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Perceived Paternal Parenting style on Emotional Intelligence of Adolescents

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Adolescents, Emotional intelligence, Paternal parenting style.

Abstract

The study examined the influence of perceived paternal parenting styles on emotional intelligence of adolescents. Sex differences in perceived paternal parenting style was also explored. The participants comprising of 973 Pre University college students ranging in age between 16-18 years were administered Buri's parenting style questionnaire (1991) and Emotional intelligence inventory by Mangal & Mangal, (2004). Results indicated father's authoritative and authoritarian parenting style significantly correlated with emotional intelligence and fathers were perceived to be more authoritative towards girls than boys. Findings suggest greater involvement of fathers and adopting an authoritative approach in bringing up emotionally intelligent adolescents

Most parents feel adolescent years are the most difficult years of child rearing as it is in this developmental stage that individual, cognitive, social, emotional, and contextual changes come together (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000), and children try to establish their own identity, enhance the skills necessary for socially responsible behaviour, experience heightened emotionality and feel emotions in a stronger and more persistent manner. Many researchers are of the view that after a long period of stability they feel unstable, unpredictable and unbalanced when they enter the adolescent stage, which is marked by turmoil and emotionality (Alim, 1994; Rangaswamy & Kamakshi, 1985), an increase in stressful events and greater negative affect (Larson & Ham, 1993). It can be a smooth process if facilitated by secure, nurturing and understanding parents in an emotionally conducive environment (Erickson, 1968). For an adolescent to develop the ability to perceive accurately the emotions in self, others, and also manage their own emotions and as well as that of others, family plays a pivotal role. As Goleman (1995) has rightly pointed out "Family is our first school for emotional learning. A close emotional bonding and adequate communication between children and parents with clear specifications for behaviour, can make children emotionally and socially competent, responsible, independent and confident" (Goleman, 1995). This highlights the importance of family and specifically the role of parents in bringing up emotionally intelligent children. Though parents want to help their children to successfully move through different developmental stages, they may not be certain about what form and to what extent they need to involve themselves. Research has shown that the influence of parents on children does not decline as they grow into adolescents (Astone & Mclanahan, 1991; Baumrind, 1991; Steinberg, Lamborn, Darling, Mounts, & Dornsbusch, 1994) but the style could vary with the developmental stage (Shek, 2008). During the adolescent stage many parents are confused whether to directly control their behaviour or simply provide some structure and show empathy for their socialization experiences. Especially as children grow into adolescence they are more vulnerable to emotional problems and how they deal with their emotions and the emotions of others depends on the parenting style.

Most of the studies on the outcomes of parenting styles on adolescents have pre pondered on mothers influence on emotional and social development (Kaufmann, Gesten, Lucia, Salcedo,

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Rendina-Gobioff, & Gadd, 2000; Pittman, & Chase-Lansdale, 2001;Joussemet, Koestner, Lekes, & Landry, 2005) . But the new millennium as a result of globalization has brought a lot of changes in Indian families from changes in family structure, parental socialization goals, and to more women joining the workforce (Gore, 2003). A review of literature indicates that all along father's role in the family has been that of a bread winner but the changes in Indian families due to globalization calls for a need to look at the role of fathers as more nurturing (Sriram, Karnik, & Ali,2002; Kumari, 2008). Hence, there is a need to examine the role of fathers as emotional coaches in the new millennium.

Parenting style is a psychological construct that is defined as standard strategies used by parents to bring up their children. Baumrind (1967, 1971, 1989, & 1991) in a series of studies identified three parenting styles namely authoritative, authoritarian and permissive. These three styles vary according to the degree of warmth and control exercised and is useful in understanding its contribution to emotional well being of children. Each parenting style creates a different emotional climate thereby contributing to the development of emotional intelligence. During the socialization process parents provide the first context for recognition and communication of affective messages. These affective messages are communicated to children with the expectation that they will be able to interpret and respond to them. Parents' emotional expressiveness and the emotional climate that they create through their parenting styles provide guidelines to children regarding the use of emotion in the regular everyday social interactions. The expressiveness of parents takes emotional learning beyond the acquisition of social skills, such as coding and decoding, to the use of rules about emotion in different contexts. As Halberstadt (1991) argued, emotional expressiveness may involve a combination of emotion states, knowledge of display rules, and motivation and ability to control one's emotions. Thus, children not only learn emotional lessons from parents but also transfer their expressive style in their interactions with others. Studies show similarities between mothers and children's level of expressiveness (Denham, 1993), similarities between fathers and children's levels of expressiveness (Halberstadt, Fox & Jones, 1993) and inequality in emotional education that leads to gender differences in the regulation and expression of emotions (Sanchez- Nunez, Fernandez-Derrocal, Montanes, & Latorre, 2004). These studies demonstrate connection between parental expressiveness and children's emotional competence.

Emotional intelligence refers to the capacity for recognizing one's own feelings and those of others, for motivating ourselves and for managing emotions well in ourselves and our relationships. Unlike intelligence quotient (IQ) which changes little after adolescent years, emotional intelligence (EI) is largely learnt, is not fixed genetically or develops in early childhood but continues to develop and is predominantly environmentally determined (Goleman, 1995). Emotionally intelligent person is skilled in four areas such as identifying, using, understanding and regulating emotions (Mayer & Salovey, 1993). Gardener (1983) found that those with higher emotional intelligence (EI) perform better academically as they have developed empathy and social skills. Though there is no direct link between a student's retention capacity and emotional intelligence (EI), students equipped with a proper level of Emotional intelligence (EI) are more likely to succeed academically than those who have relatively high Intelligence quotient (IQ) and yet lack emotional intelligence. Be it an ability or personality trait, emotional intelligence follows a predictable pattern of development from infancy to adolescence. During adolescence from 13 to 20 years there is an increased awareness of complex emotional cycles. Adolescents use complex strategies to independently regulate emotions and slowly become aware of the need for mutual and reciprocal emotional self disclosure in making and maintaining relationships.

In the present study, identifying, using, understanding and regulating emotions (Mayer & Salovey, 1993) or abilities to motivate oneself and persist in the face of frustration; to control impulse and delay gratification; to regulate one's moods and keep distress from hindering the ability to think to empathize and to hope (Goleman, 1995) is conceptualized as interpersonal awareness, intrapersonal awareness, interpersonal management, and intrapersonal

management. The four components used in this study interpersonal and intrapersonal awareness and management refer to self regulation, motivation and social skills or adaptability.

Several studies have shown the positive outcome of parenting style on emotional intelligence but the focus has been on only one parent that is the mother (Kaufmann,*et al*,2000; Pittman,*et al*, 2001; Joussemet, *et al*,2005; Ulutas & Omeroglu, 2008). Tiwari and Srivastava (2004) found perceived environmental quality of home and school positively related to emotional intelligence, Indian view of emotional intelligence is context sensitive and family has a major role in shaping the emotions of an individual(Sibia, Misra & Srivastava, 2004). Furnham and Cheng (2000) found that reasonable amount of discipline exercised by mothers towards their children was beneficial in enhancing the Childs self esteem. Among the Khasi adolescents males showed more rejection as compared to females. Females perceived better emotional warmth from fathers than males and no difference for the mother. This is contrary to the study done by Rai, Pandey and Kumar (2000) who found high rejection among Mizo girls. The rejection among the Khasi students may be due to matrilineal Khasi society. Whether parents use harsh discipline or empathic understanding, indifference or warmth it can have lasting influence on ones emotional life (Goleman, 1998). These studies show children learn how to feel about themselves and how others will react to their feelings, how to think about these feelings and what choices they have in reacting, how to read and express hopes and fears from the way parents communicate with them. Since emotional intelligence is linked to parenting styles, the present study seeks to explore the relationship between paternal parenting styles on emotional intelligence of adolescents.

Objectives:

1. To find out the sex difference in paternal parenting styles as perceived by adolescents.
2. To find out the relationship between paternal parenting style and emotional intelligence of adolescents.

Hypotheses

1. There is no significant sex difference in paternal parenting styles as perceived by adolescents.
2. There is no relationship between paternal parenting style and emotional intelligence of adolescents.

Method

Participants

The participants comprised of 973 adolescents studying in various pre university colleges of Dakshina Kannada and Udupi districts of Karnataka. Both private and government run colleges were selected to yield a representative sample from different geographical backgrounds rural and urban, small, medium and large population areas, different socio economic backgrounds, different family structures, different communities and studying in different disciplines of subjects. Therefore their social frame of reference was different. The participants consisted of 509 females and 464 males.

Instruments

1. Parental authority questionnaire (PAQ): Parental authority questionnaire (PAQ) developed by Buri (1991) was used to measure the three parenting styles as perceived by the adolescents. It consisted of 30 items comprising of three styles authoritarian, authoritative and permissive parenting subscales of 10 items per subscale. Scores range from 10 to 50 on each variable with high scores showing greater degree of the parental style measured. Items were scored on a 5 point Likert type scale ranging from 1=strongly disagree to 5= strongly agree. The

participants responded to the same statements separately for father and mother. The highest score on the PAQ is considered to be the dominant parenting style. Buri (1991) reported Cronbach coefficient alpha values for the subscales ranging from .87 to .74. The content, criterion and discriminant validity were also reported to be high. For the present study, the Cronbach alpha was established for the Kannada translation of the total scale for father and mother and the values obtained were .80 and .78 respectively.

2. Emotional intelligence Inventory (MEII): Mangal Emotional intelligence Inventory developed by Mangal and Mangal (2004) was used to measure the emotional intelligence of the participants. It consisted of 100 items measuring four components of emotional intelligence: a) intrapersonal awareness b) interpersonal awareness c) intrapersonal management d) interpersonal management each having 25 items. The participants were required to respond either yes or no. The scoring was one mark for yes and zero for no response. The total scores and the scores obtained in each individual component was interpreted in terms of the five categories namely very good, good, average, poor, and very poor. Higher the score in individual areas as well as total, higher the level of emotional intelligence and lower the score, lower the level of emotional intelligence. The possible range of scores on the test is 0 to 100. Mangal & Mangal (2004) reported reliability coefficient of .89 on split half method, .90 on K-R formula (20) and .92 for test retest method. Validity was measured using factorial and criterion related methods. Reliability and validity was well established. For the present study, the Cronbach alpha for the Kannada translation of the scale was established and the value obtained was .78.
3. Socio-Demographic data sheet: To gather data on age, gender, geographical locale, discipline of study, socio-economic status, family structure like nuclear and extended or joint family, single parent and two parent families.

Procedure

The researchers first identified and listed the names of various pre University Colleges both private and government located in Dakshina Kannada and Udupi district.

Permission of the principals of those colleges listed out was sought by the researcher and the purpose of the study and the procedures involved. Since stratified random sampling was used the selected private and government run colleges were further stratified into arts, science and commerce. Further they were stratified into boys and girls. The consent of the potential participants was sought orally and the purpose of the study and the procedures were explained thoroughly to the participants before any data was collected. The students were assured that information given was confidential and used only for research purpose. The researcher administered the instruments personally to a group of 35 to 40 students at a time in order to ensure that the participants in the research understood and followed the instructions clearly and also to establish uniform test taking conditions. The researcher read out a verbal script containing standard instructions explaining the purpose, procedures, the right to withdraw, confidentiality and the benefit of taking part in the study before taking the test. Participants took part on an entirely voluntary basis. The instruments were collected on the spot to ensure a high response rate. At the end of the session the participants were thanked.

Results and Discussion

The present study provides valuable insights with respect to perceived paternal parenting styles and its relation to emotional intelligence. An independent t-test showed fathers adopted a statistically significant higher authoritative style towards females (Mean = 37.6, *SD*= 5.86) than males (Mean 36.1, *SD* = 6.44), t = 3.786 (p < .01) as shown in table 1. Hence the hypothesis that no significant sex differences exist in perception of paternal parenting style is rejected.

Table 1

Mean, SD and 't' Value of paternal parenting style as perceived by male and female adolescents (N=973)

Parenting style of father	Male		Female		t value
	Mean	SD	Mean	SD	
Authoritarian	32.00	6.76	32.69	6.41	1.611
Authoritative	36.12	6.44	37.64	5.86	3.786**
Permissive	29.98	5.87	30.22	5.47	0.671

**p< .01

Both boys and girls perceived fathers to be authoritative and not authoritarian or permissive indicating that fathers are more warm and approachable. Girls perceived fathers to be more authoritative than boys. Traditionally Indian fathers were portrayed as being authoritarian (Kakar, 1978) but the finding of this study augurs positive outcomes on emotional development of adolescents through care, concern, support and autonomy. Fathers being perceived as more authoritative towards females indicate a shift in the parenting style from one of totally being authoritarian to one of autonomy granting style. Such a shift has been validated by earlier studies which showed fathers in India are becoming more involved and nurturing suggesting a shift to western individualistic values. (Roopnaraine, Talukder, Jain, Joshi, & Srivastav, 1990).

Table 2

Pearson correlation coefficient for paternal parenting style and emotional intelligence as perceived by adolescents (N=973)

Variables	IRPA	IEPA	IRPM	IEPM	Total EI
Authoritarian	.084*	-.088*	-.090*	-.083*	.149*
Authoritative	.115**	.154**	.119**	.182**	.186**
Permissive	.050	.037	.012	.006	.031

*p< .05, **p< .01

Note: IRPA-Intrapersonal awareness, IEPA- Interpersonal awareness, IRPM- Intrapersonal management, IEPM- interpersonal management

Significant positive correlations were seen between authoritarian style of father and intrapersonal awareness r = .084, significant negative correlation between authoritarian style and interpersonal awareness r = -.088, intrapersonal management r = -.090, and interpersonal management r =-.083. Fathers authoritarian style was positively correlated with total emotional intelligence r =.149.

Fathers authoritative style was positively correlated with intrapersonal awareness r = .050, interpersonal awareness r =.154, intrapersonal management r = .119, interpersonal management r = .182, and total emotional intelligence r = .186 (p< 0.01). No significant correlations were found between fathers permissive style and intrapersonal awareness r = .050, interpersonal awareness r =.037, intrapersonal management r = .012, interpersonal management r = .006, and total emotional intelligence r = .031, (p > 0.05).

Father's authoritarian style positively correlated with intrapersonal awareness, it negatively correlated with interpersonal awareness, interpersonal management and intrapersonal management. On the whole father's authoritarian style showed a positive significant relationship with global emotional intelligence. This is contrary to the theoretical model given by Baumrind (1967) which showed authoritarian style as having negative outcome. Earlier studies also showed authoritarian style as negatively influencing the self esteem, motivation, and self awareness (Erlanger, Turner & Heffer, 2005; Spera, 2006; Slicker, Picklesimer, Guzak, & Fuller, 2005; Erden & Uredi, 2008). Although domination is a component implicit in authoritarian style as described by Baumrind (1971), this element of control may be seen as involvement and closeness in Asian cultures (Chao, 1994). In India, family culture is one of conformity, parental regulation is an expected behavior of parents (Kapadia, 2008) and the finding is a reflection of Indian culture where adolescents see parents' strictness and demand for obedience as warmth and concern as opposed to the West.

But when authoritarian and authoritative styles were compared, authoritative style was positively correlated with all the four components of emotional intelligence such as interpersonal awareness, intrapersonal awareness, interpersonal management and intrapersonal management. This is in consonance with the theoretical model (Baumrind) and also earlier research which shows authoritative style (Steinberg, 2001) as contributing to independence, self awareness, motivation, altruism, self regulated learning (Erden & Uredi, 2008) and high self esteem, all of which are related to the four components of emotional intelligence undertaken in the present study. Studies show the type of parenting style predominantly adopted is reflective of the culture inherent in the society like Authoritative style reflects individualistic culture and authoritarian reflects collectivistic culture (Kim, Triandis, Kaagitcibasi, Chi, &Yoon, 1994). Though traditional India is predominantly collectivistic, the finding is reflective of changes in a societal trend towards more authoritative style of parenting which may be due to globalization or multiculturalisation (Patel-Amin & Power, 2002). Moreover parenting which involves value systems is subjected to change from one generation to the next (Kline *et al*, 1996; Zervides & Knowles, 2007).When parents adopt an authoritative style they set very clear standards and make sure rules are enforced and are consistent using sanctions whenever necessary. They attune to the feelings of their children and may be use the emotional situation to understand what exactly is upsetting them and also show them an alternative way of responding to the situation. At the same time adolescents are given opportunity to experience emotional openness, independence and help them to see reason in what they are doing rather than imposing their will on them. Authoritative style (Chen, Lin & Tu,2006), the specific features of the authoritative style such as warmth, emotional support (Davis,1999), acceptance, involvement (Zakeri & Karimpour,2011), a combination of freedom and control (Markazi, Badrigargari & Vahedi,2011) communicates and creates such an emotional climate that adolescents are able to deal with their own feelings as well as that of others. It helps them to become aware of the feelings embedded in whatever is being communicated by the parents. The self awareness results in autonomous regulations of one's own emotions. Thus interpersonal awareness and management will lead to intrapersonal awareness and management.

Conclusion

The findings of the study indicate a major change taking place in Indian families especially the role of fathers in bringing up emotionally intelligent children. This has implications for future parenting. More boys will adopt an authoritative approach to parenting in future thereby reducing the adjustment and emotional problems in adolescence. Parenting programs in schools can emphasize the importance of father's involvement and adoption of an authoritative approach in bringing up emotionally intelligent children.

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Research Paper | Psychology

Relationship Between Depression and Death Anxiety Among Elderly

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ABSTRACT *Old age in human beings is the final stage of the normal life span. Depression in older adults is a major health concern. It is a more common problem than people might think. However, it must be emphasized that depression is not a part of the normal aging. Death anxiety refers to the fear and apprehension of one's own death. Elderly with higher scores in depression also have higher levels of death anxiety. The study aims to find the relationship between Depression and Death anxiety among the elderly. Sample consisted of 240 elderly. Geriatric Depression Scale developed by Yesavage et al and Death Anxiety Scale developed by Templer were administered to the sample. The data collected was statistically analyzed using Karl Pearson's correlation. Analyses revealed that as Depression increases Death anxiety also increases among elderly.*

KEYWORDS: Depression, Death anxiety and Elderly

INTRODUCTION

Old age in human beings is the final stage of the normal life span. Old age is frequently defined as 60 or 65 years of age or older.

Late-life depression is usually confused with the effects of the multiple illnesses associated with this age and the medication used for their treatment, or it is consider normal among elders. However, it must be emphasized that depression is not a part of the normal aging. Left undiagnosed, depression can cause emotional pain for elders and their families.

Depression in elderly is caused due to Psychological, Physical and Social factors. Anxiety, sadness, incapacity to feel pleasure in normal activities, persistent, vague or unexplained physical complaints, difficulties falling asleep, discouragement, memory problems and difficulties concentrating, social withdrawal and isolation, negligence about personal care, confusion, delusions and hallucinations are some of the depressive symptoms in elderly. Higher levels of depression can lead to higher levels of death anxiety.

Death anxiety is defined as "the thoughts, fears, and emotions about that final event of living that we experience under more normal conditions of life". Erikson's psychosocial theory states that in later stages of life "ego integrity" is attained. Erikson proposed that when person reaches late adulthood he/she engages in life review, if elderly find meaning and purpose in life ego integrity is attained and hence should have lower death anxiety (Belsky, 1999)

Decrease in death anxiety in old age may be due to older adults being more successful with emotional regulation, especially negative emotion.

In old age, people must confront the possibility of their own death as well as the death of loved ones. Available data do not support the hypothesis that death anxiety advances with age, because of two main reasons first, gradual acceptance of death with advancing age and maturity, second, for some elders fear of life can be greater than fear of death. Many older people experience social isolation, financial concern, and age related physical problems which increase their dissatisfaction with life.

OBJECTIVE

To find the relationship between Depression and Death Anxiety among elderly.

HYPOTHESIS

There is no significant relationship between Depression and Death Anxiety among elderly.

REVIEW OF LITERATURE

Ozturk et al (2011) conducted study to find out the level of death anxiety evaluate its relationship with several socio demographic and clinical variables among elderly. Two hundred elderly (117 male, 83 female) were included in the study. A formal psychiatric interview was conducted with the sample and demographic and clinical variables were recorded thereafter. After the interview, Geriatric Depression Scale (GDS), State and Trait Anxiety Inventory (STAI), Templer Death Anxiety Scale (DAS), Death Depression Scale (DDS) and Short Form-36 (SF-36) quality of life scale was administered. Evaluation of the relationship between demographic variables and scale scores revealed positive correlation between DAS score and the number of children of the patients, while a negative correlation was present between DAS and length of education. There were no significant differences in DAS and DDS scores with regards to physical disorder type. The presence of bereavement within one year time was not a significant factor for change in DAS scores while there was a significant increase in death anxiety among elderly who had frequent death thoughts. The results of this study presented significant relationship between death anxiety and length of education, number of children and frequency of death thoughts among elderly. No such relationship could be determined for the type of physical disease.

Boushera and Arnout (1996) conducted a study to explore the relation between quality of life, coping strategies, death anxiety and depression in elderly persons. Study sample consisted of 150 elderly persons (75 males, 75 females) from Sharqia city aged between 60-79 years. Different tests like; Elderly Quality of life inventory, Coping strategies scale, Death anxiety scale, Beck depression short inventory were used. Research finding suggested that there was significant relation between coping strategies, death anxiety, depression and the quality of life for elderly.

METHOD:

Design:

The study adopts a correlational design

Sample:

Convenient sampling consisting of 240 elderly from Mangalore and Udupi district of Karnataka.

Definition of terms:

Elderly:

Conceptual definition:

Men and women of age 60 years and above are referred as elderly

Operational definition:

Men and women of age 60 years and above are referred as elderly

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Depression:

Conceptual definition:

Depression is a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for an extended period of time (Zieye et al, 2008).

Operational definition:

Depression refers to feeling worthless, sad, hopeless, helpless and emptiness in life as measured by Geriatric Depression scale.

Death anxiety:

Conceptual definition:

Death anxiety is defined as the thoughts, fears, and emotions about that final event of living that one experience under more normal conditions of life.

Operational definition:

Death anxiety is defined as the thoughts, fears, and emotions about that final event of living that one experience under more normal conditions of life as measured by Templers death anxiety scale.

Test:

1. Geriatric Depression Scale (Yesavage et al, 1983)

The Scale consists of 30 yes/no questions and is widely used in screening depression among the elderly population.

Scoring:

Questions 1, 5, 7, 9, 15, 19, 21, 27, 29 and 30 if marked 'no' gets a score of 1 and questions 2, 3, 4, 6, 8, 10, 11, 12, 13, 14, 16, 17, 18, 20, 22, 23, 24, 25, 26 and 28 if marked 'yes' gets a score 1. Total depression score is obtained by summing the marks of each question.

Reliability and Validity:

The reliability and validity of the tool have been supported through both clinical practice and research. In a validation study comparing the long and short forms of the Geriatric Depression scale for self-rating of symptoms of depression, both were successful in differentiating depressed from non-depressed adults with a high correlation of 0.84.

2. Death Anxiety Scale (Templer, 1970)

The scale consists of 15 items and subjects have to encircle either true or false response as applied to them.

Scoring: Items 1, 4, 8, 9, 10, 11, 12, 13 and 14 gets a score of 1 for true response and 0 for false response. Scores are reversed [illegible] 6, 7 and 15.

Reliability and Validity: The test has a test retest reliability of 0.[illegible] and a co-efficient alpha of 0.76. The test is cross culturally valid.

Procedure: To collect data elderly were personally approached and the purpose of the study was explained to them. After getting their consent Depression and Death anxiety scales was administered to them as per the instructions in the manual and were later thanked for their co-operation.

RESUTS AND DISCUSSION:

Table 1

Karl Pearson's correlation between Depression and Death Anxiety among elderly.

Variables (N=240)	r
Depression and Death anxiety	0.206**

**p< .01

Correlation between Depression and Death anxiety is significant at 0.01 level hence the null hypoth esis that there is no relationship between Depression and Death anxiety is rejected. Depression and Death Anxiety are positively correlated indicating that as Depression increases Death Anxiety also increases and vice versa.

The results are similar to the study conducted by Boushera and Arnout (1996) which revealed that Depression and Death anxiety are related.

FINDING:

1. As Depression increases in elderly Death Anxiety also increases and vice versa

SCOPE FOR FURTHER STUDY:

1. Study can be extended to larger geographical area
2. Research in relation to other variables like physical and Psychological health, religion, family dynamics loneliness and financial problems can be done.
3. Further study can be done by taking various groups of elderly such as elderly with partner, with and without children, institutionalised elderly etc.

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A comparative study of different classifiers on search engine based educational data

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Abstract— **It is believed in this information age that intelligent information leads to power and success. Educational data is a large data repository consisting of data related to educational system. This paper discusses the behaviour of the different Weka classifiers on data related to the search engine usage and political interactions on social networking sites. It is amazing to observe that out of the 16 classifiers considered here 15 classifiers have performed in an excellent manner with ≈ 100% accuracy.**

Keywords- Data Mining, Edu-data, classifiers, Accuracy.

I. INTRODUCTION

We are in an age often referred to as the information age. In this information age, it is believed that information leads to power and success, and thanks to the sophisticated technologies such as computers, satellites, etc. Initially, with the advent of computers and means for mass digital storage, we started collecting and storing all sorts of data. Unfortunately, these massive collections of data stored on disparate structures very rapidly became overwhelming. This initial chaos has led to the creation of structured databases and database management systems (DBMS).

Today, we have far more information than we can handle: from business transactions and scientific data, to satellite pictures, text reports and military intelligence. Information retrieval is simply not enough anymore for decision-making [1].

A. Why data mining?

Data mining got its start in what is now known as "customer relationship management" (CRM)[2]. It is widely recognized that companies of all sizes need to learn to emulate what small; service-oriented businesses have always done well – creating one-to-one relationships with their customers. In every industry, forward-looking companies are trying to move towards the one-to-one ideal of understanding each customer individually and to use that understanding to make it easier for the customer to do business with them rather than with a competitor. These same companies are learning to look at the lifetime value of each customer so they know which ones are worth investing money and effort to hold on to and which ones to let drop.

B. What are Data Mining and Knowledge Discovery?

With the enormous amount of data stored in files, databases, and other repositories, it is increasingly important, if not necessary, to develop powerful means for analysis and perhaps the interpretation of such data would help the extraction of interesting knowledge that could help in decision-making. *Data Mining*, also popularly known as *Knowledge Discovery in Databases* (KDD) [1], refers to the nontrivial extraction of implicit, previously unknown and potentially useful information from data in databases. While data mining and knowledge discovery in databases (or KDD) are frequently treated as synonyms, data mining is actually part of the knowledge discovery process. The following figure (Figure 1.1) shows data mining as a step in an iterative knowledge discovery process.

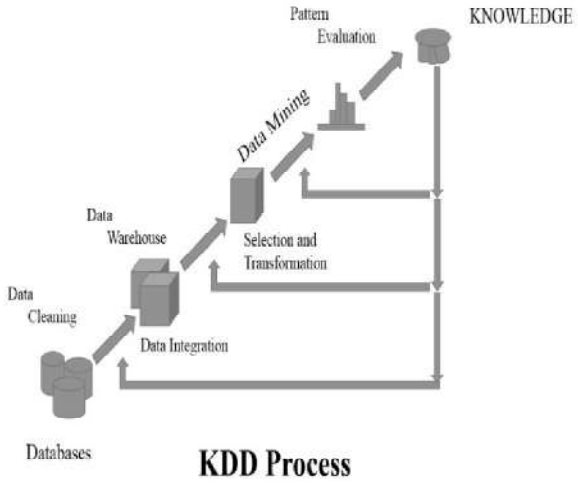

Figure 1.1

The Knowledge Discovery in Databases process comprises of a few steps leading from raw data collections to some form

of new knowledge. The iterative process consists of the following steps:

(i) Data cleaning: also known as data cleansing, it is a phase in which noise data and irrelevant data are removed from the collection.

(ii) Data integration: at this stage, multiple data sources, often heterogeneous, may be combined in a common source.

(iii) Data selection: at this step, the data relevant to the analysis is decided on and retrieved from the data collection.

(iv) Data transformation: also known as data consolidation, it is a phase in which the selected data is transformed into forms appropriate for the mining procedure.

(v) Data mining: it is the crucial step in which clever techniques are applied to extract patterns potentially useful.

(vi) Pattern evaluation: in this step, strictly interesting patterns representing knowledge are identified based on given measures.

(vii) Knowledge representation: is the final phase in which the discovered knowledge is visually represented to the user. This essential step uses visualization techniques to help users understand and interpret the data mining results.

The KDD is an iterative process. Once the discovered knowledge is presented to the user, the evaluation measures can be enhanced, the mining can be further refined, new data can be selected or further transformed, or new data sources can be integrated, in order to get different, more appropriate results.

The words Educational Mining [Edu-mining] and educational data [Edu – data] are coined by [3] and applied by [4],[5],[6]. It is challenging task to work on Edu-data for the development of a country in the local as well as in the global scenario.

