected from Bombay Stock Exchange bulletin, annual reports of NIFTY and report on fraudulent accounting methods in India, various reputed journals, newspapers, white papers and websites of various companies.

DISCUSSION

COMPARATIVE TECHNIQUES

A fraud examiner commonly employs the following techniques to identify the relationships among the financial data that do not appear reasonable. Comparison of current period information with similar information from prior periods, prior period amounts normally are assumed to be the expectation for the current period. A modification of this comparison is the incremental approach whereby prior period numbers are adjusted for known changes, such as significant purchases or sales of assets

SALES VERSUS COST OF GOODS SOLD

The company generates sales because it sells its merchandise. This merchandise had to be purchased, manufactured or both, all of which entail a cash outlay for materials, labour, etc. Therefore, for each sale there must be a cost associated with it. If sales increase, then the cost of goods sold generally increases proportionally. Of course there are cases where a company has adopted a more efficient method of producing goods, thus reducing its costs, but there still are costs associated with the sales that are recognized upon the sales of the goods.

SALES VERSUS ACCOUNTS RECEIVABLE

When a company makes a sale to a customer, the company generally ships the merchandise to the customer before the customer pays, resulting in an accounts receivable for the company. Therefore, the relationship between the sales and the accounts receivable is directly proportional. If sales increase, then accounts receivable should increase at approximately the same rate.

SALES VERSUS INVENTORY

A company's inventory is merchandise that is ready to be sold. A company generally tries to anticipate future sales, and in doing so, tries to meet these demands by having an adequate supply of inventory. Therefore, inventory usually reflects the growth in sales. If sales increase, then inventory should increase to meet the demands of sales. Inventory that grows at a faster pace than sales might indicate obsolete, slow-moving merchandise or overstated inventory.

PROFIT MARGINS

Companies generate sales revenue by selling products or providing services. Likewise, companies incur direct and indirect costs related to producing or acquiring the products they sell, or providing the services for their customers. Gross, operating, and net profit margins are shown on the income statement. Over time, profit margins should stay consistent as the company targets a certain profit in order to stay in business. If the company encounters increased competition and must reduce the price for its products, it will have to find ways to cut expenses. Ongoing pressure on profit margins indicates pressure on management, which could ultimately lead to fraud in the financial reporting.

ASSETS VERSUS LIABILITIES

A financially healthy company tries to maintain a consistent balance between assets and liabilities. By keeping a certain balance, the company displays its solidity to lenders or equity investors and keeps financing costs down. A sudden change from historical norms means something has changed with management's view of its business. It also could indicate that management is trying to hide something. A sudden increase in the ratio could mean that liabilities such as long-term debt have been hidden in off-balance sheet entities. If the value of liabilities rises and the ratio spikes downward, it could reveal that the company is borrowing heavily to finance operations and the risk of fraud is acute.

TYPES OF ANALYTICAL PROCEDURES

Fraud examiners employ several techniques to manipulate plain, unconnected numbers into solid, informative data to interpret the company's financial standing. Investigating relationships between numbers offers deep insight into the financial well-being of an organization. By comparing these relationships with other industries or businesses within the same industry, an examiner can extrapolate evidential matter and gain a greater comprehension of the company's financial condition. Financial statement analysis includes the following:

- Percentage analysis, including vertical and horizontal analysis
- Ratio analysis
- Cash flow analysis

PERCENTAGE ANALYSIS: VERTICAL AND HORIZONTAL

There are traditionally two methods of percentage analysis of financial statements: vertical analysis and horizontal analysis. **Vertical analysis** is a technique for analyzing the relationships between the items on any one of the financial statements in one reporting period. The analysis results in the relationships between components expressed as percentages that can then be compared across periods. This method is often referred to as "common sizing" financial statements. In the vertical analysis of an income statement Net Sales is assigned 100%, for a balance sheet Total Assets is assigned 100%, on the asset side and Total Liabilities and Equity is expressed as 100% on the other side. All other items in each of the sections are expressed as a percentage of these numbers.

In the bellow example, it is observed that accounts payable is 27.27% of total liabilities. Historically, it may find that this account averages slightly over 25%. In year two, accounts payable rose to 49.41%. Although the change in the account total may be explainable through a correlation with a rise in sales, this significant rise might be a starting point in a fraud examination. Source documents should be examined to determine the rise in this percentage. With this type of examination,

fraudulent activity may be detected. The same type of change can be seen as selling expenses decline as a part of sales in year two from 20 to 18.75%. Again, this change may be explainable with higher volume sales or another bona fide explanation. But, close examination may possibly point a fraud examiner to uncover fictitious sales, since there was not a corresponding increase in selling expenses.

The following is an example of financial statements that are analyzed by both vertical and horizontal analysis:

TABLE 1: BALANCE SHEET

| Particulars | Vertical analysis | | | | Horizontal Analysis | |
|---------------------|----------------------|--------|----------------------|--------|---------------------|-------------|
| | 1 st Year | | 2 nd Year | | Change | % of Change |
| | Rs. | % | Rs. | % | | |
| Current Assets | 40000 | 12.12 | 20000 | 4.71 | - 20000 | -50.00 |
| Cash | 150000 | 45.46 | 200000 | 47.06 | 50000 | 33.33 |
| Accounts Receivable | 80000 | 24.24 | 145000 | 34.12 | 65000 | 81.25 |
| Inventory | 60000 | 18.18 | 60000 | 14.11 | -- | -- |
| Fixed Assets | 330000 | 100.00 | 425000 | 100.00 | 95000 | 28.79 |
| Total | 90000 | 27.27 | 210000 | 49.41 | 120000 | 133.33 |
| Accounts payable | 60000 | 18.19 | 60000 | 14.11 | -- | -- |
| Long term Debt | 100000 | 30.31 | 100000 | 23.53 | -- | -- |
| Shareholders Equity | 80000 | 24.24 | 55000 | 12.95 | -25000 | -31.25 |
| Retained earnings | | | | | | |
| Total | 330000 | 100.00 | 425000 | 100.00 | 95000 | 28.79 |

TABLE 2: INCOME STATEMENT

| Particulars | Vertical analysis | | | | Horizontal Analysis | |
|-------------------------|----------------------|--------|----------------------|--------|---------------------|-------------|
| | 1 st Year | | 2 nd Year | | Change | % of Change |
| | Rs. | % | Rs. | % | | |
| Net Sales | 200000 | 100.00 | 400000 | 100.00 | 200000 | 100.00 |
| Cost of Goods sold | 100000 | 50.00 | 250000 | 62.50 | 150000 | 150.00 |
| Gross Profit | 100000 | 50.00 | 150000 | 37.50 | 50000 | 50.00 |
| Operating Expenses | 40000 | 20.00 | 75000 | 18.75 | 35000 | 87.50 |
| Selling Expenses | 45000 | 22.50 | 100000 | 25.00 | 55000 | 122.22 |
| Administrative Expenses | | | | | | |
| Net Profit | 15000 | 7.50 | (25000) | - 3.25 | (40000) | -266.67 |

Horizontal analysis is a technique for analyzing the percentage of change in individual financial statement items from one year to the next. The first period in the analysis is considered the base, and the changes in the subsequent period are computed as a percentage of the base period. If more than two periods are presented, each period's changes are computed as a percentage of the preceding period. The resulting percentages are then studied in detail. It is important to consider the amount of change as well as the percentage in horizontal comparisons. A 5% change in an account with a very large dollar amount may actually be much more of a change than a 50% change in an account with much less activity. Like vertical analysis, this technique will not detect small or immaterial frauds. However, both methods translate changes into percentages, which can be compared to highlight areas of top concern.

In the previous example, cash declined by Rs. 20,000 from year one to year two a 50% drop. Further analysis reveals that the 100% increase in sales has a much greater corresponding increase in cost of goods sold, which rose 150%. This is an unusual increase and displays a deteriorating financial condition. If management employed fraudulent accounting in the period, it might mean that revenues were understated for some reason. Management might have wanted to avoid a high tax bill or wanted to shift revenues to the next period for some reason. It might also mean that the cost of goods is rising, which may pressure management to improve the appearance of the company's financials by engaging in fraudulent accounting in future periods.

FINANCIAL RATIO ANALYSIS

Ratio analysis is a means of measuring the relationship between two different financial statement amounts. This form of financial statement analysis can be very useful in detecting red flags for a fraud examination. Many professionals including bankers, investors, business owners, and investment analysts use this method to better understand a company's financial health.

An accounting ratio is an index computed from two or more accounting values with close affinity or relationship. Ratio analysis allows for internal evaluations using financial statement data. The relationship and comparison are the keys to the analysis. For further insight, financial statement ratios are used in comparisons to an entity's industry averages. As the financial ratios present a significant change from one year to the next or over a period of years, it becomes obvious that there may be a problem. As in all other analyses, specific changes are often explained by changes in the business operations. When a change in a specific ratio or several related ratios is detected, the appropriate source accounts should be researched and examined in detail to determine if fraud has occurred. For instance, a significant decrease in a company's current ratio may point to an increase in current liabilities or a reduction in assets, both of which could be used to cover fraud.

These ratios may also reveal frauds other than accounting frauds. If an employee is embezzling from the company's accounts, for instance, the amount of cash will decrease disproportionately and the current ratio will decline. Liability concealment will cause a more favorable ratio. Similarly, a check-tampering scheme will usually result in a decrease in current assets, namely cash, which will in turn, decrease the current ratio. In fact, these frauds may be more easily detected with ratio analysis because employees other than management would not have access to accounting cover-ups of non-accounting frauds. Anomalies in ratios could point directly to the existence of fraudulent actions. Accounting frauds can be much more subtle and demand extensive investigation beyond the signal that something is out of the norm.

The following calculations are based on the example of financial statements presented earlier

Current Ratio

The current ratio, current assets divided by current liabilities, is probably the most frequently used ratio in financial statement analysis. This comparison measures a company's ability to meet present obligations from its liquid assets. The number of times that current assets exceed current liabilities has long been a measure of financial strength. In detecting fraud, this ratio can be a prime indicator of manipulation of accounts involved. Embezzlement will cause the ratio to decrease. Liability concealment will cause a more favorable ratio.

In the preceding example, the drastic change in the current ratio from year one (3.00) to year two (1.74) should cause an examiner to look at these accounts in more detail. For instance, a check-tampering scheme will usually result in a decrease in current assets (cash), which will in turn decrease the ratio.

Debt-to-Equity Ratio

The debt-to-equity ratio is computed by dividing total liabilities by total equity. This ratio is heavily considered by lending institutions. It provides a clear picture of the relative risk assumed by the creditors and owners. The higher the ratio, the more difficult it will be for the owners to raise capital by increasing long-term debt and the greater the risk assumed by creditors. Debt-to-equity requirements are often included as borrowing covenants in corporate lending agreements. The example displays a year one ratio of 0.83. This is very favorable, as it shows that the company is financed more by equity than debt.

However, year two shows a ratio of 1.74, meaning that debt is greatly increasing relative to equity. In this case, the increase in the ratio corresponds with the rise in accounts payable, sudden changes in this ratio may signal an examiner to look for fraud.

Profit Margin

The profit margin ratio is net income divided by sales. This ratio is often referred to as the efficiency ratio, in that it reveals profits earned per dollar of sales. This percentage of net income to sales examines not only the effects of gross margin changes, but also changes in selling and administrative expenses. If fraud is committed, net income may be artificially overstated, resulting in a profit margin ratio that is abnormally high compared to other periods. False expenses will cause an increase in expenses and a decrease in the profit margin ratio. Over time this ratio should be fairly consistent.

In this example, the profit margin analysis is already calculated in the vertical and horizontal analyses, while revenues increased by 100%, the cost of goods sold increased by 150%, which in turn dropped profit margins from 7.5% to -3.25%. Further investigation could uncover fraudulent accounting that shifted costs from one period to another or might reveal another type of fraud in which inventory is being stolen so, costs appear to jump.

Collection Ratio

Accounts receivable aging is measured by the collection ratio, which divides 365 days by the receivable turnover ratio to arrive at the average number of days to collect receivables. In general, the lower the collection ratio, the faster receivables are collected.

A fraud examiner may use this ratio as a first step in detecting fictitious receivables or larceny and skimming schemes. Normally, this ratio will stay fairly consistent from year to year, but changes in billing policies or collection efforts may cause a fluctuation. The example shows a favorable reduction in the collection ratio from 273.76 in year one to 182.5 in year two. This means that the company is collecting its receivables more quickly in year two than in year one.

Inventory Turnover

The relationship between a company's cost of goods sold and its average inventory is shown through the inventory turnover ratio. This ratio measures the number of times the inventory is sold during the period. This ratio is a good determinant of purchasing, production and sales efficiency. In general, a higher inventory turnover ratio is considered more favorable.

For example, if cost of the goods sold has increased due to theft of inventory (ending inventory has declined, but not through sales), then this ratio will be abnormally high. In the above example, inventory turnover increases in year two, signaling the possibility that an embezzlement is buried in the inventory account. An examiner should look at the changes in the components of the ratio to determine a direction in which to discover possible fraud.

CONCLUSION AND RECOMMENDATIONS

The concern for accounting ratios and fraudulent financial statements detection have been of interest in accounting research in recent times. The collapse of highly rated firms around the world is linked to financial statement frauds and inability for early detection by stakeholders. Meanwhile, incidences of financial statement frauds are at increasing side. Therefore, it is expected that application of accounting ratios would aid in detection of likelihood of financial statements fraud occurrences.

The following recommendations were consequently put forward.

1. Creditors, Venture capitalists, Debenture holders should ensure that leverage or debt ratios are computed whenever financial statements of firms they have stake are released so as to check the true state of the firms.
2. Stakeholders should ensure that profitability and performance ratios of firms are critically evaluated and also used for assessing the health of their firms in the annual reported financial statements.
3. Investors both local and foreign should always closely examine at least five years financial statements of firms before investing and monitoring the level of their investments in firms in terms of their dividends and earnings.
4. Procedures for the management of firm's assets (assets utilization) should be documented in the Companies and Allied Matters Act by the regulatory authorities so as to prevent sharp practices of Managers.
5. Liquidity ratios should be clearly computed and the manner to arrive at the respective figures should be well stated by management in the notes to accounts of the reported financial statements so as check incidence of fraudulent financial statements.
6. Professional Accounting bodies in India (Institute of Chartered Accountants of India and Association of National Accountants of India) should from time to time admonish their members not to support or be involved in fraudulent financial statements.
7. Government regulatory authorities like Bombay Stock Exchange, Security and Exchange Commission, Reserve Bank of India, Financial Reporting Council of India and others should ensure that financial statements of firms are properly screened and endorsed by them before being released.

REFERENCES

1. Ilaboya, O. (2008), "Advanced Financial Accounting". Benin-city, Nigeria: Mindex publishing Co.
2. Johan Perols (2011), "Financial Statement Fraud Detection: An Analysis of Statistical and Machine Learning Algorithms", A Journal of Practice & Theory 30 (2), pp. 19-50
3. Kathleen, A., Sterling, T. & Liming, G. (2004), "Can Financial Ratios Detect Fraudulent Financial Reporting", Managerial Auditing Journal, 19(1), 15-28.
4. Kieso, D., Weygant, J., & Warfield, T. (2007), "Intermediate Accounting" (12th Ed.) New York: John Wiley and Sons.
5. Kirkos, E., Spathis, C., & Manolopoulos, Y. (2007), "Data Mining Techniques for the Detection of Fraudulent Financial Statements", Expert Systems with Applications, 32 (23), 995-1003.
6. Koh, H. & Low, C. (2004), "Going Concern Prediction Using Data Mining Techniques", Managerial Auditing Journal, 19 (3), 462-476.
7. Koskivaara, E (2004), "Artificial Neural Networks in Auditing: State of The Art". The ICFAI Journal of Audit Practice, 1 (4), 12-33.
8. Kreutzfeldt, R. & Wallace (1986), "Error Characteristics in Audit Populations: Their Profile and Relationship to Environment Factors". A Journal of Practice and Theory.
9. McNichols, M. & Stubben, S. (2008), "Does Earnings Management Affect Firms", investment decisions. The Accounting Review, 83(6), 1571-1603.
10. P.Ravisankar, V. Ravi, G.RaghavaRao, I., Bose (2011), "Detection of Financial Statement Fraud and Feature Selection Using Data Mining Techniques", Decision Support Systems, 491 - 500
11. Welch, I. (2011), "Two Common Problems In Capital Structure Research: The Financial Debt-Asset Ratio And Issuing Activity Versus Leverage Changes". International Review of Finance, 11(11), 1-17.
12. Young, B. (2005), "Related-Party Transactions: Why They Matter and What is Disclosed", The Corporate Governance Advisor, 13(4): 1-7.
13. Zhang, W. & Kappor, G. (2011), "Detecting Evolutionary Financial Statement Fraud". Decision Support Systems 50, 570 - 575.

FACTORS INFLUENCING WOMEN ENTREPRENEURS IN COIMBATORE DISTRICT**P. SATHIYA BAMA****ASST. PROFESSOR****DEPARTMENT OF MANAGEMENT STUDIES & RESEARCH****KARPAGAM UNIVERSITY****COIMBATORE****ABSTRACT**

Entrepreneurs play very important role in socio economic welfare of the country. They identify the needs of the business, purchase the other factors of production and coordinate them for some productive purposes. They are innovators, researchers and risk-takers of the society. Today business is built around human capital and women are one of the valuable factors. Globalization and Liberalization of market encouraged women to come forward to become an entrepreneur and start new enterprises. The present research study has been conducted to study the factors influencing women entrepreneurs with special reference to service sector of Coimbatore District.

KEYWORDS

women entrepreneurs, socio economic status, self identity and social status.

INTRODUCTION

Women Entrepreneur is a person who accepts challenging role to meet her personal needs and become economically independent. Women owned business are highly increasing in the economies of almost all the countries. The hidden entrepreneurial potentials of women have gradually been changing with the growing sensitivity to the role and economic status in the society. Skill, Knowledge and adaptability in business are the main reasons for women to emerge into business ventures. A strong desire to do something positive is an inbuilt quality of entrepreneurial women, who is capable of contributing values in both family and social life.

The educated Indian women have to go a long way to achieve equal rights and position as traditions are deep rooted in Indian society where the sociological set up has been a male dominated one. Despite all the social hurdles, India is brimming with the success stories of women. They stand tall from the rest of the crowd and are applauded for their achievements in their respective field.

Women entrepreneurs are key players in any developing country particularly in terms of their contribution to economic development. In recent years, even among the developed countries like USA and Canada, Women's role in terms of their share in small business has been increasing. The facts of a study conducted by IIT, Delhi are:

- (i) Women own one-third of small business in USA and Canada.
- (ii) Britain has seen an increase of over three times of women in workforce than that of men ever since 1980s.
- (iii) Women make for 40 percent of total work force in Asian Countries.
- (iv) In Japan, the percentage of women entrepreneurs increased from 2.4 percent in 1980 to 5.2 percent in 1995.

FACTORS, WHICH INFLUENCE TO PREFER WOMEN ENTREPRENEURSHIP

Women Entrepreneur is a person who accepts challenging role to meet her personal needs and become economically independent. A strong desire to do something positive is an inbuilt quality of entrepreneurial women, who is capable of contributing values in both family and social life. With the advent of media, women are aware of their own traits, rights and also the work situations. s. They are flourishing as designers, interior decorators, exporters, publishers, garment manufacturers and still exploring new avenues of economic participation.

- Self Interest to meet new challenges
- Self Identity and social status
- Innovative thinking
- Bright future of their wards
- Family Occupation
- Employment generation
- Education and qualification

OBJECTIVES OF THE STUDY

1. To examine factors which influence women entrepreneurship
2. To study the socio economic status of women entrepreneurs
3. To suggest a framework for the promotion of women entrepreneurship in Coimbatore district

RESEARCH METHODOLOGY

Women entrepreneurs who are the main source of primary data are collected from the women entrepreneurs through a well structured questionnaire. As the area of study is limited to Coimbatore District of Tamilnadu and as the total population of women population is numerable, the researcher has proposed the convenience sampling technique for the selection of respondents. 90 respondents were selected from Coimbatore districts who have engaged to start an enterprise and running it successfully.

ANALYSIS AND INTERPRETATION

Questionnaire and Personal interview are the major tools of data collection. Percentage Analysis and chi – Square test were the various statistical tools applied for analysis.

TABLE 1: SHOWING FACTORS WHICH INFLUENCE WOMEN ENTREPRENEURSHIP

| S.No | Reasons for becoming Entrepreneurs | No. of Respondents | Percent |
|--------------|--------------------------------------|--------------------|------------|
| 1 | Employment generation | 14 | 15.6 |
| 2 | Self Interest to meet new challenges | 15 | 16.7 |
| 3 | Family Occupation | 12 | 13.3 |
| 4 | Bright future of their wards | 17 | 18.9 |
| 5 | Innovative thinking | 13 | 14.4 |
| 6 | Self Identity and social status | 19 | 21.1 |
| Total | | 90 | 100 |

The above table indicates that 21.1% entered Self Identity and social status, 18.9% for bright future of their wards, 16.7% of them self Interest to meet new challenges, 15.6% of them to generate employment, 14.4% of them Innovative thinking and the remaining 13.3% to continue family Business.

CHI – SQUARE ANALYSIS

The opinion of the respondents and socio –economic characters relationship is applied for chi square test.

TABLE 2: SHOWING SOCIO ECONOMIC STATUS OF WOMEN ENTREPRENEURS

| S.No | Factors | Chi Square Value | Degree of Freedom | Table Value | Result |
|------|---------------------------|------------------|-------------------|-------------|-----------------|
| 1 | Age | 17.26 | 6 | 16.81 | Significant ** |
| 2 | Marital Status | 12.56 | 2 | 5.99 | Significant * |
| 3 | Educational Qualification | 14.97 | 4 | 13.28 | Significant ** |
| 4 | Business Type | 11.54 | 4 | 9.49 | Significant * |
| 5 | Family Income | 3.65 | 6 | 12.59 | Not Significant |
| 6 | Size of the Business | 7.23 | 4 | 9.49 | Not Significant |
| 7 | Sources of Finance | 13.68 | 6 | 12.59 | Significant * |
| 8 | Amount spend | 7.26 | 4 | 13.28 | Not Significant |

Note:* Significant at 5% level, ** Significance at 1% level

The chi square analysis reveals that the factors age and education are significant at 1% level. Marital status, Business type and sources of finance are significant at 5% level of Significant. The remaining factors are not significant.

RECOMMENDATIONS

- Women Entrepreneurs could be trained and educated in order to make the successful with regard to sense of achievement, improved standard of living, increased social interaction and economic empowerment.
- Women entrepreneurs can increase their self interest to meet challenges through role model of other successful women entrepreneurs.
- The unexplored talents of women can be identified, encouraged and used for various types of industries to increase the productivity of our nation.

CONCLUSION

Study finds that leading attitude, self identity and social status, bright future of their wards, Self interest to meet new challenges, employment generation are the major areas and factors which may be stated as the reasons for become women entrepreneurs. Women can do wonders by their effectual and competent involvement in entrepreneurial activities. A smart woman can pick up a job any day, but when she becomes an entrepreneur she can provide a livelihood to at least 10 more women. More over the women entrepreneurs are looking forward to attain self identity and social status in the successful running of their business.

REFERENCES

1. Ahl, H. (2004). *The Scientific Reproduction of Gender Inequality. A discourse analysis of research texts on women's entrepreneurship*. Sweden: Copenhagen Business Press.
2. Baron, R., & Shane, S. (2007). *Empreendedorismo - uma visão do processo*. São Paulo: Thomson.
3. Beatrice, A. (2012). Why women enter into entrepreneurship? An emerging conceptual framework based on the peruvian Case. *Journal of Women's Entrepreneurship and Education*, 3(4), 43-63.
4. Beyda, T. T., & Casado, R. U. (2011). Relações de trabalho do mundo corporativo: possível antecedente do empreendedorismo? *Cadernos Ebape*, 9(4), 1066-1084.
5. Birley, S., & Muzyka, D. F. (2001). *Dominando os desafios do empreendedor*. São Paulo: Makron Books.
6. Borges, C., Filion, L. J., & Simard, G. (2005). Création d'entreprises - Femmes entrepreneurs Rapport de Recherche 2005. *Cahier de Recherche 2005-16*, HEC: Montreal.
7. Welter, F., & Smallbone, D. (2008). Women's entrepreneurship from an institutional perspective: the case of Uzbekistan. *International Entrepreneurship Management Journal*, 4(4), 505-520.
8. Winn, J. (2005). Women entrepreneurs: can we remove the barriers? *International Entrepreneurship and Management Journal*, 1(3), 381-397.
9. Zanakis, S. H., Renko, M., & Bullough, A. (2012). Nascent Entrepreneurs and the transition to entrepreneurship: Why do people start new businesses? *Journal of Developmental Entrepreneurship*, 17(1), 1-25.

FDI AS DRIVING FORCE FOR SUCCESS OF MAKE IN INDIA

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ABSTRACT

Make in India Campaign was launched to encourage companies to manufacture their products in India. Manufacturing Sector at present book for only 15% of India's GDP and the Government wants to gear up that to 25% by 2022. NDA government is committed to make over India into a global manufacturing hub, while confirming that manufactured goods have 'zero defect' and 'zero effect' on the environment. With 'Make in India', the Government aims to remove unnecessary regulations, shorten rigid processes, boost infrastructure and open up new sectors to foreign direct investment (FDI). Government of India has diagnosed twenty-five precedence sectors that will be accessed properly. Foreign Direct Investment is one of the major instruments of inviting International Economic Integration in any economy. It serves as a connection between investment and saving. Many developing economies like India are facing the shortfall of savings. This problem can be solved with the help of FDI. In this paper is an attempt to look at the role of FDI in Make in India campaign and impact of 'Make in India' initiative on FDI inflows. The study is undertaken with the help of secondary data (collected from various reports published by Reserve Bank of India Database on Indian Economy, database of department of Industrial Policy and Promotion). The results of the study shown that after the launch of 'Make in India' initiative, the FDI inflows augmented significantly across various sectors from different countries.

KEYWORDS

FDI, GDP, make in India, global manufacturing hub, international economic integration.

INTRODUCTION

India's economic reforms way back in 1991 has generated strong interest in foreign investors and turning India into one of the favorite destinations for global FDI flows. According to A.T. Kearney, India ranks second in the World in terms of attractiveness for FDI. A.T. Kearney's 2007 Global Services Locations Index ranks India as the most preferred destination in terms of financial attractiveness, people and skills availability and business environment. Foreign direct investment (FDI) is a controlling ownership in a business enterprise in one country by an entity based in another country. FDI is defined as the net inflows of investment (inflow minus outflow) to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. FDI usually involves participation in management, joint-venture, transfer of technology and expertise. A foreign direct investment (FDI) is a controlling ownership in a business enterprise in one country by an entity based in another country.

Horizontal FDI arises when a firm duplicates its home country-based activities at the same value chain stage in a host country through FDI. Platform FDI Foreign direct investment from a source country into a destination country for the purpose of exporting to a third country.

Vertical FDI takes place when a firm through FDI moves upstream or downstream in different value chains i.e., when firms perform valueadding activities stage by stage in a vertical fashion in a host country.

FDI Stimulate the economic development of the country in which the investment is made, creating both benefits for local industry and conducive environment for the investors. It creates job and increase employment in the target country. It enables resources transfer and other exchange of knowledge whereby different countries are given access to new skills and technologies. The equipment and facilities provided by the investor can increase the productivity of the workforce in the target country. FDI may be capital intensive from the investors' point of view and therefore sometimes high risk. The rules governing FDI and exchange rate may negatively affect the investing country. Investment in certain areas is banned in foreign markets, meaning that an inviting opportunity may be impossible to pursue.

LITERATURE REVIEW

Aggarwal,S, et al. (2012) in their paper studied the need of FDI in India, to exhibit the sector-wise & year-wise analysis of FDI's in India, to rank the sectors based upon highest FDI inflows. The results revealed that Mauritius is the country that has invested highly in India followed by Singapore, Japan, and USA and so on.

Rao.M et.al (2015) in their conceptual paper gave the sector-wise scattering of FDI inflow to know about which has fretful with the chief share. He found that the inflow of FDI in service sectors and construction and development sector gained much interest of investors whereas in other sectors it has been quite low.

Sangwan, S. (2015) in her study focused on the changes in FDI rate after the introduction of Make in India initiative and growth due to increase in the FDI rate. She found that there is high correlation between Industrial Production and FDI inflows.

OBJECTIVES OF THE STUDY

1. To find out the influence of FDI on economic development after introduction of "Make in India" campaign.
2. To study about the role of FDI inflows and its contribution in increasing productivity.

RESEARCH METHODOLOGY

The present study is based on secondary data. The necessary data has been collected from various sources i.e. research papers, various Bulletins Of Reserve Bank Of India, Publications from Ministry Of Commerce, Govt. Of India that are available on internet.

DATA ANALYSIS**COMPARISON OF FDI FLOWS**

'Make in India' campaign resulted into significant modifications in the FDI flow across various sectors. Reports also showed country wise differences in the flow of FDI. The table shows the data pertaining to changes in FDI post the launch of the 'Make in India' campaign.

TABLE 1: INDIA'S GROSS FDI INFLOWS (\$ billion)

| Financial Year | Total Inflows | Of which, | | | Increase/Decrease over the Previous Year (%) | |
|----------------|---------------|-----------------------------|---------------------|--------|--|--------|
| | | Equity Inflows [#] | Reinvested Earnings | Others | Total | Equity |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 2007-08 | 34.8 | 26.9 | 7.7 | 0.3 | | |
| 2008-09 | 41.9 | 32.1 | 9.0 | 0.8 | 20.4 | 19.3 |
| 2009-10 | 37.7 | 27.1 | 8.7 | 1.9 | -10.0 | -15.6 |
| 2010-11 | 34.8 | 22.3 | 11.9 | 0.7 | -7.7 | -17.7 |
| 2011-12 | 46.6 | 35.9 | 8.2 | 2.5 | 33.9 | 61.0 |
| 2012-13 | 34.3 | 22.9 | 9.9 | 1.5 | -26.4 | -36.2 |
| 2013-14 | 36.0 | 25.3 | 9.0 | 1.8 | 5.0 | 10.5 |
| 2014-15 | 45.1 | 31.9 | 10.0 | 3.2 | 25.3 | 26.1 |
| 2015-16 | 55.5 | 41.0 | 10.0 | 4.4 | 23.1 | 28.5 |

TABLE 2: MONTH-WISE FDI INFLOWS

| Year / Month | | | | | | | | | | | | | (₹ Billion) |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|
| | Apr. | May | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Total |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 2011-12 | 32.49 | -25.46 | 55.13 | 56.21 | -89.44 | 28.53 | 27.98 | -39.29 | -0.17 | 113.39 | 251.92 | 87.87 | 499.18 |
| 2012-13 | -12.18 | -13.32 | 40.72 | 78.00 | 98.66 | 209.38 | 103.46 | 110.96 | 234.90 | 224.16 | 220.95 | 110.56 | 1406.25 |
| 2013-14 | 61.41 | 207.84 | -93.74 | -63.10 | -58.05 | 130.62 | 183.24 | 76.26 | 157.16 | 3.24 | 29.59 | 220.75 | 855.22 |
| 2014-15 | 79.23 | 168.44 | 112.60 | 110.72 | 68.29 | 60.62 | 3.87 | 137.09 | -9.10 | 180.63 | 87.76 | 102.28 | 1102.44 |
| 2015-16 | 77.61 | -4.75 | -58.01 | 59.80 | - | - | - | - | - | - | - | - | - |

Source: Reserve bank of India

Table 2 is showing data pertaining to month-wise changes in FDI inflows. Results of the data revealed that post the launch of the 'Make in India' Initiative in September 2014, there has been major changes in FDI inflows month-wise. There has been remarkable raise in FDI inflows post the launch of the scheme. It signifies that this initiative has made significant changes in the FDI inflows.

TABLE 3: SHARE OF TOP INVESTING COUNTRIES FDI EQUITY INFLOWS

| Ranks | Country | Amount Rupees in crores (US\$ in million) | | | | | %age to total Inflows (in terms of US \$) |
|--|-------------|---|-------------------------|--------------------------------|---|------|---|
| | | 2013-14 (April - March) | 2014-15 (April - March) | 2015-16 (April, 15 - June, 15) | Cumulative Inflows (April '00 - June '15) | | |
| 1. | MAURITIUS | 29,360 (4,859) | 55,172 (9,030) | 13,236 (2,089) | 438,892 (89,644) | 35 % | |
| 2. | SINGAPORE | 35,625 (5,985) | 41,350 (6,742) | 23,320 (3,673) | 190,477 (35,861) | 14 % | |
| 3. | U.K. | 20,426 (3,215) | 8,769 (1,447) | 755 (119) | 110,409 (22,329) | 9 % | |
| 4. | JAPAN | 10,550 (1,718) | 12,752 (2,084) | 2,916 (459) | 96,312 (18,811) | 7 % | |
| 5. | NETHERLANDS | 13,920 (2,270) | 20,960 (3,436) | 4,123 (652) | 81,381 (15,323) | 6 % | |
| 6. | U.S.A. | 4,807 (806) | 11,150 (1,824) | 3,959 (627) | 70,839 (14,378) | 6 % | |
| 7. | GERMANY | 6,093 (1,038) | 6,904 (1,125) | 3,497 (554) | 42,007 (8,198) | 3 % | |
| 8. | CYPRUS | 3,401 (557) | 3,634 (598) | 608 (96) | 39,971 (8,140) | 3 % | |
| 9. | FRANCE | 1,842 (305) | 3,881 (635) | 877 (138) | 23,465 (4,651) | 2 % | |
| 10. | SWITZERLAND | 2,084 (341) | 2,066 (337) | 598 (94) | 15,812 (3,139) | 1 % | |
| TOTAL FDI INFLOWS FROM ALL COUNTRIES * | | 147,518 (24,299) | 189,107 (30,931) | 60,298 (9,508) | 1,293,836 (258,141) | - | |

Table 3 showed the share of top investing countries FDI equity inflows from 2013 to 2015. The results of the table showed that country-wise significant rise took place with the exception of U.K. and Switzerland. The uppermost increase in FDI inflows were from Mauritius wherein the inflows increased from 29,360 crores to 55,172 crores (35% of total inflows). The lowest share of FDI inflows were from Switzerland.

TABLE 4: SECTORS ATTRACTING HIGHEST FDI EQUITY INFLOWS

| Ranks | Sector | Amount in Rs. crores (US\$ in million) | | | | |
|-------|---|--|----------------------------|---------------------------------------|---|--|
| | | 2011-12 (April - March) | 2012-13 (April - March) | 2013-14 (April, 13- January, 2014) | Cumulative Inflows (April '00- January'14) | % age to total Inflows (In terms of US\$) |
| 1. | SERVICES SECTOR ** | 24,656 (5,216) | 26,306 (4,833) | 10,680 (1,804) | 182,955 (39,039) | 18 % |
| 2. | CONSTRUCTION DEVELOPMENT: TOWNSHIPS, HOUSING, BUILT-UP INFRASTRUCTURE | 15,236 (3,141) | 7,248 (1,332) | 5,914 (966) | 106,963 (23,047) | 11 % |
| 3. | TELECOMMUNICATIONS (radio paging, cellular mobile, basic telephone services) | 9,012 (1,997) | 1,654 (304) | 1,063 (172) | 59,796 (13,028) | 6 % |
| 4. | COMPUTER SOFTWARE & HARDWARE | 3,804 (796) | 2,656 (486) | 6,230 (1,020) | 59,796 (13,028) | 6 % |
| 5. | DRUGS & PHARMACEUTICALS | 14,605 (3,232) | 6,011 (1,123) | 7,128 (1,269) | 56,008 (12,711) | 5 % |
| 6. | CHEMICALS (OTHER THAN FERTILIZERS) | 18,422 (4,041) | 1,596 (292) | 2,950 (496) | 43,446 (9,376) | 4 % |
| 7. | AUTOMOBILE INDUSTRY | 4,347 (923) | 8,384 (1,537) | 6,144 (1,050) | 45,314 (9,344) | 4 % |
| 8. | POWER | 7,678 (1,652) | 2,923 (536) | 4,281 (704) | 40,418 (8,538) | 4 % |
| 9. | METALLURGICAL INDUSTRIES | 8,348 (1,786) | 7,878 (1,466) | 2,599 (432) | 37,413 (7,939) | 4 % |
| 10 | HOTEL & TOURISM | 4,754 (993) | 17,777 (3,259) | 2,306 (382) | 35,566 (7,013) | 3 % |

Table 4 shows the sectors which have attracted highest FDI equity inflows. The table revealed that the highest share was from the service sector. Percentage share of service sector amounted to 17% (highest share). The share was lowest for Metallurgical Industries.

FDI AND MAKE IN INDIA AHEAD

There has been significant growth in FDI inflow after the launch of 'Make in India' campaign. Further, the government is proposing to lessen the FDI policy in several sectors, including asset reconstruction companies, insurance and pension with the aim of attracting more overseas investments. The increasing FDI inflows has not only provided a stable source of financing for the current account deficit problem, but also expected to bring technical know-how, which may help in enhancing India's productivity growth in the near future. The government is endeavoring to further liberalize the FDI policy in Food Processing industry and trade. Plans are being made to allow 100% FDI through the FIPB route in the marketing of food products produced and manufactured in India. This will work as an impetus in boosting the food processing ministry. This will also help in generating employment opportunities in India.

CONCLUSION

The study made an effort to analyse the impact of 'Make in India' initiative launched by government of India to liberalize trade on FDI inflows in India in various years across various sectors. The study used secondary data for the purpose of accomplishment of the aforesaid objective. The results of the tables exposed that there has been significant rise in the FDI inflows after the introduction of this campaign. This increase has been through various sectors, from different countries, in different time periods. The results thus revealed that New FDI policy helped in increasing FDI inflow across various sectors. The government is moving ahead with 'Make in India' India initiative by comforting the sectors which were earlier not in the purview of New FDI policy. This will help significantly in ensuring sensible growth across various sectors throughout the country.

REFERENCES

1. Aggrawal, S., Singla, A., Aggrawal, R. (2012). Foreign direct investment in India. International Journal of Computational Engineering & Management, 15 (5), 93-105.
2. Bajpai, N., & Sachs, J. D. (2000). "Foreign direct investment in India: Issues and problems.
3. Balasubramanyam, V. N., & Mahambare, V. (2003). Foreign direct investment in India.
4. <http://www.makeinindia.com/home>
5. Institute for Studies in Industrial Development New Delhi, India "The Tenuous Relationship between Make in India and FDI Inflows"
6. Sahoo D, Mathiyazhagan MK. Economic Growth in India: Does Foreign Direct Investment Inflow matter? The Singapore Economic Review 2003; 48:151-171.
7. Sangwan, S. (2015). Making "Make in India" realism: role of FDI. IJAR, 1(7), 770-773.
8. Sharma K. Export Growth in India: Has FDI Played a Role?. Center Discussion Paper, No. 816, Economic Growth Center, Yale University, 2000.

AN OVERVIEW OF TOBACCO ISSUES IN INDIA

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ABSTRACT

India is the second world's largest populated country. India got third position in tobacco production and also third in export of tobacco product in the world. In India, tobacco consumption is responsible for half of all the cancers in men and a quarter of all cancers in women in addition to being a risk factor for cardiovascular diseases and chronic obstructive pulmonary diseases India also has one of the highest rates of oral cancer in the world. India's tobacco problem is more complex than probably that of any other country in the world, with a large consequential burden of tobacco related disease and death. The prevalence of tobacco use among men has been reported to be high (generally exceeding 50%) from almost all parts of India (more in rural than in urban areas). All forms of tobacco use are inferred to be unsafe for human health.

KEYWORDS

tobacco, government regulation, issues.