In this paper, the performance of different classifiers on a real – time survey that contains data on search engine usage and political interactions on social networking sites data with 2253 instances and 35 attributes is studied in detail. No work in this direction is available. Section II deals with Data Mining Techniques. Section III deals with the Methodology. Section IV deals with Data Set description. Section V deals with Data experiments and results and finally conclusions are presented in Section VI.

II. Related Work

No doubt most of the related works have used Data Mining Techniques but their objectives and analysis are different.

In this work [3] the authors try to find frequent behaviours among pedagogical surveys. In this context, their aim is to find patterns on teachers‟ behaviours, combining pattern mining, pattern visualization, classification and domain knowledge, in order to anticipate teachers‟ behaviours. They show how some domain knowledge can contribute to improve the process. Additionally, they propose a new tool for patterns visualization, that can be used for visually identify trends on the discovered patterns.

The C4.5 decision tree algorithm is applied on student's internal assessment data [7] to predict their performance in the final exam. The outcome of the decision tree predicted the number of students who are likely to fail or pass. The result is given to the tutor and steps were taken to improve the performance of the students who were predicted to fail.

This paper [8] is a collective work and essentially synthesizes the observations emerging from the various subsector studies and from a number of interactions with administrators in the Department of Education.

The authors [9] developed the Course recommender System in E-Learning which is a system that recommend the course to the student based on the choice of various student collected from huge amount of data of courses offered through Moodle package of the college. Here in this paper the authors compare the five classification algorithm to choose the best classification algorithm for Course Recommendation system. These five classification algorithms are ADTree, Simple Cart, J48, ZeroR & Naive Bays Classification Algorithm. They compare these six algorithms using open source data mining tool Weka & present the result. They found that ADTree classification algorithm works better for this Course Recommender System than other five classification algorithms.

This paper[10] mainly focus on the performance evaluation of the three types of classifiers viz., Rule based, Decision tree based and Baysian networks on Edu data which is a large repository consisting of data related to technical education system which is considered as a benchmark system for the study of Edu-mining.

This paper [11] deals with the performance analysis of the learning model used to optimize the Mathematical Pathway – ' Ganitha Vithika'. Using the mathematical pathway database generated by the learning model that contains information of all the mathematical concept competencies a child has to achieve from class 1 to class 7 for a large population of a children, the performance of an individual child is evaluated which indicates whether the child's progress is normal or exceptionally good or there is a need for guidance.

The paper [12] aims at comparing the classification algorithms on sea data stream.

III. Data Mining Techniques

A. Classification:

The classification process has two phases; the first phase is learning process where the training data are analyzed by the classification algorithm. Learned model or classifier is represented in the form of classification rules. The second phase is classification process, where the test data are used to estimate the accuracy of classification model or classifier. If the accuracy is considered acceptable, the model can be applied to the new data to know the prediction result. There are many techniques that can be used for classification such as decision tree, Bayesian methods, Bayesian network, rulebased algorithms, neural network, support vector machine, Figure 2.

Classification Process in Data Mining ISSN: association rule mining, k-nearest-neighbour, case-based reasoning, genetic algorithms, rough sets and fuzzy logic. In this study, our discussion focuses on the three main classification techniques i.e. decision tree, neural network and k-nearest-neighbour. Decision tree and neural network are found useful in developing predictive models in many fields.

If we need to work with categorical data, or a combination of categorical data and continuous numeric, classification analysis will meet our requirements. This technique has the capability to process a more extensive variety of data compared to regression and is therefore increasing in popularity.

In addition, the output it provides can be interpreted more easily. Rather than the complex mathematical formula that the regression technique provides, in this you will be provided a decision tree which requires a sequence of binary decisions.

Classification and prediction are among the methods that can produce intelligent decision [17]. Currently, many classification and prediction methods have been proposed by researchers in machine learning, pattern recognition, and statistics. In this study, we are focusing on classification methods in data mining as part of machine learning process. Classification and prediction in data mining are two forms of data analysis that can be used to extract models to describe important data classes or to predict future data trends.

Decision tree can produce a model with rules that are human-readable and interpretable. The classification task using decision tree technique can be performed without complicated computations and the technique can be used for both continuous and categorical variables. This technique is suitable for predicting categorical outcomes and less appropriate for application with time series data. Decision tree classifiers are quite popular techniques because the construction of tree does not require any domain expert knowledge or parameter setting, and is appropriate for exploratory knowledge discovery.

IV. METHODOLOGY

The present work employs the following classifiers for the data set considered.

In this work we use the WEKA DT tools, which include 11 different and independent algorithms for constructing decision trees. A brief description of each algorithm is presented below. WEKA is a Java Software package for data mining tasks developed by the University of Waikato, New Zealand.

i) NB Tree

The Class is for generating a decision tree with naive Bayes classifiers at the leaves.

ii) Decision Table

The Class for building and using a simple decision table majority classifier. It evaluates feature subsets using best-first search and can use cross-validation for evaluation. There is a set of methods that can be used in the search phase (E.g.: Best First, Rank Search, and Genetic Search).

iii) Single Conjunctive Rule Learner

Single conjunctive rule learner is one of the machine learning algorithms and is normally known as inductive Learning. The goal of rule induction is generally to induce a set of rules from data that captures all generalizable knowledge within that data, and at the same time being as small as possible Rules can be of various normal forms, and are typically ordered; with ordered rules, the first rule that fires determines the classification outcome and halts the classification process.

iv) ZeroR

The most primitive learning scheme in Weka, *ZeroR*, predicts the majority class in the training data for problems with a categorical class value, and the average class value for numeric prediction problems. It is useful for generating a baseline performance that other learning schemes are compared to. In some cases, it is possible that other learning schemes perform worse than *ZeroR*, an indicator of substantial over fitting.

v) OneR

The next scheme, *OneR*, produces very simple rules based on a single attribute. *NaiveBayes* implements the probabilistic Naïve Bayesian classifier. *DecisionTable* employs the wrapper method to find a good subset of attributes for inclusion in the table. This is done using a best-first search. *IBk* is an implementation of the k-nearestneighbours classifier [6]. The number of nearest neighbours (*k*) can be set manually, or determined automatically using cross-validation.

vi) Random Tree

Random trees are formed by a stochastic process [14]. Random binary tree are binary trees with a given number of nodes, formed by inserting the nodes in a random order or by selecting all possible trees uniformly at random. Random trees can also be formed using spanning methods.

vii) Random Forest

Random forests are a combination of tree predictors such that each tree depends on the values of a random vector sampled independently and with the same distribution for all trees in the forest. The generalization error for forests converges to a limit as the number of trees in the forest becomes large.

viii) REPTree

REPTree is a fast decision tree learner that builds a decision/regression tree using information gain/variance as the criterion to select the attribute to be tested in a node [15].

ix) Naïve Bayes Uptateable

The Class is used for a Naive Bayes classifier using estimator classes. This is the updateable version of Naïve Bayes. This classifier will use a default precision of 0.1 for

Table 2: Accuracy prediction for different classifiers

Classifier			Mean absolute Error	Kapa Statistics	Time to build (in Sec)	Accuracy
Algorithms	Correctly Classified Instances	In Correctly Classified Instances				
NBTree	2253	0	0	1	0.2	100
Conjuctive Rule	2253	0	0	1	0.07	100
REP Tree	2253	0	0	1	0.08	100
OneR Rule	2253	0	0	1	0.02	100
Decision Table	2253	0	0.003	1	0.59	100
Random Forest	2253	0	0.0003	1	0.09	100
BFTree	2253	0	0	1	2.52	100
Ridor Rule	2253	0	0	1	0.07	100
NNge Rule	2253	0	0	1	0.27	100
Bayesnet	2253	0	0	1	0.06	100
Naïve Bayes	2253	0	0	1	0.03	100
Naïve Bayes Updateable	2253	0	0	1	0.01	100
Random Tree	2252	1	0.0002	0.9988	0	99.9556
J48	2251	2	0.0002	0.9975	0.06	99.9112
J48 Graft	2251	2	0.0002	0.9975	0.33	99.9112
Zero R Rules	1729	524	0.0719	0	0	76.7421

numeric attributes when build Classifier is called with zero training instances.

vii) J48

J48 is an open source java implementation of the C4.5 algorithm in the weka data mining tool. The J48 Decision tree classifier follows the following simple algorithm. In order to classify a new item, it first needs to create a decision tree taken. Six different data sets based on the attribute values of the available training data. So, whenever it encounters a set of items (training set) it identifies the attribute that discriminates the various instances most clearly [16].

viii) Naïve Bayes

The Naïve Bayes classifier [17] is based on the Bayes rule of conditional probability. It makes use of all the attributes contained in the data, and analyses them individually as though they are equally important and independent of each other.

ix) Random Forest

Random forests are a combination of tree predictors such that each tree depends on the values of a random vector sampled independently and with the same distribution for all trees in the forest. The generalization error for forests converges to a limit as the number of trees in the forest becomes large.

V. DATA SET DESCRIPTION

The data set (TABLE 1) used in the present investigation for our classification example will focus on the survey that contains data on search engine usage, and political interactions on social networking sites. The description is as follows:

% Data on search engine usage and political interactions on social networking sites.

% no of instances = 2253

% no of attributes = 35

% Variable definitions

Table 1: Data set description

Psid	Sex	Modem	birth_his
Sample	q1	active2	Party
Lang	q2	active7	partyln
Code	q3a	active3	Ideo
State	q3b	Active	Inc
Cregion	q3c	Edu	i_user
User	Intuse	Empnw	Weight
Form	Empcc	Hisp	Standwt
	yest1nw	Race	home3nw

VI. EXPERIMENTS AND RESULTS

This section contains the results of the experiments conducted on the students data sets mentioned earlier. This data set consists of 2253 instances with 35 attributes. As mentioned earlier, the main objective of the present analysis is to predict the test classifier that will enable to take effective decisions.

Table 2, presents the number of accurately and inaccurately classified instance, mean absolute error, Kappa statistics, the time to build up the model and the accuracy with regard to the classifiers viz; NBTree, Conjuctive Rule, REP Tree, ZeroR, OneR, Decision Table, JRIP, Part Rule, DTNB, Random forest and RandomTree,J48, J48 Graft.

It is found that

(i) NBTree. Conjuctive Tule, REP Tree, OneR Rule, Decision Table, Random Forest, BFTree, Ridor Rule, NNge Rule, BayesNet, Naive Bayes, Naive Bayes Updateable are the best classifiers with accuracy 100

(ii) Random Tree is the next best classifier with accuracy (=99.9556)

(iii) The other classifiers performed equally well.

Thus, it can be concluded that the classifiers considered here are most suited and accuracies achieved are remarkable. These results are also in accordance with the values of the Kappa statistics and mean absolute error.

Tables 3 to 5 present the confusion matrices for the classifiers mentioned above. The correctly and incorrectly classified instances for each classifier are available from these tables and are summarized in table 2. A glance at these matrices yields some useful information with regard to the analysis.

Table 3 : Confusion Matrix for NBTree

a	b	c	d	e	f	g	h	i	j	<-- classified as
524	0	0	0	0	0	0	0	0	0	a = '(-inf-0.1]'
0	0	0	0	0	0	0	0	0	0	b = '(0.1-0.2]'
0	0	0	0	0	0	0	0	0	0	c = '(0.2-0.3]'
0	0	0	0	0	0	0	0	0	0	d = '(0.3-0.4]'
0	0	0	0	0	0	0	0	0	0	e = '(0.4-0.5]'
0	0	0	0	0	0	0	0	0	0	f = '(0.5-0.6]'
0	0	0	0	0	0	0	0	0	0	g = '(0.6-0.7]'
0	0	0	0	0	0	0	0	0	0	h = '(0.7-0.8]'
0	0	0	0	0	0	0	0	0	0	i = '(0.8-0.9]'
0	0	0	0	0	0	0	0	0	1729	j = '(0.9-inf)'

Table 4 : Confusion Matrix for Random Tree

a	b	c	d	e	f	g	h	i	j	<-- classified as
523	0	0	0	0	0	0	0	0	1	a = '(-inf-0.1]'
0	0	0	0	0	0	0	0	0	0	b = '(0.1-0.2]'
0	0	0	0	0	0	0	0	0	0	c = '(0.2-0.3]'
0	0	0	0	0	0	0	0	0	0	d = '(0.3-0.4]'
0	0	0	0	0	0	0	0	0	0	e = '(0.4-0.5]'
0	0	0	0	0	0	0	0	0	0	f = '(0.5-0.6]'
0	0	0	0	0	0	0	0	0	0	g = '(0.6-0.7]'
0	0	0	0	0	0	0	0	0	0	h = '(0.7-0.8]'
0	0	0	0	0	0	0	0	0	0	i = '(0.8-0.9]'
0	0	0	0	0	0	0	0	0	1729	j = '(0.9-inf)'

Table 5 : Confusion Matrix for Conjunctive Rule

a	b	c	d	e	f	g	h	i	j	<-- classified as
524	0	0	0	0	0	0	0	0	0	a = '(-inf-0.1]'
0	0	0	0	0	0	0	0	0	0	b = '(0.1-0.2]'
0	0	0	0	0	0	0	0	0	0	c = '(0.2-0.3]'
0	0	0	0	0	0	0	0	0	0	d = '(0.3-0.4]'
0	0	0	0	0	0	0	0	0	0	e = '(0.4-0.5]'
0	0	0	0	0	0	0	0	0	0	f = '(0.5-0.6]'
0	0	0	0	0	0	0	0	0	0	g = '(0.6-0.7]'
0	0	0	0	0	0	0	0	0	0	h = '(0.7-0.8]'
0	0	0	0	0	0	0	0	0	0	i = '(0.8-0.9]'
0	0	0	0	0	0	0	0	0	1729	j = '(0.9-inf)'

VII. CONCLUSION

In this paper, experiments on Data on search engine usage and political interactions on social networking sites are conducted to study the behaviour of the different WEKA classifiers. The data set comprises 2253 instances with 35 attributes. The raw data is obtained from the data on search engine survey and the results obtained are discussed in detail. These results provide an excellent platform for making effective decisions. Further, of all the classifiers NBTree, Conjuctive Tule, REP Tree, OneR Rule, Decision Table, Random Forest, BFTree, Ridor Rule, NNge Rule, BayesNet, Naive Bayes, Naive Bayes Updateable are found to be an excellent performance with accuracy 100. No work in this direction is available although some literature exists with regard to the educational data.

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A CONCEPTUAL STUDY ON DIAMOND TRADING AND ITS IMPACT ON MONEY LAUNDERING IN INDIA

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ABSTRACT

Until 18Th century India was the only source for diamonds but over a period of time the Indian mines were worn-out and diamonds became distant in nature. Until late 19th century with the discovery of several large diamonds on the De Beers property in South Africa that a substantial supply of diamonds was discovered. Diamond and diamond trade can be used in all stages of money laundering (placement, layering and integration). Diamonds can be both the vehicle to generate criminal profits as well as the vehicle to launder them. The report by the Financial Action Task Force (FATF) a Paris-based global body to set standards to combat money laundering says that India has reported incidences where diamond prices were overvalued for purposes of laundering. The report said as there were no set standards of diamond pricing in the country, agents were overvaluing the costly and prized gemstones. This paper discuss about the trading in diamond leading to the consequences of money laundering in India

Key words: Diamond trading, Money laundering

INTRODUCTION:

India has a heritage of world's most famous historical diamonds. It takes us back to the greathistoric period of Sikh, Persian and Mughal rulers who possessed Koh-I-Noor Diamond which was once considered the largest diamond in the world. Until some hundred years ago, diamonds were found only in India. The most important part of the history of diamonds has its roots in India. Until 18th century India had dominance over the global diamond industry, later new diamond deposits were discovered in Russia, Brazil, Australia and Africa, while the commercial potential of the Indian diamond deposits had been exhausted by the late 18th century. In the early nineteenth century Diamond trading was moved to Brazil and later to Southern Africa

History of diamond trading in India is started about 1000 years back were traditionally, diamonds would be transported across Arabia and traded to Jewish merchants, who, in turn, resold the diamonds in major European cities As the amount of diamond exchange increased, these exquisite gems came to be used as collateral for loans and payment for high-value items.

Today, India is home to the world's leading diamond cutting and polishing centre. A development that has only started recently. But apparently, the relationship India has with diamonds is much deeper and older

Money laundering (ML) referring to concealing of illegal money has laid its roots in diamond trading in India. According to the report by the Financial Action Task Force (FATF) India has reported instances where diamond prices were overvalued for purposes of laundering

To have a comprehensive paper, the theme of the paper is discussed in three parts. Part I explains about diamond trading in India Part II discuss about the money laundering in diamond trading and Part III explains about the FATF Recommendations which are recognised as the global anti-money laundering (AML)

LITERATURE REVIEW

(singh , January 2009)In his paper the researcher discusses about the concepts and process of money laundering pointing out the challenges and losses and is a kind of primer to money laundering. The paper also analyses the position of India in controlling money laundering keeping up with the mandate of international forum. To sum up the paper various problems and loopholes in implementation of the anti-money-laundering laws are discussed putting forth few humble suggestions to have a balanced anti-money-laundering regime.

As per the report of The report said that there were no set standards of diamond pricing in the country, agents were overvaluing the costly and prized gemstones, and even one such big instance is under the scanner of financial enforcement agencies. The report has been brought out with the aim to provide a general overview of the global diamond industry, the way it works and the characteristics of diamonds as merchandise, "through an anti-money laundering".

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One more report of FATF says that Indian importers of diamonds, based in Surat and Mumbai, imported from Hong Kong and China by "grossly over-valuing these diamonds to USD 544.8631 per carat." India reported a relatively large number of cleaned cases (12) in which suspicious transaction reports were received (in connection with diamond trade). In these specific cases, Hong Kong, China is a destination for illegal cash flows related to the diamond trade

According to the debated document, in a number of suspect cases of diamond trafficking the funds were transferred to Belgium from accounts in Hong Kong, China, Israel, the United Arab Emirates (UAE), the US and India. In cases of suspicious money laundering through diamond trade, the money came from India, Israel and Switzerland to the UAE.

OBJECTIVES OFTHE STUDY

1. To know about diamond trading in India
2. To study the impact of diamond trading on money laundering
3. To study the measures undertaken by anti-money laundering

Part –I Diamond Trading In India

As it has already been mentioned in the introduction that the diamond trading has started around 1000 years back, recently it has gone through various changes. The main source of diamond could be found in South Africa initiated by Cecil Rhodes who started De Beers. This became a monopoly of diamond mining and sales.

How diamond traded?

India is giving Africa's diamonds a respectable polish. Diamonds are being sent into the city of Surat, where they are cut and polished, then sold to respectable firms.

Surat is the centre of the world's diamond cutting and polishing industry. Ninety-two percent of the world's diamonds are crafted here. Located 250 kilometres north of Mumbai, the city earned India US$11 billion in exports last year. Thus the diamond trading will be done in India.

Part – II Diamond Trading Leading to Money Laundering

The various ways in which diamond trading has been done and how it leads to the money laundering has been cited below.

- Financing drug trafficking with diamonds and ML through retail level has intricate an organised criminal group that distributed drugs and controlled several low level (street-level) drug dealers. The higher placed distributor would distribute drugs to the street level dealer and receive *diamonds*, *gemstones* and *jewellery* as payment, as well as cash. Likewise, the street-level drug dealer traded drugs for diamond jewellery and then traded up to the higher placed drug dealer for more drugs and debt payments.
- According to investigative media reports, blood diamonds are smuggled into Surat in fishing boats. These are cut and polished in the diamond bazaars of this town, sold to reputed firms who then export the stones with a certification that they were not imported from conflict areas.
- Diamonds taken from large scale robberies, thefts and burglaries are sold to "second hand" dealers to include pawn shops, estate jewellery dealers and other high-end retail outlets.
- A diamond dealer has been arrested on organised crime charges allegedly laundering more than USD 100 000 in high-quality diamonds stolen by a local ring of thieves.
- Laundering proceeds of crime through purchase of diamonds and resale at wholesale prices to jewellers and to final customers through the internet
- Ml through diamond dealers account and use of a diamond dealer account to transfer funds for third parties

Part – III Measures To Reduce Money Laundering

The following are the various measures as per FATF and the other recognised bodies to reduce the money laundering due to Diamond trading;

Building a better awareness: Criminals use creative schemes to exploit the diamond sector. Lack of awareness of ML risks associated with diamonds and the trade in diamonds could contribute to the risks of ML posed by the abuse of the trade. This lack of awareness amongst key players about their role in the process of fighting

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illicit activities is a significant vulnerability, particularly since certain expertise is required to improve understanding and awareness. Understanding the ML risks associated with the trade in diamonds by government bodies and the private sector, including financial institutions, would assist in addressing this vulnerability and taking any needed steps to mitigate the risks.

Definition of a diamond dealer: There is no definition given by FATF of a dealer in precious stones(which includes a diamond dealer). This results in different national legislation and interpretation of diamond dealers. Pawn shops and retailers are often not seen as diamond dealers and there fore not under any national AML legislation and regulation. Consideration should be given to defining a dealer in precious stones including a diamond dealer, which could mitigate the risk of ML.

Enhancing transparency through cooperation with the private sector: Although the sector is specialised and there are barriers to entry, engagement with the private sector during this project has indicated that they are not unwilling or reluctant to cooperate. In general, AML authorities need a better understanding of legitimate commercial practices for diamonds as well as what they perceive as suspicious, and the measures taken to mitigate the risk

International co-operation: Difficulties in the international exchange of information and the use oftax havens are major obstacles in the detection and prosecution of ML through the trade in diamonds. Since the trade is multi-jurisdictional, involving several countries from mine to market, amulti-jurisdictional cooperation is required to investigate ML cases.

Regulatory level playing field: Given the international character of the trade in diamonds, it is important to encourage a level playing field for AML regulation. Where there are major discrepancies between jurisdictions, this may attract criminals to conduct their transactions in jurisdictions with low or no AML regulation on the diamonds trade. For a sector which is mainly based on trust and long-lasting partnerships, the application and enforcement of the AML legislation and the obligation of diamond dealers to collect identification documents from each client and report suspicious transactions, has a large impact on the competitiveness vis-à-vis diamond dealers in other countries who are not subject to similar obligations. This may have the adverse effect of diverting the diamonds trade to less regulated jurisdictions, generating higher levels of ML risks associated with the diamonds trade.

Indian intelligence officials say that blood diamonds will have to be identified before they enter Surat as once a rough diamond is polished it is impossible to trace its place of origin

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Global HR Issues and Challenges for Managers

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Abstract: *When business operates across international borders, economic situations as well as diversity can affect your operations! And being a strategic business partner HR professional's contribution to the success of their organization can be really critical. And that can be from complying with different rules and regulations to integrating markets across nations and managing diverse culture of your workforce. With this in mind organisations specially the MNC's need to make an effective strategy to cope up with the needs and requirements of the Global Workforce. The paper here presents a brief insight to the problems and their remedies.*

Keywords: Globalization, Technology, Talents, World economic Forum, mobility, cultural agility

1. Introduction

Today's corporations are living in a brave new world with Globalization, technology, and the hunt for scarce talent pushing them into new territories and redefining the way they work, think and communicate. But managing a global workforce is no easy task, and not everyone will get to the finish line. So what does it take to win? "You must have a global mindset," says Flemming Poulfeldt, Professor of management at the Copenhagen Business School. "You have to be open to new ways of thinking, and you have to create an environment, both at home and abroad, that is welcoming and supportive to global workers." Add these keywords like strategic talent management, mobility, and cultural agility, which experts say are all necessary components in this brave new world.

With the World Economic Forum warning we are entering an "era of unparalleled talent scarcity," companies not only need to be able to find, attract and keep talent, but they need to be mobile enough to set up shop where the best expertise and cost can be found. As an example, we've opened a financial shared services centre in Budapest because the knowledge base for that is strong there. And, we have a water technology centre in Fresno, USA. IBM, for example - which has more than 400,000 employees in 170 countries, was one of the first companies to encourage employees of Global Workforce.

2. Few Facts

- Today's corporations are operating in a world of global workforces
- Businesses need to have a global mindset to thrive
- Some businesses are changing corporate structures in response
- Others are still tripping over the Basics

3. Objectives of the Study

- To understand the various issues facing by HR functions for a global workforce.
- To know how the HR Managers are dealing with the challenges.
- Suggestions to solve HR issues for Global workforce

4. Major Issues of Global Workforce

Issue #1: **Culture and Communication:**
"When you take someone from one environment into another, there is going to be some adjustment [needed] in regard to culture and communication."

Issue #2: **Labour Law Conflict:**
For example, "Employment at Will" statement in US that states the company may terminate an employee at any time without giving any reason. Apparently this concept does not exist in India and other countries.

Issue #3: **Talent Gap:**
Finding and retaining the talent for highly skilled jobs or the one that knows the national and international markets can be tough. And you would need the help of immigration departments from your nation and from other nations as well to leverage the international talent pool.

Issue #4: **Interest Conflict:**
Successfully integrating markets across borders is critical when we talk about business! Even when we work in at a national level, your markets depends and varies from state to state. So what happens when it is global? And you have your employees working in other nations have their own national interest that conflicts with your corporate goals.

5. HR Managerial Challenges

- **Managing Change**: As the organizations are going global this one problem faced by many organization s of managing the change in the organization and how to make people acquainted with the changes.
- **Work Culture:** Due to acquisition and mergers taking place it becomes important for the HR Manager to develop the work culture.
- **Ethics and Values:** In the times when we are getting more professional and narcissist, it is very important to have ethics and values to be in place which also in the long run decides the sustainability of the organization
- **Managing Low Attrition Rate**: More competition also adds to high attrition. Now here is the opportunity for the HR manager to play and introduce good retention strategies.
- **Balancing work and personal life**: Huge responsibility is on the shoulder of an hr manager to create a balance between the work life and personal life by flexi work

hours, paternity leaves (yes it is what most companies are starting) and vocations are some of the options hand.

- Stress and Conflict: Long working hours, target pressures, high competition etc adds stress and conflicts in the organization. It is the duty of an hr manager to have proper responses to the stress and conflicts before it causes damage to someone's personality.
- Restructuring and Organization: As the trend is changing so as the organization structure. The organizations are getting more flat and simpler.
- Globalization: Companies are going global due to which the workforce diversity is increasing. Managing these people with different religious, cultural, moral background is a challenging task for the HR managers.
- Consultative Approach: Developing continuous dialogue, open communication, participative decision making is very important for implementing consultative approach. It is an HR manager who can facilitate such approach to procure participative and democratic cultures.

6. Suggestions to Solve HR Issues for Global Workforce

6.1 The Management of Workplace Diversity

Manager needs to change from an ethnocentric view ('our way is the best way') to a culturally relative perspective ('let's take the best of a variety of ways').

6.2 Planning a Mentoring Program

One of the best ways to handle workplace diversity issues is through initiating a Diversity Mentoring Program. This could entail involving different departmental managers in a mentoring program to coach and provide feedback to employees who are different from them.

6.3 Organizing Talents Strategically

Many companies are now realizing the advantages of a diverse workplace. As more and more companies are going global in their market expansions either physically or virtually (for example, E-commerce-related companies), there is a necessity to employ diverse talents to understand .e various niches of the market.

6.4 Control and Measure Results

A HR Manager must conduct regular organizational assessments on issues like pay, benefits, work environment, management and promotional opportunities to assess the progress over the long term.

6.5 Motivational Approaches

Workplace motivation can be defined as the influence that makes us do things to achieve organizational goals: this is a result of our individual needs being satisfied (or met) so that we are motivated to complete organizational tasks effectively.

6.6 Gain-sharing

Gain-sharing programs generally refer to incentive plans that involve employees in a common effort to improve organizational performance, and are based on the concept that the resulting incremental economic gains are shared among employees and the company.

6.7 Executive Information Systems

With Global workforce into picture it's becoming all the more difficult to deal with HR issues. With an EIS in place, a company can track inventory, sales, and receivables, compare today's data with historical patterns.

7. Research Methodology

Data's are collected through secondary sources like the websites, journals reports published on websites.

8. Conclusion

The role of the HR manager must parallel the needs of the changing organization. Successful organizations are becoming more adaptable, resilient, quick to change directions, and customer-centred. Within this environment, the HR professional must learn how to manage effectively through planning, organizing, leading and controlling the human resource and be knowledgeable of emerging trends in training and employee development.

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UMA S. N has completed Masters in Business Management with the specialization of HR and got 9 years of experience in corporate and academic field, worked with national and multinational companies and started carrier in Marketing Field as Business Development Manager and moved in to an interested core specialized filed of HR and served in different companies as HR specialist ,Regional HR Manager, performed core HR generalist role etc., and academic field as Asst Prof and Placement and training Head for PG courses. Exposure in teaching of HR subjects for MBA students in different colleges. Companies worked with-Dalmia India Ltd, Modi groups (Nature's Bounty, Revlon) VLLCC, VTS Ventus India PVT., (Europe based AHU Manufacturing Company) Etc., She helps candidates with the help of her own consulting firm by name "Hollyhock HR Services" providing Training and job opportunities to many fresher's and experience candidates. Past 4years already placed many candidates in Indian and MNC companies from the entry level to top level positions. Exposure in core HR generalist area of Talent Acquisition, Training & development, HR Operation, PMS, HR Polices, Statutory Compliances, Etc., She has conducted Training programs to many colleges for students' employability and provided placement opportunities to many students in different verticals. She has attended National and international Conferences and seminar and Published articles in different international publications.