1. INTRODUCTION

Tobacco was introduced into India by Portuguese traders during AD 1600. Tobacco is extracted from around 65 known species tobacco plant of which the one that is grown commercially and widely as a source of tobacco is *Nicotiana glauca*. Most of the tobacco from Northern India and Afghanistan comes from the species *Nicotiana glauca*.

Tobacco products are products made entirely or partly of leaf tobacco as raw material, which are intended to be smoked, sucked, chewed or snuffed. All contain the highly addictive psychoactive ingredient, nicotine. Tobacco use is one of the main risk factors for a number of chronic diseases, including cancer, lung diseases, and cardiovascular diseases. Despite this, it is common throughout the world. A number of countries have legislation restricting tobacco advertising, and regulating who can buy and use tobacco products, and where people can smoke.

Tobacco use kills nearly six million people worldwide each year. According to the World Health Organization (WHO) estimates, globally, there were 100 million premature deaths due to tobacco in the 20th century, and if the current trends of tobacco use continue, this number is expected to rise to 1 billion in the 21st century. India is 2nd largest producer of tobacco. India accounts for 10% of the world tobacco area and 9% of the production. Total area under tobacco cultivation 4 Lakh hect. Approx 1.2-1.3 crore people are engaged in tobacco sector.

Tobacco is deadly in any form or disguise. Scientific evidence has unequivocally established that exposure to tobacco smoke causes death, disease and disability. According to the International Agency for Research on Cancer (IARC) monograph, there is sufficient evidence in humans that tobacco smoking causes cancer of the lung, oral cavity, naso-, oro- and hypo-pharynx, nasal cavity and paranasal sinuses, larynx, esophagus, stomach, pancreas, liver, kidney (body and pelvis), ureter, urinary bladder, uterine cervix and bone marrow (myeloid leukemia). Colorectal cancer is seen to be associated with cigarette smoking, although there is insufficient evidence for it to be causal. 90% of all lung cancer deaths in men and 80% in women are caused by smoking. Causal associations have been clearly established between active smoking and adverse reproductive outcomes, chronic obstructive pulmonary disease and cardiovascular diseases. Studies on bidi smoking, the most common form of tobacco smoking in India, provide evidence toward causality of it as carcinogenic substance. Case-control studies demonstrate a strong association of bidi smoking with cancers at various sites, such as oral cavity (including subsites), pharynx, larynx, esophagus, lung and stomach. Almost all studies show significant trends with duration of bidi smoking and number of bidis smoked. 40% of the tuberculosis burden in India may be attributed to smoking. Significant association is seen between passive or active exposure to tobacco smoke and tuberculosis infection, disease and tuberculosis mortality. Smoking was associated with excess deaths among smokers between 30 and 69 years, mainly from tuberculosis and also from respiratory, vascular or neoplastic disease. The risk of tuberculosis deaths among bidi smokers was 2.60-times higher than never-smokers in Mumbai. Workers engaged in tobacco cultivation suffer from an occupational illness known as green tobacco sickness (GTS), an acute form of nicotine toxicity resulting from absorption of nicotine through the skin.

1.1 COMPOSITION OF TOBACCO

Tobacco products contain around 5000 toxic substances. Most important and dangerous constituents are:

1. Nicotine
2. Carbon Monoxide
3. Tar

Nicotine is the major cause of the predominant behavioral effects of tobacco. It is a poisonous substance leads to addiction. Nicotine influences and reinforces all tobacco-use behavior. After absorption, nicotine travels rapidly to the brain, in a matter of seconds, therefore, the psycho-active rewards associated with smoking occur quickly and these rewards are highly reinforced. Nicotine binds to the receptors in the brain where it influences the cerebral metabolism. Nicotine is then distributed throughout the body, mostly to skeletal muscles. Development of tolerance to its own actions is similar to that produced by other addictive drugs. Carbon mono-oxide reduces the amount of oxygen blood can carry and causes shortness of breath. Tar is a sticky residue which contains benzopyrene, one of the deadliest cancer causing agents known. Other compounds are carbon dioxide, nitrogen oxides, ammonia, volatile nitrosamines, hydrogen cyanide, volatile sulfur containing compounds, volatile hydrocarbons, alcohols, aldehydes and ketones. Some of these compounds are known to cause cancers of various organs of the body.

1.2 FORMS OF TOBACCO INTAKE

1. Cigarette - Most common and most harmful
2. Bidi – most commonly used form in India
3. Cigar -
4. Hookah (Hubble bubble)
5. Sheesha
6. Tobacco chewing
7. Kreteks (clove cigarettes)
8. Snuff – Moist & Dry

9. E-cigarette – recent intruder in the list

When non-smokers are exposed to smoke containing nicotine and toxic chemicals emitted by smokers it is called *passive smoking or exposure to second hand smoke*.

1.3 KEY FACTS

- Tobacco kills up to half of its users.
- Tobacco kills around 6 million people each year. More than 5 million of those deaths are the result of direct tobacco use while more than 600 000 are the result of non-smokers being exposed to second-hand smoke.
- Nearly 85% of the world's 1 billion smokers live in low- and middle-income countries.
- Tobacco kills 1 person in every 6 seconds.
- Tobacco is the leading preventable causes of all deaths.
- If current smoking patterns continue, it will cause some 8 million deaths each year by 2030.
- Indian tobacco is exported to about 100 countries.
- India has one of the highest rates of oral cancer in the world, with over 50% attributable to smokeless tobacco use.

2. NOTEWORTHY CONTRIBUTION IN THE FIELD OF TOBACCO

According to the National Family Health Survey (NFHS)-3- survey, conducted in 2005–06, tobacco use is more prevalent among men, rural population, illiterates, poor and vulnerable section of the society.

According to GATS 2010-Non-communicable diseases (NCDs)- like ischemic heart diseases, cancers, diabetes, chronic respiratory diseases are the leading causes of death globally and associated with tobacco use. Available data from WHO demonstrate that thirty-eight million people die each year from NCDs, of which nearly 85% of NCD deaths occur in low- and middle-income countries. The situation is equally bad in India with estimated number of tobacco users being 274.9 million where 163.7 million users of only smokeless tobacco, 68.9 million only smokers and 42.3 million users of both smoking and smokeless tobacco as per Global Adult Tobacco Survey India (GATS). It means around 35% of adults (47.9% males and 20.3% females) in India use tobacco in some form or the other. Use of smokeless tobacco is more prevalent in India (21%).

According to WHO statistics for 2010 -In India, NCDs are estimated to account for 53% of all deaths. Of these deaths, cardiovascular diseases and diabetes are the most common causes of deaths in India. This huge burden of NCDs can be attributed to increasing use of tobacco. Tobacco is a major risk factor for a number of diseases affecting all age groups. WHO data shows that tobacco uses kill nearly six million people in a year. Around five million of those deaths are the result of direct tobacco use while more than 600,000 are the result of non-smokers being exposed to second-hand smoke. One person dies every six seconds due to tobacco. Up to half of current users will eventually die of a tobacco-related disease.

WHO report on the global tobacco epidemic, 2015- Price and tax measures are one of the core demand reduction strategies that the WHO FCTC requires its Parties to implement. Governments have the power to deflect industry interference and implement strong tax policies. Raising taxes on tobacco is the most effective way to reduce tobacco use.

3. ISSUES RELATED TO TOBACCO

- **Health issues-** Tobacco use causes a wide range of major diseases which impact nearly every organ of the body. These include several types of cancers, heart diseases and lung diseases. Public health researchers have been substantiating these findings and discovering more and more damaging evidence about the disease consequences of tobacco use for over half a century. For a long time, the tobacco industry propounded and Low emotional stability and risk taking behavior are more common in tobacco users. Existence of some mental disorders also increases the risk of tobacco use.
- **Environment issues-** The land that has been destroyed or degraded to grow tobacco has affects on nearby farms. As forests, for example, are cleared to make way for tobacco plantations, then the soil protection it provides is lost and is more likely to be washed away in heavy rains. This can lead to soil degradation and failing yields. A lot of wood is also needed to cure tobacco leaves. Tobacco uses up more water, and has more pesticides applied to it, further affecting water supplies. These water supplies are further depleted by the tobacco industry recommending the planting of quick growing, but water-thirsty eucalyptus trees. cultivation of tobacco crop forests are destroyed. Burning of tobacco produces number of toxicants in environment. Manufacturing, packaging and transportation also cause environmental pollution
- **Economic issues-** Tobacco and poverty are inextricably linked. Many studies have shown that in the poorest households in some low-income countries as much as 10% of total household expenditure is on tobacco [and therefore] less money to spend on basic items such as food, education and health care. In addition to its direct health effects, tobacco leads to malnutrition, increased health care costs and premature death. It also contributes to a higher illiteracy rate, since money that could have been used for education is spent on tobacco instead. Tobacco's role in exacerbating poverty has been largely ignored by researchers in both fields. Treatment of cardiovascular diseases and cancer imposes maximum financial burden on the individual and family.
- Taxation policy remain non uniform across the states.
- Local municipal bodies not active to take up relevant action.
- Involvement of policies forces still not uniformly possible as COTPA violation remain low priority.
- Implementation remain a challenge due to lack of trained enforcement squad.

4. TOBACCO CONTROL POLICIES/ LEGISLATION IN INDIA

WHO policies on tobacco control- Legislation is recognized as the critical driver for meaningful progress in tobacco control. The WHO framework convention on tobacco control (WHO FCTC) is a global public health treaty developed as a global response to the globalization of the tobacco epidemic, which aims at reducing the burden of disease and death caused by tobacco. It was adopted by the World Health Assembly in May 2003, and India was the eighth country to ratify it on 5 February 2004. The FCTC embraces scientific evidence-based approaches that have shown effectiveness in reducing tobacco consumption. It does not lay down a law, but sets out guidelines for various national and international measures that would encourage smokers to quit and restrain nonsmokers from taking the habit. The success of the WHO FCTC, which as of July 2009 had more than 160 parties covering 86% of the world's population, demonstrates the global political will for making tobacco control far more comprehensive and successful. The WHO has established the MPOWER package to help countries comply with the WHO FCTC. This is a package encompassing six most important and effective tobacco control policies: Monitoring tobacco use and prevention policies, Protecting people from tobacco smoke, Offering help to people to quit tobacco use, Warning everyone about the dangers of tobacco, Enforcing ban on tobacco advertising, promotion and sponsorship and Raising taxes on tobacco.

In India, since 1975, it is mandatory to display a statutory health warning on all packages and advertisements of cigarettes because of the Cigarettes (Regulation of Production, Supply and Distribution) Act, enacted by the Government of India (GOI). Further restrictions on tobacco trade were initiated along with efforts to bring forth a comprehensive legislation for tobacco control during the 1980s and 1990s. The Indian Parliament passed the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Bill, 2003 in April 2003. This Bill became an Act on 18 May 2003 – COTPA. Rules were formulated and enforced from 1 May 2004. The Act is applicable to all products containing tobacco in any form, and extends to the whole of India.

The key provisions of COTPA-2003 are as follows :

Section 4: Bans Smoking in all "public places like Hotels restaurants, coffee houses, pubs, bars, airport lounges, and other such places visited by the general public, workplaces, shopping malls, cinema Halls, educational institutions and libraries, hospitals and auditorium, open auditorium, amusement centers, stadium, railway station, bus stop etc.

Section 5: It prohibits advertisement, promotion and sponsorship of all tobacco products; both direct and indirect advertisement of tobacco products is prohibited in all forms of audio, visual and print media. It imposes total ban on sponsoring of any sport and cultural events by cigarette and other tobacco product companies.

Section 6 (a): Prohibits sale of tobacco to minors (persons under the age of 18).

Section 6 (b): Prohibits sale of tobacco products near educational institutions. Sale of any tobacco product is prohibited in an area within radius of 100 yards of any educational institution

Section 7: Its calls for specified health warning labels on all tobacco products.

Section 7 (5): Every tobacco package must have nicotine and tar contents along with maximum permissible limits. Specified warning should be there depicted on tobacco package.

4.1 NATIONAL TOBACCO CONTROL PROGRAMME

The Ministry of Health and Family Welfare (MHFW), GOI, has launched the National tobacco control programme (NTCP) in the XI Five Year Plan to facilitate the implementation of the Tobacco Control Laws, bring about greater awareness about the harmful effects of tobacco and to fulfill the obligations under the WHO-FCTC. The Cabinet Committee on Economic Affairs (CCEA) on 28 January 2010 approved the programme. The NTCP will establish tobacco product testing laboratories, provide baseline estimates of tobacco prevalence and status of implementation of the Tobacco Control Law. The pilot phase will focus on 42 districts of 21 states. The activities of the NTCP are arranging exhibitions, seminars, banners at District level, implementing the anti-tobacco act in letter and spirit, sending monthly reports regarding the anti-tobacco activities in the district level to the state. At the headquarters the activities focused are promoting Information, Education and Communication (IEC) activities at the district level and multi-sectoral involvement for the implementation of the Act with the help of NGOs, Police Department, Education Department and the Local Administration.

Numerous voluntary organizations like the HRIDAY-SHAN, CCAA-Cancer patient's aids association; the Salaam Mumbai Foundation, Health Bridge, Voluntary Health Association of India, etc. are actively involved in tobacco control activities in India. Healis is actively engaged in conducting quality research in tobacco control. In addition, it is involved in media mobilization for tobacco control, public education, conducting workshops for different stake holders and conducting scientific conferences and meetings of national and international level. The Public Health Foundation of India (PHFI) has launched a multi-faceted website to create an enabling environment for tobacco control in the country. The web portal comprehensively offers training, resources and research evidence with regard to tobacco control. To support global efforts for tobacco control, The Union focuses on several key policies that are proven to reduce tobacco consumption. In India, the Union has been active in collaborating with the central and state governments and prominent NGOs to strengthen pack warning content and its implementation. The WHO is actively involved in tobacco control in India. Tobacco surveillance has been included in the integrated disease surveillance programme. A National Tobacco Control Cell was set up by the WHO in collaboration with the Ministry of Health and Family Welfare, which has activities in the different spheres of tobacco control, with the main impetus on spreading awareness.

Tobacco Free Initiative in India

One important initiative under this is setting up of Tobacco Cessation Clinics in India. During 2001-02, 13 Tobacco Cessation Clinics were set-up in 12 states across the country in settings such as cancer treatment hospitals, psychiatric hospitals, medical colleges, NGOs etc users to quit tobacco use.

National Guidelines for Treatment of Tobacco Dependence have also been developed and disseminated by the Government in 2011, to facilitate training of health professionals in tobacco cessation. Various interventions and research studies were also supported to develop community based tobacco cessation models.

Pictorial warning

The Union Ministry of Health & Family Welfare has mandated an increase in the size of pictorial warnings from the current 40% on front of the packs to 85% on both sides with effect from 1st April 2016. What is really surprising is that the Government has not taken cognizance of the recommendation of the Parliamentary Committee on Subordinate Legislation for coverage of warnings to be 50% on both sides of cigarettes packs rather than the excessive 85%.

40% pictorial warnings are adequate to inform & caution consumers The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 ("COTPA") requires the warnings to be legible, prominent and conspicuous which is fully met by specified health warning covering 40% of the front panel of packs. The 40% warning requirement was decided upon by a Group of Ministers constituted in 2007 to evaluate pictorial warnings.

Apart from pack warnings retail outlets are mandated to display boards prominently with a warning of size 60 x 30 cm. These warnings also help to caution the consumers.

Hence, it is clear that the 40% pictorial warning on the front of the pack are adequately serving the purpose of cautioning the consumers.

World No Tobacco Day (WNTD)

It is observed around the world every year on May 31. It is intended to encourage a 24-hour period of abstinence from all forms of tobacco consumption around the globe. The day is further intended to draw attention to the widespread prevalence of tobacco use and to negative health effects, which currently lead to nearly 6 million deaths each year worldwide, including 600,000 of which are the result of non-smokers being exposed to second-hand smoke. The member states of the World Health Organization (WHO) created World No Tobacco Day in 1987. In the past twenty years, the day has been met with both enthusiasm and resistance around the globe from governments, public health organizations, smokers, growers, and the tobacco industry.

Plain packaging

WHO and the Secretariat of the WHO Framework Convention on Tobacco Control are calling countries to get ready for plain (standardized) packaging of tobacco products. Plain packaging is an important demand reduction measure that reduces the attractiveness of tobacco products, restricts use of tobacco packaging as a form of tobacco advertising and promotion, limits misleading packaging and labeling, and increases the effectiveness of health warnings. Plain packaging of tobacco products refers to measures that restrict or prohibit the use of logos, colors, brand images or promotional information on packaging other than brand names and product names displayed in a standard color and font style. Plain packaging builds upon other measures as part of a comprehensive multi sectoral approach to tobacco control. Policy-makers, civil society and the public can take action to ensure that their governments consider adoption of plain packaging.

MONITOR TOBACCO USE AND PREVENTION POLICIES BY WHO (MPOWER)

Monitor -Data are necessary to implement and evaluate effective tobacco control policies. Only through accurate measurement of the tobacco epidemic and of the interventions to control it can those interventions be effectively managed and improved. Good monitoring provides policy-makers with information about the extent of the epidemic in a country and how to tailor policies to the needs of different groups. Disseminating the information broadly and effectively gives all stakeholders a clearer picture of the epidemic and provides advocates for tobacco control with important evidence to bolster the case for stronger policies.

Protect people from exposure to second-hand tobacco smoke- All people have a right to breathe clean air. There is no safe level of exposure to second-hand smoke, which causes heart disease, cancer and many other diseases. Even brief exposure can cause serious damage. Smoke-free legislation is popular wherever it is enacted, and these laws do not harm business. Any country, regardless of income level, can implement effective smoke-free legislation. Only a total ban on smoking in public places, including all indoor workplaces, protects people from the harms of second-hand smoke, helps smokers quit and reduces youth smoking. Guidelines to Article 8 of the WHO Framework Convention on Tobacco Control help countries know exactly what to do to protect their people from second-hand smoke.

Offer help to quit tobacco use- more than one billion smokers worldwide who are addicted to tobacco are victims of the tobacco epidemic. When informed of the risks, most tobacco users want to quit, but few get help and support to overcome their dependence. Health-care systems have primary responsibility for treating tobacco dependence. Programmes should include tobacco cessation advice incorporated into primary health-care services, easily accessible and free telephone help lines (known as quit lines), and access to low-cost medicines. All health-care workers should become advocates for tobacco control. Governments can use some tobacco tax revenues to help tobacco users free themselves from addiction.

Warn about the dangers of tobacco- Despite overwhelming evidence of the dangers of tobacco, relatively few users fully understand the risks to their health. Most tobacco users are unaware of the extent of the harm that tobacco causes and tend to underestimate the risks to themselves and others.

In addition, most are unaware of the powerfully addictive properties of nicotine, a compound present in all tobacco products, which is absorbed readily from tobacco smoke in the lungs and from smokeless tobacco in the mouth or nose. The ease and depth of addiction to nicotine for tobacco users makes quitting extremely difficult and perpetuates the cycle of increased addiction, leading to devastating health effects.

Beyond the health consequences, there is also a lack of awareness among both the general public and policy-makers of the devastating social, economic and environmental consequences of tobacco use.

Tobacco companies use packaging and other advertising techniques to make tobacco seem appealing, while distracting consumers from the harsh reality of how tobacco destroys health. Tobacco product packaging is a central marketing tool for tobacco products and the tobacco industry's most effective vehicle for advertising its lethal products.

Yet tobacco product packaging in most countries provides little or no information to warn consumers of the risks. This reality is reflected in the lack of appreciation of the health risks among the general public and even among health professionals.

Enforce bans on tobacco advertising, promotion and sponsorship- The tobacco industry spends tens of billions of dollars worldwide each year on advertising, promotion and sponsorship. A total ban on direct and indirect advertising, promotion and sponsorship, as provided in guidelines to Article 13 of the WHO Framework Convention on Tobacco Control, can substantially reduce tobacco consumption and protect people, particularly youths, from industry marketing tactics. To be effective, bans must be complete and apply to all marketing categories. Otherwise, the industry merely redirects resources to nonregulated marketing channels. The tobacco industry strongly opposes such comprehensive bans because they are effective in reducing tobacco use.