Measurement of Human Resources in Academic Institutions and Their Appraisal

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Abstract

Employees are the most important assets of any educational institution and its success or failure depends on their qualifications and performance. The current accounting system is not able to provide the actual value of employee capabilities and knowledge. This indirectly affects future performance of any educational institutions, as each year the cost on human resource development and recruitment increases. Human resource accounting is a direct part of the social accounting and aims to provide information on the evaluation of one of the most important components of the organization, namely human capital. Intellectual capital has become to be an accounting component since a decade and more now. Here is an attempt to quantify the investment in the intellectual and knowledge resources and evaluate their future value, thereby giving a fair understanding of the total worth of an organization.

Key words: Human Resource Accounting, Intellectual Capital

Introduction

"Human resources are the greatest assets of any company. You can raise tariffs or prevent MNCs from entering, but one can't stop the employees from leaving if they are dissatisfied". – Narayana Murthy, Founder of Infosys Technologies. This quotation signifies the extent to which leading corporations value their human resources. They treat them as the most powerful assets and find good reason to work towards their satisfaction. The best companies in the world are those that realize the worth of their employees and continue to invest in them towards their growth and development. This is a conscious resource that shall fuel the growth of the company from within. In recent years Academic Institutions have become the major source of any country's workforce which in turn defines the economic potential. Behind this workforce lies the effectiveness of the academic institutions that generate them. These academic institutions have been doing a commendable job in times immemorial. Of late competition has also reached academic institutions as it has the corporations. Academic institutions have also begun to have mechanisms to evaluate their profitability and decide methods for their sustenance. This makes it imperative that the capacities of the schools and colleges are evaluated appropriately. The most obvious evaluation is through financial statements. Recent developments have included human capital under the social capital head. The human assets for an academic institution are scattered between the teaching and non teaching employees. This accounts for the intangible assets of the institution. Apart from this infrastructure and facilities account for the tangible assets.

Tangible assets have common methods of evaluation and accounting like historical cost method where the original prices of assets is reduced every year by charging depreciation. The most questionable part of evaluation is among the intangible

assets. As common knowledge goes the most crucial asset for an academic institution is its intellectual capacity. This has also been concurred by analysis which includes the various factors that could affect student satisfaction. We have considered student satisfaction as the core to the analysis because this factor defines the success of any academic institution. Our study is based on higher education institutions.

Need for HRA

There appear to be two major reasons why human resource accounting has been receiving so much attention in recent years.

1. Developments in modern organization theory have made it apparent that there is a genuine need for reliable and complete information which can be used in improving and evaluating the management of human resources.
2. The traditional framework of accounting is in the process of being expanded to include a much broader set of measurement than was thought possible or desirable in the past.

Objectives of the Study

1. To understand the concept behind quantifying and accounting for Human Assets in Academic Institutions.
2. To examine the various methods of HRA in respect to educational institution.
3. To analyze the pros and cons of each of these methods for educational institutions.

Research Methodology

To study the methods of human resource accounting on the Academic institutions the theoretical framework has been studied in application with educational institutions. This study is a descriptive study where the various methods of measuring human resources have been applied to various educational institutions at the higher level especially to the Post Graduate level.

Literature Review

The concept of human resource accounting was first developed by Sir. William Petty in the year 1691.But research into true human resource accounting began in the year 1960 by Renris Likert. As per the American Accounting Association's committee (1973) HRA is the process of identifying and measuring data about human resources and communicating this information to interested parties. HRA, thus, not only involves measurement of all the costs/ investments associated with the recruitment, placement, training and development of employees, but also the quantification of the economic value of the people in an organization.

Eric Flamholtz(1971) explained human resource accounting as accounting for people as organizational resources. Sackman et al.,(1989) define HRA as the measurement of the cost and value of people for the organization. Boudreau and Berger (1985) noted that HRA made significant contribution in solving numerous personnel selection problems. During this period, numerous experiments dealing with the influence of Human Resource Accounting information on decision-making were carried out. In 1995, European Commission (EC) prepared guidelines for the

disclosure of Human Resource Accountings Information. Also, in Denmark the European Centre for the Development of Vocational Training (CEDEFOP) provided guidelines on Human Resources Accounting. Outline (2001) stated that one aspect of accounting that has received significant attention is the area of human capital. The money that enterprises spend of human resources had traditionally been reported in the account as a cost rather than as investment. More precisely, organizations do invest on training and development of their employees to get the best of them.

Characteristics of Human Resource Accounting

The following characteristics of HRA have been identified
- It is a system of accounting in which identification of human resources is made.
- Investment made in human resources is recorded.
- Measurement of costs and values are made.
- Changes occurring in human resources over a period of time are also recorded.
- Communicates information through financial statements to interested parties.

Objective of Human Resource Accounting

The following objectives of HRA have been identified:
- Identification of "human resource value"
- Measurement of the cost and value of people to organization.
- Investigation of the cognitive and behavior impact of such information
- To reflect fairness in presentation, distribution and disclosure of all material facts of the business enterprise

Measurement of Human Resources and their Appraisal

The issue on human resource accounting has focused on two basic issues:
1. How human resource assets should be valued, i.e., should historical cost or replacement value or present value methods be used?
2. The implications of capitalized human resources, once they are recorded, i.e., how should human resources be amortized? What are the tax implications of human resource amortization? What are the implications of human resource accounting on internal and external auditing?

Once it is accepted that human resources are an asset, the question of measuring the cost of this asset arises specifically in academic institution where the employees are highly qualified and do not stay in the organization for a long time.

There are two methods of valuing the human resources in any organization. They are as follows
1. The cost approach and
2. The value approach

Cost Approach

The cost approaches involve computation of the cost of human resources to the organization. The costs are capitalized and amortized over the useful life of the asset. Let us analyze the cost approaches. The methods under the cost approach are:
1. The Historical Cost Approach
2. The Replacement Cost Approach

3. The Opportunity Cost Approach

The Historical Cost Approach

According to this approach the actual cost of recruiting, selecting, hiring, training, placing and developing the employees of an organization are capitalized and amortized over the expected useful life of the asset concerned. In case of human resources in educational institutions the cost of training will not be there. Because for the teaching fraternity that too in higher education will not be given in most of the colleges. In academic institutions development is nothing but the scope for further higher studies like PhD. But many of the institutions will not spend for this. On the personal interest of the faculty and on their own expenditure they go for higher studies. Based on these facts the cost should be calculated.
It is easy to develop and operate these systems. It simply involves an extension of the concept of proper matching of costs with revenue. It will be treated very much like the cost of fixed assets. The same principles of capitalization and amortization are applied.
It suffers from various limitations like;
1. Unlike fixed assets, the economic value of human assets in academic institutions increases over period of time with knowledge and experience. But as a result of conventional accounting treatment, the capital cost decreases through amortization.
2. This approach in not suitable for academic institution.

Replacement Cost Approach

This method consists of estimating the costs of replacing the existing human resources. It is nothing but the cost of parallel grooming. This approach takes into account the fluctuations in the job market and the general rise in the price level.
The major disadvantage of this method is that while calculating the replacement value we may not get the same quality of the human resource. Because in relation to the educational institution the knowledge, the way of teaching, the interaction with the students and adaptability changes. Qualification wise the institution may get the same. But regarding the qualitative aspect which has been mentioned in the above lines may be varied. Thus it will not suit for academic institution.

The Opportunity Cost Approach

Hekimian and Jones proposed this method to overcome the limitations of the replacement cost method. According to them human resource values are measured through a competitive bidding process within the firm. Let us understand this concept with an example. How it may work in academic institution. If an academic institution has a capital base of 30, 00,000 and its revenue is around 3, 00,000. The return on investment (ROI) of the same industry is 15%. If the services of a particular faculty are acquired, it is expected that the revenue will increase by 90,000 over and above the target profit. If we capitalize Rs. 90,000 at 15% rate of return, it works to Rs. 6, 00,000 the institution may bid up to Rs.6, 00,000 for the faculty.

But this approach narrows the concept of opportunity cost by restricting the next base use only to the organization. The inclusion of scarce employees in the asset

base may be interpreted as discriminatory by other employees. This may result in lowering the employee morale.

The above mentioned methods which are based on historical cost approach are not suitable for present day situation. And that too for the academic institution where most of the things based on the human capital and it is not constant, the cost approaches are not suitable.

Value Approach

The economic and current value approaches using the present value of expected future benefits have strong theoretical appeal. From practical point of view the measurement problems associated with these approaches are insurmountable. Quantification of future economic benefits is difficult. Several approaches have been suggested as substitute measure of economic value. Those various approaches are as follows:

1. Lev and Schwartz Present Value of Future Earnings Model
2. Stochastic Rewards Valuation Model
3. Jaggi and Lau Model for Human Resource Valuation

Lev and Schwartz Present Value of Future Earnings Model

This model is also known as compensation model. According to this approach individual employee's future compensation will be used to find out the value of human capital for an organization. The method could be explained with the help of a hypothetical example in Academic Institution. In our case it relates to only the higher education;

The teaching career for higher education starts at the age of 22 or 23 years. The designation which will be occupied by the faculty will be Assistant Professor. Certain assumptions are required to study the example. They are as under;

1. At the age of 23 the teaching career starts as a Assistant Professor
2. The discount rate is assumed to be 10%

Based on these assumptions let us work out how the present value could be got. Following is the table which shows the average earnings of the employee per annum in the career of teaching

Age (Years)	**Average annual earnings (per Employee)**
23 – 32	96000
33 – 42	120000
43 – 52	150000
53 – 62	120000

The present value of this table has been shown below:

96000 X 6.145 * (1 to 10 years) = 589920
120000 X 2.369 # (11 to 20 Years) = 284280
150000 X 0.913 ♣ (21 to 30 years) = 136950
120000 X 0.352 ☼ (31 to 40 Years) = 42240
Total PV for an employee = 1053390
(see P.V. of annuity of Re. 1 table)
*from the table at 10 years and 10% rate = 6.145

8.514 – 6.145 = 0.913
♣ 9.427 – 8.514 = 0.532
The limitations of this model are as follows:
1. It ignores the possibility that a person may quit the organization before death or retirement.
2. It ignores the possibility of persons changing the positions during their careers like from Assistant Professor to Professor.
3. There is subjectivity being associated with the determination of the level of future salary, the length of expected employment within the organization, and the discount rate.

Stochastic Rewards Valuation Model

This model is an improvement over the present value of future earnings model. This model is developed by Eric Flamholtz. It is based on estimates of expected future services which was a major constraint of the earlier model. This model focuses on measurement of a person's value to a specified institution. It is recognized that an academician generates value for an institution as he occupies and plays different roles and renders services to the institution.

Based on the above concept, an academician's expected realizable value to an organization could be measured as the discounted mathematical expectation of the monetary worth of the future rewards an academician is expected to render to the institution in the future roles he is expected to occupy, taking into consideration the probability of his remaining in the institution.

According to Flamholtz model, the value is determined by multiplying the expected quantities of services of an employee in each service state with the respective probability of a person occupying these service states in the forthcoming period of time. The value of human resources of the institution is ascertained by aggregating the present value of expected future services of all employees for the period of time.
The limitations of this model are

1. Obtaining valid data regarding the value of a service state in academic institution is very difficult.
2. A person's expected tenure, and the probabilities of occupying various service states at specific times like the position of Associate Professor and Professor is not properly available.

Jaggi and Lau Model for Human Resource Valuation:

The valuation of Human Resources on a group basis was suggested by the authors of this model. According to this model group means the team of homogeneous employees. In the case of academic institution it may be the group of faculty members, who are in the same designation. It might be difficult to predict an individual's expected service tenure in the institution or at a particular level or position, but on a group basis, it is easier to ascertain the percentage of people in a particular group likely either to leave the firm during each of the forthcoming periods, or be promoted to higher levels.

This model is suitable to some extent for academic institution. But getting the information about the monetary data is a challenge.

Conclusion and Suggestion

Human Resource Accounting has been receiving much attention now-a-days. Though people are the most important asset for an educational institution, the value of assets does not appear in the financial statement. The accountants contend that human beings working in an academic institution are not owned by it; hence they cannot be treated as assets. But the fact is that, it is the investment on people and not the people themselves, which are an institution's human assets.

It is difficult to measure the human resources in an academic institution, that too with higher education because most of the faculty will not stay in the same institution for more than 3 years. And the knowledge base will be very vast.

The efforts have been made to evaluate the human resources in companies and to some extent they have been proved to be successful. But none of academic institution has valued their Human Resources and shown it in the annual report. Still lot of research has to take place for Human Resource Accounting in the field of educational institutions.

As of now the method which could be applied to calculate the value of human resources for educational institution is Net present value method.

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Management

KEYWORDS : Inflation Accounting, Price Level Changes, Profitability of the Company

Accounting and Reporting of Effects of Changing Prices with Special Reference to KSFCI, Bangalore

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ABSTRACT

The existing accounting practice of preparing financial statements are based on an important accounting assumption, namely, the monetary postulate, which states that the value of the monetary unit is stable and that fluctuations in it may be ignored in the preparation of accounts. So long as prices and costs remain stable, no accounting problem arises. But with the movement – upwards or downwards – in the price – level, the assumption of a stable monetary unit does not hold good. Consequently, a host of problems begin to creep into the accounts. This study shows although inflation effects are not recognized in nominal financial statements, they have significant economic consequences even during a period in which inflation is relatively low. This study also shows that how the inflation has affected the profitability of KSFCI, Bangalore.

INTRODUCTION

In economics, inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation also reflects erosion in the purchasing power of money – a loss of real value in the internal medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the Consumer Price Index) over time.

OBJECTIVES OF THE STUDY

1. To explain the distortions in accounting results during the period of changing prices.
2. To List the different proposals for dealing with the problem of inflation in accounts.
3. To explain the adjustments that is to be made in the profit and loss statement and the balance sheet in the General Purchasing Power Accounting (GPPA).

RESEARCH METHODOLOGY

To study the impact of inflation accounting on the profitability of the company the theoretical framework has been studied in application with KSFIC. This study is a descriptive study where the current cost accounting method for evaluating the profitability is adopted for the company.

LITERATURE REVIEW

A study conducted by *Cenap Ilter* on **Exploring the Effects of Inflation Accounting on Financial Statement** explores the effects of inflation on financial statement. Inflation, even at lower rates affects financial statements. This criteria-an inflation rate for restatement of financial statements can be set as minimum as possible, because inflation adjustments change the figures even at lower inflation rate. As the inflation accelerates the effects of inflation become more apparent on financial statements. Based on the study the management is advised to watch the inflation and calculate the possible effects of it on the financials.

The study on **Forecasting Inflation** by ***Jon Faust and Jonathan H. Wright*** states that long – term nominal commitments such as labor contracts, mortgages and other debt, and price stickiness are widespread features of modern economies. In such a world, forecasting how the general price level will evolve over the life of a commitment is an essential part of private sector decision-making. The existence of long-term nominal obligations is also among the primary reasons economists generally believe that monetary policy is not neutral, at least over moderate horizons.

As per the literature review it is clear that there are various distortions in the financial report because of inflation accounting. So our study concentrates on the distortions and also how the profitability of KSFIC is affected by the inflation accounting.

DISTORTIONS IN ACCOUNTING RESULTS

The monetary postulate underlying historical cost accounting does not hold good during the period of changing prices. Consequently, a host of problems begin to creep into the accounts with the movement in prices. Such problems have the effect of distorting the accounting results in various ways like Non – recovery of costs, Problem of replacement, financial strain on Business, Problem of Capital Levy and Capital Distribution and so on.

FINDINGS

Based on the theoretical background of the demerits of the historical approach a study has been conducted on KSFIC to know the effect of inflation on profits of the said company. For the study purpose previous year balance sheet (i.e. 2011-2012) has been taken and Current Purchasing Power Method is considered.

Table 1: Actual and Inflated profit and loss account of KSFCI for 2012

Particulars	Actual Expenditure	Inflated Expenditure
Purchases	42320369	43422489.65
Raw materials	51940537	53293155.15
Operatives & other expenses	113665837	116625884.8
Employees remuneration & other benefits	64368395	66044655.29
Administration Selling & expenses	.....	.....
Depreciation	2140636	2196381.73
TOTAL	274435774	281582566.6

Source: Annual Reports of KSFIC for the year 2011-12

Interpretation: From the above table we can conclude that the actual expenses are very low when compared to that of the inflated ones. This is because the value of money which is assumed to be constant is not so. So for all the expenses the current value is more when compared to the expenditure when they were made.

One more table which is shown below shows the profit figures which are based on actual expenses as well as inflated expenses which are calculated on the basis of wholesale price index.

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Table 2: Profit figures based on actual expenses in comparison with inflated expenses

Particulars	Actual	Inflated
Revenue	281517049	281517049
Total Expenditure	274435774	281582566.6
Profit (Loss)	7081275	-65517.6

Source: Annual Reports of KSFIC for the year 2011-12

Interpretation: From the above table we can observe that the profit which is shown on historical cost accounting is more when compared to that of the profits when it is calculated on the basis of inflation accounting.

The formula which is used to calculate the inflation expenses is as mentioned below:

$$\text{Purchases} = \frac{\text{Expenses Index at the end of the year}}{\text{Expenses Index at the begging of the year}}$$

Table 3: net monetary result on account of price level changes

Monetary Liabilities:		
Monetary liabilities as on 31/3/2011 (102945707 X 1.07)	110151906	
Increase in monetary liability during the year (9143700 X 1.07)	9783759	
Inflated value of the monetary liability	119935665	7846258
Historical value of the monetary liability as on 31/3/2012	112089407	
Monetary Assets:		
Monetary Assets as on 31/3/2011 (224837267 X 1.07)	240575876	
Increase in monetary asset during the year (18082066 X 1.07)	19347811	
Inflated value of the monetary asset	259923687	
Historical value of the monetary asset as on 31/3/2012	242919333	**(17004354)**
Net loss on monetary assets		(9158096)

Source: Annual Reports of KSFIC for the year 2011 - 12.

Profit and Loss Account: Table 1 shows all the items of profit and loss account. The amount which we can observe is mentioned both in the historical cost accounting as well as current purchasing power method. As per the study it is clear that all the expenses i.e., purchases, raw materials, operatives, employee remuneration, administration and selling expenses and depreciation is less when compared to that of inflated values which leads to lesser profits.

Profit figures: Table 2 shows the inflated and the actual profits are varying to a greater extent. As per the historical method there is a profit. But as we go through the inflation accounting method there is a loss.

Net Monetary Gain or Loss on Holding the Assets and Liabilities: Table 3 depicts the calculation of Monetary Gain and Loss for the previous year 2011 – 12. By holding the monetary assets the company is going for the loss. But the company will gain through holding the monetary liabilities. The monetary loss is greater than that of the monetary gain for the KSFIC in the previous year. This is the effect of inflation.

This is the status of the profit and Loss account. This is also applicable even for the balance sheet items. Let us see how the current purchasing power method of inflation affects the balance sheet figures.

While calculating the inflation effects on balance sheet items we have to calculate the loss on monetary assets and gain on monetary liabilities. Finally we have to calculate the net monetary gain or loss from these monetary assets and liabilities.

The index which is used to convert the historical value into the current value is wholesale price index.

That is on 31/3/2011 the WPI was 148.1 and on 31/3/2012 the WPI was 158.4

CONCLUSION

From the study it is clear that the profit figures will vary to a greater extent because of changing price levels. And it will be causing various problems for the true financial position as it has been discussed earlier. In the study the current purchasing power method is used to analyse the data which is not free from various drawbacks. Those demerits are as mentioned below:

1. An important weakness of this method is its concern about changes in the general level of prices as opposed to those in the specific prices.
2. The purchasing power unit proposed by the GPPA method is not easily perceived by the users of financial statements. Whereas a monetary unit is easily understood and perceived.
3. It is maintained that the purchasing gain/losses arising due to price-level changes which are recognized by the GPPA method, are likely to get confused with operating profits of the enterprise. This is likely to obscure the results of managerial skills and decisions.
4. The amount of work and costs involved in the reproduction of price – level adjusted accounts is so large that smaller companies may not opt for such reproduction of accounts.

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AN ADVANCED SURVEY ON CLOUD STORAGE FOR ENTERPRISE

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ABSTRACT: Storage as a Service is a business model in which a large company rents space in their storage infrastructure to a smaller company, individual and up to large company. In the enterprise, SaaS vendors are targeting secondary storage applications by promoting SaaS as a convenient way to manage backups. Cloud storage is an enterprise-class file server securely located in multiple geographically diverse data centers designed to enhance performance, redundancy and data security for business customers. Zoolz is designed with enterprise level features to offer a comprehensive business solution for backing up, archiving, data management and collaboration. The enterprise level features are scalability, centralized management, reliability, data tiring and more at a very affordable price. By leveraging AWS technology and our powerful backend, we provide a solution that will allow all businesses, no matter how large, an easy move to the cloud. Unlike other services, Zoolz does not cap bandwidth upload/download speeds nor does it set upload/download file size limitations. It can be used for quality cloud backup feasible for all businesses. Zoolz is the world's first cloud backup to adopt Cold Storage Technology to securely backup, archive and safe keep huge amounts of data to the cloud for a lifetime. Cold storage leverages the secure and reliable Amazon AWS technology everything is stored with 256-AES military grade encryption and transferred over an encrypted connection.

KEYWORDS: AWS, CLOUD STORAGE, SAAS, ZOOLZ.

INTRODUCTION

Storage as a Service is generally seen as a good alternative for a business and personnel to implement and maintain their own storage infrastructure. Cloud storage means the storage of data online in the cloud. Cloud storage is simply a term that refers to online space that you can use to store your data. Cloud storage provides a secure way of remotely storing your important data. Online storage solutions are usually provided using a large network of virtual servers that also come with tools for managing files and organizing your virtual storage space. Cloud storage can provide the benefits of greater accessibility, reliability, rapid deployment, strong protection for data backup, archival and disaster recovery purposes.

TYPES OF CLOUD STORAGE

Personal Cloud Storage: Also known as mobile cloud storage, personal cloud storage is a subset of public cloud storage that applies to storing an individual's data in the cloud and providing the individual with access to the data from anywhere. It also provides data syncing and sharing capabilities across multiple devices.

Public Cloud Storage: Cloud storage where the enterprise and storage service provider are separate and there aren't any cloud resources stored in the enterprise's data centre. The cloud storage provider fully manages the enterprise's public cloud storage.

Private Cloud Storage: In private cloud storage, the storage provider has infrastructure in the enterprise's data centre that is typically managed by the storage provider. Private cloud storage helps resolve the potential for security and performance concerns while still offering the advantages of cloud storage.

Hybrid Cloud Storage: A combination of public and private cloud storage where some critical data resides in the enterprise's private cloud while other data is stored and accessible from a public cloud storage provider.

Community Cloud Storage: The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (example: mission, security requirements, policies and compliance considerations). It may be managed by the organizations may exist on-premises and off-premises.

CLOUD SERVICE MODELS

A Cloud is a type of parallel and distributed system consisting of a collection of interconnected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements established through negotiation between the service provider and consumers. Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). Cloud services include the delivery of software, infrastructure and storage over the Internet based on user demand. Fig 1 shows that levels of Cloud Computing.

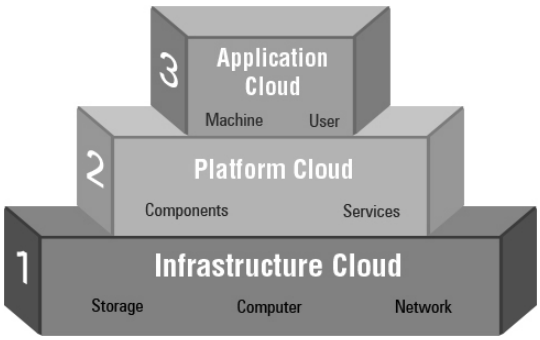

Fig 1: Cloud Computing Service Levels

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Infrastructure as a Service (IaaS): The capability provided to the consumer is to provision processing, storage, networks and other fundamental computing resources. Consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, deployed applications and possibly limited control of select networking components.

Platform as a Service (PaaS): The capability provided to the consumer is to deploy onto the cloud infrastructure consumer created or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems or storage, but has control over the deployed applications and possibly application hosting environment configurations.

Software as a Service (SaaS):

The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a web browser. The consumer does not manage individual application capabilities with the possible exception of limited user specific application configuration settings.

CLOUD STORAGE

Cloud storage is a model of networked online storage where data is stored on multiple virtual servers, generally hosted by third parties, rather than being hosted on dedicated servers. Hosting companies operate large data centers and people who require their data to be hosted buy or lease storage capacity from them and use it for their storage needs. The data center operators in the background virtualized the resources according to the requirements of the customer and expose them as storage pools, which the customers can themselves use to store files or data objects. Physically, the resource may span across multiple servers, through based uses a Web Cloud storage services may be accessed through a web service application programming interface (API) or interface. The use of the term cloud in describing these new models arose from architecture drawings that typically used a cloud as the dominant networking icon. The cloud conceptually represented any to any connectivity in a network, but also an abstraction of concerns such the actual connectivity and the services running in the network that accomplish that connectivity with little manual intervention.

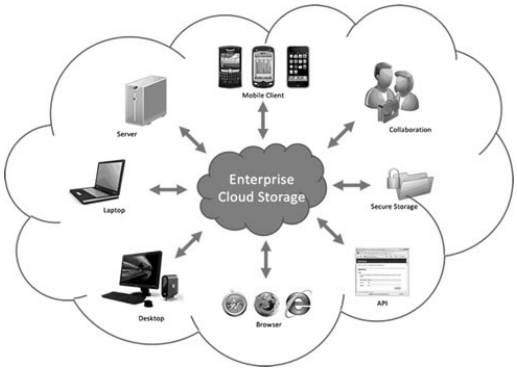

Fig 2: Enterprise Cloud Storage Architecture

Cloud storage is a cloud computing model in which data is stored on remote servers accessed from the Internet or "cloud". It is maintained, operated and managed by a cloud storage service provider on storage servers that are built on virtualization techniques. Cloud storage is also known as utility storage a term subject to differentiation based on actual implementation and service delivery. Fig 2 shows that, the Cloud Leverage storage platform scales to support business storage needs of any size. We use virtualization technology, which automatically increases capacity to support additional customers on the fly and ensures performance is always at its best.

CLOUD STORAGE REFERENCE MODEL

The appeal of cloud storage is due to some of the same attributes that define other cloud services: pay as you go, the illusion of infinite capacity (elasticity), and the simplicity of use/management. It is therefore important that any interface for cloud storage support these attributes, while allowing for a multitude of business cases and offerings, long into the future. The model created and published by the Storage Networking Industry Association™, shows multiple types of cloud data storage interfaces able to support both legacy and new applications. All of the interfaces allow storage to be provided on demand, drawn from a pool of resources. The capacity is drawn from a pool of storage capacity provided by storage services. Fig 3 shows the data services are applied to individual data elements as determined by the data system metadata. Metadata specifies the data requirements on the basis of individual data elements or on groups of data elements (containers).

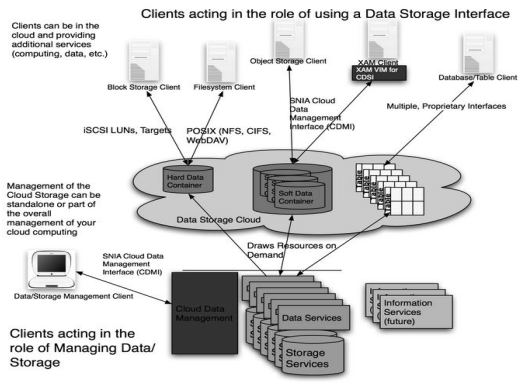

Fig 3: Cloud Computing Reference Model

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Cloud storage has the potential to truly disrupt the storage market due to its ability to provide "inherent" data protection and unlimited scalability, while imposing minimal infrastructure and management requirements on customers. This interface is also used by administrative and management applications to manage containers, accounts, security access and monitoring/billing information, even for storage that is accessible by other protocols. The capabilities of the underlying storage and data services are exposed so that clients can understand the offering. Conformant cloud offerings may offer a subset of either interface as long as they expose the limitations in the capabilities part of the interface.

ZOOLZ

Zoolz is a backup service that creates a continuous real time backup of your system and data providing your company with a scalable, reliable and a secure backup solution. Since data security is pivotal to the provider and user of backup software, Zoolz uses the highest security standards in transferring your data to and from our data centers. Using military-grade encryption, the user's data is protected from cyber-attacks, unauthorized access and theft. Zoolz is quick and simple to use. Once the app is downloaded, it rapidly scans folders for relevant files to add to the cloud. There is no need to make any configurations, and if a file has been changed, the updated versions will automatically upload. Zoolz is useful for people who have large volumes of media and documents and an interest in accessing them remotely and sharing them with others. It's a powerful means of securing important data, with download and uploads speeds up to five times quicker than its competition. Zoolz is new kid on the block among cloud-based backup service providers. In fact, both Zoolz and its parent company Genie9 are relative newcomers to this space.

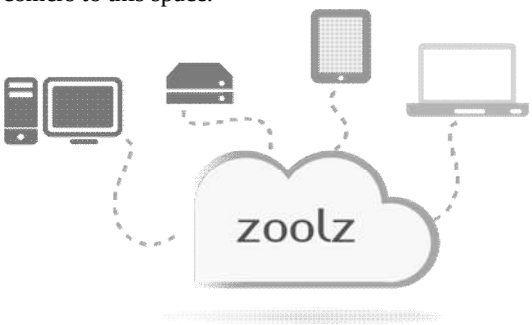

Fig 4: Zoolz for Everything

Fig 4 shows that with Zoolz, you can backup computers, laptops, netbooks, Windows Servers, Mac computers, and any external or network storage attached to your computers. Zoolz protects it all. In home computer or mobile device, open Zoolz web to access their backed up files and share securely with collaborators.

DEFINITION OF ZOOLZ

Zoolz is a long term storage unit for all data on your external, internal and network drives. Zoolz is designed for storing your data on the cloud for a lifetime. Fig 5 shows that Zoolz is the very first cloud backup to adopt Cold Storage Technology to securely backup, archive and safe keep huge amounts of data to the cloud for a lifetime. Zoolz is built entirely on Amazon AWS architecture.

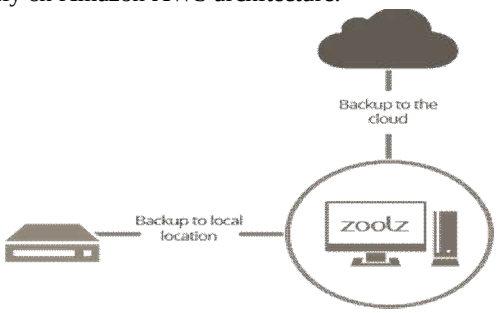

Fig 5: Zoolz Online Backup

FEATURES OF ZOOLZ

- **Continuous Backup:** Zoolz software will monitor file changes and backup your files as you update them.
- **Backup anything:** backup multiple computers, external hard drivers and even network drives onto Zoolz. There is no limit.
- **Multiple performance modes:** There are four backup performance modes: turbo, smart, battery saving and presentation.
- **Advanced file filtering:** It can filter by type, size, date and expression.
- **3 level data de-duplication.** Machine level, company level and global.
- **No limit on individual file size:** Whether you have 25GB MySQL database file or 10GB Light room files.
- **Several backup policies:** It can also set backup schedules and frequency.
- **Advanced user management:** Admins have the ability to configure the user data selection, privileges and settings all from one centralized location.
- **Mobile Apps:** get apps on both Android and iOS devices.
- **File retention rules:** Basically, can set file retention rules on your own.
- **Lightweight Client Software:** Most computation is done at the backend so the client software is very lightweight.
- **Share files:** easily share files via email and link generation and also protect your shared files with password.
- **Expiring Links:** This is the ability to expire links after one download.
- **Copy, Encrypt, Ship:** This is unique service Zoolz offers. Basically, can use utility software provided by Zoolz to copy and encrypt your data on an external hard drive and ship it to Zoolz and then they will process your files onto the cloud.
- **Cold Storage:** Built on top of Amazon Glacier storage infrastructure, it is meant for backing up rarely accessed files that don't need frequent updating. It is designed for archiving purpose and the cost is very low.

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- **Web console:** Apart from uploading and downloading files, all other functions can be done from the web interface.
- **Instant search:** A powerful search engine is built-in Zoolz web interface so that you can easily search among your files.
- **Easily switch between multiple computers:** If we are backing up multiple computers under the same account, we can easily switch between each computer under the same account.
- **Advanced reporting:** we can get all sorts of reports about your backups, including users across the globe and monitor each user's bandwidth usage.
- **Easy restoration:** we can do restoration via Web interface or using the client software. We can pause and resume your restores and it can restore to original file location or to different destination too.
- **Backup Windows servers:** Continuous data protection, backup while logged off, open file backup support and server level de-duplication that supports encrypted drives.

SECURITY & PROTECTION

Zoolz is actually built on top of Amazon AWS architecture, which is trusted by organizations like NASA, NASDAQ, National Institutes of Health and many others. There are 3 levels of encryption: 256 AES on machine, 128-bit SSL for data transfer, and 256-bit AES server side encryption. Data are stored on Amazon S3 and Glacier servers. According to Zoolz, this kind of security complies and surpasses with all laws and regulations required for data processing, transferring and storing such as Sarbanes-Oxley Act, HIPPA, PCI-DSS, GLBA, FISMA, and the Joint Commission. Zoolz protects your data with 256-AES encryption before it even leaves your network, 256-SSL encryption in transit and 256-AES encryption while at rest. Fig 6 shows that you can choose your own encryption key so that not even the Zoolz staff will ever be able to see any of your data. Also, files and folders you need to share are password-protected, and you can request a confirmation email that lets you know when files have reached the recipient. The administrative controls make it easy to deactivate users or passwords when needed for security purposes. It also unshared links to files and folders. Zoolz uses the Amazon Web Services infrastructure to store your data in any of Amazon's secure storage facilities around the world.

Fig 6: Remotely Access and Share with Zoolz

Users are able to provide others with access to their clouds by adding names via email and Facebook. The main app is used via Facebook, Zoolz also offers an app for mobile phones and iPads that allows film and music access while traveling.

COMPARISON

Table 1: Comparisons between Zoolz and Flickr

	Zoolz	Flickr
Files Supported	Everything	only photos
Upload Limitation	No Limitation	200 MB per photo
Privacy	Files are encrypted before leaving your machine using 256-AES. You can specify your own encryption password (optional)	Visible to everyone by default, no encryption
Image extensions supported	All including RAW image formats	JPEGs, non-animated GIFs, and PNGs. You can also upload TIFFs and some other file types, but they will automatically be converted to and stored in JPEG format.
File uploading	Automatic	Manual
Purpose of use	Backup and sharing	Photo sharing and streaming
Upload interruption	resumes where it left off	start the process from the beginning

Table 1 shows that difference in File storage, Uploading and usages.

DATA STORAGE

Zoolz is a pure-cloud solution. Multiple cloud storage providers are utilized to securely store the user's data. The list currently includes Amazon S3 and Amazon Glacier. This service provider is among the most trusted in the business as they provide the highest standards of data availability and service reliability. Data in storage is always present in an encrypted form using the AES 256 Encryption Standard SSE.

Hybrid+: Fig 7 shows, at any stage of the backup can enable Zoolz Hybrid+ to back up a copy of all your files to a local server, network or external drive. It zeros recovery time by intelligently prioritizing restoration of files from your local Hybrid+ storage instead of the online storage.

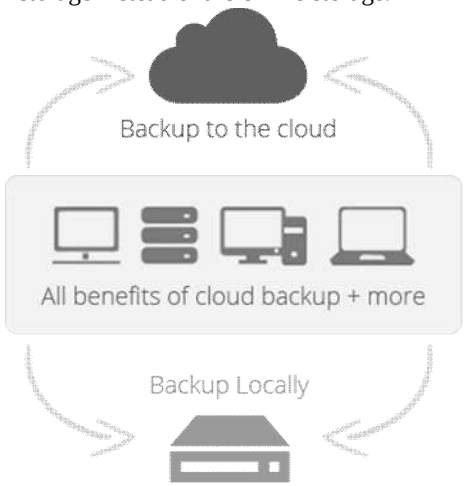

Fig 7: Zoolz Hybrid+ Storage

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CENTRALIZED MANAGEMENT

The Cloud Management Console allows controlling entire organization's backups. The management consoles also deploy Zoolz to client computers with simple email invites, whether it is one user up to thousands. This gives the administrator the ability to deploy policies, locally or globally and the control of managing and monitoring the entire process from a central location.

Enterprise level backend core: Zoolz uses the enterprise level, secure and reliable Amazon S3 Data centers. Your backups are duplicated and stored over multiple facilities across the globe ensuring on-demand data availability. All major computation is done on the back end cloud offering smooth backup and minimum performance impact on your side. Fig 8 shows, Zoolz is one of the cloud service providers for enterprise. It works more or same as the other cloud service provider. Zoolz also integrated with Facebook. It allows Facebook users to share their photos and videos. Zoolz user will face less complexity because this service supports both iOS and Android powered devices.

Fig 8: Zoolz Enterprise level backend core

COLD TECHNOLOGY

Cold Storage is an extremely low cost storage that provides an optimal, secure and reliable storage solution for data that is rarely accessed. It is designed to store your files for a lifetime as they are duplicated over multiple facilities across the Globe. Your hardware can fail, but your files will stay protected with Zoolz. Unlike other services, Zoolz is designed for safekeeping for retired and failed external drives or computers. There is no need to restore your rarely accessed data on your active computer or media, in order for your data to stay protected. Restoring cold storage files are delayed for 3-5 hours. However, recovery is extremely simple just go to My Computer from the web console and select your cold storage files, once they are ready you will receive an email with a secure link to download these files or folders. Cold storage leverages the secure and reliable Amazon AWS technology, everything is stored with 256-AES military grade encryption and transferred over an encrypted connection. It is a perfect solution to backup external drives, NASs, SANs and any big data stored for safekeeping, archiving or auditing purposes. To accelerate backing up big data, use Copy, Encrypt and Ship. Just copy and encrypt all your data to an external disk and ship the disk to us, backup will resume automatically taking new and changed files.

BIG DATA ARCHIVE WITH ZOOLZ

Zoolz is low cost cloud backup and archival system that leverages Amazon Glacier to give a complete and usable business solution and able to backup and archive data easily. Bypass internet by shipping your data to our data centers with Zero knowledge, Instant Search, Instant Browsing, 3-5 Hours Restore time, No hidden cost price includes, storage, transfer and recovery fee, Photo Previews (Big and small thumbnails) Perfect for photographs and media companies, Fast Recovery in case of large data recovery can accelerate the process by sending your files to an external hard disk. So, if 1 TB, 1 PB or even more can move them to the cloud easily with Zoolz. Fig 9 shows that the Zoolz is the most practical storage and archive solution which can replace tape backups and on premises storage, by providing easy retrieval and a cost effective solution.

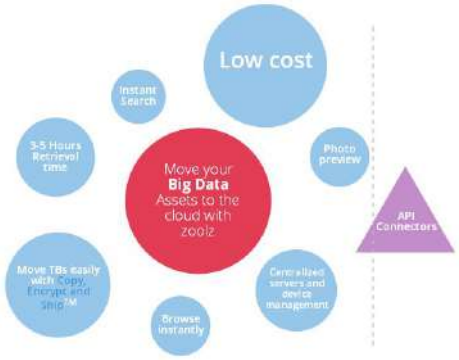

Fig 9: Big Data archive with Zoolz

CONCLUSION

This paper described the principal security measures offered by Zoolz to ensure the safety of the user's data. A Secure deployment of the software, transfer security, data encryption, and storage security all prove Zoolz to be a safe and a reliable cloud backup solution designed and constructed with security in mind. Cold storage leverages the secure and reliable Amazon AWS technology, everything is stored with 256-AES military grade encryption and transferred over an encrypted connection. Furthermore, Zoolz 2.0 is a complete comprehensive storage solution where you can backup desktops, laptop, external storage, network locations and even servers. Zoolz 2.0 leverages Amazon Glacier very beautifully by adding encryption, de-duplication, web viewing as well as browsing. With simply installing Zoolz you will instantly make your life easier, especially if you take a look at its many enticing features such as the introduction of Cold Storage which is the future of all backup solutions. All in all, Zoolz is the perfect business solution for both corporate and home users and with its compelling prices,

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A Study on Training Importance for Employees of their Successful Performance in the Organization

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Abstract: *Training is vital to any company. Employee training is essential for an organization's success. By implementing a training program, you can save your company thousands of dollars a year. Not only will the savings pay off for your company, but you can increase productivity from your employees. Training is very much Important and benefits in all the hierarchical levels of the employees for improving their performance. This study gives a clear understanding about the effectiveness and Importance of the training in respect of employees' performance in the organization. For entry level employees training is very important as well as must for theirrespective Job. At the same time training would help all levels of employees in their enhancement of their performance on day today bases. Training is not only enhancing their performance also help employees to upgrade their knowledge as well skills in respective of their specialized job as per the current market trends. The primary purpose of organization training is to provide the skills, employees need to make your business better overall. In essence, trained employees can help to achieve high quality performance in a shorter time period.*

Keywords: Training, Performance, Importance, Effectiveness, Benefits, Training need, Employee competency

1. Introduction

Training is the process of enhancing the skills, capabilities and knowledge of employees for doing particular job. Training process moulds the thinking of an employees and leads to quality performance of employees .It is continues and never ending process .Training is crucial for organization development and success. It is fruitful to both employers and employees of an organization. An employee will become more efficient and productive if he trained well.

Training is given on four basic grounds: 1.New candidates who join an organization are given training. This training familiarizes them with the organizational mission, vision, rules and regulations and the working conditions. 2. The existing employees are trained to refresh and enhance their knowledge. 3. If any updating and amendments take place in technology, training is given to cope up with those changes. For instance, purchasing new equipment, changes in technique of production, computer impartment. The employees are trained about use of new equipments and work methods. 4. When promotion and career growth becomes important. Training is given so that employees are prepared to share the responsibilities of the higher level job.

Training for new employees represents a golden first opportunity to get things off to a good start. It sets a momentum for the new hire. This momentum can be positive for a good experience.For better performance initial training required for new employees in the organization .Interval trainings are very important for all levels of the employees for the quality performance and organizationproductivity.

Training would not only helpful for the individual competency. It is more helpful for the organization productivity .In the current market competent employees will give more productivity and will get more opportunity at all the level and different field so, Training is playing very vital role in terms of employee and organization development. The quality and variety of the employee training you provide is key for motivation

2. Objective

1. To know the training impact on the employee performance in the organization.
2. To understand the Training importance and the opportunities in terms of employee performance and organizational development.
3. To understand the training purpose,need and benefits of an Employee competency in the organization.
4. Real Time Training process at top level companies

3. Training Impact on Employee Performance

Employee performance training should follow a true evaluation of the employee's skill and knowledge levels; this needs to be assessed prior to hiring the employee. The knowledge and skill portion of the review considers whether the employee has or is performing the job tasks properly. Does the employee know what to do? Has it been explained clearly and concisely?

A review or performance assessment is the tool that determines what needs to be done in order to improve the employee's performance. Hence, it needs to be clear, concise, informative, measurable and actionable. Without measures and actions, it would be like a journey with a destination and parameters.

With the performance assessment completed by the employee and evaluated by the employer, it will now be known whether the employer will want to invest in additional training. It might be the right time to begin a departure plan. There are some situations where additional training will do absolutely no good. However typically if the employee was 'good enough' to hire, then chances are additional employee performance training will help the 'under achiever' and put him or her back on track for success. Employee performance training will also set a good

tone for existing employees because they will know that their employer is willing to help employees who need additional training.Unless poor performance is the result of lack of knowledge or skill, training will have little if any effect on the problem. Typically, companies will try to solve the problem of poor performance by funneling more dollars into training, poor performance means less productivity.

4. The Training Impact on Main Areas Like as Follows

1. **Improves morale of employees-** Training helps the employee to get job security and job satisfaction. The more satisfied the employee is and the greater is his morale, the more he will contribute to organizational success and the lesser will be employee absenteeism and turnover.
2. **Less supervision-** A well trained employee will be well acquainted with the job and will need less of supervision. Thus, there will be less wastage of time and efforts.
3. **Fewer accidents**- Errors are likely to occur if the employees lack knowledge and skills required for doing a particular job. The more trained an employee is, the less are the chances of committing accidents in job and the more proficient the employee becomes.
4. **Chances of promotion-** Employees acquire skills and efficiency during training. They become more eligible for promotion. They become an asset for the organization.
5. **Increased productivity-** Training improves efficiency and productivity of employees. Well trained employees show both quantity and quality performance. There is less wastage of time, money and resources if employees are properly trained.

5. Employee Training Importance and Opportunities in the Organization

Training is crucial because itEducates workers about the effective use of technology, Ensures competitive edge in the market, Promotes safety and health among employees, Creates opportunities for career development and personal growth, an important factor in retaining workers Helps employers comply with laws and regulations and Improves productivity and profitability.

Surveys indicate the main issue facing business is attracting and retaining good employees. Nationally the average turnover rate is approaching 15%. Keep in mind that a turnover rate of 10% is desirable. Continuous improvement for a company is parting with the lowest 10% of your performers and replacing them with higher quality employees. Therefore, the goal is to part with under-achievers, and retain your top performing employees. Inevitably, you will lose good performers; the key is to minimize that fact.

A complete employee training program includes a formal new hire training program with an overview of the job expectations and performance skills needed to perform the job functions. A new hire training program provides a fundamental understanding of the position and how the position fits within the organizational structure. The more background knowledge the new associate has about how one workgroup interrelates with ancillary departments, the more the new associate will understand his or her impact on the organization.

Another aspect of a comprehensive employee training program is continuing education. The most effective employee training programs make continuing education an ongoing responsibility of one person in the department. This is an important function that will keep all staff members' current about policies, procedures and the technology used in the department. When advance training was introduced years ago, employees considered it punishment to have to go to a meeting and learn something. It was something akin to going to traffic court and in order not to have the offense appear on your insurance you were given the 'opportunity' to go to drivers education class. How times have changed. Now employees consider additional training as an opportunity and as a highly regarded company benefit.

6. Employees like training opportunities for many reasons including the following

- They can actually learn something that will make their job easier or more enjoyable
- It increases their 'stock value' within the company. They become more desired
- It could lead to a promotion, pay increase, or a new title
- They can include it on their resume someday in the future
- They feel needed by the company, because their employer is willing to invest time and money into their learning experience
- It gives them the chance to do something different, other than their daily job.
- They can be around other employees or peers and build camaraderie.
- It's typically fun
- It might even include a breakfast, lunch, or dinner
- It might include a team building fun event
- It could include company paid travel to get away for while.

The actual training opportunities that exist are as abundant as there are needs to be filled and creative ideas to be surfaced.Training opportunities can be grouped into one of two categories; mandatory and optional. Mandatory training opportunities require employees to participate in those training events. That type of training opportunity provides more benefit to the company than to the employee, though the employee also benefits. This type of training typically covers policy, procedure, HR situations, and legal requirements. Mandatory training typically protects the company from liability whereas optional training opportunities benefit the employee as much if not more than the employer. Optional training benefits the employee not only with his or her current employer; it also helps the employee with most if not all future employment situations.

As you can see, providing training opportunities benefit all who come in contact with the experience. Whether the benefit is short term or long lasting, the opportunity for further training is an exceptional experience for all employees.

7. Purpose, Need and benefits of an Employee Training in Organization

The primary purpose of organization training is to provide the skills employees need to make your business better overall. In essence, trained employees can help to achieve high quality products and services in a shorter time period. Highly skilled workers can provide better customer service experiences and engage more customers for longer periods.McGhee (1997) stated that an organization should commit its resources to a training activity only if, in the best judgment of managers, the training can be expected to achieve some results other than modifying employee behavior. It must support some organizational goals, such as more efficient production or distribution of goods and services, product operating costs, improved quality or more efficient personal relations is the modification of employees behavior affected through training should be aimed at supporting organization objectives.

Competitive advantage is the essence of competitive strategy. It encompasses those capabilities, resources, relationships, and decisions, which permits an organization to capitalize on opportunities in the marketplace and to avoid threats to its desired position, (Lengnick-Hall 1990). Boxall and Purcell (1992) suggest that 'human resource advantage can be traced to better people employed in organizations with better processes.' This echoes the resource based view of the firm, which states that 'distinctive human resource practices help to create the unique competences that determine how firms compete' (Capelli and Crocker- Hefter, 1996). Intellectual capital is the source of competitive advantage for organizations. The challenge is to ensure that firms have the ability to find, assimilate, compensate, and retain human capital in shape of talented individual who can drive a global organization that both responsive to its customer and 'the burgeoning opportunities of technology' (Armstrong, 2005)

8. Real Time Training Process at Top Level Companies

Training @ TCS

In TCS there is a initial Learning programme for 23 days at their main 6 training centers that is induction. Employees will be sent to the locations where they are recruited for stream specific training .There is exams in between the training and after completion of the training and employee training will affect their salary.TCS launches its science to software training program in the Chennai.

Training @ Wipro

Wipro follows three important step in training, 1st month is fundamental readiness programe, 2nd month is project readiness program and 3rd month is real time lab where they need to do a real time project.

Training @ Infosys

In Wipro recruitment recruiters are divided into 2 categories', Computer background and Non computer background.16 week of training in their Mysore campus and after completion of the training at the end employees have comprehensive exams and their performance will affects on their salary

9. Research Study

The researcher focused Descriptive research design. Data collection has done through the secondary data .collected in form of Books, Journals, Internet and other sources.

10. Suggestions

1. Impact of the training directly related to the employee performance, the training effectiveness directly associated not only with performance also with monetary benefit of an employee in the organization.
2. Most of the companies gives more importance and preference towards the fresher's and entry level training. For the more productivity company should always give training at all the hierarchical level of the employees in the organization.
3. Employee motivation is very important for the better performance so, regular training is important for an employee.
4. Organization would invest more capital for the training so, employees should be loyal and committed to the company and work towards the organizational productivity for long duration.

11. Conclusion

Every organization needs to have well-trained and experienced people for performing the activities that have to be done. As the jobs become more complex, the importance of employee development also increases in a rapidly changing society. Employees' training is not only an activity that is desirable but also an activity that an organization must commit its resources to if it is maintaining a viable and knowledgeable workforce.

Training plays an important role in improving organizational effectiveness. It is much needed in the private sector in today's competitive environment, especially after liberalization and globalization. In order to make the training more effective in improving organizational as well as individual performance, it is important that the perception regarding effectiveness of training must be made positive. Creating good learning environment, by providing encouragement in terms of promotion or increment and by linking training more closely to work practices.

The employer classifies the employees in 3 categories namely technical, interpersonal and problem solving. The employer train the employee so that there is a modification in the employee overall skill. Thus, the employee decides as to the type of training, the time of training and form of training. Training means maintenance and improvement of the level of performance of a person in a section or a department. Training is an upgrading performance.

Author Profile

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and academic field worked with national and multinational companies and started career in Marketing Field as Business Development Manager and moved in to an interested core operational field of HR and served in different companies as HR specialist, Regional HR Manager performed core HR generalist role etc. and academic field as Asst Prof and Placement and training Head for PG courses. Exposure in teaching of HR subjects for MBA students in different colleges. Companies worked with: Dalmia Sidco Ltd, Modi groups (Nature's Bounty, Reston) VLCC, VTS Veeras India PVT, (Europe based AHU Manufacturing Company) Etc., She helps candidates with the help of her own consulting firm by name "Hollyhock HR Services" providing Training and job opportunities to many fresher's and experience candidates. Past 4years already placed many candidates in Indian and MNC companies from the entry level to top level positions. Exposure in core HR generalist area of Talent Acquisition, Training & development, HR Operation, PMS, HR Polices, Statutory Compliances, Etc., She has conducted Training programs to many colleges for students' employability and provided placement opportunities to many students in different verticals. She has attended National and international Conferences and seminar and Published articles in different international publications.

PENCHANT OF INVESTORS FOR MUTUAL FUNDS IN INDIAN MARKET AND ITS PERFORMANCE ASSESSMENT

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Introduction

Due to the development in Indian financial markets and with reforms in financial sector, Mutual funds have referred to an important investment avenue for small and medium term investors. During initial days UTI was only the public sector player in the market issuing Mutual fund ,later even the private sector has entered in to the market with innovative schemes to furnish the requirements of investors worldwide .Thus, mutual funds have provided better substitute to medium and small investors and thereby obtain the benefits of expertise based equity investments .So in this present situation ,where many varieties of schemes are flooded into market , it is important to investigate the need of consumers and also analyze the factors affecting the need of consumers

Literature Review

- Langer (1983) suggests that when these preferences are based on choices, there is more ego involvement and attachment to the preferences, suggesting heightened level of preference bias. This phenomenon is consistent with the prediction from Cognitive Dissonance theory of Festinger (1957).
- De Bondt and Thaler (1985) while investigating the possible psychological basis for investor behavior, argue that mean reversion in stock prices is an evidence of investor over reaction where investors over emphasize recent firm performance in forming future expectations.
- Ippolito (1992) says that fund/scheme selection by investors is based on past performance and money flows into winning funds more rapidly than they flow out of losing funds
- Robert J. Shiller (1993) reported that many investors do not have data analysis and interpretation skill because, data from the market supports the merits of index investing, passive investors are more likely to base their investment choices on information received from objective or scientific sources.
- Kulshreshta (1994) offers certain guidelines to the investors in selecting the mutual fund schemes.

Objectives of the Study

- To know the need of investors regarding mutual fund investment.
- To evaluate the factors that have an impact on buying of mutual fund
- To calculate the performance of mutual funds as preferred by investors based on their return parameter.

Research Methodology

Research 1: Primary Research to know the preference of mutual fund investors regarding their investment.

Research 2: Secondary Research to estimate the presentation based upon Descriptive Research Design of Mutual funds which are ideal by most of the investors. Top 5 companies based on NAV from each sector is selected for further analysis. Three mutual fund sectors viz. tax funds, diversified funds and sector funds are selected.

Sampling Method and Sampling Frame

Research 1: The primary research is based upon convenience sampling.

Research 2: The secondary Research is based upon Judgmental Sampling.

Data Collection Instrument

Research 1: The data collection instrument used for primary research is questionnaire. The type of questionnaire used is open and close ended structured questionnaire.

Research 2: The data collection instrument used for secondary research is various data available on websites like www.mutualfundindia.com and other various sources of secondary information.

Statistical Tools used for Analysis of data:

Chi square test and Cramer's V (Testing for the Strength of Categorical Relationships) and Fisher's Exact Test were used

Analysis of data and Findings:

1	Gender	Male 93	Female 7		
2	Age	Less than 30 52	31-40 17	41-50 14	More than 50 17
3	Qualification	High School 6	Graduate 46	Post Graduate 29	Professional 19
4	Occupation	Professional 12	Business 33	Salaried 51	Retired 4
5	Annual Income	3-5 lakhs 59	5-15 lakhs 34	15-25 lakhs 6	Above 25 lakhs 1

i. **Qualification Distribution** Maximum of respondents i. e 46% holds a graduation whereas other 29% of the respondents hold Postgraduate and 19% holds Professional qualification finally a minor portion of 6% of the respondents are high school pass ..

ii. **Occupation Distribution:** majority forms up to 51% are salaried employees and minor part of 4% are retired respondents . Other 33% are business persons and 12% are practicing professionals (like Chartered Accountants, Architects, Lawyers etc.)

iii. **Income Distribution:** 59% of respondents forming a majority lie in the slab rate of income between 3-5 lakhs . A minor portion of 6% and 1% have an annual income of Rs. 15-25 lakhs and above Rs. 25 lakhs respectively and 34% of the respondents have an income ranging from Rs. 5-15 lakhs.

iv. **Preferred Investment Avenue by investors:**

Ranking the Kind of investments preferred by the respondents.

Kind of Investments	No. of Respondents	Ranks
Savings A/c	50	1
Mutual Fund	48	2
Gold/Silver	45	3
Shares/debentures	41	4
Fixed Deposit	40	5
Insurance	31	6
Real Estate	26	7
Post Office	24	8

Factor favored most while making investment and Age of investors:

		Factor Preferred Most				Total
		Liquidity	High Return	Low risk	company Reputation	
Age	Less than 30	11	21	12	8	52
	31-40	4	10	2	1	17
	41-50	4	4	4	2	14
	More than 50	3	6	7	1	17
Total		22	41	25	12	100

H0: Factor preferred the most while taking investment decision and age of the investor are independent of each other.

H1: Factor preferred the most while taking investment decision and age of the investor are dependent on each other.

Investors of age group less than 30 are more involved by the high returns, low risk or liquidity or company reputation. Investors of 31-40 years of age give high preference to high return. But the investors of age group of 41-50 are consistently spread for factors like return, risk and liquidity. Investors above 50years of age prefer low risk more than any other factor. Chi square calculated value is 7.1773 and tabulated value for the same is 16.91 as calculated value is less than tabulated value Ho is not rejected. (Fail to reject H0, thus there is no considerable relationship between two variables.). This means that factors preferred and age group are independent of each other.