Raise taxes on tobacco- Increasing the price of tobacco through higher taxes is the single most effective way to encourage tobacco users to quit and prevent children from starting to smoke. Taxes on inexpensive tobacco products should be equivalent to higher-priced products, such as premium-brand cigarettes, to prevent substitution in consumption. Taxes need to be increased regularly to correct for inflation and consumer purchasing power. Tobacco taxes are generally well accepted by the public and raise government revenues. Allocating tax revenues for tobacco control and other important health and social programmes further increases their popularity.

5. CONCLUSION

In this study we focus on issues related to tobacco products like health issues, environment issues and economic issues (taxation policy). We observed through this study that tobacco is very harmful for human being as well as society. It is like a epidemic for world because tobacco use kills nearly 6 million people worldwide each year. Tobacco use is the one of the main risk factor of chronic disease including cancer, lung diseases and cardiovascular disease. Number of countries including India has legislation restricting tobacco advertising and regulating, which can buy and used tobacco product and where people can smoke. Indian government should strictly implement COTPA 2003 Act for everywhere and every when. Indian government also plan to implement to plain packaging of tobacco products.

REFERENCES

1. Global Adult Tobacco Survey (GATS) Indian report 2009-10, Conducted by international institute for population science, Mumbai, on behalf of ministry of health and family welfare, India.
2. Logan, R. A. & Longo, D.A. (1999). Re-thinking anti smoking media campaigns: Two generation of research and issues for the next. *Journal of health care finance*, Vol. 25, Issue 4, pp.77-90.
3. Pechmann, C. & Ratneshwar, S. (1994). The effect of anti smoking and cigarette advertising on young adolescent perceptions of peers who smoke. *Journal of consumer research*, Vol. 21, Issue 2, pp.236-251.
4. Raut, U. & Pawar, P. Robert, S. & Moore. (2005). The sociological impact of attitude towards smoking: secondary effect of de-marketing of smoking. *The journal of social psychology*, Vol. 145, Issue 6, pp. 703-718
5. Ministry of health and family welfare. (28th May.2016). Government policies for tobacco control. Retrieved from: <http://www.mohfw.nic.in>.
6. Preventing Tobacco Use Among Youth and Young Adults, retrieved from : <http://www.cdc.gov>
7. Tobacco control laws. (28th May.2016). Indian legislation on tobacco products. Retrieved from: <http://www.tobaccocontrolaws.org/legislation/country/india/summary>.
8. Tobacco institute in India (27th May.2016). Tobacco production. Retrieved from :<http://www.tionline.org/facts-sheets/tobacco-production/>
9. World health organization in India (26th May. 2016). Tobacco use. Retrieved from: <http://www.searo.who.int/tobacco/en/tobacco>
10. Government of India. Ministry of Health & Family Welfare. Directorate General of Health Services. Tobacco Dependence Treatment Guidelines. 2011. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014 [accessed 2014 Apr 24].

OCCUPATIONAL ROLE STRESS AND JOB SATISFACTION IN EMPLOYEES OCCUPYING BOUNDARY SPANNED ROLES: AN OVERVIEW

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ABSTRACT

Occupational Role Stress is framework to identify the factors causing role stress among employees occupying a role. This scale is widely used by researchers to identify the stressors in a role. This has been used to identify stressors in boundary spanned roles of IAF officers who are spanners involved in development of highly technological systems with the association of scientists of DRDO labs and Public Sector Undertakings. The co-relation of the stressors with job satisfaction is measured by the Job Satisfaction Survey developed by Paul Spector. The physiological stress level is measured by the Perceived Stress Scale developed by Sheldon Cohen. In this paper the concept of evaluating role stress and its effect on job satisfaction and perceived stress is discussed in detail.

KEYWORDS

stress, occupation role stress, job satisfaction, boundary spanned roles.

1. INTRODUCTION

Organisations have many of their employees deployed across various places to achieve the organisation goals. The employees come from varied background of this country and many join at a very young age. Every organisation has its own culture and employees are groomed to the culture and ethos of the organisation. Many employees are assigned roles which demands interfacing with people of other organisations. For example, a large number of defence officers are engaged in working together with employees of public sector undertakings and private enterprises in development and trials of new weapon systems, transfer of technology from foreign firms. They also interact with personnel of DRDO labs for research and development of new systems and work on various projects.

Dealing with organisations which have a different work culture than that of parent organisation can lead to increased job stress. An employee gets accustomed to the working culture and environment of the parent organisation over the years and when assigned a role to interact with people from different organisation which has a different working culture can lead to frustration and stress. Deadlines, operational urgency, lack of resources, lack of autonomy, lack of understanding of the requirements by members of other organisations, delays, frequent failures etc can lead to occupational role stress. There are possibilities of conflicting demands placed on such employees by the parent organisation and members of the organisation they mostly interact with. People specially engaged in projects have ambiguous role requirements which may conflict with the requirement of the parent organisation. Employees may be required to assume different kind of roles in their job to suit the organisational requirements.

The occupational role stress can lead to frustration and can adversely affect the job satisfaction. Job satisfaction has different facets like pay, supervision, environment, communication etc. Although it can be measured by asking an employee how he feels about his job, but the different facets in a job can give better understanding of the job satisfaction if the management wants to improve the level of satisfaction for its employees. Although there are many factors which affect the job satisfaction, stress can alone overwhelm all the other factors and affect adversely. A dissatisfied employee can not only harm his own health but can have negative effect on the performance of the organisation and may lead to even sabotage.

2. REVIEW OF LITERATURE

2.1 STRESS

The word is derived from the Latin word "Stringere" – which means to draw tight. The term stress was first introduced by Hans Selye in 1936 in the field of life sciences. In the physiological sense, Selye propounded 'stress' as a nonspecific response of the body to any demand made on it. He theorized that to a broad array of stressors and concluded that the body's way of responding is surprisingly same. It indicates that a wide variety of stressors are capable of producing same stress response like effort, fear, success and fatigue (Selye, 1956). Stress is a dynamic condition in which an individual is confronted with and opportunity, demand or resource related to what the individual desires and for which the outcome is perceived to be both uncertain and important (Stephen, et al., 2013).

Stress is expressed in the form of overwhelming exhaustion, feeling of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment (Maslach & Schaufeli, 2001). Stress is conceptualized from three different perspectives namely, (a) stimulus perspective (b) response perspective and (c) psychodynamic perspective (Pestonjee, 1999). As a stimulus, stress has been used to describe situations in the external environment characterized as new, forceful, fast changing, demanding, sudden or unexpected (Beehr, 1985).

Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health (mental and physical) and even injury (Mamta, n.d.). Job stress is also defined as 'a situation when job-related factors interact with a worker to change (i.e. disrupt or enhance) his or her psychological and/or physiological condition, such that the person (i.e. mind or body) is forced to deviate from normal functioning' (Beehr & Newman, 1978).

Today the word 'stress' has become a major concern for every organisation. Ignoring stress has major consequences for an organisation by way of increased health costs, absenteeism, substance abuse and can even lead to sabotage. Stress always has a negative connotation and is believed to be caused by something bad to the individual by the organisation or the environment. But there is also a positive stress called *eustress* in contrast to *distress*. Eustress which is called positive stress is required in any organisation without which can lead to boredom, lack of focus and depression. Stress can be defined as and 'adaptive response to an external situation that results in psychological and/or behavioural deviations for organisational participants (Luthans, 2010). Excessive stress can lead to burnout. The difference between stress and burnout is that 'stress is normal and often quite healthy. However, when the ability to cope with stress reduces in individuals it can lead to burnout (Grensing, 1999). Stress stimuli can be due to threat of failure, unpleasant agents and rapid social changes (Lazarus, 1966). We can see job stress as a "process in which stimuli in the work place cause employee to experience serious psychological discomfort or ill health" (Beehr, 2001). From a response

perspective, stress can be seen as an imbalance between the demands to make an adaptive response and the capacity of the individual, higher the difference between requirements and resources the higher will be stress (Srivastava, 1999).

Individuals under too much stress would display lack of concentration, focus, anxiety and have adverse health condition like sleeplessness, backaches, headaches etc. There are various factors which causes stress and the factors may be external to the organization or internal, the social environment the individual interacts, or from within the individual. The organisational stressors may include administrative policies, organisational structure and design, organisational processes, working conditions. The working environment plays a major role in the organisation for individuals which can lead to stress and burnout.

The short term response for stress management in individuals can be "Flight-or-Fight" response as termed by Walter Cannon in 1915. He described the Flight-or-Fight response as a physiological reaction that occurs in response to a perceived harmful event, attack or threat to survival. Hans Selye is considered to be the father of stress research had observed that the body of an organism would respond to any external source of stress with a predictable biological pattern in order to maintain the internal homeostasis. The response of the body to maintain the internal homeostasis is called as "General Adaptation Syndrome". This was a model which describes stress comprises of three phases of response. They are: **Alarm Stage, Resistance Stage and Exhaustion Stage** (Selye, 1976).

Stress can contribute to health problems such as headaches, high blood pressure, heart problems, and skin conditions. Stress may also influence cognitive processes because it is associated with elevated levels of cortisol, a hormone that can influence brain functioning. High level of stress can lead to cardiovascular problems, musculoskeletal problems, immune system problems, gastrointestinal system problems. It can also lead to psychological problems like anger, anxiety, depression, nervousness, irritability, depression, tension, boredom. Individuals are prone to exhibit aggression, hostility which can lead to poor decision making. Since many personnel have to deal with emergency situation in their work place, stress can impact their alertness and decision making leading to dangerous situations and safety hazard. Research shows that work is, for most people, the most important source of stress in life (Stephen, et al., 2013). The total number of working days lost in UK due to stress related illness in 2015/16 was 11.7 million days (Health, 2016). Schuler defines stress "as a dynamic condition in which an individual is: (a) confronted with an opportunity for being/having/doing what he desires and/or (b) confronted with a constraint on being/having/doing what he desires and/or (c) confronted with a demand on being/having/doing what he desires and for which the resolution often is perceived to have uncertainty but which will lead (upon resolution) to important outcomes" (Schuler, 1980). Many treat stress as a stimulus variable and define it as "any vigorous, extreme or unusual stimulation, which, being a threat causes some significant change in behaviour" (Miller, 1969).

2.1.1 OCCUPATIONAL ROLE STRESS

Occupational Role Stress is the stress experienced due to occupation of an organisational role (Srivastava, 1999). Perceived stress related to occupational conditions such as role conflict, role ambiguity, group and political pressures, role overload, responsibility for persons, powerlessness, under participation, poor peer relations, low status, intrinsic impoverishment, unprofitability and strenuous working conditions have been assessed (Srivastava, 1981). Occupational role stress take places if there is mismatch between one's job resources and circumstances and his/her abilities (Holmlund, 2005). The organisational climate and social support also has a great impact on the stress level of the employees. (Cooper, 1976) classified stress as intrinsic to a job or role, career growth, relationship with colleagues and organizational climate and structure as five main clusters of work stressors. (Srivastava, 2009) found that the role of an employee in the organization may create conditions that cause stress for employees at work affecting the quality of work life. Such Organizational role stress has been found to be negatively related to managerial effectiveness. (Srivastava, 1981) reviewed that perceived stress is related to work conditions such as role ambiguity, role conflict, political and group pressures, role overload, responsibility for persons, powerlessness, under participation, deprived peer relations, low status, intrinsic impoverishment, unprofitability and strenuous working conditions. (Schuler, 1982) acknowledged relationship, job qualities, organizational structure, career development, physical qualities, change and role as major categories of job stressors. (Cummins, 1990) recommended role conflict and ambiguity, work overload, underutilization of skills, resource inadequacy and lack of participation as the main categories of work stressors. Workplace stress is vague concept that has come to mean a number of things. It is defined as "characteristic of the job environment which make demands on (tax or exceed) the abilities or resources of the people for meeting the demands or which may otherwise threaten attainment of people's need" (Abramis, 1994).

2.2 BOUNDARY SPANNED ROLES

Boundary spanned roles are job positions where individual employees are required to come in direct contact with the public or employees of other organisations which are also called boundary roles. Today is the era of multi-team systems and the requirement of continuous innovation. Since boundary spanners have role senders located in external organizations as well as in their own organization, conflicting and misunderstood expectations for role performance often are sent to the boundary spanner. Conflicting demands can result in strong role pressures in boundary span roles.

Effective boundary management not only directly benefits team effectiveness, but also—since team boundaries are important for knowledge transfer within and between organizations, for organizational innovation and for protection against outside threats—translates into improved organizational learning and effectiveness (Jennifer, 2007). Boundary spanning behaviours also include conflict management, member co-ordination and goal setting. Because boundary-spanning activities are taxing and can directly compete with internally directed activities for time and attention (Katz, 1978). Research has found boundary-spanning roles to have negative effects for their incumbents. Since boundary spanners have *role senders* located in external organizations as well as in their own organization, conflicting and misunderstood expectations for role performance often are sent to the boundary spanner. These conditions have been found to result in strong and conflicting role pressures and tensions for incumbents of boundary-spanning roles (Keller R. H., 1974).

2.3 JOB SATISFACTION

The term job satisfaction was termed by Hoppock who reviewed 32 studies on job satisfaction conducted prior to 1933 and observed that job satisfaction is a combination of psychological, physiological and environmental circumstances that cause a person to say, "I am satisfied with my job". Such a description indicates the variety of variables that influence job satisfaction but tell us nothing about its nature (Hoppock, 1936). Job satisfaction is also defined as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976). In simple terms, job satisfaction explains what makes people want to come to work. What makes them happy about their job or not to quit their job?

(Nash, 1985) has extensively reviewed the nature of job satisfaction in the industrial world and found that job satisfaction is attributed not only to one but many factors and varies in its impact on individuals satisfaction with life because work varies in importance from individual to individual. He also found that people who take their job as prime interest experience high level of job satisfaction. Their job satisfaction will be further enhanced if they are doing work that is utilizing their skills. He also found that job satisfaction is an indicator of employee's motivation to come to work and it changes with age and employment cycle. He also concluded that certain organizational characteristics influence job satisfaction, and one of the major factors is the intrinsic nature of the job itself. An individual who genuinely likes the content of the job will be more satisfied with the job. In terms of preferences, he said that industrial workers want job with high pay, high security, promotional opportunities, fewer hours of work and friendly supervision. Finally, he found that if it demands considerable effort to get a job (through education, experience or achievement), if one can make a lot of money at it, if one cannot think of an alternative, then one should be highly satisfied with the job. He also stated in his findings that factors that influence job satisfaction differ from men to women in terms of importance of ranks. Generally, men rank security first, followed by advancement, type of work, company, pay, co-worker, supervision, benefits, and duration of work and then working condition. Whereas women rank type of work first, followed by company, security, co-workers, advancement, supervision, pay, working condition, duration of work and then benefits.

Satisfaction is also operationalized as a discrepancy and defined as the extent to which reward actually received meet or exceed the perceived equitable rewards. The greater the failure of actual rewards to meet or exceed equitable rewards the more dissatisfied an employee will be (Porter, 1985). The concern of job satisfaction can be based on the focus of employee or organisation. The humanitarian perspective says that people deserve to be treated fairly and with respect. Job satisfaction is a reflection of good treatment. It is an indicator of emotional wellbeing or psychological health. Also, the utilitarian perspective is that job satisfaction can lead to behaviour by employees that affects organisational functioning (Spector, 1997).

Job satisfaction is about how people feel about their jobs and different aspects of their job. Most recent study on job satisfaction focus on cognitive process instead of the perspective of need fulfilment. Job satisfaction is mostly seen as an attitudinal variable. This perspective has become predominant in the study of job satisfaction. Most of the studies use the facet approach to find out which aspect of the job produce satisfaction or dissatisfaction. Facets which are usually studies are pay, fringe benefits, co-workers, nature of work, supervision, promotion etc.

3. OBJECTIVES

The objective of the paper is:

- (a) To develop a concept for evaluating the occupational role stress among employees in boundary spanned roles.
- (b) To identify the occupational role stressors in boundary spanned roles.
- (c) To develop a concept to evaluate the relationship between occupational role stress and job satisfaction.

4. METHODOLOGY

4.1.1 OCCUPATIONAL ROLE STRESS (ORS)

One of the widely used Occupational Role Stress framework was developed by Udai Pareek (1983). This framework has ten different stressors identified which are given below:

- (a) **Inter-Role Distance (IRD):** An individual carries out more than one role in similar or different capacities. Stress arises when the demands of these different roles creates conflict. Stress arises when a person cannot balance the different roles and he feels it is important to do justice to all the roles.
- (b) **Role Stagnation (RS):** As an individual grows in an organisation, he expects his career to grow too. Stress due to role stagnation sets in when people feel that they have limited or no career growth in their organisation.
- (c) **Role Expectations Conflict (REC):** Stress arising out of conflicting expectations or demands by different role senders creates Role Expectations Conflict stress.
- (d) **Role erosion (RE):** When some important roles are given to or done by others, which should have been part of the individual’s role, role erosion stress takes place.
- (e) **Role Overload (RO):** When people are faced with multiple obligations or demands, which is more than the time available, role overload stress sets in.
- (f) **Role Isolation (RI):** The stress resulting due to a situation when an individual feels isolated with other roles in the organisation due to poor communication, hierarchy, or organisational climate is termed as Role isolation.
- (g) **Personal Inadequacy (PI):** The stress arising due to the feeling in a person that he/she does not have the required skills and training to effectively perform the role is termed Personal Inadequacy.
- (h) **Self-Role Distance (SRD):** This kind of stress arises when an individual fails to identify with the role he occupies or feels he is not fully utilised. This is essentially a conflict arising out of mismatch between the person and his job.
- (i) **Role ambiguity (RA):** Lack of clarity in the role occupied or poor feedback about one’s performance can result in stress due to role ambiguity.
- (j) **Resource Inadequacy (Rin):** When adequate resources are not provided to a role occupant for performing the role effectively, it results in stress due to resource inadequacy.

The ORS scale can be adopted from the ORS Manual of Udai Pareek, which has five questions for each of the above role stressors to be responded on a Likert Scale. So a total of 50 questions are used to evaluate the above role stressors.

4.1.2 JOB SATISFACTION SURVEY

Few of the existing and most used scales for evaluating job satisfaction are:

- Job Descriptive Index (JDI) by Smith, Kendall and Hulin 1969
- Minnesota Satisfaction Questionnaire (MSQ) by Weiss, Dawis, England and Lofquist 1967
- Job Diagnostic Survey (JDS) by Hackman and Oldham 1975
- Job Satisfaction Survey (JSS) by Paul E Spector 1985

All these four surveys use the facet measures of job satisfaction. For the purpose of this study, the JSS can be considered. This survey assesses nine facets of job satisfaction. Each facet has four items and hence a total of 36 questions. It uses a summated rating scale format. The total satisfaction score can be computed by adding the score of all the items. The JSS yields 10 scores. Each of the nine facet produces subscale score and total of all items produces total score. The questionnaire has some of the items scored in the positive and some in the negative direction. Before the items are totaled, the scoring for the negatively worded items have to be reversed.

The Job Satisfaction Survey (JSS) developed by Paul Spector is used to measure the level of job satisfaction in the boundary-spanned role of the officers of IAF (Spector, 1997). The JSS measures job satisfaction in nine facets as well as the overall satisfaction. The nine facets with brief description is given in the Table 4.1 below:

TABLE 4.1: FACETS OF JOB SATISFACTION AND ITS DESCRIPTION (Spector, 1997)

| Facet | Description |
|----------------------|---|
| Pay | Satisfaction with pay and pay raises |
| Promotion | Satisfaction with promotion opportunities |
| Supervision | Satisfaction with person’s immediate supervisor |
| Fringe Benefits | Satisfaction with fringe benefits |
| Contingent Rewards | Satisfaction with rewards(not necessarily monetary) |
| Operating Conditions | Satisfaction with rules and procedures |
| Co-Workers | Satisfaction with co-workers |
| Nature of Work | Satisfaction with the type of work done |
| Communication | Satisfaction with the communication within the organisation |

5. CONCLUSION

Stress has become one of the major health hazards today for every individual. Organisations can be a cause for stress in its employees and therefore it is obliged to identify the stressors and take steps to mitigate the stressors. The study can help organisations to identify the stressors in the role and take appropriate steps by adopting policies which help in reducing the role stress and increasing job satisfaction which ultimately increases morale and motivation of its employees. The scores can be analyzed to identify the major stressors and their inter-relations among themselves. Also the scores can be analyzed to find the co-relation of the stressors and job satisfaction. Many studies have been carried out to identify the role stressors in organisations, but this is an attempt to conceptualize the study of Occupational Role Stress in boundary Spanned Roles and its relationship with Job Satisfaction.