Share of Mutual Funds in your total Investment:

		% Investment of Mutual fund in total Investment			Total
		0% - 25%	25% - 50%	50% - 75%	
Annual Income	3 - 5	33	7	3	43
	5 - 15	18	7	2	27
	15 - 25	4	1	0	5
Total		55	15	5	75

H0: Share of mutual funds in the total investment and the income of the investors are independent of each other.

H1: Share of mutual funds in the total investment and the income of the investors are dependent on each other.

From the above table it is clear that the investor would typically favor to invest 0-33% of the investments in mutual funds. Barely 5 investors choose 50-75% investments in mutual fund and 15 investors were willing to invest 25-50% of their total investments in mutual fund. In addition the above table also depicts that annual income has no impact on percentage investment of mutual fund. Chi square computed value is 1.3966 and tabulated value is 9.578. Since computed value is less than tabulated value Ho is not rejected and H1 is accepted that is Share of mutual funds in the total investment and the income of the investors are independent of each other.

Favored method to receive the returns and regularity to receive the returns on mutual fund scheme.

		Frequency to receive returns				Total
		Monthly	Quarterly	Semi-Annually	Annually	
Preferred mode to receive returns	Dividend payout	5	7	1	9	22
	Dividend Reinvestment	0	4	1	6	11
	Growth in NAV	2	9	13	18	42
Total		7	20	15	33	75

H0: Way favored to receive returns yearly and the category of Return expected by the investors is independent of each other.

H1: Way favored to receive returns yearly and the category of Return expected by the investors is dependent on each other.

Calculated value of Chi square is 13.278 and tabulated value for the same is 12.672. As calculated value is higher than tabulated value Ho is rejected. Thus there is significant relationship between the variables.

Findings related to Schemes most preferred by the investors:

On the basis the top five schemes were preferably selected from every categories and its performance measured based on secondary data analysis and identifies schemes which have outperformed the market. On the basis of schemes particularly the investors favored equity plans while investing in mutual funds. Amongst equity schemes Equity diversified scheme, equity tax savings (ELSS), and Equity sectoral schemes are generally favored by the investors. The analysis is as follows.

Risk Analysis of Equity Tax Savings Scheme:

Scheme	Standard Deviation	Sharpe	Beta	Treynor	Correlation
Axis Long-term Equity Fund- Growth	2.17	0.05	0.76	0.11	0.47
Canara Robeco Equity TaxSaver –Growth	3.13	0.19	0.80	0.66	0.67
Franklin India Tax shield – Growth	3.42	0.09	0.80	0.33	0.80
BNP Paribas Tax Advantage Plan – Growth	3.46	0.07	0.80	0.22	0.79
Tata Tax Saving Fund	3.48	0.07	0.76	0.26	0.76

The risk analysis Planning 5 best capital tax schemes has unstable characteristics such as standard deviation, Sharpe, Beta and Correlation Coefficient which measures the regimes in terms of risk of the portfolio or individual systems. As

Sharpe and coefficient ratio TaxSaver Canara Robeco equity - Growth is regarded as a better system, but with a standard deviation and correlation beta also be considered for long axis then long term Heritage Fund - Growth is considered as an option viable investment

Equity Diversified Schemes: Risk Analysis:

Scheme	Standard Deviation	Sharpe	Beta	Treynor	Correlation
Edelweiss Absolute Return Fund –Growth	0.69	-0.01	1.08	NA	0.62
UTI Wealth Builder Fund Series II Growth	2.48	0.14	0.62	0.57	0.52
SBI Magnum Sector Funds Umbrella Emerging Buss Fund –Growth	4.66	0.09	1.03	0.42	1.02
UTI Opportunities Fund Growth	3.25	0.1	0.76	0.43	0.74
Canara Robeco Large Cap Fund Growth	1.81	-0.09	0.63	-0.26	0.41

Amongst the top 5 programs of diverse equity funds, we can say that the UTI Wealth Builder Fund - Series II - Growth is said to be the most convenient, regardless of the rating obtained based on NAV, so equally Canara Robeco Large Cap + Fund - Growth is said to be less appropriate for investors. Therefore, these systems do not need the same rating as the option contained in the basis of risk analysis, therefore, we can say that the standard deviation, Sharpe, Beta, and the correlation coefficient is not the only action depth analysis of the classification.

Suggestions

One must expand the savings between few funds (the definite amount depends completely on the quantity of savings). This approach guarantees that the portfolio is not depending upon the performance of one single fund. Nevertheless, one needs to steer clear of over-diversification as that would lead to losses. Investor can try for single mutual fund of diversified equity plan, second mutual fund of debt type and third one you can plan of balanced type etc. In this manner the money will get diversified, risk is reduced and the investor will get excellent profit.

For Example: Rs 30,000 per month, it would be wise to go for a highest of three funds. Consider good rated midcap funds, large-cap funds and a balanced fund. The subsequent would give the debt element and minimize the portfolio's downside risk. In no way fund should be judge on the basis of its NAV.

Also investor has to look at the Treynor, Sharpe Ratio, Beta, correlation, standard deviation, ratio P / B, P / E ratio and expense ratio, as well as its performance in bull and bear phase, and then invest in them. Simply looking at the NAV of the fund, it is not appropriate to choose the background that the percentage gain or loss matter very much. In addition to looking on past returns, dividends, etc. investment fund have told. If investor has chosen for equity or stock mutual fund market-related, then you can choose for systematic investment plan (SIP). A risk adverse investor must avoid investing in sectoral funds. Use of the AMC NFOs for creating excitement and push his funds. Such plans are implemented, since they are ways easier to capture management fees and enhance asset base of the fund. Such systems are usually just clones existing schemes, but with flaunted and peppy names to lure investors.. A number of available funds that have proved its worth and investors need to select for themselves because they have a track record.

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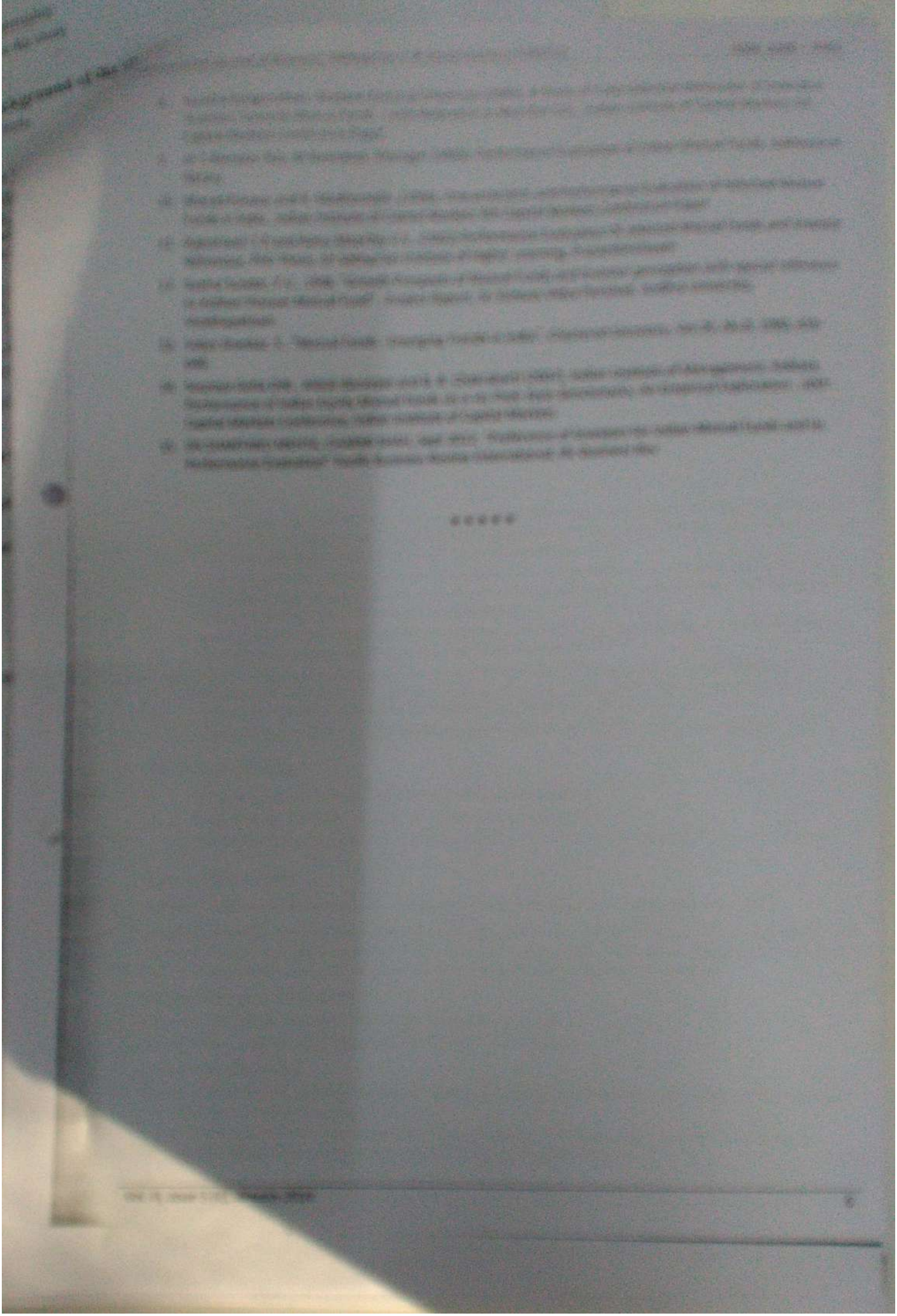

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RURAL WOMEN ENTREPRENEURS – EPITOMIZING THE FACE OF OUR COUNTRY

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ABSTRACT

Women are generally perceived as home makers with little to do with the business acumen. But this picture has changed remarkably over the years especially in rural India. It's the prospect of poverty which motivated them to self employment as a medicine to improve their standard of living. Moreover it's the Indian women who have setup benchmarks for the younger generation besides conservative, tradition bound, caste consciousness mindset of the male dominated society.

Hence with the today's assent that, *'Women owned businesses boost the economy'* the present study intends to find out motivational factors behind the concept of rural women entrepreneurship, their potentialities & constraints thus faced & nevertheless the schemes undertaken by the Govt. of India in support of this.

The primary data required was collected from 100 women entrepreneurs residing in & around villages of Mandya district. Further analysis was carried out with the help of Z – test a statistical tool followed by its interpretation & suggestions part. Furthermore interesting is it appears that a transition in the rural women entrepreneurship has lead to, a practical necessity for the viability and sustainability of rural development.

Keywords: Rural Women Entrepreneur, Entrepreneurship, Caste Consciousness

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INTRODUCTION

A major part of the Indian economy still lies in the rural areas and villages of the country. Though a huge mass of people are constantly moving to the urban sectors, development of the villages cannot be neglected. With their excellent confidence and entrepreneurial skills, most of the Indian women have proved to be on par with their men counterparts in business acumen with an intension to raise the standard of living in Indian villages and have been really successful at it.

"When woman move forward, the family moves, the village moves and the nation moves."

- Pandit Jawaharlal Nehru

Women constitute half of the world's population, accomplish about two third of its working hours. But nearly 90% of rural women entrepreneurs in India are handicapped in the matter of running businesses generally due to low levels of skills, Lack of support system, restricting them to low paid occupations. For this reason, the transition from homemaker to a sophisticated business woman is not that easy.

In the words of ***Former President APJ Abdul Kalam*** – "Empowering women is a prerequisite for creating a good nation, when women are empowered, society with stability is assured. Empowerment of women is essential as their thoughts and their value systems lead to the development of a good family, good society and ultimately a good nation."

Meaning: Women entrepreneur is any women who organizes and manages any enterprise, especially a business with considerable initiative and risk.

OBJECTIVES OF THE STUDY

The present study has been carried out with the aim to spotlight the following objectives -

1. To analyze the motivational factors which influenced rural women to become entrepreneurs
2. To find out the potentials and constraints of women entrepreneurs along with the opportunities which promoted their idea of entrepreneurship.
3. To comprehend the different supportive measures & schemes undertaken by the Government of India in this regard.

4. To gauze how the idea of entrepreneurship among rural women have helped them to improve their current economic status of life.

SCOPE OF THE STUDY

The study focuses on the rural women entrepreneurs from different villages in & around Mandya district. While the study is broader in scope & is highly significant as it makes an attempt to know the current status of rural women in India in general. Problems thus faced by her wrt gender equity, empowerment of women at large, encouragement for her entrepreneurship activity, etc.,

Furthermore it also tries to find out the suitable measures to promote the socio – economic status & social mobilization among rural women entrepreneurs thereby enhancing the advocacy of such vulnerable groups.

RESEARCH METHODOLOGY

Research Type: Descriptive Research

Research Tool: The statistical tool adopted for the study is **Z – test**

List of formulas to Calculate Z test:

Formula to Calculate Standard Deviation	
$\bar{X} = \sum X/n$	$\bar{Y} = \sum Y/n$
$\sigma X = \sqrt{\left(\frac{\sum(X-\bar{X})^2}{n-1}\right)}$	$\sigma Y = \sqrt{\left(\frac{\sum(Y-\bar{Y})^2}{n-1}\right)}$
$\sigma \bar{X}_1 - \bar{X}_2 = \sqrt{\left(\frac{\sigma 1^2}{n_1} + \frac{\sigma 2^2}{n_2}\right)}$	

Formula to calculate $Z_{cal} = \left(\frac{\bar{X} - \bar{Y}}{\sigma \bar{X}_1 - \bar{X}_2} \right)$

Sampling Plan

(a) *Sampling Technique:* Judgmental Sampling.

Sampling Type: Target audience comprises only those respondents who were rural women entrepreneurs

Sampling Size: 100 Respondents

Sampling Area: The respondents were chosen from 10 villages in & around Mandya District namely,

Marasinganahalli, Pannedoddi, Mudigere, Besagarahalli, Anedoddi, Kadalur, Hombalegowdanadoddi, Anigere, Huluvadi, Anchipura.

(b) *Methods of Data Collection:*

The present research study was done using primary data which was collected through a Structured Questionnaire using Personal Interview technique.

REVIEW OF LITERATURE

Anitha D.Pharm & Dr. R.Sritharan (2013) "Problems Being Faced By Women Entrepreneurs In Rural Areas" stated that, "Besides the government organizes many schemes & associations, woman are not ready to undertake the business. As compared to men, women are less motivated to start business units due to some unwanted fear, lack of motivation and kind of activities. Thus, the study aims at undertaking the entrepreneurial development among women highlights their motivational forces and relationship between socioeconomic background of women entrepreneurs, motivational factors and their existing entrepreneurial traits."

Eugenia Petridou, Niki Glaveli, (2008), 'Rural women entrepreneurship within co-operatives: training support', - "The purpose of the paper is to appraise rural women entrepreneurs, running co-operatives in Greece. The paper seeks to examine the effects of training support on their

entrepreneurial skills and attitudes, co-operatives' viability and growth prospects, and work-family balance.

Research was conducted in which 104 rural women members of co-operatives, who had participated in a specific training program contributed. Anonymous questionnaires were used to collect data on participants' perceptions of the effects of the training intervention".

S. Shiralashetti, Abhaykumar S. Gasti (2013), 'Problems Of Rural Women Entrepreneurs In North Karnataka: A Study' – "Indian women have steadily moved from the status of housewives to educated women, employed women and now women entrepreneurs. However, women entrepreneurs are facing problem of inadequate infrastructural facilities, inadequate encouragement from family, government and society, marketing problems, financial problems, labour problems etc. Therefore, it is very essential to encourage women entrepreneurs by providing adequate training to build confidence and necessary infrastructural facilities to undertake entrepreneurship.

These solutions not only eradicate problems but also empower women entrepreneurs. The present study concentrates on problems of rural women entrepreneurs in north Karnataka. The study suggested providing adequate training and encouraging women by providing infrastructural facilities."

Syeda mahboob arshiya (2008), 'Impact Of Udyogini Scheme On Economic Empowerment of women in Mandya district' – "Impact of Udyogini scheme on economic empowerment of women in Mandya district was conducted in Mandya district of Karnataka state. This district comprises of seven taluks viz., Mandya, Maddur, Malavalli, Nagamangala, Shrirangapatna, K.R. Pet, and Pandavapura.

The central government sponsored schemes through this department in the sate are Swalambana and STEP , and among state sponsored schemes are Udyogini, Devadsi rehabilitation programme, Nagara Stree Shakti, stateresource centre, marketing assistance scheme and women training Programme."

PROBLEMS & CHALLENGES OF RURAL WOMEN ENTREPRENEURS

An **ILO report** on women entrepreneurship identifies the following problems faced by women entrepreneurs.

1. Lack of family support- Sometimes the family may make the women feel guilty of neglecting household duties in her pursuit of business obligations. Cultural traditions may hold back a woman from venturing into her own business.
2. Lack of capital-traditional sources of finance like banks are reluctant to lend to women entrepreneurs especially if they do not have any male or family backing. This is especially true of lower income females. Women do not have adequate finance or legal knowledge to start an enterprise.
3. Lack of confidence and faith-lack of role models undermines the self confidence of women entrepreneurs. The activity of selling is considered abhorrent to the female gender.
4. Lack of right public/ private institutions: Most public and private incentives are misused and do not reach the woman unless she is backed by a man. Also many trade associations like ministries, chambers of commerce do not cater to women expecting women's organizations to do the necessary thing.[1]

GOVERNMENT SCHEMES

The *Planning Commission* as well as the Indian government recognizes the need for women to be part of the mainstream of economic development. Women entrepreneurship is seen as an effective strategy to solve the problems of rural and urban poverty.

Rural Women Work Participation in India

Country /Year	Percentage
India (1970 – 1971)	14.2
India (1980 – 1981)	19.7
India (1990 – 1991)	22.3
India (2000 – 2001)	31.6

Source: Planning Commission Fifth Five Year Plan

Women Entrepreneurship in Karnataka -2008-09

[1] Article on 'Women Entrepreneurship in India' from "Word Quotient" followed by the URL http://www.wordquotient.com/library/entrepreneurship/women-entrepreneurship-in-india.html

State	No. of Registered Units	No. of women entrepreneurs	Percentage
Karnataka	3822	1026	26.84

Source: Economic Survey 2008 - 09

Credit Schemes for Women

There are numerous government schemes like IRDP (integrated rural development programme), DWCRA (development of women and children in rural areas), PRY (prime minister rozgar yojna) and DRI,(differential interest rate scheme).

The ministry of rural areas and employment has several schemes for providing better opportunities to women through providing loans. Out of the variety of ameliorative strategies proposed, to improve the income generating activities of women, provision of finance at reasonable rates on regular basis for women in the informal sector is the crucial one.

In the year 1987,the government of Karnataka established KSWDC, Karnataka State Women Development Corporation, as per the memorandum of association of KSWDC, there is a set of specified objectives according to which the corporation function for the welfare of the women in need.

MANDYA DISTRICT - DEVELOPMENT PROGRAMMES

Udyogini Scheme

Udyogini is an innovative scheme, sanctioned by the government of Karnataka through Karnataka state women Development Corporation in the year 1997-98. Udyogini assists women in gaining self reliance through self employment, especially in the trade and service sector. Udyogini empowers women by providing loans through banks and other financial institutions. It also provides a subsidy from the Karnataka state women development corporation for undertaking business activities or micro enterprises. Loans are arranged through financial institutions like commercial banks and RRBs. This scheme has gone a long way in preventing women entrepreneurs from private borrowing at high rate of interest.

The scheme operating from past 10 years, has been devised for economic upliftment of women in lower economic strata of the society in all the seven taluks of the Mandy district.

Banks

The nationalized banks, district co-operative banks and women cooperative banks are empowered to sanction loans for the above scheme. More than 100 economic activities have been enlisted for sanctioning loans.

Developmental Programmes

There are various developmental programmes implemented in the district. Jawahar Rozgar Yojna is to provide employment to rural poor and the major credit linked programme implemented in the district is Swarn Jayanthi Gram Swrozgar yojana (SGSY) and Sampurna Gramina Rojgar Yojna is to provide food grains. And especially for empowerment of women the state has implemented several schemes like Udyogini,Nagara stree shakti, Devdasi rehabilitation scheme etc in the district.

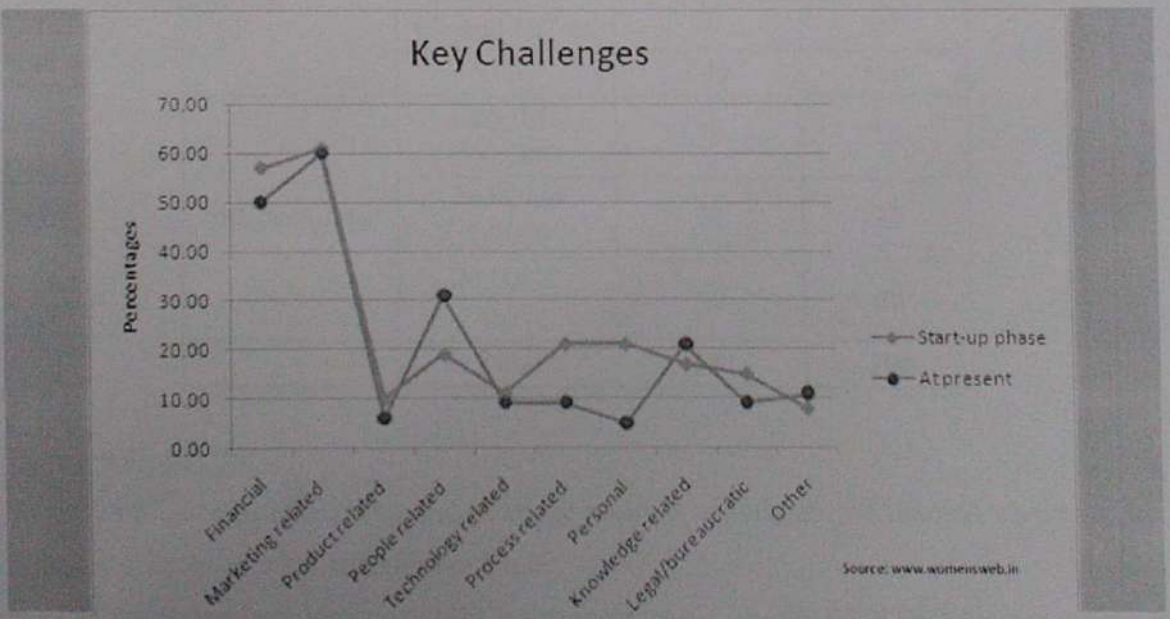


Fig 1: indicating the key challenges faced by rural women entrepreneurs in India

Source: Article from Women Entrepreneurship: The Road Ahead

DATA ANALYSIS & INTERPRETATION[2]

Table 1 - Demographic profile of the Respondents

Demographic Factors	Category	No. of Respondents	Percentage (%)
Age	20 – 35 yrs	54	54
	36 – 50 yrs	40	40
	50 yrs & Above	06	06
	Total	**100**	**100**
Marital Status	Married	52	52
	Unmarried	03	03
	Widow	45	45
	Total	**100**	**100**
Educational Qualification	Illiterate	49	49
	1st to 5th std	33	33
	6th to 10th std	18	18
	Cleared 10th std	00	00
	Total	**100**	**100**
Income (p.m)	Less than 10,000	78	78
	10,000 to 25,000	22	22
	25,000 & Above	00	00
	Total	**100**	**100**

Table 1 indicates that –

(i) Majority of the respondents who undertake the business activity are the married women & the widow in order to take initiative for her family.

(ii) Most of the respondents who undertake the entrepreneurial activity fall within the age group of 20 – 50 yrs & above that its very minimal in no.

[2] In the Calculation of Z test, Respondents with the highest response are considered as 'X' variables & the lowest response as 'Y' varialbles.

(iii) Nearly 49% of the respondents are illiterate and the rest are educated only upto 5th std.

(iv) Nearly 78% of the rural women entrepreneurs earn upto Rs 10000 /- pm while beyond that Its only minimal in no.

Table 2: Distribution & Selection of Sample sizes[3]

Sl No.	Kind of Business Undertaken by Rural Women	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	Total
1	Provision Stores	1	1	1	1	1	1	1	1	1	1	**10**
2	Bangle stores	1	1	1	1	1	1	1	1	1	1	**10**
3	Vegetable / Fruit vendor	2	1	1	3	1	1	1	1	2	1	**14**
4	Broom Stick vendor	1	2	1	1	1	2	1	1	1	1	**12**
5	Tailor	1	1	1	1	1	1	1	1	1	1	**10**
6	Tea Stall	1	1	1	1	1	1	1	1	1	1	**10**
7	Animal Husbandry	3	2	1	1	1	1	2	1	1	1	**14**
8	Sericulture	2	2	2	2	2	2	2	2	2	2	**20**
Grand Total		**12**	**11**	**09**	**11**	**09**	**10**	**10**	**09**	**10**	**09**	**100**

Above table shows the distribution & selection of respondents. V1 to V 10 are the total of 10 villages in & around Mandya district undertaken for study. It was primarily the 8 diverse kinds of business activities undertaken by rural women entrepreneurs were identified. Following which 100 respondents were chosen for study on the basis of judgmental sampling.

Table 3: Problems faced by Rural Women Entrepreneurs before starting up their business

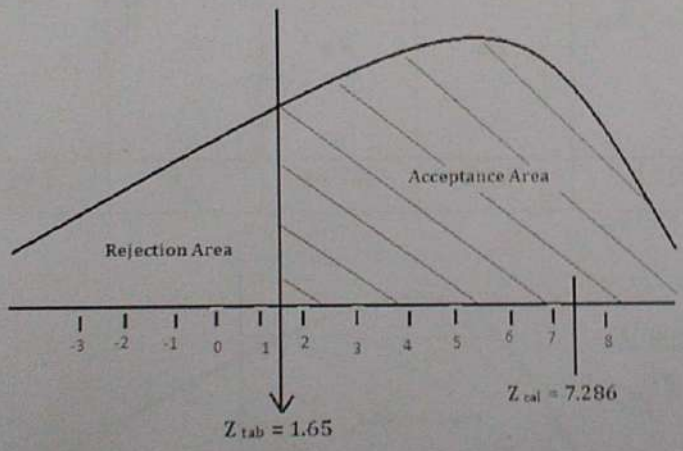
Parameters	No. of Respondents
Lack of capital	55
Lack of family support	18
Lack of confidence & faith	14
Fear of Loss	10
Fear of acceptance from Social community	03
Total	100

[3] V1 to V 10 are the total of 10 villages in & around Mandya district

H_0 = Fear of Loss & acceptance from the social community are the problems which intervene in the way of rural women entrepreneur before starting up their business.

H_1 = The major problems which pull the rural women entrepreneur from starting up their own business are the lack of adequate capital, family support & their lack of confidence.

$\overline{X}$	$\overline{Y}$	σX	σY	$\sigma\overline{X}_1 - \overline{X}_2$	Z_{cal}	Z_{tab} (One tail, Two sample test, Z at 95%)
29.33	6	22.278	5.656	3.202	7.286	1.65



Conclusion:

As $Z_{cal} > Z_{tab}$ i.e., 7.285 > 1.65,

Accept H_1

The major problems which pull the rural women entrepreneur from starting up their own business are the lack of adequate capital, family support & their lack of confidence.

Table 4: Objective of Rural Women Entrepreneurs to go ahead with the idea of entrepreneurship

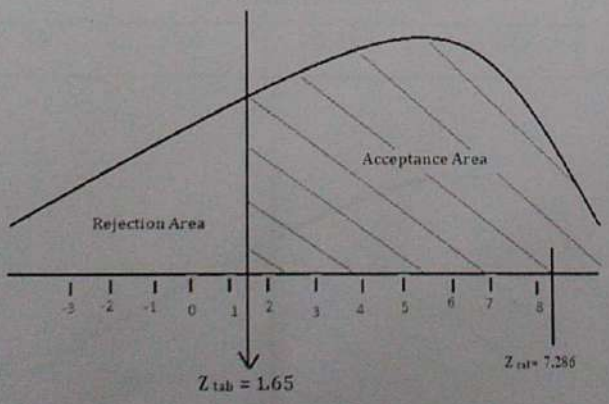
Parameters	No. of Respondents

To earn money	57
To improve the standard of living	32
With an intension to continue the family owned business	04
take an initiative to become a helping hand for her family	07
Total	100

H_0 = The prime motive behind starting up their own business was either to continue with their family business or else to take an initiative & thus become a helping hand for their family.

H_1 = The main motive for the rural women to start up their business was to improve their standard of living by earning money.

$\overline{X}$	$\overline{Y}$	σX	σY	$\sigma\overline{X}_1 - \overline{X}_2$	Z_{cal}	Z_{tab} (One tail, Two sample test, Z at 95%)
39.5	5.5	24.748	2.121	4.190	8.112	1.65



Conclusion:

As $Z_{cal} > Z_{tab}$ i.e., $8.112 > 1.65$,

Reject H_0

The prime motive behind starting up their own business was either to continue with their family business or else to take an initiative & thus become a helping hand for their family.

Table 5: Supporting hand for the Rural Women Entrepreneurs to start up their business

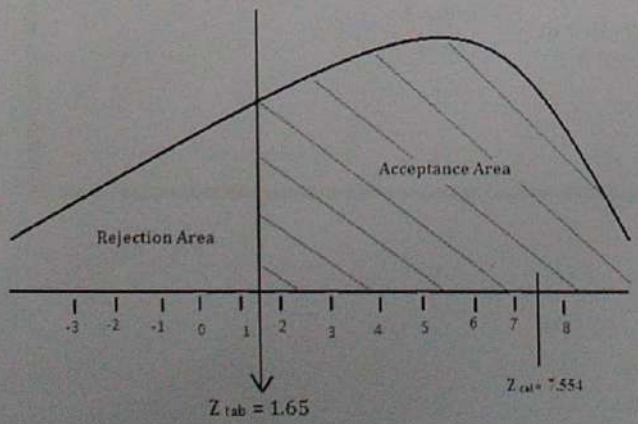
Parameters	No. of

	Respondents
Government schemes	20
Local Supporting bodies operating in your village	42
Family	08
Loans from Banks	30
Total	100

H_0 = It was the government schemes & finally the family who extended support to start up with the business for the rural women.

H_1 = Local supporting bodies in the village & thus it was the loan borrowed from banks stood supportive to start up their business.

$\overline{X}$	$\overline{Y}$	σX	σY	$\sigma\overline{X}_1 - \overline{X}_2$	Z_{cal}	Z_{tab} (One tail, Two sample test, Z at 95%)
36	14	8.485	8.485	2.912	7.554	1.65



Conclusion:

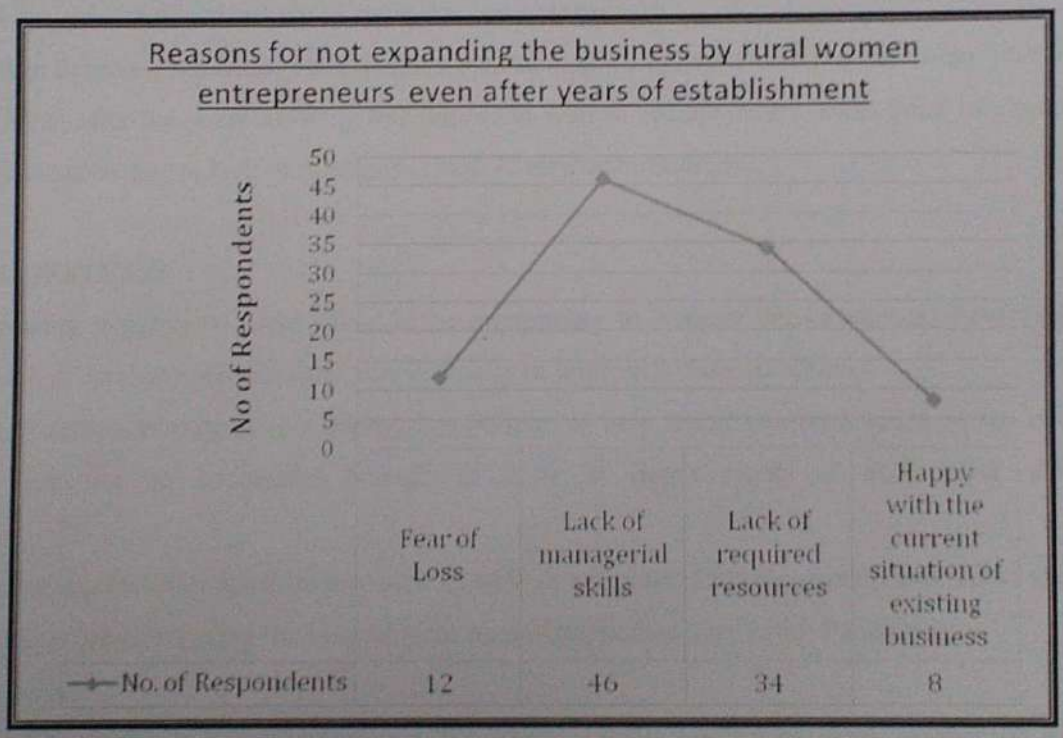
As $Z_{cal} > Z_{tab}$ i.e., 7.554 > 1.65,

Accept H_1

Local supporting bodies in the village & thus it was the loan borrowed from banks stood supportive to start up their business.

Table 6: Reasons for not expanding the business by rural women entrepreneurs even after years of establishment

Parameters	No. Of Respondents
Fear of Loss	12
Lack of managerial skills	46
Lack of required resources	34
Happy with the current situation of existing business	08
Total	100



FINDINGS

1. Besides diverse government schemes emerged for the benefit of rural women entrepreneurs, it's only handful no. of women who are getting the advantage of it.
2. Majority of the Rural women are still handicapped to a greater extent with respect to the capital required to start up their business enterprise.
3. To whatever extent the society is developing, the situation of rural women still continues to be the same. i.e., Male dominance, Conservative outlook of the society, Lack of family support.
4. As the sample required was drawn around the villages of Mandya district, the major business activity taken up by rural women entrepreneurs are Animal husbandry & Sericulture.
5. Rural women thought to come out of their poverty & thereby to improve their standard of living was the main motive for them to enter into business activity.
6. Village Panchayat & Gram Seva Sangh were the supporting hands with respect to the finance.
7. But even after the years of doing business rural women entrepreneurs never think of expanding their business due to lack of managerial skill & required resources.

SUGGESTIONS

Following suggestions were found to be appropriate to remove the bottlenecks hindering the growth of rural women entrepreneurs & finally to improvise their condition:

1. The government must evolve appropriate policies to help women entrepreneurs, as the existing one are not so successful enough to have in depth reach of such rural women.

2. Networking facilities must be provided as well as adequate entrepreneurship awareness training should be provided using the help of local supporting bodies like, Gram Panchayat.

3. Sarpanch & Panchayat members are the good opinion leaders to rural women so all the government benefits should reach through them.

4. Credit facilities must be made available with low rate of interest and marketing help must be provided.

5. There is a very greater need to educate the rural men also to eliminate the conservative outlook towards rural women & thus to be supportive to them.

6. The need is to improve female literacy as education holds the key to development women in rural India.

All these will help foster a culture of entrepreneurship among women in rural India.

CONCLUSION

No economy can sustain itself without the participation of women either urban / rural. Government has devised many programs to empower rural women in various avenues but nothing can be fruitful without effective training & education. As empowering women to participate in entrepreneurial activity is not only a daunting and challenging task but also paving path for future sustainable development. Provided the rural women required support & encouragement inclusive of intensive training programmes, she can do wonders by their effectual and competent involvement in entrepreneurial activities thereby accelerating the economic growth of our country.

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Fig: Different entrepreneurial business undertaken by rural women entrepreneurs under Udyogini Scheme

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CONTENTS

Financial Inclusion of Women and their Empowerment through Self Help Groups

Suma C.V. and Shylaja N.

Keywords: *Micro-finance, SHGs, Financial Inclusion*

Abstract

Financial inclusion has been defined as the "provision of affordable financial services" (RBI, 2006a) to those who have been left unattended or under-attended by formal agencies of the financial system.

Financial inclusion of women through self help groups will give access and affordability of micro finance to women borrowers. Financial assistance to SHGs comes from three sources Commercial Banks, Regional Rural Banks and Cooperative Banks. Of these, Commercial Banks have been instrumental in financing the largest number of SHGs till now. In order to accomplish this, banks are targeting poorest segment with the support of NGO?s and informal sector comprising small Self Help Groups (SHGs). This study will use secondary and primary data on SHGs to evaluate the success of SHGs in providing credit access to women customers.

The primary objective of this study is to evaluate SHGs as a means of financial inclusion of the groups/regions excluded from the formal financial system. In this connection, the study looks at the issues of SHGs and their performance in Bellary district of Karnataka.

The study uses secondary data from the annual publication of National Bank for Agriculture and Rural Development (NABARD) on micro finance, namely, "Progress of SHG-Bank Linkage Programme in India". Further, it also uses secondary data from the latest round of All India Debt and Investments Survey conducted by National Sample Survey Organisation (NSSO).

Introduction

Even after 60 years of independence, a large section of Indian population still remains unbanked. This lacuna in our banking system has led to financial instability and pauperism among the lower income group who do not have access to financial products and services. However, in the recent years the government and Reserve Bank of India has been pushing the concept and idea of financial inclusion.

Financial inclusion is the delivery of financial services at affordable costs to vast sections of disadvantaged and low income groups

The policy makers have been focusing on financial inclusion of Indian rural and semi-rural areas primarily for three most important pressing needs:

1. Inculcating the habit of saving money.
2. Making formal credit avenues available to lower Income groups
3. To Plug gaps and leaks in public subsidies and welfare programmes

RBI set up the Khan Commission in 2004 to look into financial inclusion and the recommendations of the commission were incorporated into the mid-term review of the policy (2005-06) and urged banks to review their existing practices to align them with the objective of financial inclusion. Specifically;

A. Initiation of no-frills account

B. Banking service reaches homes through business correspondents

C. Electronic Benefits Transfer for public subsidies and welfare programmes

Financial Inclusion Index

On June 25, 2013, CRISIL, India's leading Credit rating and Research Company launched an index to measure the status of financial inclusion in India. The index- Inclusix- along with a report was released by the Finance Minister of India, P. Chidambaram at a widely covered program at New Delhi. CRISIL Inclusix is a one-of-its-kind tool to measure the extent of inclusion in India, right down to each of the 632 districts. CRISIL Inclusix is a relative index on a scale of 0 to 100, and combines three critical parameters of basic banking services — branch penetration, deposit penetration, and credit penetration —into one metric.

1. The all-India CRISIL Inclusix score of 40.1 is low, though there are clear signs of progress – this score has improved from 35.4 in 2009.
2. Deposit penetration is the key driver of financial inclusion – the number of savings accounts (624 million), is almost four times the number of loan accounts (160 million).
3. The top three states and Union Territories are Pondicherry, Chandigarh, and Kerala.

Financial inclusion of the unbanked masses is expected to unleash the hugely untapped potential of the bottom of pyramid section of Indian economy and may lead to the next revolution of growth and prosperity.

SHG

A **self-help group** (**SHG**) is a village-based financial intermediary usually composed of 10–20 local women. Most self-help groups are located in India, though SHGs can also be found in other countries, especially in South Asia and Southeast Asia.

Members make small regular savings contributions over a few months until there is enough capital in the group to begin lending. Funds may then be lent back to the members or to others in the village for any purpose. In India, many SHGs are 'linked' to banks for the delivery of microcredit.

A Self-Help Group may be registered or unregistered. It typically comprises a group of micro entrepreneurs having homogenous social and economic backgrounds; all voluntarily coming together to save regular small sums of money, mutually agreeing to contribute to a common fund and to meet their emergency needs on the basis of mutual help. They pool their resources to become financially stable, taking loans from the money collected by that group and by making everybody in that group self-employed. The group members use collective wisdom and peer pressure to ensure proper end-use of credit and timely repayment.

Goals

Self-help groups are started by non-governmental organizations (NGOs) that generally have broad anti-poverty agendas. Self-help groups are seen as instruments for a variety of goals including empowering women, developing leadership abilities among poor people, increasing school enrolments, and improving nutrition and the use of birth control.

NABARD estimates that there are 2.2 million SHGs in India, representing 33 million members, which have taken loans from banks under its linkage program to date. This does not include SHGs that have not borrowed. "The SHG Banking Linkage Programme since its beginning has been predominant in certain states, showing spatial preferences especially for the southern region – Andhra Pradesh, Tamil Nadu, Kerala and Karnataka. These states accounted for 57 % of the SHG credits linked during the financial year 2005-2006."

Advantages of financing through SHGs

- An economically poor individual gains strength as part of a group
- Financing through SHGs reduces transaction costs to both lenders and borrowers

Effect of financial Inclusion through SHGs on women Empowerment

Financial inclusion is not a one-off event. In terms of finance provision, it means that hitherto excluded people – either as individuals or as groups – now have access to credit ***on a regular basis*** for as long as they continue to abide by the terms of such a credit relationship. For Financial inclusion to promote growth, it has to move from "opening an account" in the Bank, to regular savings and finally to a relationship which enables the borrower to access loans on a regular basis.

Objectives and Research Methodology

Objectives

1. To study the functioning of SHGs and profile of SHG members in Bellary district.
2. To study the role of SHG on financial inclusion in Bellary district.
3. To study the impact of SHG's on women empowerment in terms of economic and social change

Data Source

Primary Data: in this study the primary data was collected by administering questionnaire to 25 respondents of SHGs belonging to 6 SHG s. In each SHG 4-5 members were administered questionnaire s in Bellary Rural District. Simple convenience sampling was used to collect data.

Direct interview method was used to collect information from SHG representatives about the functioning of the SHG.

Secondary Data: in this study secondary data was collected from the published websites. State Government published hand outs.

Data analysis

Simple percentage analysis, bar graphs and pie charts have been used to analyse data. Also, tabular analysis of data on socio-economic condition, SHG lending, utilisation, repayment and economic activities were carried out. Class interval technique was used to analyse the age, family income, income of SHG members, SHG membership.

Limitations of the Study

1. Nature and activities of SHGs vary widely. Hence findings of a few SHGs may not be generalised.
2. SHG members were reluctant to share information.
3. Sample size consisted of only 6 SHGs and 25 members
4. Time was main constraint.

Establishment of SHGs

Every Anganwadi assist in establishing SHGs under their area. They monitor the working and progress of SHGs established by them. In case the SHG is not functioning satisfactorily they guide in its functioning.

Sources of Funds for SHGs

The funds for SHG come from 2 sources. Initially to establish A SHG Rs 5000 called as' Suttunidhi' comes from the state government agencies like NSCFDC, VSSN. As the SHG starts functioning, it raises funds from members through their monthly savings. Government releases subsidised loans as and when required by SHGs based on the SHG savings and the recommendations from Anganwadis.

Rate of Interest of SHG lending:

The SHG lends at 2% rate of interest P.A. 1% will be payable to the respective Grameena Banks (Pragathi Grameena Bank) and the 1% is payable to the SHG.

Collective efforts /Activities undertaken by SHGs

SHG's have started playing a major role in rural areas. While establishing a SHG the main objective is to create income generation activities. But they are becoming very powerful instruments of not only economic change but also social change in their communities.

In Bellary District the activities undertaken by SHGs are as follows-

Commercial activities such as preparation and sale of Jowar Roti, Sugar candy, Papad, Chutney Powder, stuffed toys. Also poultry farming, dairy farming, collective farming and vending vegetables are undertaken.

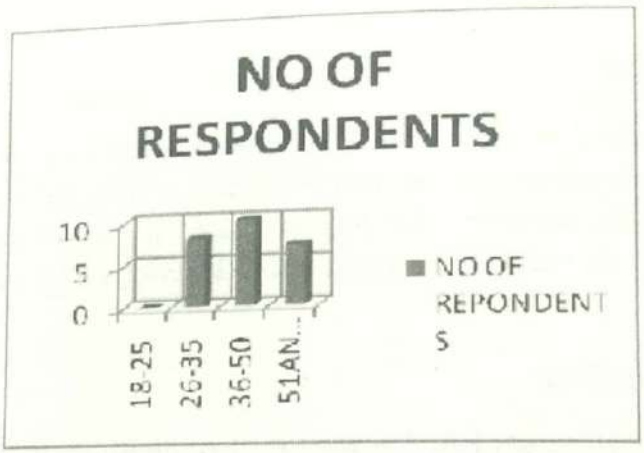
Other Social activities

They render help to village Panchayat in its functioning. They are also acting as instruments of social change by persuading children to attend school regularly, arbitrage for domestic dispute settlement when help is sought, actively participate in pulse polio programme, distribution of medical kits and any other activity which is need based.

Data analysis and interpretation

1. Table Showing the Age Group of Respondent

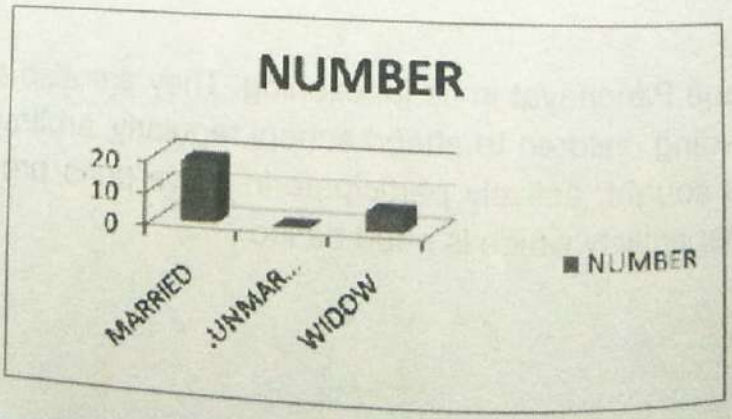
Age Group	*No of Respondents*	*Percentage*
18-25	0	0%
26-35	8	32%
36-50	10	40%
51AND ABOVE	7	28%
TOTAL	25	100



Interpretation: - It was found that 32% of SHG members were in the age group of 26-35 and 40% in the age group of 36-50.

2. MARTIAL STATUS OF RESPONDENTS

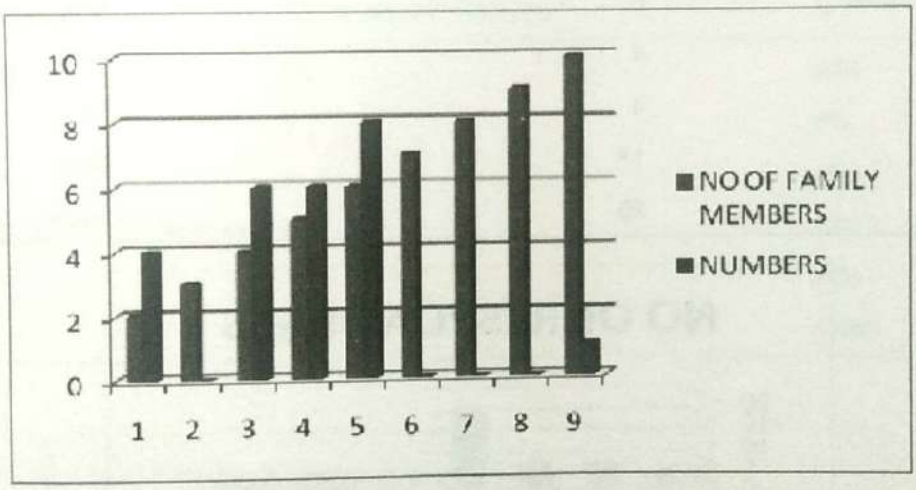
STATUS	*NUMBER*	%
MARRIED	19	76%
UNMARRIED	0	0%
WIDOW	6	24%
TOTAL	25	100%



Interpretation: - it was found that 76% of SHG members are married women and 24% are widows.

3. NO OF FAMILY MEMBERS IN REPONDENTS HOUSEHOLD

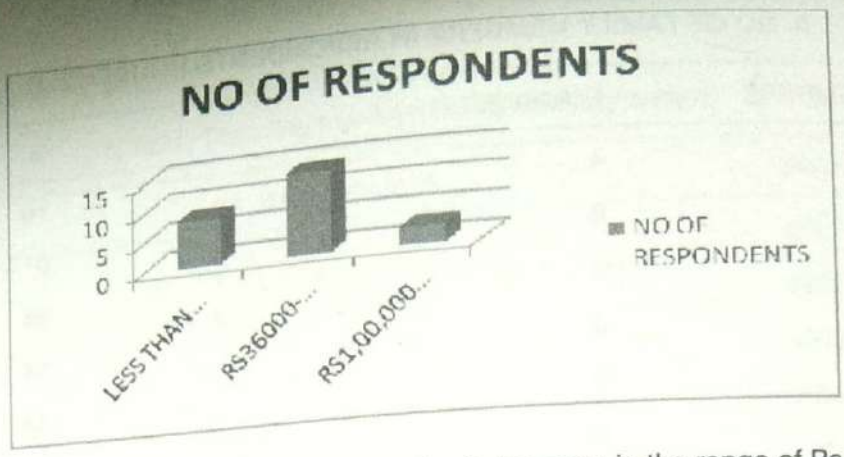
NO OF FAMILY MEMBERS	NUMBERS	%
2	4	16
3	0	0
4	6	24
5	6	24
6	8	32
7	0	0
8	0	0
9	0	0
10	1	4
TOTAL	25	100



Interpretation:- Most of the SHG members have between 4-6 members in their family.

4. TOTAL INCOME OF THE FAMILY

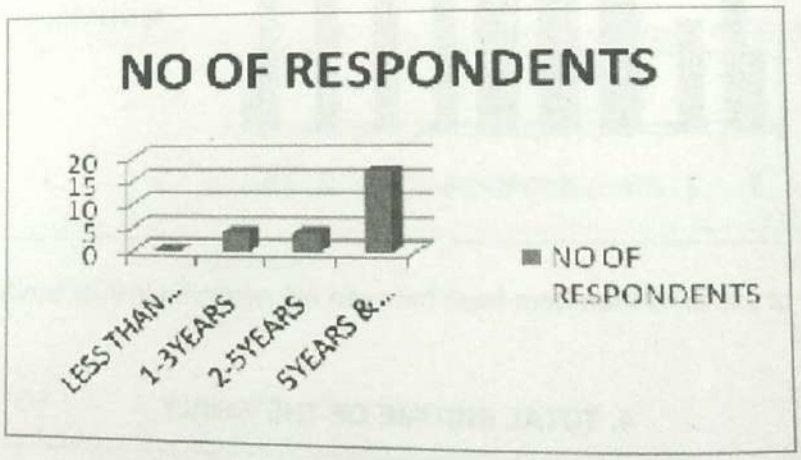
Income	No of Respondents	Percentage
LESS THAN RS36000	8	32%
RS36000-1,00,000	14	56%
RS1,00,000 &ABOVE	3	12%
TOTAL	25	100%



Interpretation:- maximum no of SHG members have family incomes in the range of Rs 36000-100,000.

5. SHG MEMBERSHIP DURATION

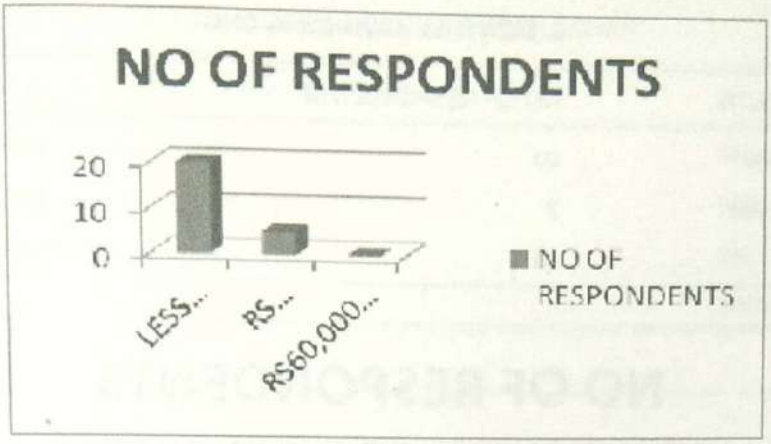
DURATION OF MEMBERSHIP	*NO OF RESPONDENTS*	%
LESS THAN 1YEAR	0	O%
1-3YEARS	4	16%
2-5YEARS	4	16%
>5YEARS	17	68%
TOTAL	25	100%



Interpretation: - 68% of the respondents have been members in the SHG for a period of 5 years and above.

6. INCOME OF SHG MEMBERSHIP

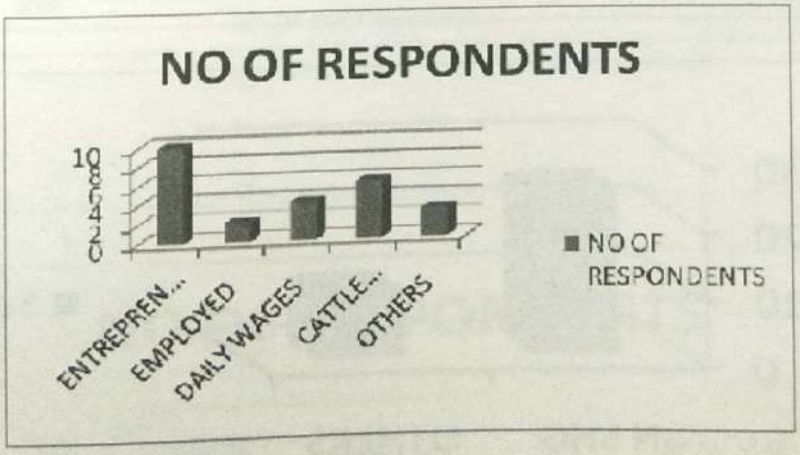
INCOME	*NO OF RESPONDENTS*	%
LESS THAN RS 24,000	20	80%
RS 24,000-60,000	5	20%
RS60,000 & ABOVE	0	0%
TOTAL	25	100%



Interpretation:- 80% of the respondents have an annual income less than 24000.

7. SOURCES OF EARNINGS

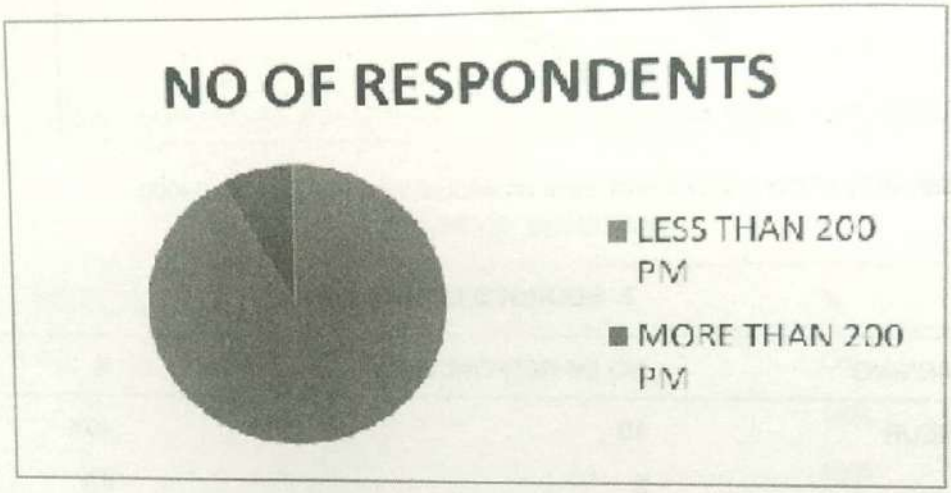
MODE OF EARNING	*NO OF RESPONDENTS*	%
ENTREPRENEUR	10	40%
EMPLOYED	2	8%
DAILY WAGES	4	16%
AGRICULTURE & CATTLE REARING	6	24%
OTHERS	3	12%
TOTAL	25	100%



Interpretation:- 40% of respondents are small entrepreneurs,24% employed and 24% are engaged in agriculture and Cattle rearing.

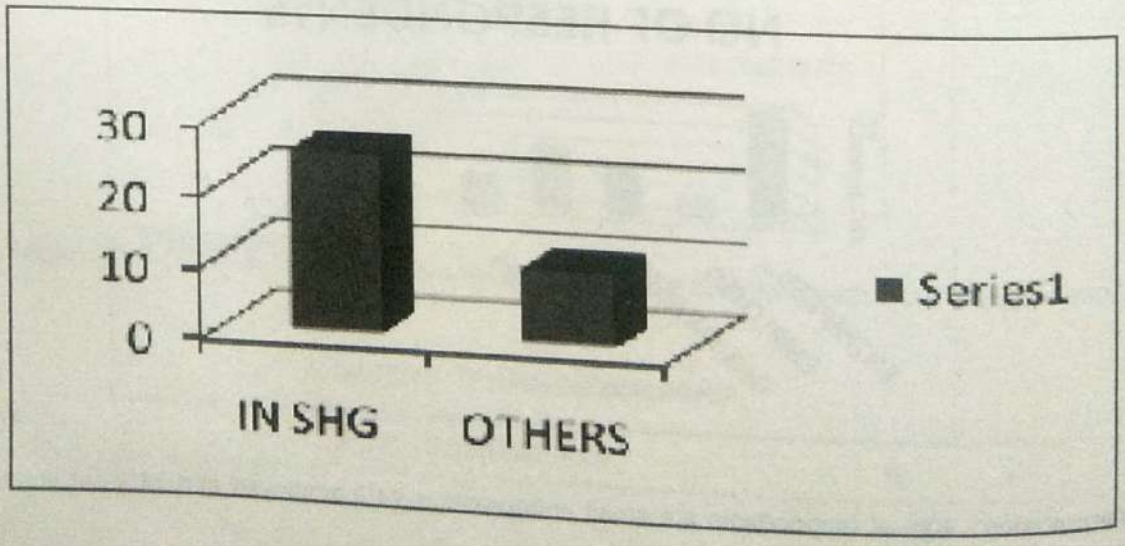
8. MONTHLY SAVINGS IN SHG

SAVINGS PER MONTH	*NO OF RESPONDENTS*	%
LESS THAN 200 PM	23	92%
MORE THAN 200 PM	2	8%
TOTAL	25	100%



Interpretation: 92% of SHG members save less than Rs. 200 per month.