REFERENCES

1. Abramis, D., 1994. *Relationship of Job Stressors to Job Performance: Linear or an Inverted -U*, s.l.: Psychological Reports.
2. Beehr, T. B. R., 1985. *Human Stress and Cognition in organizations: An Integrated Perspective*. New York: John Wiley and Sons.
3. Beehr, T. J. S. & G. P., 2001. *The Management of Occupational Stress*. New York: s.n.
4. Beehr, T. & Newman, J., 1978. "Job Stress, Employee Health and Organisational Effectiveness".
5. Cooper, C. M. J., 1976. *Occupational Sources of Stress: A Review of the Literature Relating to Coronary Heart Diseases and Mental Health*.
6. Cummins, R., 1990. *Job Stress and the Buffering Effort of Supervisory Support*, s.l.: Group and Organizational Studies.
7. Gensing, L. P., 1999. "Commuting HR eases the Pain". *HR Magazine*, March, p. 84.
8. Health, a. S. E., 2016. *Health and Safety Executive*. [Online] Available at: www.hse.gov.uk [Accessed 11 January 2017].
9. Hoppock, R., 1936. *Job Satisfaction*. New York: Harper.
10. Jennifer, A. M. P. E. B., 2007. A Multilevel Investigation of Antecedents and Consequences of Team Member Boundary-Spanning Behavior. 50(6).
11. Katz, D. K. R., 1978. *The Social Psychology of Organizations*. New York: Wiley & Sons.

12. Keller, R. H. W., 1974. Boundary Spanning Roles in Research and Development Organisation: An Empirical Investigation.
13. Lazarus, R., 1966. *Psychological Stress and Coping Process*. s.l.:s.n.
14. Locke, E., 1976. The Nature and Causes of Job Satisfaction. In: *Handbook of Industrial and Organizational psychology*. Chicago: Rand McNally.
15. Luthans, F., 2010. *Organisational Behaviour*. New York: McGraw Hill.
16. Mamta, J. R. B. M. T., n.d. "Work Place Stress and Suicide". *International Journal of Multidisciplinary Research*.
17. Maslach, C. & Schaufeli, W. L. M., 2001. Job Burn Out Annual Review of Psychology.
18. Miller, J., 1969. Information Input Overload and Psychopathology.
19. Nash, M., 1985. *Managing Organizational Performance*. San Francisco, CA: Jossey-Bass.
20. Pestonjee, D., 1999. *Stress and Coping: The Indian Experience*. N Delhi: Sage Publications.
21. Porter, L. & L. E., 1985. *Managerial Attitudes and Performance*. Homewood, IL: Irwin.
22. Schuler, R., 1980. *Organisational Behaviour and Human Performance*. s.l.:s.n.
23. Schuler, R., 1982. An Integrative Transaction Process Model of Stress in Organizations. Volume 3.
24. Selye, H., 1956. *"The Stress of Life"*. New York: Mc Graw Hill.
25. Spector, P., 1997. *"Job Satisfaction-Application, Assessment, Causes and Consequences"*. s.l.: Sage Publications.
26. Srivastava, A. & S. A., 1981. Construction and standardisation of an Occupational Stress Index; A Pilot Study. Volume 8(2).
27. Srivastava, A., 1999. *Management of Occupational Stress*. s.l.: Gyan Publishing House.
28. Srivastava, A., 2009. Control Climate in Public Sector: Relationship with RoleStress, Coping Strategy and Personal Variables. Volume 12(1).
29. Stephen, P., Timothy, A. & Neharika, V., 2013. *Organisational Behavior*. New Delhi: Dorling Kindersley (India) Pvt Ltd.

**FACTORS AFFECTING JOINING AND RETENTION OF SECURITY FIRMS' EMPLOYEES IN THE TRADE UNIONS:
CASE OF G4S SECURITY SERVICES LIMITED, NAIROBI, KENYA**

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ABSTRACT

There is recognition of trade unions in industrial relations throughout the twenty-first century. In the recent years, membership has sharply decreased as a result of privatization of public enterprises and liberalization of the economy. The research design that was employed in this study is descriptive research design. The target population of the study was the employees of security firms in Kenya. The selection of the sample population was done through stratified random sampling where a proportion of 10% was selected from each stratum: a sample population of 158 respondents was selected. The researcher used qualitative and quantitative techniques in analyzing the data. The study found that the economic conditions faced by workers in G4S Security Services Ltd influences their intention to join and remain in the trade unions to a great extent, workers were not allowed by their employer to join trade unions if they wanted to do so, there was a high level of victimization for employees who intended or have joined trade unions and this influenced their intention to join the trade unions. The study has also highlighted some policy recommendations aimed to encourage employees of security firms to join and remain in the trade unions such as negotiating of wages and rules governing hiring, firing and promotion of workers.

KEYWORDS

G4S security services limited, joining & retention of employees, trade unions.

1.1 BACKGROUND OF THE STUDY

Trade unions are associations of employees (there are also associations of employers - F.K.E) and their main objective is to represent the employees' interests to the employers. The right to form and join a trade union is a fundamental human right. A well-functioning and respected trade union movement is often a good indicator of democracy and standards of human rights. Besides playing a role in the fight for better working conditions, trade unions have had (and continue to have) a key role in the building of social movements and the developing of social changes (Nzuve, 2007). The role of trade unions has been very varied. In some countries, where fascist and communist regimes were in place, trade unions were overtaken or created by state authorities and the political elite and turned into a tool for their oppressive regimes. As a result of this historical reality, many people are skeptical of the role that trade unions can play, and only lately have the workers from these countries started to recognize. In Kenya however, there is COTU as the umbrella governing trade unions (Terry, 1995, p. 203).

A Trade Union is an organization of workers who have joined together so as to try to improve their interests. The main object of Trade Unions is to regulate relations between employees and employers (Nzuve, 2007). Singh (1969:170) defines a Trade Union as the association whose main object is to regulate relations between workers and their employers or between one group of workers and another group of workers or between employers and other employers.

There seems to be widespread recognition of the rational base of trade unions in the literature on industrial relations throughout the twentieth century. All definitions of trade unions concur with the view that their main purpose is to improve and promote the living standards of their members (Allen, 1996, p. 49). Indeed trade unions are seen primarily as agents constantly striving to improve the conditions of work of their members through bargaining and negotiation. If or when constrained to pursue political action, they do so as "an adjunct to extend the scope or coverage of bargaining or to protect the right to organize and bargain" (Kelly, 1998, p. 52). This role of trade unionism is reinforced by the notion that affluence is not a divinely ordained privilege granted to a small elite but something that can be attained by a large segment of the population through social engineering of the market value of work. There is a cultural assumption that affluence is not a dream but a goal that can be achieved by means of productive work. This has bred an instrumental attitude towards work which has been transferred to trade unionism in the sense that workers expect their trade unions to use their bargaining powers to fulfill their aspirations (Goldthorpe *et al.*, 1968).

In Kenya the history of Trade Union goes back to the period when the labour party was predominantly influenced by the Trade Union Congress which is the Central Organization of Trade Unions in Britain. The British government decided as a matter of policy to promote Trade Unions in their colonies and consequently appointed British Union's labour officers to come and organize workers Trade unions. Kenya was one of the targeted colonies. This culminated the formation of Kenya Federation of Labor (an alternative to the banned K.A.U). This move was obviously unpopular with the colonial masters / employers, who in turn formed the Federation of Kenya Employers (F.K.E) in January 1959, as a counter to the Federation of Labor.

A trade union simply means an association of workers in a particular trade, industry or craft. In a strict legal sense, it means an association formed primarily for the purpose of regulating the relations between employers and employees or employees and employees or employers and employers. According to justice L.J Harison, a trade union is essentially an organization of workers whose function is to enable them to act together to make possible collective bargaining. However, under the trade unions Act, a trade union includes both employers and workers organizations. The Industrial Relations Act, 2007 is the principal law regulating Trade Unions conduct in Kenya, It defines a Trade Union in Section 2 as; an association of employees, whose principal purpose is to regulate relations between employees and employers including an employers' organization. Contrary to belief of many unions here in Kenya, the Kenya Local Government Workers Union (KLGWU) is the only organisation whose membership cuts across all grades without industrial disquiet and conflict (Machyo, 2003). For instance, Town Clerks are

members of the union with limited participation in union activities. By virtue of their roles as Council chief executives, they are not eligible to contest union elections but their grievances in Industrial Courts are handled by the union.

1.1.2 EMPLOYEE INTENTION TO JOIN TRADE UNION

Intention to join trade union is the motive of employees to become union members by subscribing for membership in the union. The motives of people for joining a union often use the classification developed by Van De Vall (1970), who differentiated between ideological motives (To make the union as strong as possible), social motives (pressure from colleagues or family members) and instrumental motives (financial, legal and administrative support or protection in case of difficulties). Research shows the instrumental motive to be the most important motivation for union membership (Waddington and Hoffman, 2000). In Flanders (Belgium), 69 percent of union members joined 'because being a member is good protection in the event of problems at work' (De Witte, 1996). The predominance of the active or 'defense motive' suggests that the union is considered by many members as an 'insurance' against possible problems in the individual or collective sphere (Visser, 1995). The need for protection which is central to the instrumental motivation of membership of course includes more than just protection against possible dismissal or job insecurity. The latter, however, constitutes an important component of the protection motive.

Labor unions have been viewed as organizations established to help protect the interests of employees and foster pleasant relationships between employees and employers (Wilawan, 2007; Napathorn and Chanprateep, 2011). Much research has examined the reasons why employees want to join labor unions, especially in the United States and Europe (Visser, 2002; Friedman, Abraham, and Thomas, 2006). For example, employees in the United States joined labor unions to improve work environments, career prospects, and job satisfaction (Friedman, Abraham, and Thomas, 2006). Employees in Poland joined labor unions to improve their career prospects (Zientara and Kuczynski, 2009).

In Kenya the labor relations system seems to be under the control of the management. Employees are not eager to organize labor unions because of cultural factors (Suthakavatin, 2005; Siengthai and Bechter, 2005). Most security firm's employees view themselves to have a low rank in the organizational hierarchy; thus, they pay respect to managers whom they believe to have a higher rank within the organization. Therefore, they prefer not to create adversarial relationships with managers by establishing labor unions to protect their own rights. Moreover, most managers have a negative perception of labor unions and thus do not welcome the establishment of labor unions within their workplace. Some managers also view labor unions as self-interested since some labor unions are established for personal rather than public purposes (Brown, 2004).

1.2 STATEMENT OF THE PROBLEM

The influence of trade unions is evident in crucial economic indicators such as employment, levels of wages, standard of working conditions etc. Studies on the labor movement in India show that there was no organized labor force in the early stages of industrialization in India. However, unbearably long hours of work, low wages etc, made the workers use a weapon called strike. Declining employment elasticity implies that more output is attained with less employment. Unions can affect this employment elasticity by resisting technological change that increases the possibility of substituting between capital and labor and by limiting the availability of goods and services that compete with the output of unionized firms.

Locally, Musandu (2007) in his study found out that the causes of fragmentation of Trade Unions are; Poor management of the Trade Unions, poor leadership, lack of education, poor representation, leadership wrangles, conflict of interests, misappropriation and lack of union funds, increase in awareness of rights, and unfair elections. K'obonyo (1981) studied the operations of Trade Unionism in Kenya; a study of the railways African Union. Machyo (2003) studied women's participation in Trade Union leadership in Kenya. Busienei (2005) added to the body of knowledge by his study of the moderating effects of Trade Union membership on employee perception of job security and fair treatment by management in the manufacturing industry in Kenya. Moraa (2006) surveyed the strategies used by Trade Unions in negotiating with employers in Nairobi.

Despite documented evidence of declining membership of trade unions by employees, there has been scanty of research to explain factors leading to declining membership, thus the need for research to determine factors affecting intention to join and remain in the trade unions among firm's employees in Kenya. The security firms in the country employ a relatively large pool of workers in the unionsable category that provides a good basis for understanding the reasons affecting their intention to join and remain in the trade unions.

1.3 OBJECTIVES OF THE STUDY

1.3.1 GENERAL OBJECTIVE

The study sought to establish factors affecting intention to join and remain in the trade unions by security firms' employees in Kenya with special reference to G4S Security Services Limited in Nairobi.

1.3.2 SPECIFIC OBJECTIVES

The study specifically sought:

1. To establish how the economic conditions faced by workers in G4S Security Services Ltd influences their intention to join and remain in the trade unions.
2. To determine how the state of human relations practices in G4S Security Services Ltd influences the employees' intention to join and remain in the trade unions.
3. To assess how the Human Resource Management practices being carried out at G4S Security Services Ltd influences the employees' intention to join and remain in the trade unions
4. To examine how the literacy level of employees working with G4S Security Services Ltd influences their intention to join and remain in the trade unions.

1.4 RESEARCH QUESTIONS

The study sought to answer the following research questions:

1. How do the economic conditions faced by workers in G4S Security Services Ltd influence their intention to join and remain in the trade unions?
2. How does the state of human relations practices in G4S Security Services Ltd influence the employees' intention to join and remain in the trade unions?
3. How does the Human Resource Management practices being carried out at G4S Security Services Ltd influence the employees' intention to join and remain in the trade unions?
4. How does the literacy level of employees working with G4S Security Services Ltd influence their intention to join and remain in the trade unions?

1.5 SIGNIFICANCE OF THE STUDY

The study will be of great importance to employees of security firms in Kenya as they will be able to understand the factors affecting their intention to join and remain in the trade unions. The study will also be of great importance to trade unions in Kenya as they will understand factors that hinder employees of security firms in Kenya in joining trade union and thus try and enlighten them on the benefits of joining trade unions. The study will be of great importance to policy makers in the government as they will be able to design policy that will help employees in joining trade unions. Finally this study will be of great importance to future scholars as it will form basis for future research.

1.6 SCOPE OF THE STUDY

This was concerned with establishing the factors affecting intention to join and remain in the trade unions by security firms' employees in Kenya with special reference to G4S Security Services Ltd. The study targeted 158 employees of G4S Security Services Ltd at their Headquarters Office along Witu Road, off Lusaka, Industrial Area, Nairobi. Both the management and the junior staff were involved. The study was conducted using descriptive survey design to investigate and analyzed and discovered factors affecting intention to join and remain in the trade unions by security firms employees in Kenya with special reference to G4S Security Services Ltd.

1.7 ASSUMPTIONS OF THE STUDY

This research study had the assumption that all the respondents would cooperate and give reliable information and that the respondents were aware of the factors affecting their intention to join and remain in the trade unions by security firms employees in Kenya with special reference to G4S Security Services Ltd. The study also assumed that all the respondents understood the questionnaire and gave response from a point of perfect knowledge.

1.8 LIMITATIONS OF THE STUDY

Some of the questionnaires given were not returned. To overcome this limitation, the researcher filled the questionnaire as she interviewed the respondents. In addition, the company rigid policies and regulations posed a limitation as the respondents were not free enough to give information. The study overcame this limitation by requesting for an introductory letter from the University which helped to introduce herself to the management of the company.

2. LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the existing literature, information and publication on the topic related to the research problem by accredited scholars and researchers. This section shall examine what various scholars and authors have said about factors affecting intention to join and remain in the trade unions, in particular it will cover the theoretical review of literature, empirical review of the literature and conceptualization of the research problem.

2.2 THEORIES OF TRADE UNIONS

2.2.1 SOCIAL CUSTOM THEORY

Although the main role of unions is to bargain the wage with the employer, becoming a union member is not necessary in order to enjoy the right to be covered by the wage contract negotiated by the union. If one disregards the closed shop - an institution that has almost disappeared - union members who work in a given firm or sector are covered by the same collective contract as non-members. So, if workers get the same wage, independently of their union status, and some of them choose to pay a membership fee, what does the membership card buy? The basic answer delivered by the literature is that membership buys the worker a good social treatment in the community he lives in or, in other words, a good reputation (Booth, 1985, Booth and Chatterji, 1993, Naylor and Cripps, 1993, Corneo, 1997, Goerke, 1997). As there exists no formal obligation for the union to provide its members with social rewards, union membership gives rise to an implicit contract. The working of an implicit contract based on social rewards may be understood by making reference to the theory of social norms, as developed e.g. by the US-sociologist Coleman (1990). In economic terms, social norms are claimed to arise in order to solve problems caused by externalities and public goods.

Interpersonal exchange of deference, sympathy, courtesy, and concrete help is a device that serves to award those individuals who hold a norm. To join the union may be considered as the focal action at which is directed a social norm. The norm is aimed at deterring the workers from free-riding on the bargaining effort provided by the trade union, and it is enforced by social sanctions and rewards mainly carried out by workmates. From the viewpoint of workmates, the decision to join the union is a positive externality or a contribution to a public good, as all workers benefit from a larger, and hence more powerful, trade union. By rewarding union members and sanctioning non-members in their social life, the workforce as a whole provides an incentive to join the union, and thereby it solves the free-rider problem. According to this view, the degree of unionization depends on the enforceability of a unionist social norm in the workers' community. In turn, community enforcement requires the willingness of workers to condition their personal attitudes toward workmates on their union membership status. Since rewarding or punishing someone implies a deviation from normal behavior, both rewarding and punishing involve some costs for the subject who undertakes them. This creates a new problem: Why should workers choose to punish non-members and reward members?

This issue can be approached in various ways. A first route considers the role of second-order sanctions and sanctions of higher order, e.g. the fact that not only are deviators from the desired behavior punished, but a worker who fails to punish is in turn punished. The sustainability of such sanctions can be evaluated using game-theoretical tools. Consider, for the sake of concreteness, the following game. In its first stage the workers of a given firm simultaneously choose whether to join the trade union. Then, they engage in infinitely repeated interactions. In each stage, workers are randomly matched into pairs to play a version of the prisoner's dilemma game (Kandori, 1992). Under complete information, a modified Folk Theorem applies to the subgame identified by the repeated random matching game. Therefore, it may be possible to sustain a perfect equilibrium in the matching game in which players only cooperate in the stage game if both are union members. If the discounted expected differential payoff between members and non-members in the matching game is sufficiently large, the overall game may well exhibit perfect equilibria in which the workers join the union in the first stage of the game.

Things, however, change if workers cannot observe each other's behavior, e.g. they do not know whether a union member has failed to play "cooperate" with another member in the previous stage. In these cases it may be difficult to enforce the unionist norm. In general, such a norm is more likely to be enforced as a sequential equilibrium whenever workers have a large amount of information about individual behaviour in the past, and they use this information so that only defectors are punished. Clearly, such an information processing is facilitated by the presence of a stable social network linking the workers.

A second route draws from social psychology in order to identify behavioral rules that may explain the sanctioning of non-members in the social sphere. According to equity theory Adams (1963), in social exchange between two agents the ratio of the perceived value of the "inputs" to the perceived value of the "outcomes" would tend to be equal. In the current setting the "input" of a worker is the value of the deference shown to his workmate, and the "outcome" is the sum of the deference received by the other and the wage net of the membership fee. Behavior according to equity theory would therefore lead to offset the higher net wage of a non-member by showing him less deference (Hölländer, 1990). More generally, workers may be endowed with a total amount of deference that they can show, and societal values may deliver criteria according to which deference should be allocated to others. Solidarity being a societal value, union members may automatically be awarded more deference by the workforce (Corneo, 1997).