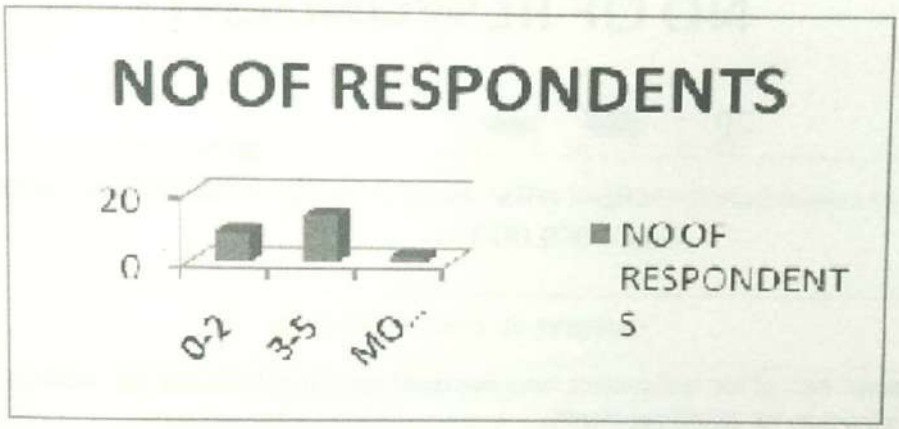
9. *SAVINGS OF SHG*	*MEMBERS*	%
IN SHG	25	100%
OTHERS	10	40%



Interpretation: - while all Respondents have savings with SHG only 40% have any other form of saving like LIC, bank, post office savings etc

10. NO OF TIMES LOAN HAS BEEN TAKEN

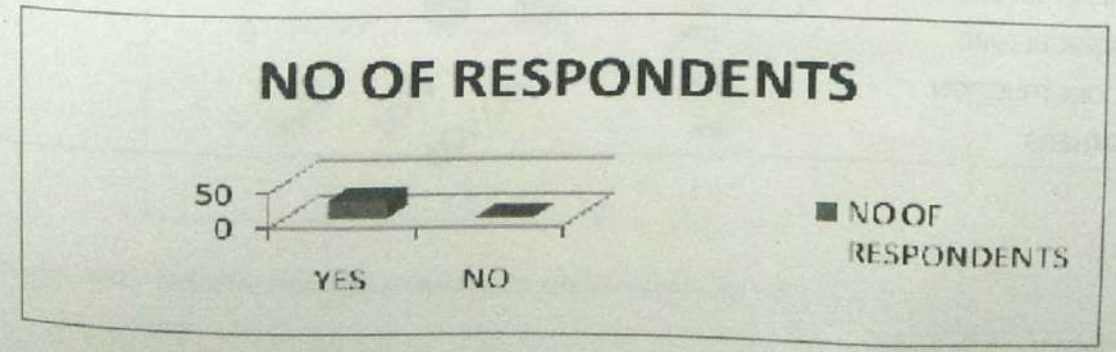
NO OF TIMES	*NO OF RESPONDENTS*	%
0-2	9	36%
3-5	14	56%
> 5	2	8%
TOTAL	25	100%



Interpretation:- 56% of Respondents have borrowed 3-5 times and 36% of the respondents have borrowed less than 0-2 times.

11. ARE YOU GETTING REQUIRED LOAN AMT

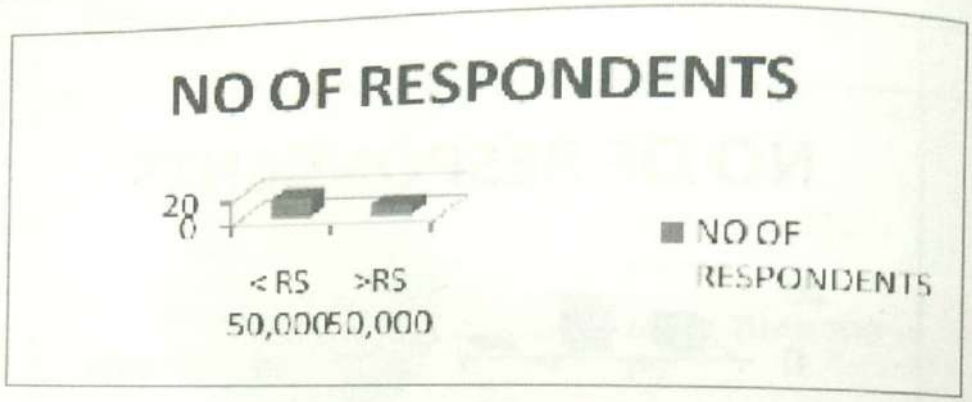
RESPONSE	*NO OF RESPONDENTS*
YES	25
NO	0
TOTAL	25



Interpretation: - 100% of the respondents are of the opinion that the SHGs are financing 100% of their requirement.

12. AMT BORROWED BY SHG MEMBERS

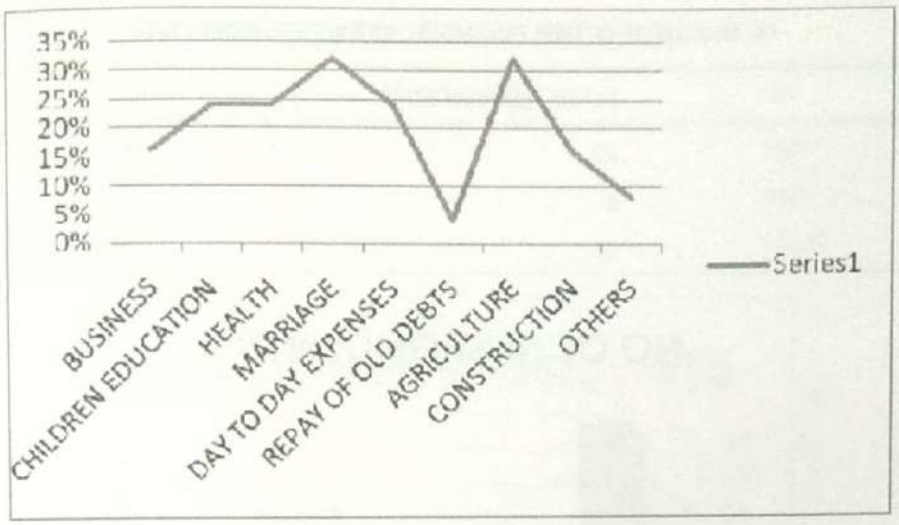
AMOUNT	*NO OF RESPONDENTS*	*%*
< RS 50,000	16	64%
> RS 50,000	9	36%
TOTAL	25	100%



Interpretation:- 64% of the respondents have borrowed less than Rs 50,000 per month and 36% have borrowed more than RS 50,000 per month.

13. PURPOSE OF WITHDRAWAL OF SHG MEMBERS

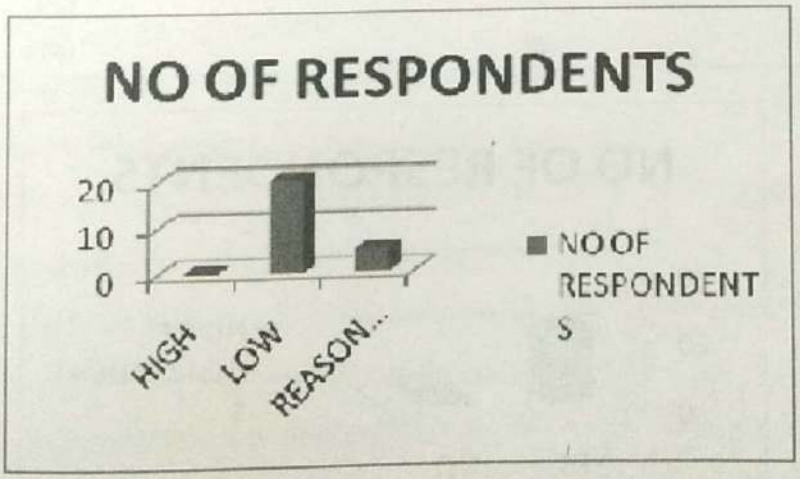
PURPOSE	*NO OF MEMBERS IN %*
BUSINESS	16%
CHILDREN EDUCATION	24%
HEALTH	24%
MARRIAGE	32%
DAY TO DAY EXPENSES	24%
REPAY OF BAD DEBTS	4%
AGRICULTURE	32%
CONSTRUCTION	16%
OTHERS	8%



Interpretation: - Agriculture and Marriage with 32% seems to be the most important reasons for borrowing from SHG.

14. OPINION ON RATE OF INTEREST

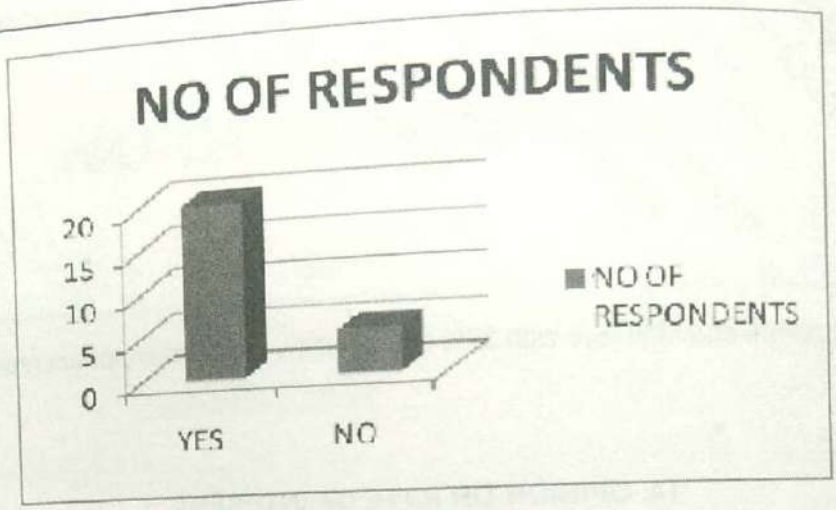
OPINION	*NO OF RESPONDENTS*	%
HIGH	0	0%
LOW	20	80%
REASONABLE	5	20%
TOTAL	25	100%



Interpretation:- 80%of the respondents feel that the rate of interest being charged is less.

15. USAGE OF OTHER FINANCIAL SERVICES FROM BANK

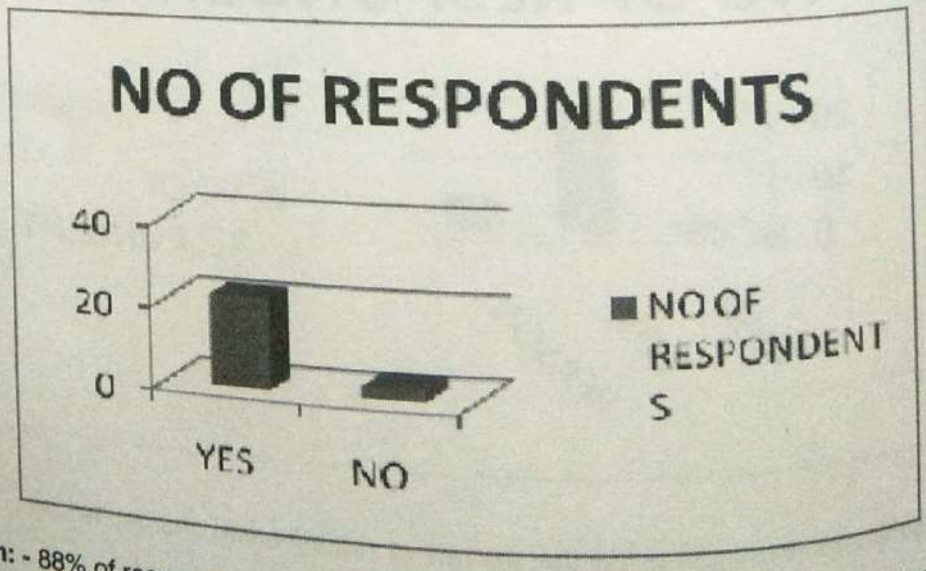
OPINION	*NO OF RESPONDENTS*	%
YES	20	80%
NO	5	20%
TOTAL	25	100%



Interpretation: - 80% of SHG members have used other services from banks.

16. CHANGE IN ECONOMIC STATUS AFTER JOINING SHG

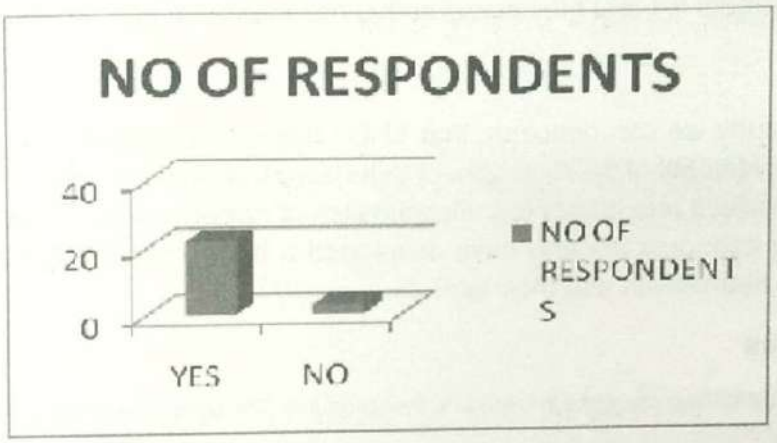
OPINION	*NO OF RESPONDENTS*	%
YES	22	88%
NO	3	12%
TOTAL	25	100%



Interpretation: - 88% of respondents agree that their economic status has improved after joining S

17. CHANGE IN SOCIAL STATUS AFTER JOINNING SHG

OPINION	*NO OF RESPONDENTS*	%
YES	22	88%
NO	3	12%
TOTAL	25	100%



Interpretation: - 88% of respondents feel that their social status has improved after joining SHG.

Summary of Findings

1. Most of the SHG members were in the age group of 25-50 years.
2. Majority of SHG members were married woman.
3. 80% of SHG members have 4-6 members in their families.
4. 88% of SHG members have family incomes less than RS. 1,00,000.
5. Majority of SHG members have been members for a period of more than 5 years.
6. All SHG members have personal Income less than RS.60, 000 PA.
7. Most of SHG members were either entrepreneurs or engaged in cattle rearing and agriculture.
8. 92% of SHG members save less than RS. 200 Per month with SHG.
9. Only 40% of SHG members have other savings like bank, post office etc. other than SHG contribution.
10. 92% of SHG members have borrowed money from the SHG less than 5 times.
11. All SHG members are happy about the quantum of loan they get from the SHGs.
12. 64% of SHG members have borrowed less than Rs.50, 000.

13. Though there were different reasons for borrowing, repaying of old debt is not a very impor factor for borrowing money.

14. All the SHG members were very happy with the rate of interest being charged by SHG.

15. Majority of the SHG members knew banking transactions.

16. 88% of SHG members felt that their economic status has improved after joining SHG.

17. 88% of the Members felt that their social status has improved after joining SHG.

Conclusion

From the above study we can conclude that SHGs have led to women empowerment thro financial inclusion. Majority of the members of SHG have borrowed money for income genera activities and the default rate is very low. Despite lack of opportunities, women in rural areas able to contribute economically and have developed a banking habit. This has brought ab social changes in themselves and their families.

Recommendations

SHGs in Bellary rural district face problems in marketing their products. The Government should take initiative in pro marketing assistance.

SHGs should increase and better organise their collective efforts towards income generating activities

http://www.allbankingsolutions.com
http://www.myrada.org
http://en.wikipedia.org
http://www.planningcommission.nic.in
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UNIVARIATE TIME SERIES FORECASTING USING ARIMA AND ARTIFICIAL NEURAL NETWORK MODELS: A CASE STUDY OF INDIAN STOCK MARKET

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Introduction

Humans have tried to predict the future, since ancient times. They have, for example, made their forecasts on the stars, the entrails of chickens, faith in some moral structures of society, economic theory, and intuition of the expert groups. Use of the statistical ideas as a basis for the forecasting goes back at least to the early use of least squares to fit the orbits of the planets and predict the future locations of the planets. There was a interest in the economic forecast in this century, especially in regard to business cycles. The dramatically rise in interest for prediction came with the advent of computers, and then prediction of routinely large scale has become a possibility. Several methods have been developed, such as Holt-Winters, who made effective use of relatively limited storage capacity of the first computer. The main reason for the prediction is the knowledge that the evaluating stage of the future possibilities is vital to the decision-making process of the present.

There are several reasons to try to predict stock market prices. The mostfundamental of these is financial gain. Any system that can always pick the winners and losers in the market dynamic would make the system owner is very rich. Therefore, many people including scientists, investment professionals, investors and media are constantly looking for this system than them higher returns.More over market trends provided will help the regulators making corrective measures.There are various forecasting techniques available in the academic literature.However, the selection of these techniques usually depends on data availability, quality of models and some pre-defined conditions.

Neural network theory came out of Artificial Intelligence research, or the research in designing machines with cognitive ability. A neural network is a computer program or hardwired machine that is designed to learn in a manner similar to the human brain.

Neural network can mine useful information from a mass of historical information and can be efficiently used in financial matters, for which the applications of neural networks for financial forecasting have become very popular in recent years.

Research Question's

The following research questions allow the research to meet the objectives proposed

- Can neural networks accurately forecast a stock market index?
- Can Autoregressive Integrated Moving Average (ARIMA) model accurately forecast a stock market index?
- Which method is best ANN or ARIMA?

Scope, Limitations And Assumptions

The possible groupings of financial market indices or stocks, and neural network type are almost unlimited. For this purpose, the research was restricted to one stock market index, one neural network type and one statistical forecast tool. This permitted the research to build upon and confirm previous research and place margins around the vast topic of time series forecasting.

The only limitation in this research was obtainability of data. We have used only four years 2000 to 2005 of historical data to train the neural network, with in which we had recession period of 2001 made data very noisy. In the next period i.e. from 2007 to 2011 we had only five years of data, with in which we had recession period in 2008 to 2009 made data very noisy to train the neural network.

Literature Review

Box and Jenkins has integrated the existing knowledge, in 1970, with the book "The Time Series Analysis: Forecasting and Control" which had a huge impact on the theory and practice series analysis and modern forecast. They also developed a coherent, flexible, iterative cycle into three phases for the identification of time series, estimation and validation, known as the Box-Jenkins approach.

The Box-Jenkins stochastic models symbolize a flexible class of models which can be used to signify the short-term behaviour of a wide class of time series. Stochastic models are useful in developing optimal short-term forecasters, especially in terms of the variables of primary interest. In some cases, these stochastic forecasters are as accurate as those based on elaborate econometric models. The Box-Jenkins stochastic models can be used to forecasts for the exogenous variables of an econometric model, to enable determination of the optimal forecast based on the econometric model. Aid in identification of a reasonable structure for an econometric model, and can be used to model auto correlated residuals in an econometric model. Lastly, they are particularly well-suited to the problem of simulating near future realizations, or outcomes, of a time series(Caldwell, George J (2006))

Since the 1940s, Artificial Neural Network (ANN) wasused for various engineering applications. As artificial intelligence was improved, they started to be used in solving medical problems, military and astronomy. More recently, ANN have been regularly applied to the field of research funding, such as forecasting the stock market, bankruptcy and destruction of economic agents. But the largest application of neural networks in economics and finances is in the area of forecasting time series, because of their ability to categorize a set of observations in different categories, and their ability to forecasts.

In most cases, the researchers sought to establish a linear relationship between macroeconomic variables and stock returns input. But with the discovery of non-linearity in the indexes of stock market returns, there has been a major shift in the focus of researchers to non-linear forecasting of stock returns(Abhyankar, A., Copeland, L. S., & Wong, W 1997).Even though, there hasbeen many literatures come up in non-linear statistical models of stock returns, most of them demanded that the nonlinear model to be specified before the estimation is made. But the reason for the return of the stock markets are noisy, uncertain, chaotic and nonlinear in nature, ANN has evolved into a better technique to capture the structural relationship between stock performance and its determinants more accurately than many other statistical techniques(Schoeneburg, E 1990).

Neural networks are able to produce some enhancements in forecasting stock market if the inputs are a good choice and if the answers to a number of networks are averaged together to reduce over fitting. It's unlikely that the future performance of these models will beas good as the test of historical data.Research suggest that as a result of executions don't match the ideal of historical closing prices and because of increased competition from other investors, use of technology has improved, but suggested the profits are large enough that these problems are not likely to wipe them out completely(McCluskey, Peter C 1993).

Performance Measurement Of Arima And Ann

To evaluate the performance of ARIMA and ANN, four statistical tests are carried out. These tests are Root Mean Square Error (RMSE), Mean Square Error (MSE), Mean Absolute Percentage Error (MAPE) and Mean Absolute Deviation (MAD).

$$\text{RMSE} = \sqrt{\frac{1}{n}\sum_{t=1}^{n}(\text{observed}_t - \text{predicted}_t)^2}$$

$$\text{MSE} = \frac{1}{n}\sum_{t=1}^{n}(\text{observed}_t - \text{predicted}_t)^2$$

$$\text{MAPE} = \frac{100}{n}\sum_{t=1}^{n}\left|\frac{\text{observed}_t - \text{predicted}_t}{\text{observed}_t}\right|$$

$$\text{MAD} = \sum_{t=1}^{n}\frac{|\text{observed}_t - \text{predicted}_t|}{n}$$

Where n is the number of forecasting periods, "observed$_t$" is the actual time series values and "predicted$_t$" is the foreca1sting time series values.

Results And Discussion

Hypothesis for ANN predication and ARIMA predication to prove that the mean of the prediction of ANN and ARIMA. A paired-samples t-test was conducted to compare the mean of ANN and ARIMA.

For 2000 to 2005

Hypothesis

Null H_o: $\text{Mean}_{ANN} = \text{Mean}_{ARIMA}$

AlternateH_A: $\text{Mean}_{ANN} \neq \text{Mean}_{ARIMA}$

Intermediate values used in calculations:

t = 29.7310, df = 249, Standard error of difference = 13.874
The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant.

For 2007 to 20011

Hypothesis

Null H_o: $Mean_{ANN} = Mean_{ARIMA}$

AlternateH_A: $Mean_{ANN} \neq Mean_{ARIMA}$

Group	Predicated by ANN	Predicated by ARIMA
Mean	5461.12	5405.93
Standard Deviation(SD)	392.96	118.05
Standard Error of a Mean(SEM)	24.75	7.44
Number of Observation (N)	252	252

Paired t test results for 2007 to 2011

Intermediate values used in calculations:

t = 2.9469, df = 251, Standard error of difference = 18.730

The two-tailed P value equals 0.0035. By conventional criteria, this difference is considered to be very statisticallysignificant.

Performance Measurement Of Arima And Ann

The performance of ARIMA and ANNis carried out using four statistical tests namely Root Mean Square Error (RMSE), Mean Square Error (MSE), Mean Absolute Percentage Error (MAPE) and Mean Absolute Deviation (MAD).

	ANN	ARIMA
Root Mean Square Error (RMSE)	13.46	20.59
Mean Square Error (MSE)	51809.89	262572.87
Mean Absolute Percentage Error (MAPE)	5.45	11.91
Mean Absolute Deviation (MAD)	181.18	424.12

For period 2000 to 2006

	ANN	ARIMA
Root Mean Square Error (RMSE)	10.72	326.85
Mean Square Error (MSE)	114.82	106833.63
Mean Absolute Percentage Error (MAPE)	2.15	4.53
Mean Absolute Deviation (MAD)	114.82	252.72

For period 2007 to 20011

Forecasting performances of ANN and ARIMA models is illustratedin above Table for 2000 to 2005 and 2007 to 20011. According to the table, the error values of ARIMA are higher than those of ANN for all criteria. In this respect, the ANN model, which uses Radial basis function, has reached higher performance compared to the ARIMA model. In other words, results from the ANN model are better than the results of the ARIMA model.

Arima Versus Ann And Future Works

In this paper, we have studied the elementary part of the forecast problem of a stock market using ANN and ARIMA model. In this paper, we have only used the Historic prices of the Index values for prediction. Other macro-economic factors and other international stock market data as input variables can also be used as input variables in order to improve the accuracy of the model. Application of Chaos Theory, Fractal analysis and wavelet analysis in feature selection of the input data set will also give a possibility of improvement in the performance.

Conclusion

The purpose of this study was to compare neural network and traditionally forecasting method such as ARIMA. ANN has the capability of extract useful information from vast data set, so ANN plays a major role in prediction the stock market. Artificial neural networks approach is relatively new field, active and promising on the prediction of the behaviour of stock prices.It is clear from the performance of ARIMA and ANN that neural networks can accurately predict financial markets if given the proper data upon which to train. In comparison to regression analysis, neural networks are a better tool for the investor. The uniqueness of the research comes from the fact that it will help to

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[illegible] in particular, the forecast of [illegible]. When you are using multiple linear [illegible] may not hold well in [illegible]. From the performance of [illegible] linear and nonlinear systems [illegible] traditional linear models (ARIMA).

[illegible]

1. [illegible] (1997) Uncovering nonlinear structure in real-time stockmarket [illegible] Journal of Business & Economic Statistics, [illegible]
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3. Box, [illegible] Time series analysis: Forecasting and control, San Francisco: Holden-Day.
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Measuring Customer Based brand equities of FMCGs in Indian Rural Markets-An Empirical Study

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ABSTRACT:

"If the businesses were split up, I would take the brands, trademarks, and goodwill, and you could have all the bricks and mortar and I would fare better than you".

–***John Stuart***[1]

Marketers of goods and services usually carry out market research on consumer's beliefs about attributes of competing brands in a product category. They mainly do the research to position the brand and to evaluate the efficiency and effectiveness of the marketing program. Brand equity is very important to marketers as this facilitates in the effectiveness of brand extensions and brand introductions. This is because consumers who trust and display loyalty toward a brand are willing to try to adopt brand extensions. While there have been methods to measure the financial value of brand equity, measurement of customer based brand equity was found to be in its nascent stage. Present research was conducted to measure customer based brand equity of FMCGs with emphasis on Soaps in Indian rural market. The customer based brand equity scale was developed based on the five underlying dimensions of brand experiences: brand awareness, brand recognition, brand trial, brand preference and brand loyalty. In this study researchers have considered brand trial to measure brand equity. The design of experiment selected was randomized block design and analyzed through technique of two-way ANOVA. It was found that with increase in prices of soaps the brand equity also increased with few exceptions.

KEYWORDS*: Brand, brand equity, CBBE, brand management*

I. INTRODUCTION

1.1 Brand, Brand elements and Branding

The American Marketing Association defines a brand as "a name, term, sign, symbol, or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors." A brand is thus a product or service that adds dimensions that differentiate it in some way from other products or services designed to satisfy the same need. These differences may be functional, rational, or tangible-related to product performance of the brand. They may also be more symbolic, emotional or intangible-related to what the brand represents. Brands represent enormously valuable pieces of legal property, capable of influencing consumer behavior, being bought and sold, and providing the security of sustained future revenues to their owner. The value directly or indirectly accrued by these various benefits is often called brand equity (Kapferer, 2005; Keller, 2003).
Brand can be logically understood as follows:

Product + X= Brand

A brand is a product, which adds other dimensions that differentiate it in some way from other products designed to satisfy the same need (X).

1.1.1 Brand elements:

Brands typically are made up of various elements, such as, name, logo, tagline or catchphrase, graphics, shapes, colors, sounds, scents, tastes, movements, customer relationship management (www.wikipedia.org).

1.1.2 Branding

Branding is endowing the products and services with the power of a brand. Branding is all about creating differences. To brand a product it is necessary to teach consumers "who" the product is-by giving it a name and using other brand elements to help identify it- as well as "what" the product does and " why" consumers should care. Branding involve creating mental structure and helping the consumers organize their knowledge about the products and the services in a way that clarifies their decision making and, in the process,

[1] Former Chairman of Quaker Oats Ltd. (Dyson, Farr, Hollis 1996:9).

provides value to the firm. For branding strategies to be successful and brand value to be created, consumers must be convinced that there are meaningful differences among brands in the products or service categories. The key to branding is that consumers must not think that all brands in the category are the same (Kotler, Keller, Koshy, Jha 2007:255-56).

1.1.3 Brand management

Brand management is a communication function that includes analysis and planning on how that brand is positioned in the market, which target public the brand is targeted at, and maintaining a desired reputation of the brand. Developing a good relationship with target public is essential for brand management. Tangible elements of brand management include the product itself; look, price, the packaging, etc. The intangible elements are the experience that the consumer takes away from the brand, and also the relationship that they have with that brand.

1.2 Five stages of Brand Experience

Brand equity is typically the result of brand loyalty, and brand loyalty brings increased market share. In fact, there are five stages of brand experience that lead to positive brand equity:

1. Brand awareness: Consumers are aware of the brand.
2. Brand recognition: Consumers recognize the brand and know what it offers vis-à-vis competitors.
3. Brand trial: Consumers have tried the brand.
4. Brand preference: Consumers like the brand and become repeat purchasers. They begin to develop emotional connections with the brand.
5. Brand loyalty: Consumers demand the brand and will travel distances to find it. As loyalty increases so do emotional connections until there is no adequate substitute for the brand in the consumer's mind (Susan Gunelius).