A third route contemplates the psychological mechanisms that may reduce the costs of sanctioning non-members in the social sphere. A prominent mechanism is based on cognitive dissonance reactions (Aronson, 1979). These reactions usually stem from peoples' view of themselves as "nice people". Information that conflicts with this image tends to be ignored or accommodated by changes in other beliefs. Experiments show that individuals who are told to engage in cruel behaviour toward others systematically change their attitudes against the object of their cruelty. In order to preserve their self-image as a nice person, individuals lower their opinion about the object of their cruelty. A similar mechanism may operate when non-members are sanctioned. Cognitive dissonance theory suggests that individuals who badly treat nonmembers may want to believe that they still behaved as nice persons are supposed to. Collective images of non-members as "scabs" and nasty individuals facilitate such beliefs and reduce the psychic cost of being cruel to them.

2.3 EMPIRICAL REVIEW OF LITERATURE

Trade union movements are confronting multiple challenges. Among the adversities that union leaders face are pressing organizational problems: membership tends to erode due to structural changes in the economy and society, unfavorable political and institutional conditions make organizing even more difficult, and attempts to attract and represent new social groups remain insufficient. 'Deunionisation' and its consequences for collective bargaining and the political clout of union movements has become a problem acknowledged not only in academic but also union circles. However, these accounts rarely note the intricate relationship between union movements and welfare states, and the potential consequences of ongoing efforts to recalibrate the welfare state, which unions had helped expanding.

Facing decline in membership, representatively, and dues income, we could expect unions to become more dependent on the welfare state in which they are embedded. Where they have an institutionalized involvement in statutory workplace representation or play a role in the co-management of social and employment policies, they could gain additional legitimacy and resources. Where unions are weak in membership strength and bargaining power, they may still benefit from the bargaining coverage through better organized employer organizations or from state support via legal extension of collective agreements to non-organized workers and non-unionized firms. In addition, the welfare state might provide several 'union securities', be it through union-friendly labour relations in the public sector or subsidies to collective insurance schemes run by unions.

Moreover, as social movements, organized labour may be able to assume a role in the politics of welfare state reform, defending the interests of current and former wage earners against government and employer policies. In recent years, some union movements have been capable of blocking reform efforts, while in other cases; union leaders were willing to negotiate the adaptation of labour market and social policies to the current domestic and international challenges. Comparative studies stressed the shift to bargaining decentralization, labour market deregulation, and flexibilisation in production as major challenges to industrial relations since the 1980s (Baglioni and Crouch, 1990; Katz, 1993). Since the run up to European Monetary Union in the early 1990s, there have been attempts at negotiating long-term tripartite social pacts with the aim to achieve wage moderation under the pressures of international competition and stringent public budget constraints (Fajertag and Pochet, 2000; Waddington, 2001). Moreover, in countries with social partnership traditions, the state delegated some public policy competencies to the social partners, in particular in labour market and social policy matters (Berger and Compston, 2002; Casey and Gold, 2000; Reynaud, 2000). With intensified European integration and the increased pressures on welfare states, a renegotiation of the post-war social compromise is on the agenda at both national and European level.

Also within the European Union, the 'open method of coordination' (Goetschy,), which relies on concerted national action that includes also the social partners, expanded from issues of employment to other social policy areas such as social inclusion and pension policies (de la Porte, 2001). Activities beyond wage bargaining have not been limited to the union side, ideas of 'corporate social responsibility' and 'social partnership' are also discussed among employers at European level and especially in Anglo-Irish and Nordic circles in the recent years (Kjaergaard and Westphalen, 2001). Yet, in several European countries, employer representatives and political actors are also those that fiercely criticize and attempt to undo social partnership institutions, most prominently French employers and the Austrian centre-right coalition.

From the theoretical treatment of trade unions in economics, it is quite clear that trade unions attempt to raise wages above the level that would exist in their absence. Reviewing a number of early empirical studies in the US and undertaking much additional analysis, Lewis (1963) concludes that the size of the effect of unionism on the average union-non-union relative wage in the United States has varied greatly and in systematic fashion over time. In recent years several authors have attempted to measure the relative union-nonunion wage differentials using multiple regression analysis mostly on micro-economic data. Parsley (1980) has reviewed the available studies undertaken largely in USA, UK and Canada.

Most of these studies fit a single wage equation on pooled data (union and non-union) incorporating unionism as one of the explanatory variables (Bhattacharjee and Datta Choudhary, 1992 and Deshpande, 2000). The important assumption of these studies is that the rewards for the each of the explanatory variables are the same both in union and non-union sectors.

There are few studies in the USA, which consider that both wages and unionization are simultaneously determined (Ashenfelter 1972; Schmidt and Strauss, 1976; and Schmidt, 1978). The authors of these studies view that unionization is also affected by wages; more and more non-union workers join unions after noticing the monetary gains of the unionized workers; thus according to this view unionization is no longer an exogenous factor but endogenous. These considerations suggest that in order to obtain a better estimate the effect of unionism on relative wages it is necessary to incorporate in to the model how unionism is also determined. Few studies (Bloch and Kuskin, 1978; Lee, 1978, Robinson and Tomes, 1984) postulate that the wage structures for union and non-union sectors are different. Bloch and Kuskin have considered separate wage equations for union and non-union sectors and attempted to measure the union-non-union wage differentials. Lee, on the other hand, having fitted separate wage equations for union and non-union sectors has estimated union-non-union wage differentials using the simultaneous equation technique. To sum up, the survey of empirical studies reveals that trade unions increase the wages of their members more than what prevailed in their (union) absence.

In Kenya, Musandu (2007) in his study of 'the effects of fragmentation of Trade Unions on collective Bargaining in Kenya's hotel industry found out that the causes of fragmentation of Trade Unions are; Poor management of the Trade Unions, poor leadership, lack of education, poor representation, leadership wrangles, large membership of Trade Unions, conflict of interests, misappropriation and lack of union funds, increase in awareness of rights, and unfair elections. Poor management of Trade Unions was the greatest of these. Several other studies have been done on Trade Unions in Kenya. K'obonyo (1981) studied the operations of Trade Unionism in Kenya; a study of the railways African Union. Machyo (2003) studied women's participation in Trade Union leadership in Kenya. Busienei (2005) added to the body of knowledge by his study of the moderating effects of Trade Union membership on employee perception of job security and fair treatment by management in the manufacturing industry in Kenya. Moraa (2006) surveyed the strategies used by Trade Unions in negotiating with employers in Nairobi. Mutung'a (2006) did a study on the response of trade unions to challenges posed by conditions of work at the EPZ.

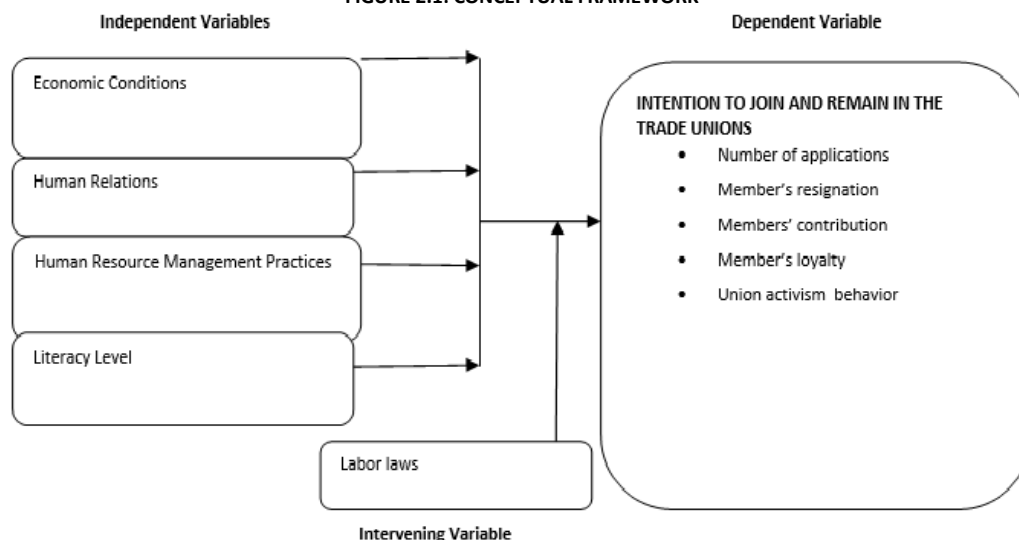
2.4 RESEARCH GAP

The influence of trade unions is evident in crucial economic indicators such as employment, levels of wages, standard of working conditions etc. Recently the union membership has drastically dwindled as a result of privatization of public enterprises and liberalization of the economy. Musandu in his study found out that the some of the causes of fragmentation of Trade Unions are; Poor management of the Trade Unions, poor leadership, lack of education, poor representation, leadership wrangles, and lack of union funds, increase in awareness of rights and unfair elections. K'obonyo studied the operations of Trade Unionism in Kenya; a study of the railways African Union. Machyo studied women's participation in Trade Union leadership in Kenya. Busienei added to the body of knowledge by his study of the moderating effects of Trade Union membership on employee perception of job security and fair treatment by management in the manufacturing industry in Kenya. Moraa surveyed the strategies used by Trade Unions in negotiating with employers in Nairobi. There is scanty of research to explain factors affecting intention to join and remain in the trade unions by security firms employees in Kenya.

2.5 CONCEPTUAL FRAMEWORK

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this.

FIGURE 2.1: CONCEPTUAL FRAMEWORK



Source, Researcher 2012

Trade unions are meant to argue better pay for its members in whichever sector in which they operate. Thus, it is conceptualized that trade unions in Kenya have positively influenced employee remuneration packages for their members. For the employees to perform better in their various capacities and to be able to handle the challenges they face in terms of their job content, training is very crucial. Thus, the trade unions generally negotiate for their members to attain adequate training to impact them with skills necessary to effectively perform their roles. It is therefore hypothesized that trade unions in Kenya have had a positive impact on training and development of employees (who are their members).

Employees' salaries strongly affect their intention to join and remain in the trade union as the trade unions depends on member's contributions to finance their activities, employees with low income will find it hard to have their salaries deducted union contribution and this will influence their intention to join and remain in the trade union. COTU believes that the current minimum wage is inadequate and need to be reviewed immediately as this acts as an obstacle to employees who wants to join trade unions. Employees who feel they are overburdened by union contributions will tend to resign from the unions, an increase in salary would result to increase in the number of applications.

Human Resources Management approaches and industrial relations can successfully coexist. Various research in the developed world reveals that HRM practices have been introduced by employers as union substitution strategies union substitution policies tend to be concentrated in large firms that can afford specialized industrial relations personnel. Employers are increasingly adopting human resource management approaches, which includes strategy based on fear and intimidation seeking to create a perception that the union is 'bad' or 'source of trouble' and/or a union marginalization strategy based on communication through non-union channels.

The level of education of employees determine to a great extent their level of understanding of the perceived benefits accrued from being members of trade unions, most employees with low education background seems not to understand the benefits they would receive from being members of trade unions and therefore this influences their intention to join and remain in trade unions. Employees with low level of education will perceive joining of union as activism and thus will fear to join trade union and even though they remain as members they won't be active members.

Employees especially those in the manufacturing sector are faced with health hazards in their working places. In order to improve the health conditions, trade unions are usually at the forefront to ensure that such health concerns are addressed by the employers. It is therefore hypothesized that the trade unions in Kenya have had a positive influence on the improvement of health conditions for workers in organizations. There are number of factors that influence the intention to join and remain in the trade by security firms employees in Kenya, these includes; economic conditions, human relations, Human Resource Management practices and literacy level.

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the methodology that was used in gathering the data, analyzing the data and reporting the results. Here the researcher aimed at explaining the methods and tools that were used to collect and analyze data to get proper and maximum information related to the subject under study.

3.2 DESIGN OF THE STUDY

The research design employed in this study was descriptive research design. The major purpose of descriptive research design is to describe the state of affairs as it is at the time. According to Mugenda and Mugenda (1999) a descriptive research is a process of collecting data in order to answer questions concerning the current status of the subjects in the study. This helped the researcher to find out factors affecting intention to join and remain in the trade unions by security firms employees in Kenya with special reference to G4S Security Services Ltd. According to Mugenda and Mugenda (1999) this type of research design attempts to describe such things as possible behavior, attitudes, values and characteristics.

3.3 TARGET POPULATION

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. This definition ensures that the population of interest is homogeneous. Population studies are more representative because everyone has equal chance to be included in the final sample that is drawn according to Mugenda and Mugenda (1999).

The target population of the study comprised of the management, senior level and low level officers of G4S Security Services Limited in the country all estimated to be 1,573. The target was as follows:

TABLE 3.1: TARGET POPULATION

| Level | No in Position | Percentage of Total Population. |
|-------------------|----------------|---------------------------------|
| Top Management | 27 | 1.7 |
| Senior Officer | 178 | 11.3 |
| Low Officer Level | 1368 | 87.0 |
| Total | 1573 | 100.0 |

Source: Researcher, (2012)

3.4 SAMPLING TECHNIQUES

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample was selected (Cooper and Schindler, 2003). The study employed every element in the target population so as to have a chance to be a respondent. This technique ensured that bias was not introduced regarding who was included in the census (Kothari, 2005). The study sampled employees of G4S Security Services security firm in Kenya. Proportionate stratified random sampling technique was used to select 158 staffs working with G4S Security Services Ltd at their Head Office, this represented 10% of the entire population of employees working with G4S Security Services Ltd, Gay recommends a 10% of the accessible population for descriptive studies (Mugenda & Mugenda, 2003) but says the larger the sample the more reliable the data is. The sample was as follows:

TABLE 3.2: SAMPLE SIZE

| Level | Population Size | Sample Size (10% of the Population) |
|-------------------|-----------------|-------------------------------------|
| Top Management | 27 | 3 |
| Senior Officer | 178 | 18 |
| Low Officer Level | 1368 | 137 |
| Total | 1573 | 158 |

Source: Researcher, (2012)

3.5 DATA COLLECTION

The researcher developed the instruments with which to collect the necessary information. Questionnaire was used to obtain important information about the population. The face to face interviews were preferred as they allowed the researcher to probe for more information from the respondents. The questionnaire contained questions which were closed ended, likert and open ended. These types of questions were accompanied by a list of possible alternatives from which the respondents were required to select the answer that best described their situation. The main advantage of closed ended questions is that they are easy to analyze since they are in their immediate usable form. They are also easy to administer because each time is followed by an alternative answer and is economical to use in terms of time saving.

3.5.1 DATA COLLECTION PROCEDURE

The study incorporated both primary and secondary data. The primary data was sought due to it nearness to the truth and ease for control over errors (Copper and Schindler, 2003). Primary data was collected using semi structured questionnaires and face to face interviews. The questionnaire was administered through

drop and pick methods for the top management and senior officers but for the low level staff, face to face interviews was carried out so as to fill the questionnaire. The questionnaire was used because they allowed the respondents to give their responses in a free environment. The questionnaire was self-administered to all the respondents.

3.5.2 INSTRUMENT VALIDITY AND RELIABILITY

Validity refers to the accuracy and meaningfulness of inferences based on the research results (Mugenda & Mugenda, 2003), and can be enhanced by absence of errors in the data collected. The research instrument was piloted with 15 respondents who will not form part of the sample selected for the study. This was ensured by going through the questionnaire with the respondents to ascertain that each of the items is framed in the least ambiguous way. The pilot study aimed at establishing construct validity of the instruments (Mugenda & Mugenda, 1999). The pilot study assisted in identifying the problems which the respondents may encounter in the process of answering the questions put across to them. The piloted questionnaire was revised and ambiguous items modified.

In this study, a pilot study was carried out with 15 respondents who were not included in the actual data collection. The researcher administered the instruments personally to the respondents. The feedback was used to validate the instrument in readiness for the study. After administering the instrument to the selected respondents, the data obtained was a true reflection of the variables under study. To test the reliability of the instrument, the researcher will use the split-half technique. The instrument was split into two sub sets (the sets which have odd numbers and even numbers). All even numbered items and odd numbered responses in the pilot study will be computed separately. By using this method, the researcher aimed at determining the co-efficient of internal consistency and the reliability co-efficient whose value varied between 0.00 (indicating no reliability) and +1.00 (indicating perfect reliability). The odd numbered scores for all items were correlated with even numbered scores using Pearson Product Moment Correlation Co-efficient of the entire test.

The researcher will use Spearman Brown Prophecy formula:

$$= \frac{2 \times \text{Corr. between the halves}}{1 + \text{Corr. between the halves}} \text{ Or } Re = \frac{2R}{r+1}$$

Where Re = reliability of the original test

r = reliability of the coefficient resulting from correlating the scores of the odd items with the scores of the even items. A coefficient of 0.70 was considered adequate but a coefficient of 0.80 is good according to Gay (2003).

3.6 DATA ANALYSIS

For the data collected to be meaningful, it was analyzed in a way that it is easy to be understood by the common man. This included analysis of data to summarize the essential features and relationships of data in order to generalise from the analysis to determine patterns of behaviour and particular outcomes. Before processing the responses, the completed questionnaires were edited for completeness and consistency. The researcher used qualitative and quantitative techniques in analyzing the data. Descriptive analysis was employed; which include; weighted mean, frequencies and percentages. The organised data was interpreted on account of concurrence to objectives using the assistance of computer packages specifically Statistical Package for Social Sciences (SPSS) and Microsoft excel to communicate the research findings. Regression analysis was used to establish the relationship between the dependent and the independent variables. The regression model was as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon_i$$

Where:

Y= Intention to join and remain in the trade unions

β_0 = The constant

β_1 ... β_4 = Coefficients of the independent variables

X_1 ... X_4 = Independent variables of economic conditions, human relations, Human Resource Management Practices and literacy level.

ϵ_i = Error term

3.7 DATA PRESENTATION

The analyzed data was presented in frequency and percentage tables; this enhanced easier interpretation and understanding of the research findings.

4. DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter presents analysis and findings of the research. From the study population target of 158 respondents, 128 respondents filled and returned their questionnaires, constituting 81% response rate. Data analysis was done through Statistical Package for Social Sciences (SPSS). Frequencies and percentages were used to display the results which were presented in tables, charts and graphs.

4.2 REGRESSION ANALYSIS

TABLE 4.1: MODEL SUMMARY

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .898 ^a | .806 | .801 | .19758 |

Adjusted R² which is termed as the coefficient of determination tells us how intention to join and remain in trade unions varied with economic condition, human relations, human resource management practices and literacy level. According to the findings in table above, the value of adjusted R² is 0.801. This implies that, there was a variation of 80.1% of intention to join and remain in trade unions with economic condition, human relations, human resource management practices and literacy level at a confidence level of 95%. R is the correlation coefficient which shows that there was a strong correlation between the study variable as shown by the correlation coefficient of 0.806.

TABLE 4.2: ANOVA

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|-------|-------------------|
| 1 Regression | 2.232 | 6 | 0.372 | 3.131 | .048 ^b |
| Residual | 39.809 | 121 | 0.329 | | |
| Total | 42.041 | 127 | | | |

From the ANOVA statistics in the table above, the regression model is significant at p<0.05 f=3.131.

TABLE 4.3: COEFFICIENTS

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|-------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .833 | .172 | | 4.847 | .000 |
| | Economic condition | .142 | .082 | .132 | 1.739 | .084 |
| | Human relation | .643 | .082 | .586 | 7.835 | .000 |
| | Human resource management practices | .232 | .083 | .246 | 2.806 | .006 |
| | Literacy level | .162 | .063 | .223 | 2.583 | .011 |

From the finding in table the established regression equation was

$$Y = 0.833 + 0.142 X_1 + 0.643 X_2 + 0.232X_3 + 0.162 X_4$$

From the above regression model, Economic Conditions, Human Relations, Human Resource Management Practices and Literacy Level to constant zero, intention to join and remain in trade unions would be at 0.833. It was established that a unit increase in the economic conditions would cause an increase in intention to join and remain in trade unions by a factor of 0.142, a unit increase in human relations would lead to an increase in intention to join and remain in trade unions

by a factor of 0.643, also a unit increase in human resource management practices would cause an increase in intention to join and remain in trade unions by a factor of 0.232, further a unit increase in literacy level would cause an increase in intention to join and remain in trade unions by a factor of 0.162.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

From the analysis of the data collected, the following discussions, conclusions and recommendations were made. The responses were based on the objectives of the study. The researcher had intended to establish how the economic conditions faced by workers in G4S Security Services Ltd influences their intention to join and remain in the trade unions, to determine how the state of human relations practices in G4S Security Services Ltd influences the employees' intention to join and remain in the trade unions, to assess how the Human Resource Management practices being carried out at G4S Security Services Ltd influences the employees' intention to join and remain in the trade unions and to examine how the literacy level of employees working with G4S Security Services Ltd influences their intention to join and remain in the trade unions.

5.2 DISCUSSIONS AND FINDINGS

From the findings on the level of income the study found that most of the employees were earning an income of between 5,001 and 10,000 Kenya shillings. On the influence of income on the intention to join and remain in the trade union, the study found that the level of income influences the intention to join and remain in the trade union. From the findings on the extent to which salary influences the decision to join a trade union, the study found that the salary influences the decision to join a trade union to a great extent. From the finding on the various aspects of economic conditions influencing the intention to join and remain in the trade unions, the study found that a reduction in employee's income would lead to resignation of employees from the unions, low level of income affects members monthly contribution to the union, with increase in the level of income, this would lead to more employees joining trade unions and employees are unwilling to accept to tie a significant part of their monthly contribution to the trade unions.

On whether the workers are allowed by the employer to join trade unions, the study found that workers were not allowed by their employer to join trade unions if they wanted to do so. From the findings on the level of victimization for employees who intend or have joined trade unions, the study found that level of victimization for employees who intend or have joined trade unions is high. On the rating of the various aspects of victimization, the study found that the respondents indicated high rating of the following, level of victimization in this company, victimization with regard to agitating for employees to join trade unions, victimization with regard to being a bonafide member of a trade union, victimization with regard to showing interest to join a union and victimization with regard to showing royalty or commitment to trade union activities. From the findings on the employee resignation from the trade unions as a result of harassment or victimization by the management, the study revealed that employees' resignation from the trade unions as a result of harassment or victimization by the management is high.

On whether job rotation influences employees' intention to join and remain in the trade unions, the study found that job rotation influences employees' intention to join and remain in the trade unions. From the findings on various aspects of job rotation, the study found that those rated highly as influencing intention to join and remain in trade unions are, job rotation with regard to employees who demonstrate some degree of union activism behaviour, level of job rotation in this company, job rotation to unionized workers for their loyalty to union activities, job rotation with regard to intention to join trade unions and job rotation with regard to unionized workers. From the findings on the level of agreement that job rotation influence employees to resign from the trade unions the study found that job rotation influence employees to resign from the trade unions. This is an indication that the employees of G4S agreed that job rotation influences employees to resign from the trade unions.

From the findings on the familiarity with the work and organization of trade unions, the study found that employees of G4S were familiar with the work and operations of trade unions. On the extent to which this level of familiarity with trade unions influences the decision to join trade unions, the study found that the level of familiarity with trade unions influences the decision to join trade unions to a great extent. On the importance of trade union membership benefits, the study found the following were important, free legal protection, education and training, other benefits, better wages and working conditions, job protection (security), fringe benefits, safety at work and a more secure retirement (pension plans). On whether employees were informed about the work being done by the trade unions, the study found that employees of G4S are not well informed about the work being done by the trade unions. From the findings on whether the intention to join a union largely depends on the benefits it offered, the study found that the intention of the employees of G4S to join a union largely depends on the benefits the union offered to them.

The study found that the indicators of the intention to join and remain the trade unions, were, member's loyalty indicate the intention to join and remain the trade unions by security firms' employees in Kenya, number of applications indicate the intention to join and remain the trade unions by security firms' employees in Kenya, member's resignation indicate the intention to join and remain the trade unions by security firms' employees in Kenya, union activism behaviour indicate the intention to join and remain in the trade unions by security firms' employees in Kenya, members' contribution indicate the intention to join and remain the trade unions by security firms' employees in Kenya. On what should be done to encourage employees of security firms to join trade unions in Kenya, the study found that the trade unions can encourage employees of security firms to join trade unions in Kenya through negotiation of wages, laying down favourable work rules, complaint handling, rules governing hiring, firing and promotion of workers, benefits, and workplace safety policies.

5.3 CONCLUSION

The study set out to investigate and analyze factors affecting intention to join and remain in the trade unions by security firms employees' with special reference to G4S Security Services Limited in Nairobi.

The study found that economic conditions faced by workers in G4S Security Services Ltd influences their intention to join and remain in the trade unions to a great extent. The salary level influences the decision to join trade unions to a great extent.

The study found that workers were not allowed by their employer to join trade unions if they wanted to do so. It was further established that there was a high level of victimization for employees who intended or have joined trade unions and this influenced their intention to join trade unions. The study also revealed that employee resignation from the trade unions as a result of harassment or victimization by the management was high.

With regard to job rotation, the study found that job rotation influences employees' intention to join and remain in the trade union. It was revealed that the various aspects of job rotation highly influences employees' intention to join and remain in trade unions. Further, the study found that job rotation influence employees to resign from the trade unions. This is an indication that the employees of G4S agreed that job rotation influence employees to resign from the trade unions.

The study also found that the employees of G4S were familiar with the work and operations of trade unions and the level of familiarity with trade unions influences the decision to join to a great extent. The importance of trade union membership benefits were highlighted as follows; free legal protection, education and training, other benefits, better wages and working conditions, job protection, fringe benefits, safety at work and a more secure retirement.

The study further revealed that the indicators of the intention to join and remain the trade unions were, member's loyalty indicate the intention to join and remain the trade unions by security firms' employees in Kenya, number of applications indicate the intention to join and remain the trade unions by security firms' employees in Kenya, member's resignation indicate the intention to join and remain the trade unions by security firms' employees in Kenya, union activism behavior indicate the intention to join and remain in the trade unions by security firms' employees in Kenya, members' contribution indicate the intention to join and remain the trade unions by security firms' employees in Kenya.

5.4 RECOMMENDATIONS

The study recommends that there is need for trade unions to encourage employees of security firms to join trade unions in Kenya through negotiation of wages, laying down of favorable work rules, complaint handling, rules governing hiring, firing and promotion of workers, benefits, and workplace safety policies.

There is need for the government to increase the minimum wage standards across all the sectors of the economy as this will help many employees increase their salary and thus increase their contribution to the trade unions which will help more employees to join and remain in trade unions.

There is also need for the government to strength the workers organizations through various legislation as this will help employees to join trade unions without fear of victimization by the employer.

5.5 AREA FOR FURTHER RESEARCH

The study sought to establish factors affecting intention to join and remain in the trade unions by security firms' employees with special reference to G4S Security Services Limited in Nairobi Kenya. The study recommends an in-depth study to be done on the challenges facing employees when they want join trade unions in Kenya.

REFERENCES

1. Adams, J.S. (1963), toward an understanding of inequity, *Journal of Social Psychology* 67, 422-436.
2. Baglioni, G. and Crouch, C. (eds.) (1990) *European Industrial Relations. The Challenge of Flexibility* (London: Sage).
3. Berger, S. and Compston, H (eds.) (2002) *Policy Concentration and Social Partnership in Western Europe: Lessons for the 21st Century* (New York: Berghahn Books).
4. Bhattacharjee, D and Datta, C. T (1992), *Unions, Wages and Segmented labor Markets in Indian Industry*, Working Paper Series-173(92), Indian Institute of Management, Calcutta.
5. Bloch, F. E and Kuskin, M.S (1978) Wage Determination in the Union and Non-union Sectors, *Industrial and Labor Relations Review*, January, Vol.31, No.2
6. Booth, A. (1985), the free rider problem and a social custom model of trade union membership, *Quarterly Journal of Economics* 100, 253-261.
7. Booth, A. and Chatterji, M (1993), Reputation, membership and wages in an open shop trade union, *Oxford Economic Papers* 45, 23-41.
8. Brown, A. (2004). *Labour, politics and the State in industrializing Thailand*. London: Routledge Curzon.
9. Busienei, J. R (2005). *A study of the moderating effects of Trade Union membership on employees perception of job security and fair treatment by management in the manufacturing industry in Kenya*. Nairobi: University of Nairobi.
10. Casey, B. and Gold, M (2000), *Social Partnership and Economic Performance: The Case of Europe* (Cheltenham, UK: Edward Elgar).
11. Corneo, G. (1997), the theory of the open shop trade union reconsidered, *Labour Economics* 4, 71-84.
12. De La Porte, C. (2001), 'The Complex Soft Government Technique and the Brittle Consensus in European Social Protection', in E. Gabaglio and R. Hoffmann (eds)
13. Deshpande, L.K (2000), *Labour Market Flexibility in India*, project report submitted Central Statistical Organisation, New Delhi.
14. Fajertag, G. and P. Pochet (eds.) (2000) *Social Pacts in Europe: New Dynamics* (Brussels: ETUI).
15. Friedman, B. A., Abraham, S.E and Thomas, R. K (2006). Factors Related to Employees' Desire to Join and Leave Unions. *Industrial Relations*, 45, (1), 102-110.
16. Goerke, L. (1997), an open shop, wage bargaining, and taxation - a note, *Oxford Economic Papers* 49, 651- 657.
17. Goldthorpe, J.H., Lockwood, D., Bechofer, F. and Platt, J. (1968), *The Affluent Worker, Industrial Attitude and Behaviour*, Cambridge University Press, Cambridge.
18. Hersch, J and Kip Viscusi, W (1990), "Cigarette Smoking, Seat Belt use and Differences in Wage Risk Trade offs", *Journal of Human Resources*, 25, 202-227.
19. Holländer, H. (1990), A social exchange approach to voluntary cooperation, *American Economic Review* 80, 1157-1167.
20. K'obonyo, P.O. (1981). *The operations of trade unionism in Kenya; a study of the railways African union (Kenya)*. Nairobi: University of Nairobi.
21. Kandori, M. (1992), Social norms and community enforcement, *Review of Economic Studies* 59, 63-80.
22. Katz, H. C. (1993), 'The decentralization of collective bargaining: A literature review and comparative analysis', *Industrial & Labor Relations Review*, 47, 1, 3-22.
23. Kelly, J. (1998), *Rethinking Industrial Relations. Mobilisation, Collectivism and Long Waves*, Routledge, London.
24. Kjaergaard, C. and Westphalen, S. Å (eds.) (2001) *From Collective Bargaining to Social Partnerships: New Roles of the Social Partners in Europe* (Copenhagen: The Copenhagen Centre).
25. Machyo, C. M (2003). *An analysis of women's participation in trade union leadership in Kenya*. Nairobi: University of Nairobi.
26. Moraa, A (2006). *A survey of the strategies used by trade unions in negotiating with employers in Nairobi*. Nairobi: University of Nairobi.
27. Musandu, B (2007). *Effects of fragmentation of Trade Unions on collective Bargaining in Kenya's hotel industry: a case study of KUDHEIHA AND KHAWU*. Nairobi: University of Nairobi.
28. Mutung'a, J.M (2006). *The response of Trade Unions to challenges posed by conditions of work at the Export Processing Zones (EPZs) in Kenya*. Nairobi: University of Nairobi.
29. Napathorn, C and Chanprateep, S (2011). Recent Labor Relations and Collective Bargaining Issues in Thailand [Electronic Version]. *Interdisciplinary Journal of Research in Business*, 1(6), 6681.
30. Naylor, R. and Raaum, O (1993), the open shop union, wages and management opposition, *Oxford Economic Papers* 45, 589-604.
31. Ngechu. M (2004), *Understanding the research process and methods. An introduction to research methods*. Acts Press, Nairobi.
32. Nzuve, S.N.M (2007). *Management of Human Resources; a Kenyan perspective (Revised Edition)*. Nairobi: Basic Modern Management Consultants.
33. Rein, M and Wadensjö, E (eds.) (1997) *Enterprise and the Welfare State* (Cheltenham, UK: Edward Elgar).
34. Reynaud, E (ed.) (2000) *Social Dialogue and Pension Reform: United Kingdom, United States, Germany, Japan, Sweden, Italy, Spain* (Geneva: International Labour Office).
35. Robinson, C and Tomes, N (1984), Union Wage Differentials in the Public and Private Sectors: A Simultaneous Equation Specifications, *Journal of Labor economics*, Vol.2, 106-127.
36. Roche, W. K (2001), 'Accounting for the Trend in Trade Union Recognition in Ireland', *Industrial Relations Journal*, 32, 1, 37-54.
37. Siengthai, S and Bechter, C (2005). Human Resource Management in Thailand: A Strategic Transition for Firm competitiveness, *Research and Practice in Human Resource Management*, 13(1): 1829.

FACE RECOGNITION IN COMPUTER VISION

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ABSTRACT

Computer Vision is the process by which descriptions of physical scenes are inferred from images. Computer vision has also been explained as the enterprise of automating and integrating a wide range of processes and representations for vision perception. A facial recognition system is a computer application for automatically identifying a person from a digital image or a video frame from a video source that is computer vision. The multiple images of each person, then for each person compute in eigenspace from the points computed for each image of that person. The method requires that all images in the database contain faces of about the same size, position, and orientation, so they can be compared using this global distance function in eigenspace.

KEYWORDS

face recognition, computer vision.

1. INTRODUCTION

Computer vision is the technology of automated image analysis which is used in many fields. Computer vision is a field which includes methods for acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world in order to produce numerical or symbolic information, e.g., in the forms of decisions.^[1] The inferences in the development of this field have been to duplicate the abilities of human vision by electronically perceiving and understanding an image.^[2] This image understanding can be seen as the symbolic information from image data using models constructed with the aid of geometry, physics, statistics, and learning theory.^[3] Computer vision has also been explained as the enterprise of automating and integrating a wide range of processes and representations for vision perception.^[4]

2. APPLICATIONS

The various application of computer vision in image processing are listed as below:

- Medical image analysis
- Aerial photo interpretation
- Vehicle exploration and mobility
- Material-handling For example, part sorting and picking
- Inspection For example, integrated circuit board and chip inspection
- Assembly
- Navigation
- Human-computer-interfaces For example, handwriting recognition, optical character recognition (OCR), face recognition, gesture recognition, gaze tracking, 3D model acquisition
- Multimedia For example, video databases, image compression, image browsing, content-based retrieval
- Telepresence/Tele-immersion/Tele-reality For example, tele-medicine, virtual classrooms, video conferencing, interactive walkthroughs

3. FACE RECOGNITION

A facial recognition system is a computer application for automatically identifying or verifying a person from a digital image or a video frame from a video source. One of the ways to do this is by comparing selected facial features from the image and a facial database.

It is typically used in security systems and can be compared to other biometrics such as fingerprint or eye iris recognition systems.^[1]

3.1 FACE RECOGNITION USING AN EIGENSPACE REPRESENTATION

There is an problem such as given a training set of M images, each of size $N \times N$ pixels, where each image contains a single person's face, approximately registered for face position, orientation, scale, and brightness, and a test image, determine if the person in the test image is one of the people in the training set, and, if so, indicate which person it is.

- Need a similarity metric for measuring the "distance" between two face images
- Need a way of representing face features to be compared within the similarity metric

3.2. EIGENSPACE REPRESENTATION OF IMAGES

- An $N \times N$ image can be "represented" as a point in an N^2 dimensional **image space**, where each dimension is associated with one of the pixels in the image and the possible values in each dimension are the possible gray levels of each pixel. For example, a 512×512 image where each pixel is an integer in the range $0, \dots, 255$ (i.e., a pixel is stored in one byte), then image space is a 262,144-dimensional space and each dimension has 256 possible values.

- If we represented our M training images as M points in image space, then one way of recognizing the person in a new test image would be to find its **nearest neighbour** training image in image space. However, this approach would be very slow since the size of image space is so large, and would not exploit the fact that since all of our images are of faces, they will likely be clustered relatively near one another in image space. So, instead, let's represent each image in a lower-dimensional feature space, called **face space** or **eigenspace**.

- We have M' images, $E_1, E_2, \dots, E_{M'}$, called **eigenfaces** or **eigenvectors**. These images define a **basis** set, so that each face image will be defined in terms of how similar it is to each of these basis images. That is, we can represent an arbitrary image I as a weighted (linear) combination of these eigenvectors as follows:

1. Compute the **average image**, A , from all of the training images I_1, I_2, \dots, I_M :

$$A = \frac{1}{M} \sum_{i=1}^M I_i$$

2. For $k = 1, \dots, M'$ compute a real-valued weight, w_k , indicating the similarity between the input image, I , and the k th eigenvector, E_k :

$$3. \quad w_k = \mathbf{E}_k^T * (\mathbf{I} - \mathbf{A})$$

where \mathbf{I} is a given image and is represented as a column vector of length N^2 , \mathbf{E}_k is the k th eigenface image and is a column vector of length N^2 , \mathbf{A} is a column vector of length N^2 , $*$ is the dot product operation, and $-$ is pixel by pixel subtraction. Thus w_k is a real-valued scalar.

4. $\mathbf{W} = [w_1, w_2, \dots, w_M]^T$ is a column vector of weights that indicates the contribution of each eigenface image in representing image \mathbf{I} . So, instead of representing image \mathbf{I} in image space, we'll represent it as a point \mathbf{W} in the M' -dimensional weight space that we'll call **face space** or **eigenspace**. Hence, each image is **projected** from a point in the high dimensional image space down to a point in the much lower dimensional eigenspace. In terms of compression, each image is represented by M' real numbers, which means that for a typical value of $M'=10$ and 32 bits per weight, we need only 320 bits/image to encode it in face space. (we must also store the M' eigenface images, which are each N^2 pixels, but this cost is amortized over all of the training images.)

The image \mathbf{I} can be approximately reconstructed from \mathbf{W} as follows:

$$\mathbf{I} \sim \mathbf{A} + \sum_{i=1}^{M'} w_i * \mathbf{E}_i$$

This reconstruction will be exact if $M' = \min(M, N^2)$. Hence, representing an image in eigenspace won't be exact in that the image won't be reconstructible, but it will be a pretty good approximation that's sufficient for differentiating between faces.

4. FACE RECOGNITION ALGORITHM

The entire face recognition algorithm can now be given:

1. Given a training set of face images, compute the M' largest eigenvectors, $\mathbf{E}_1, \mathbf{E}_2, \dots, \mathbf{E}_{M'}$. $M' = 10$ or 20 is a typical value used. Notice that this step is done once "offline."
2. For each different person in the training set, compute the point associated with that person in eigenspace. That is, use the formula given above to compute $\mathbf{W} = [w_1, \dots, w_{M'}]$. Note that this step is also done once offline.
3. Given a test image, \mathbf{I}_{test} , project it to the M' -dimensional eigenspace by computing the point \mathbf{W}_{test} , again using the formula given above.
4. Find the closest training face to the given test face:
5. $d = \min || \mathbf{W}_{\text{test}} - \mathbf{W}_k ||$
6. k

where \mathbf{W}_k is the point in eigenspace associated with the k th person in the training set, and $|| \mathbf{X} ||$ denotes the Euclidean norm defined as $(x_1^2 + x_2^2 + \dots + x_n^2)^{1/2}$ where \mathbf{X} is the vector $[x_1, x_2, \dots, x_n]$.

7. Find the distance of the test image from eigenspace (that is, compute the projection distance so that we can estimate the likelihood that the image contains a face):

$$8. \quad d_{\text{ffs}} = || \mathbf{Y} - \mathbf{Yf} ||$$

where $\mathbf{Y} = \mathbf{I}_{\text{test}} - \mathbf{A}$, and $\mathbf{Yf} = \sum_{i=1}^{M'} w_{\text{test},i} * \mathbf{E}_i$.

9. If $d_{\text{ffs}} < \text{Threshold1}$;

Test image is "close enough" to the eigenspace; associated with all of the training faces to; believe that this test image is likely to be some; face (and not a house or a tree or something other than a face)

then if $d < \text{Threshold2}$

then classify \mathbf{I}_{test} as containing the face of person k ,

where k is the closest face in the eigenspace to

\mathbf{W}_{test} , the projection of \mathbf{I}_{test} to eigenspace

else classify \mathbf{I}_{test} as an unknown person

else classify \mathbf{I}_{test} as not containing a face

5. CONCLUSION

The performance using a 20-dimensional eigenspace resulted in about 95% correct classification on a database of about 7,500 images of about 3,000 people. If training set contains multiple images of each person, then for each person compute the average point in eigenspace from the points computed for each image of that person. The method requires that all images in the database contain faces of about the same size, position, and orientation, so they can be compared using this global distance function in eigenspace. If there are multiple images of a 3D object (e.g., a person's head from many different positions and orientations), then the points in eigenspace corresponding to the different 3D views can be combined by fitting a hypersurface to all the points, and storing this hypersurface in eigenspace as the description of that person. Then, classify a test image as the person corresponding to the closest hypersurface.

REFERENCES

1. Bernd Jähne and Horst Haußecker (2000). *Computer Vision and Applications, A Guide for Students and Practitioners*. Academic Press.
2. Greene, Lisa (2001-02-15). "Face scans match few suspects" (SHTML). *St. Petersburg Times*. Retrieved 2011-06-30.
3. Linda G. Shapiro and George C. Stockman (2001). *Computer Vision*. Prentice Hall. ISBN 0-13-030796-3.
4. Milan Sonka, Vaclav Hlavac and Roger Boyle (2008). *Image Processing, Analysis, and Machine Vision*. Thomson.
5. R. Brunelli and T. Poggio, "Face Recognition: Features versus Templates", IEEE Trans. on PAMI, 1993.
6. R. Brunelli, *Template Matching Techniques in Computer Vision: Theory and Practice*, Wiley, 2009.
7. Tim Morris (2004). *Computer Vision and Image Processing*. Palgrave Macmillan. ISBN 0-333-99451-5.

A SCHEME TO DETECT INTRUSION IN MOBILE AD HOC NETWORKS

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ABSTRACT

Mobile Ad Hoc Network (MANET) is collection of multi-hop wireless mobile nodes that communicate with each other without centralized control or established infrastructure. The attacker can attack the path or route established very easily as security measures are very less in case of mobile adhoc networks. In this paper two types of attacks has been introduced. One changes number of hops that are used to reach destination and other tried to create denial of service. The algorithm proposed has been implemented on AODV and results are simulated on NS2.

KEYWORDS

MANET, DSR, DSDV, AODV, routing, security, intrusion.

1.0 INTRODUCTION

The wireless network can be classified into two types: Infrastructure or Infrastructure less. In Infrastructure wireless networks, the mobile node can move while communicating, the base stations are fixed and as the node goes out of the range of a base station, it gets into the range of another base station. The figure 1, given below, depicts the Infrastructure wireless network.

In Infrastructureless or Ad Hoc wireless network, the mobile node can move while communicating, there are no fixed base stations and all the nodes in the network act as routers. The mobile nodes in the Ad Hoc network dynamically establish routing among themselves to form their own network 'on the fly'.

A Mobile Ad Hoc Network (MANET) is a collection of wireless mobile nodes forming a temporary/short-lived network without any fixed infrastructure where all nodes are free to move about arbitrarily and where all the nodes configure themselves. In MANET, each node acts both as a router and as a host & even the topology of network may also change rapidly.

2.0 ROUTING PROTOCOLS

A routing protocol is needed whenever a packet needs to be transmitted to a destination via number of nodes and numerous routing protocols have been proposed for such kind of ad hoc networks. These protocols find a route for packet delivery and deliver the packet to the correct destination. The studies on various aspects of routing protocols have been an active area of research for many years. Many protocols have been suggested keeping applications and type of network in view. Basically, routing protocols can be broadly classified into two types as (a) Table Driven Protocols or Proactive Protocols and (b) On-Demand Protocols or Reactive Protocols

Table Driven or Proactive Protocols: In Table Driven routing protocols each node maintains one or more tables containing routing information to every other node in the network. All nodes keep on updating these tables to maintain latest view of the network. Some of the existing table driven or proactive protocols are: DSDV [6, 19], DBF [7], GSR [24], WRP [23] and ZRP [28, 13].

On Demand or Reactive Protocols: In these protocols, routes are created as and when required. When a transmission occurs from source to destination, it invokes the route discovery procedure. The route remains valid till destination is achieved or until the route is no longer needed. Some of the existing on demand routing protocols are: DSR [8, 9], AODV [4, 5] and TORA [26, 27].

2.1 ADOV (AD HOC ON DEMAND DISTANCE VECTOR) [4, 5]

AODV is a variation of Destination-Sequenced Distance-Vector (DSDV) routing protocol, which is collectively based on DSDV and DSR. It aims to minimize the requirement of system-wide broadcasts to its extreme. It does not maintain routes from every node to every other node in the network rather they are discovered as and when needed & are maintained only as long as they are required.

The key steps of algorithm used by AODV for establishment of unicast routes are explained below.

ROUTE DISCOVERY

When a node wants to send a data packet to a destination node, the entries in route table are checked to ensure whether there is a current route to that destination node or not. If it is there, the data packet is forwarded to the appropriate next hop toward the destination. If it is not there, the route discovery process is initiated. AODV initiates a route discovery process using Route Request (RREQ) and Route Reply (RREP). The source node will create a RREQ packet containing its IP address, its current sequence number, the destination's IP address, the destination's last sequence number and broadcast ID. The broadcast ID is incremented each time the source node initiates RREQ. Basically, the sequence numbers are used to determine the timeliness of each data packet and the broadcast ID & the IP address together form a unique identifier for RREQ so as to uniquely identify each request. The requests are sent using RREQ message and the information in connection with creation of a route is sent back in RREP message. The source node broadcasts the RREQ packet to its neighbours and then sets a timer to wait for a reply. To process the RREQ, the node sets up a reverse route entry for the source node in its route table. This helps to know how to forward a RREP to the source. Basically a lifetime is associated with the reverse route entry and if this entry is not used within this lifetime, the route information is deleted. If the RREQ is lost during transmission, the source node is allowed to broadcast again using route discovery mechanism.

EXPANDING RING SEARCH TECHNIQUE

The source node broadcasts the RREQ packet to its neighbours, which in turn forwards the same to their neighbours and so forth. Especially, in case of large network, there is a need to control network-wide broadcasts of RREQ and to control the same; the source node uses an expanding ring search technique. In this technique, the source node sets the Time to Live (TTL) value of the RREQ to an initial start value. If there is no reply within the discovery period, the next RREQ is broadcasted with a TTL value increased by an increment value. The process of incrementing TTL value continues until a threshold value is reached, after which the RREQ is broadcasted across the entire network.

SETTING UP OF FORWARD PATH

When the destination node or an intermediate node with a route to the destination receives the RREQ, it creates the RREP and unicast the same towards the source node using the node from which it received the RREQ as the next hop. When RREP is routed back along the reverse path and received by an intermediate node, it sets up a forward path entry to the destination in its routing table. When the RREP reaches the source node, it means a route from source to the destination has been established and the source node can begin the data transmission.

ROUTE MAINTENANCE

A route discovered between a source node and destination node is maintained as long as needed by the source node. Since there is movement of nodes in mobile ad hoc network and if the source node moves during an active session, it can reinitiate route discovery mechanism to establish a new route to destination.

Conversely, if the destination node or some intermediate node moves, the node upstream of the break initiates Route Error (RERR) message to the affected active upstream neighbors/nodes. Consequently, these nodes propagate the RERR to their predecessor nodes. This process continues until the source node is reached.

When RERR is received by the source node, it can either stop sending the data or reinitiate the route discovery mechanism by sending a new RREQ message if the route is still required.

Benefits and Limitations of AODV

The benefits of AODV protocol are that it favors the least congested route instead of the shortest route and it also supports both unicast and multicast packet transmissions even for nodes in constant movement. It also responds very quickly to the topological changes that affects the active routes. AODV does not put any additional overheads on data packets as it does not make use of source routing.

The limitation of AODV protocol is that it expects/requires that the nodes in the broadcast medium can detect each others' broadcasts. It is also possible that a valid route is expired and the determination of a reasonable expiry time is difficult. The reason behind this is that the nodes are mobile and their sending rates may differ widely and can change dynamically from node to node. In addition, as the size of network grows, various performance metrics begin decreasing. AODV is vulnerable to various kinds of attacks as it based on the assumption that all nodes must cooperate and without their cooperation no route can be established.

3.0 PROPOSED SCHEME

The present proposal is to enhance the performance of existing system with the incorporation of SRR. With this if the nodes behave maliciously during route reply phase, say, by giving a wrong hop count, such nodes will be flagged off from the network and salvaging route reply packet commences immediately. Changes are made in REQUEST Phase and REPLY phase of the protocol.

The implementation of NEW Scheme is based on two algorithms. Algorithm 1- Route Request and Algorithm 2 involves RREP packets, is modified for SRR implementation. Each node in order to participate in any network activity, says Route Request RREQ, has to announce its token. as described in algorithm 1. If status bit is "1" indicating "red flag" protocol does not allow the node to participate in any network activity.

Algorithm 1: While sending a RREQ packet

- 1: for each umpire RREQ packet (P) sent do
- 2: if each node status is green flag then
- 3: broadcast RREQ
- 4: prevhop ← currenthop [node address]
- 5: repeat step 2 until it reaches the destination node
- 6: else
- 7: drop RREQ packet (P) sent
- 8: endif
- 9: endfor

In the self-umpiring system, all the nodes have dual roles – packet forwarding and umpiring. In the forward path during data forwarding, each node monitors the performance of immediate next node. That way, node A can tell correctly whether B is forwarding the packet sent by it, by promiscuously hearing B's transmissions. Similarly during reply process RREP as given in algorithm 2, C can verify whether B is unicasting the route reply RREP and whether the hop count given by B is correct. Thus during forward path A is the umpire for B and C is the umpire for B during reverse path operations.

Algorithm 2: While sending an Umpire RREP packet

- 1: for each umpire RREP packet (P) sent do
- 2: if node status is green flag then
- 3: unicast RREP to previous node
- 4: nexthop → prevhop [node address]
- 5: repeat step 2 until it reaches the source node
- 6: if currenthopcount is equal to nexthopcount then
- 7: process this RREP as specified in the standard protocol
- 8: else
- 9: save current RREP message in the buffer
- 10: it broadcast MERR packet to 1-hop or 2-hop node distance
- 11: nextnode status is marked as red flag
- 12: currentnode is the source node and the source node becomes a destination node, thus, start MRREQ procedure
- 13: Process this MRREQ and MRREP as specified in the standard protocol
- 14: it reaches the MRREP to the currentnode
- 15: retrieve previous saved RREP message from the buffer
- 16: send RREP message in newly identified path to the source node
- 17: end if
- 18: endif
- 19: endfor

4.0 PERFORMANCE METRICS

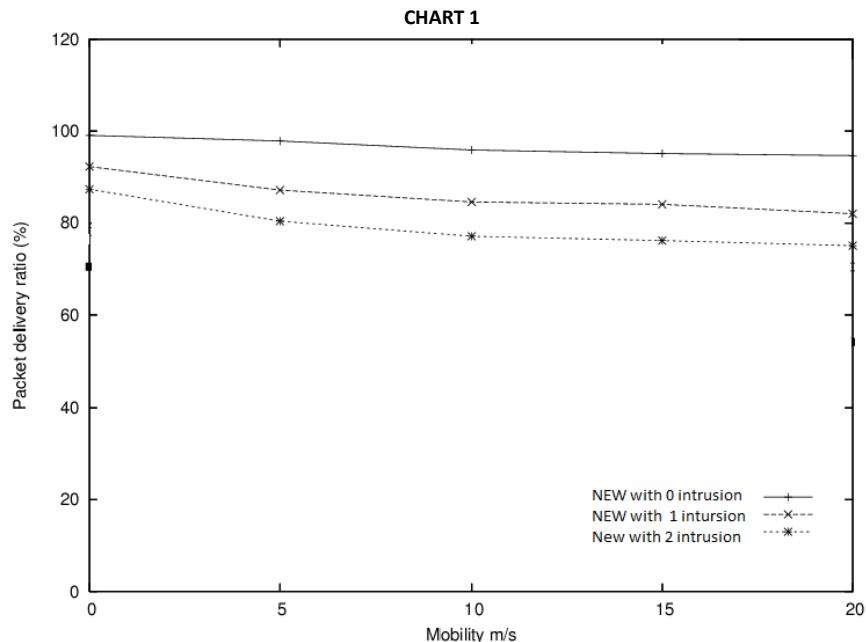
There are number of qualitative and quantitative metrics that can be used to compare reactive routing protocols. Most of the existing routing protocols ensure the qualitative metrics. For this paper packet delivery ratio has been used.

Here in this present paper only the attack of modification of hop count by the malicious nodes. Each flow did not change its source and destination for the lifetime of a simulation run. For all our studies the simulation time has been kept as 900s.

| | |
|--------------------|---------------------------|
| Simulation Time | 900 seconds |
| Propagation model | Two-ray Ground Reflection |
| Transmission range | 250 m |
| Bandwidth | 2 Mbps |
| Movement model | Random way point |
| Maximum speed | 0 – 20 m/s |
| Pause time | 0 seconds |
| Traffic type | CBR (UDP) |
| Payload size | 512 bytes |
| Number of flows | 10 / 20 |

Table 1 Parameter Settings

Packet Delivery Ratio: The ratio between the amount of incoming data packets and actually received data packets.



Clearly there is some loss in PDR with intruders, but still algorithm is able to repair the scheme as early as possible. Most important is that the attack cannot produce Denial of service. Performance can be evaluated based on end to end delay and throughput as well.

5.0 CONCLUSION

In this research paper, an effort has been made to generate a new scheme that has been proposed as an algorithm to introduce a flag system for malicious cases. The implementation has been done on NS2 and all efforts have been made to make it biasless. The ultimate goal for adhoc network security is to develop a multifold security solution that results in in-depth protection that offers multiple lines of defense against both known and unknown security threats. The results are with the theory proposed. The results clearly indicate some fall in packer delivery and then recovery is done at the earliest possible. More results will be calculated using different scenarios and more metrics will be made into effect like delay, throughput, jitters etc.

REFERENCES

1. Ashwani Kush, Phalguni Gupta, Ram Kumar, "Performance Comparison of Wireless Routing Protocols", Journal of the CSI, Vol. 35 No.2, April-June 2005
2. Anne Aaron, Jie Weng, "Performance Comparison of Ad-hoc Routing Protocols for Networks with Node Energy Constraints", available at <http://ivms.stanford.edu>
3. Charles Perkins, Elizabeth Royer, Samir Das, Mahesh Marina, "Performance of two on-demand Routing Protocols for Ad-hoc Networks", IEEE Personal Communications, February 2001, pages 16-28.
4. C. Perkins, E. B. Royer, S. Das, "Ad hoc On-Demand Distance Vector (AODV) Routing - Internet Draft", RFC 3561, IETF Network Working Group, July 2003.
5. C. E. Perkins and E. M. Royer, "Ad-Hoc On Demand Distance Vector Routing", Proceedings of the 2nd IEEE Workshop on Mobile Computing Systems and Applications (WMCSA), New Orleans, LA, pp. 90-100, 1999.
6. C. E. Perkins and P. Bhagwat, "Highly dynamic destination-sequenced distance vector routing (DSDV) for mobile computers", Proceedings of ACM SIGCOMM 94, pp. 34-244, 1994
7. D. Bertsekas and R. Gallager, "Data Networks" Prentice Hall Publ., New Jersey, 2002.
8. D. B. Johnson, D. A. Maltz, Y.C. Hu, "The Dynamic Source Routing Protocol for Mobile Ad Hoc Networks (DSR)", IETF Draft, April 2003, work in progress. <http://www.ietf.org/internet-drafts/draft-ietf-manet-dsr-09.txt>
9. D. B. Johnson and D. A. Maltz, "Dynamic Source Routing in Ad Hoc Networks", Mobile Computing, T. Imielinski and H. Korth, Eds., Kulwer Publ., pp. 152-81, 1996
10. David A. Maltz, "On-Demand Routing in Multi-hop Wireless Mobile Ad Hoc Networks", May 2001, available at www.monarch.cs.rice.edu
11. E.M.Rover, C.K.Toth, "A review of current routing protocols for ad hoc networks", IEEE Communications, vol 6, pp 46-55, 1999.
12. F. Bertocchi, P. Bergamo, G. Mazzin, "Performance Comparison of Routing Protocols for Ad hoc Networks", IEEE GLOBECOM 2003.
13. Farhat Anwar, Md. Saiful Azad, Md. Arafatur Rahman, Mohammad Moshee Uddin, "Performance Analysis of Ad hoc Routing Protocols in Mobile WiMAX Environment", IAENG International Journal of Computer Science, 35:3, IJCS_35_3_13
14. H. Ehsan and Z. A. Uzmi (2004), "Performance Comparison of Ad Hoc Wireless Network Routing Protocols", IEEE 8th International Multitopic Conference, Proceedings of INMIC, December 2004, pp.457 - 465.
15. Iskra Djonova Popova, "A PowerPoint presentation on Routing in Ad-hoc Networks", 9th CEENet Workshop on Network Technology, Budapest 2004.
16. J. Broch, D.A. Maltz, D. B. Johnson, Y-C. Hu, J. Jetcheva, "A performance comparison of Multi-hop wireless ad-hoc networking routing protocols", in the proceedings of the 4th International Conference on Mobile Computing and Networking (ACM MOBICOM '98), October 1998, pages 85-97.
17. Md. Golam Kaosar, Hafiz M. Asif, Tarek R. Sheltnami, Ashraf S. Hasan Mahmoud, "Simulation-Based Comparative Study of On Demand Routing Protocols for MANET", available at <http://www.lancs.ac.uk>
18. Per Johansson, Tony Larsson, Nicklas Hedman, Bartosz Mielczarek, "Routing protocols for mobile ad-hoc networks – a comparative performance analysis", in the proceedings of the 5th International Conference on Mobile Computing and Networking (ACM MOBICOM '99), August 1999, pages 195-206.
19. P. Chenna Reddy, Dr. P. Chandrasekhar Reddy, "Performance Analysis of Adhoc Network Routing Protocols", Academic Open Internet Journal, SSN 1311-4360, Volume 17, 2006
20. R. Misra, C. R. Manda, "Performance Comparison of AODV/DSR On-Demand Routing Protocols for Ad Hoc Networks in Constrained Situation", IEEE ICPWC 2005.
21. S. Gowrishankar, T.G. Basavaraju, M. Singh, Subir Kumar Sarkar, "Scenario based Performance Analysis of AODV and OLSR in Mobile Ad hoc Networks", available at <http://www.ijcim.th.org>

22. Samir R. Das, Charles E. Perkins, Elizabeth M. Royer, "Performance Comparison of Two On-demand Routing Protocols for Ad Hoc Networks", in the proceedings of NFOCOM 2000, Nineteenth Annual Joint Conference of the IEEE Computer and Communications Societies, IEEE, volume 1, pages 3 – 12 and also available at www.cs.ucsb.edu
23. S. Murthy and J. J. Garcia-Luna-Aceves, "An Efficient Routing Protocol for Wireless Networks", ACM Mobile Networks and App. Journal, Special Issue on Routing in Mobile Communication Networks, pp.183-97, 1996.
24. Tsu-Wei Chen and M. Gerla, "Global State Routing: A New Routing Scheme for Ad-hoc Wireless Networks" Proceedings of International Computing Conference IEEE ICC 1998.
25. V. Nazari, K. Ziarati, "Performance Comparison of Routing Protocols for Mobile Ad hoc Networks", IEEE 2006.
26. V. Park and S. Corson, Temporally Ordered Routing Algorithm (TORA) Version 1, Functional specification IETF Internet draft, <http://www.ietf.org/internet-drafts/draft-ietf-manet-tora-spec-01.txt>, 1998.
27. V. D. Park and M. S. Corson, "A Highly Adaptive Distributed Routing Algorithm for Mobile Wireless Networks", Proceedings of the IEEE International Conference on Computer Communications (INFOCOM), Kobe, Japan, pp. 1405-1413, 1997.
28. Z. J. Hass and M. R. Pearlman, "Zone Routing Protocol (ZRP)", Internet draft available at www.ietf.org.

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