1.3 Brand Equity-Concepts

"Brand equity is the value of a brand. From a consumer perspective, brand equity is based on consumer attitudes about positive brand attributes and favorable consequences of brand use."

–American Marketing Association

"A set of assets and liabilities linked to a brand, its name and symbol that adds to or subtracts from the value provided by a product or service to a firm and/or to that firm's customers."

– David Aaker

"The tangible and intangible value that a brand provides positively or negatively to an organization, its products, its services, and it's bottom-line derived from consumer knowledge, perceptions, and experiences with the brand."

– Susan Gunelius

From the above definitions following elements of brand equity could be understood.

[1] Tangible and intangible value: Brand equity can be tangible value such as revenues and price premiums or intangible value such as awareness and goodwill.
[2] Positive or negative effects: The organization, products, services, and bottom line can benefit or suffer from brand equity.
[3] Consumer catalysts: Brands are built by consumers, not companies. Therefore, brand equity is built by consumers.

Brand equity is one of the most valuable assets that a firm can have, and brand equity measurement and management continue to be important areas of research in both academia and industry. Most of the extant research on brand equity has looked at the issue from the perspective of either the consumer or the firm. Brand equity research from a consumer's perspective usually involves collecting data on consumer mindset, measures of brand equity from the consumer through surveys or experiments, and using the data to assess the consumer's perceptions, feelings, and attitudes towards the brand. On the other hand, brand equity research from a firm's perspective generally involves the use of observed market data to assess the brand's financial value to the firm.

1.4 Need for building Brand Equity

The study of brands has been an active area of study for marketing researchers for many years, but the 1990s saw a shift towards how strong brands can be formed and cultivated (Fairdoth, Capella and Alford 2001). A strong brand helps the organization connect with customers and elicits a differential response from them. When customers develop a positive attitude towards a brand it leads to brand equity (Farquhar 1989). It is also possible that customers develop a negative attitude towards a brand; such a brand then leads to a decrease in the value endowed on a product. A brand that has a negative equity will not only fail but also hamper the option of brand extensions. This highlights the importance of managing brands to build a positive equity and providing leverage to the product with the brand name. Research also shows that brand equity, along with trust,

consistently appears as the most influential factor in cultivating both behavioural and attitudinal loyalty (Taylor, Celuch, and Goodwin 2004). 'More and more companies are realizing that brand equity is one of their most valuable intangible assets (Liaogang, Chongyan, and Zi'an 2007). The benefits of building strong brand equity are as follows:

[1] Brand equity has a positive influence on market power (Farquhar 1989).
[2] It positively impacts consumers' willingness to pay price premiums (Keller 1993).
[3] It leads to 'higher efficiency and effectiveness of their marketing programs' (Bernick2005, Keller 2001).
[4] It positively impacts the company's market share (Baldauf et. al. 2003).
[5] It results in improved future profits and long-term cash flow (Srivastava and Shocker 1991, cited in Zeugner-Roth et. al. 2008).
[6] It can build brand loyalty, which in turn reduces marketing costs (Kayamanand Arsali 2007).
[7] It can deliver emotional safety, prestige, or other benefits that are important to consumers (Raggio and Leone 2007).
[8] It reduces the anticipated risk, enhances anticipated confidence in the brand purchase decision, and increases satisfaction with the brand (Broyles et. al. 2009).
[9] It leads to a sustainable competitive advantage (Bharadwaj et. al. 1993).
[10] It ultimately leads to marketing success for the brand (Ching and Ellis 2006).
[11] Strong brand equity can help in achieving success for new products launched as brand extensions (Pitta and Katsanis 1995).
[12] An understanding of brand equity and the sources of brand equity is a must for marketers, so that they can enhance their brand equity against competitor's brands (Myers 2003).

1.5 Brand Equity Models

A number of methods exist for measuring brand equity at the customer level including Advertising agency Young and Rubicam's (Y&R) Brand Asset Valuator (BAV), Millward-Brown's Brand Z, Aaker's Model, Brand Resonance model of Keller. For a better insight towards brand equity a brief discussion on Aaker and Keller's model are discussed hereunder.

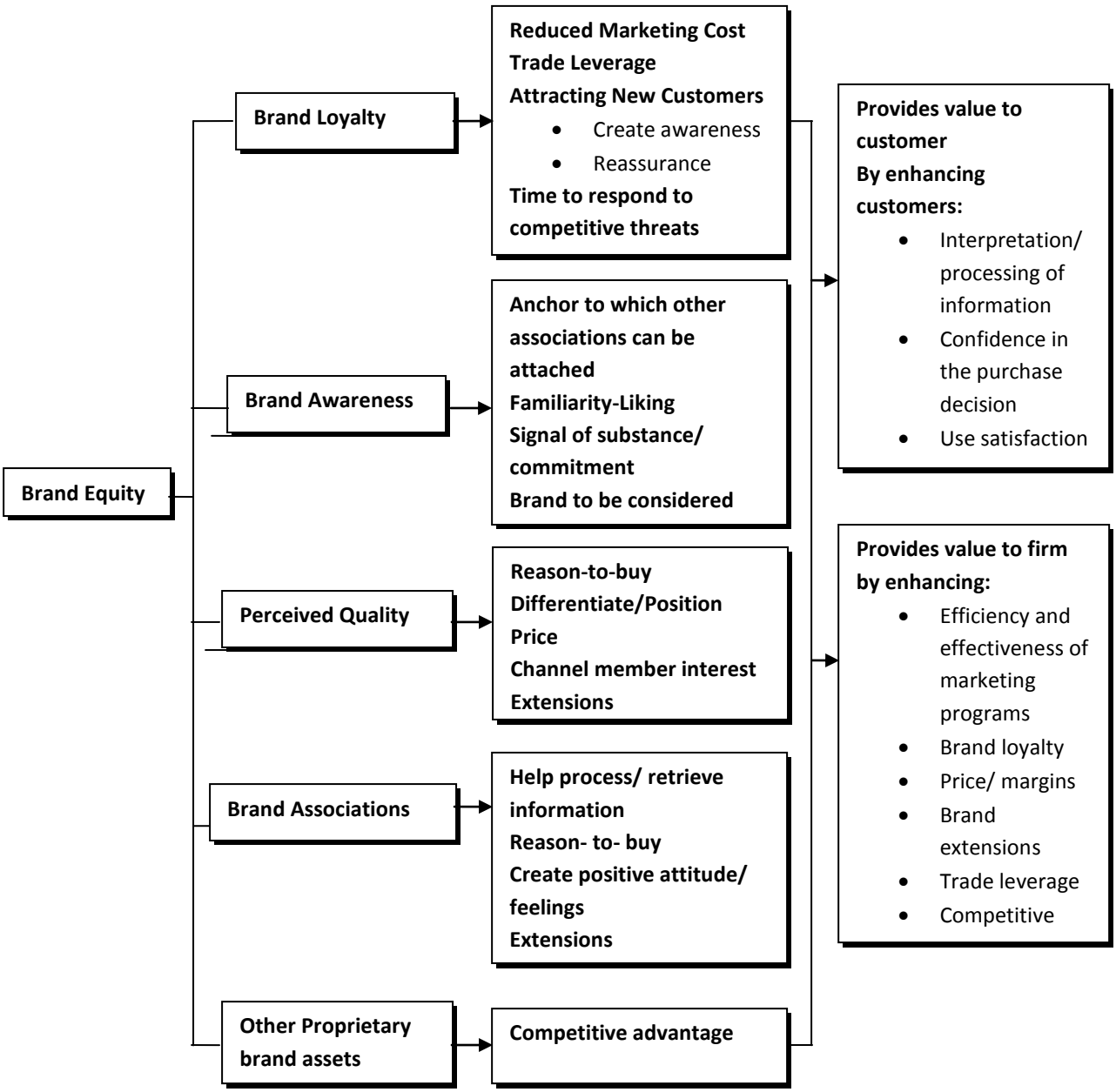
1.5.1 Aaker's model.

Former UC-Berkeley marketing professor David Aaker (1996) views brand equity as a set of five categories of brand assets and liabilities linked to a brand that add to or subtract from the value provided by a product or service to a firm and/ or to that firm's customers. These categories of brand assets are: (1) brand loyalty, (2) brand awareness, (3) perceived quality (4) brand associations, and (5) other proprietary assets such as patents, trademarks and channel relationships (Kotler 2007).

[1] Brand loyalty. The strongest measure of a brand's value is the loyalty (repeat buying; word of mouth) that engenders among customers. Sometimes the loyalty is circumstantial: Repeat buying comes from a lack of reasonable alternatives. Circumstantial loyalty includes what is called proprietary assets (e.g., patents, copyrights, trademarks, control of an airport) that give a firm at least a temporary monopoly position (the impact of generic drugs when an ethical drug comes off patent suggests that much of the advantage is in fact circumstantial and hence temporary). In other situations, loyalty reflects an efficiency motive. The brand is good, so we automatically select it to minimize effort. Notice that an important special case of efficiency loyalty occurs when a customer relies on an "expert" (e.g., a dealer) to make the choice for her or him and the expert has a preferred alternative. In this case, loyalty is really channel-created loyalty.The strongest form of loyalty is attachment. In this case, the customer doggedly seeks out a product, often out of deference to its role in a previous situation (e.g., "they were there when I needed them") and sometimes in an almost ritualistic manner (e.g., stopping at a certain ice cream store as a rite of summer). This level of loyalty insulates a brand from competitive pressures such as advertising and price promotion and leads to higher margins and profits.
[2] Brand awareness. The simplest form of brand equity is familiarity. A familiar brand gives the customer a feeling of confidence (risk reduction), and hence it is more likely to be both considered and chosen. There is also convincing evidence that, on average, customers prefer brands with which they are familiar. Finally, choosing a known brand gives the customer a justification for the decision, an explanation for his or her actions. This justification also serves a social role, indicating that the person has bought something of value.
[3] Perceived quality. A known brand often conveys an aura of quality (good or bad). A quality association can be of the general halo type; e.g., Levi Strauss has an outstanding reputation both for its products and as a place to work. Associations can also be attribute or category specific: Gillette makes fine-quality razors; Apple produces user-friendly products, and Samsonite products last forever. In some cases, a brand becomes synonymous with a category (e.g., Xerox, Kleenex, FedEx). Further, a brand often has strong price associations

that influence quality perceptions (e.g., a K mart brand product is expected to be low in price and probably low in quality as well). Thus, strong quality associations exist for many products and brands.

Figure-1.1: Aaker's Model of Brand Equity



Source: David A. Aaker, 1996

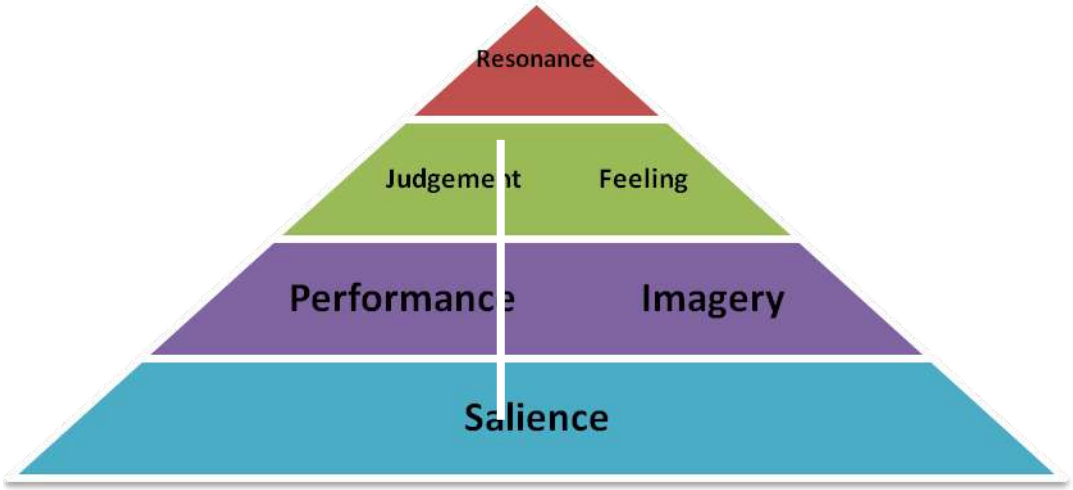
[4] Brand associations. While quality associations are very important, other, more subjective and emotional associations are also an important part of brand value. These include personal association; other associations are more emotional, relating to such lifestyle or personality characteristics as stability. Some strong associations may be with the customer or user of the product (e.g., white shirts and bald heads with business executives) or geographic region (e.g, country of origin for Japanese cars, Swiss watches). Taken together, these associations form a brand personality in that situations for which a brand is (and is not) suitable (Aaker, 1997).

[5] Other brand assets. Other assets, such as patents and trademarks, are clearly valuable. However, we exclude these from brand equity since they are tied to physical product or process and not to the brand per se (Lehmann and Winer, 2002:255-56).

1.5.2 Brand Resonance Model

The brand resonance model developed by Keller (2001) also views brand building as an ascending, sequential series of steps, from bottom to top: (1) ensuring identification of brand with customers and an association of the brand in customers' minds with a specific class or customer need; (2) firmly establishing the totality of brand meaning in the minds of customers by strategically linking a host of tangible and intangible brand associations. (3) Eliciting the proper customer responses in terms of brand- related judgment and feelings, and (4) converting brand response to create an intense, active loyalty relationship between customers and the brand. According to this model, enacting the four steps involves establishing six "brand building blocks" with customers. These brand building blocks can be assembled in terms of a brand pyramid.

Figure-1.2: Brand Resonance Pyramid



Source: Kotler, Keller, Koshy, Jha 2007:261

The creation of significant brand equity involves reaching the top or pinnacle of the brand pyramid, and will occur only if the right building blocks are put into place.

a. Brand salience relates to how often and easily the brand is evoked under various purchase or consumption situations.
b. Brand performance relates to how the product or service meets customers' functional needs.
c. Brand imagery deals with the extrinsic properties of the product or service, including the ways in which the brand attempts to meet customers' psychological or social needs.
d. Brand judgments focus on customers' own personal opinions and evaluations.
e. Brand feelings are customers' emotional responses and reactions with respect to the brand.
f. Brand resonance refers to the nature of the relationship that customers have with the brand and the extent to which customers feel that they are "in sync" with the brand.
   Resonance is characterized in terms of the intensity or depth of the psychological bond customers have with the brand, as well as the level of activity engendered by this loyalty. Examples of brands with high resonance include Harley-Davidson, Apple, and eBay (Kotler, 2007: 260-61).

1.6 Measuring Brand Equity

Brand equity consists of two components- brand strength and brand value and to have an understanding how customers evaluate brand equity, we need to have an understanding of both these components (Lassar, Mittal, and Sharma 1995). We can measure brand equity in the following ways (Lassar et al. 1995; Ashill, and Gazley 2008):Brand value or financial performance: Brand value is the financial game accrued as a result of leveraging brand strength. The financial performance is calculated to see how profitable the company is. This includes the sector and regional analysis and the profitability of all its business units. Sector analysis includes the sector of which the brand is a part, for example, the retail sector, FMCG sector, etc. The regional analysis include the performance of the product category in a particular region. Both these parameters provide an understanding of the relative performance of the brand. That is the performance of the brand vis-à-vis the growth rate of the sectors and the regions.Brand Strength or customers based measures: Brand strength is the brand association in the minds of the customers. This analysis helps understanding what customers think about the brand in relation to competitor's brand. As the study of the strength of the brand is done from the point of view of the customers, it can also be termed as customers based measure (Dutta 2012).

1.6.1 Customer Based Brand Equity (CBBE): CBBE as a method to calculate brand equity can be defined as the differential effect that brand knowledge has on consumer response to the marketing of that brand[2]. A brand is said to have positive Consumer based Brand equity when consumers react more favorably to a product and the way it is marketed when a brand is identified as compared to when it is not. A brand is said to have negative Consumer based Brand equity if consumers react less favorably to marketing activity for the brand under the same circumstances.There are three key ingredients of this definition. First, brand equity arises from differences in consumer's response. If no difference occurs, then the brand/product can essentially be classified as a commodity or generic version of the product. Competition would then probably be based on price.Second, the difference in response is a result of consumer's knowledge about the brand. Brand knowledge consists of all the thoughts, feelings, images, experiences, beliefs, and so on that become associated with the brands. In particular, brands must create strong, favorable, and unique brand associations with customers, as has been the case with Volvo (safety), Hallmark (Caring), Harly-Davidson (Adventure). Third, the differential response by consumers that makes up brand equity is reflected in perceptions, preferences, and behavior related to all aspects of the marketing of a brand.

II. REVIEW OF LITERATURE

2.1 The Role of Brands

Brands identify the source or maker of a product and allow consumers-either individuals or organizations-to assign responsibility to a particular manufacturer or distributor. Consumers may evaluate the identical product differently depending on how it is branded. Consumers learn about brands through past experience with the product and its marketing program. They find out which brands satisfy their needs and which ones do not. As consumers' lives become more complicated, rushed, and time-starved, the ability of a brand to simplify decision making and reduce risk is invaluable. Brands also perform valuable functions for firms. First, they simplify product handling or tracing. Brands help to organize inventory and accounting records. A brand also offers the firm legal protection for unique features or aspects of the products. The brand name can be protected through registered trademarks; manufacturing processes can be protected through patents; and packaging can be protected through copyrights and designs. These intellectual property rights ensure that the firm can safely invest in the brand and reap the benefits of a valuable asset. Brands can signal a certain level of quality so that satisfied buyers can easily choose the product again. Brand loyalty provides predictability and security of demand for the firm and creates barrier to entry that make it difficult for other firms to enter the market. Loyalty also can translate into willingness to pay a higher price, often 20 to 25 percent more. Although competitors may easily duplicate manufacturing processes and product designs, they cannot easily match lasting impressions in the minds of individuals and organizations from years of marketing activity and product experience, in this sense branding can be seen as a powerful tool to secure a competitive advantage. To firms, brands thus represent enormously valuable piece of legal property that can influence consumer behavior, be bought and sold, and provide the security of sustained future revenues to their owner.

2.2 Components of Brand equity

The value of a brand and its equity is ultimately derived in the market place from the words and actions of consumers. Consumers decide with their purchases, based on whatever factors they deem important, which brands have more equity than other brands. Although the details of different approaches to conceptualize brand equity differ, they tend to share a common core. All definitions typically either implicitly or explicitly rely on brand knowledge structures in the minds of consumers, individuals or organizations as the source or foundation of brand equity. In other words, the real power of a brand is in the thoughts, feelings, images, beliefs, attitudes, experiences and so on that exist in the minds of consumers. This brand knowledge affects how consumers respond to products, prices, communications, channels and other marketing activity increasing or decreasing brand value in the process. Along these lines, formally, customer-based brand equity has been defined as the differential effect that consumer brand knowledge has on their response to brand marketing activity (Keller, 2003).Brand knowledge is not the facts about the brand, it is all the thoughts, feelings, perceptions, images, experiences, and so on that becomes linked to the brand in the minds of consumers. All of these types of information can be thought of in terms of a set of associations to the brand in consumer memory. Accordingly, brand knowledge can be viewed in terms of an associative network memory model as a network of nodes and links where the brand can be thought of as being a node in memory with a variety of different types of associations potentially linked to it although (Janiszewski & van Osselaer, 2000).

Two important components of brand knowledge are brand awareness and brand image. Brand awareness is related to the strength of the brand node or trace in memory as reflected by consumers' ability to recall or recognize the brand under different conditions. Brand awareness can be characterized by depth and breadth. The

[2] London, UK, Keller, *Strategic Brand Management*

depth of brand awareness relates to the likelihood that the brand can be recognized or recalled. The breadth of brand awareness relates to the variety of purchase and consumption situations in which the brand comes to mind.Brand image is defined as consumer perceptions of and preferences for a brand, as reflected by the various types of brand associations held in consumers' memory. These associations range along a number of different dimensions, such as their strength, positivity, uniqueness, and abstractness. Strong, favorable and unique brand associations are essential as sources of brand equity to drive consumer behavior.To capture differences in brand knowledge structures, a number of hierarchy of effects models have been put forth by consumer researchers through the years (e.g., AIDA, for Awareness-Interest-Desire-Action). Customer mindset or knowledge can be largely captured by five dimensions that have emerged from prior research that form a hierarchy or chain, from bottom to top as follows:

i. Brand awareness: The extent and ease to which customers recall and recognize the brand and can identify the products and services with which it is associated.

ii. Brand associations: The strength, favorability, and uniqueness of perceived attributes and benefits for the brand, encompassing tangible and intangible product or service considerations.

iii. Brand attitudes: Overall evaluation of the brand in terms of its quality and the satisfaction it generates.

iv. Brand attachment and loyalty: How loyal the customer feels toward the brand.

v. Brand activity: The extent to which customers purchase and use the brand, talk to others about the brand, seek out brand information, promotions, and events, and so on.

There is an obvious hierarchy in the dimensions of value: Awareness supports associations, which drives attitudes that lead to attachment and activity. Brand value is created at this stage when customers have: 1) a high level of awareness; 2) strong, favorable, and unique brand associations; 3) positive brand attitudes; 4) intense brand attachment and loyalty; and 5) a high degree of brand activity (Keller 2003).

2.3 Brand Equity Measurement

Since the concept of brand equity gained widespread attention in the 1980s, many different methods of defining and measuring brand equity were advocated, however, many of which lack a common ground. This phenomenon is not surprising, because depending on the nature of the product and the market, firms may have different brand management objectives, and no single method of conceptualizing and measuring brand equity may be applicable to all brands. There is a general agreement, however, that brand equity can be defined and measured in terms of the marketing effects or outcomes that can be uniquely attributed to a brand relative to the effects or outcomes for the same product had it not been identified by that brand (Keller 2003). Other than a few notable exceptions (e.g. Srinivasan, Park, and Chang 2004; Kim et al. 2003), the extant literature on brand equity measurement typically approach the problem exclusively from either the perspective of the consumer or the firm. Keller and Lehmann (2003) divide brand equity measures into three categories: customer mindset, product market outcome, and financial outcome measures.

2.3.1 Brand Equity from the Perspective of the Firm

Studies that measure brand equity from the perspective of the firm consider brand equity as the value of the brand to the firm and encompass most of the product market outcome and financial outcome measures of brand equity categorized by Keller and Lehmann (2003). Product outcome measures consist of market place performance indicators such as revenue, profit, or price premium, and they are usually calculated from observed market data (e.g. Holbrook 1992; Ailawadi, Lehmann, and Neslin 2003). When calculated as a premium measure, they are computed with respect to a base brand that can be a generic or private label brand, the industry average, or a competing national brand with a lower equity relative to the other brands in the market. Financial outcome measures consider the value that shareholders and firms place on the brand as a financial asset, and may include various performance indicators of the brand's or firm's value observed in financial markets. Important studies with this approach include Simon and Sullivan (1993) who use financial market data to calculate brand equity as a component of the residual market value of a firm after accounting for the firm's tangible assets, and Mahajan, Rao and Srivastava (1994), who assess the importance of brand equity under acquisition decisions.

2.3.2 Brand Equity from the Perspective of the Consumer

Customer mindset measures as defined by Keller and Lehmann (2003) include "everything that exists in the minds of customers with respect to a brand (e.g. thoughts, feelings, experiences, images, perceptions, beliefs, and attitudes)" and encompass a wide variety of both quantitative and qualitative measures of brand equity. Such measures of consumer-based brand equity have received considerable attention in both academia (e.g. Aaker 1991, 1996; Keller 1993, 2003; Erdem and Swait 1998; Swait, Erdem, Louviere, and Dubelaar 1993) as well as industry (e.g. Young and Rubicam's 'Brand Asset Valuator'; Total Research Corporation's 'Equitrend'; Landor Associates' 'Image Power'). For example, Keller (2003) and Keller and Lehmann (2003)

suggest that customer mindset measures can be summarized by five key dimensions that include brand awareness, associations, attitudes, attachment, and activity. Aaker (1991) proposes a brand equity model which consists of the five mindset measures, they are: brand loyalty, brand awareness, perceived quality, brand associations and other proprietary brand assets (e.g. trademarks, patents, and channel relationships). In an empirical study that compares various consumer-mindset measures of brand equity, Agarwal and Rao (1996) find that most of the common measures (with the exception of unaided recall) as conceptualized by Aaker (1991) and Keller (1993) have convergent validity and are hence appropriate measures of the brand equity construct.

According to a customer-based brand equity perspective, the indirect approach to measuring brand equity attempts to assess potential sources for brand equity by measuring consumer mindset or brand knowledge. The indirect approach is useful in identifying what aspects of the brand knowledge may potentially cause the differential response that creates brand equity in the market place. Because any one measure typically only captures one particular aspect of brand knowledge, multiple measures need to be employed to account for the multi-dimensional nature of brand knowledge: Brand awareness can be assessed through a variety of aided and unaided memory measures that can be applied to test brand recall and recognition; brand image can be assessed through a variety of qualitative and quantitative techniques.

III. RATIONALE OF THE STUDY

A brand is essentially a marketer's promise to deliver predictable product or service performance. Understanding consumer brand knowledge is of paramount importance because it is the foundation of brand equity. Measuring brand equity of FMCGs in rural markets will certainly help the marketers upgrading their marketing program and other elements of branding to finally have better market share. This is the major drive for the present research. Fast Moving Consumer Goods (FMCGs) or consumables comprise all non-durable goods like toiletries, cosmetics, foods and beverages, footwear etc. These products are consumed quickly and purchased frequently. These products have a quick turnover and relatively low cost. FMCG products are those that get replaced within a year. According to NCAER survey, the rural market accounted for 53% of total consumption in the country in 1998-99. Francis Kanoi in 2002 puts the rural market size at Rs. 650 billion.

FMCG is a big industry in rural markets and it is an integral part of most of the households. This was the drive for choosing FMCG industry as a research area.

IV. OBJECTIVES OF THE STUDY

[1] To understand the concepts of brand, branding and brand equity.
[2] To measure the CBBE of FMCGs (soaps) in Indian rural markets.
[3]

V. HYPOTHESES

Hypotheses in respect of soap:
H0: The mean rating of soap is same for all nineteen soaps.
H1: The mean rating of soap is different for all nineteen soaps.
Hypotheses in respect of sub-division (location):
H0: The subdivision (location) of respondent has no effect on mean ratings for the soap.
H1: The subdivision (location) of respondent has effect on mean ratings for the soap.

VI. RESEARCH METHODOLOGY

The present research work is empirical in nature. It is based on primary data as well as secondary data. The secondary data was collected from several text books, journals, research papers, magazine, internet etc. The primary data was collected from one of the rural district Keonjhar of Odisha, India. Interview was used as data collection method.

6.1 Description of Sampling Region

The district of Keonjhar is the northernmost district of Odisha which borders Jharkhand. It is a rural a rural district, rich in mineral resources and about 30 percent of total area is covered with tracts of dense forests. But the district, in spite of its rich mineral and forest wealth, still remains economically backward. Most of the rural consumers rely on agriculture and allied activities for their livelihood. Even in the era of satellites, many a villagers are deprived of news papers, televisions and other sources of communications. Purchasing decisions for FMCGs are made mostly on reference group and information provided by retailers.

6.2 Sampling Plan

Administrative set-up of Keonjhar district consists of three subdivisions namely Keonjhar, Anandpur and Champua.The sample size for this investigation consisted of 285 (95 consumers from each subdivision). The non- random convenient sampling technique was used to select the sample for this investigation. To arrive at the list of nineteen soaps (refer annexure-1) two retailers each from three subdivisions (Keonnjhar, Anandpur and Champua) of Keonjhar district were chosen. An exhaustive list of available soaps was prepared to measure the brand equity. The consumer were asked to rate the soaps on a 10 point scale (1-Not liked the soap at all, and 10-Most preferred soap).

6.3 Data analysis Techniques

Brand trial is one of the important stages of brand experience. The beliefs and feelings of the consumers about the brand after using it influence brand rating. The same rating was used as indicator of brand equity in present research. In the study, descriptive and statistical tools were used to analyze the data. Two hypotheses were tested by doing two-way ANOVA with randomized block design. For this purpose researchers have taken the variable 'rating' as dependent variable and 'Soap' as factor (independent variable), the subdivision (location) as block. SPSS version 20.0 was used for data analysis.

6.4 Limitations of the Study

The present research is confined to only one rural district of Odisha. Only soaps were taken for the study but not the other FMCGs. The reference period for the study was from August, 2013 to November, 2013. The results of research were derived from the analysis of response and personal observation of respondents.

VII. DATA ANALYSIS AND INTERPRETATION

Estimated Marginal means

Table-7.1: Estimated marginal means of soaps

Sl. No.	Soap Brands	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	Breeze	2.933	.251	2.439	3.428
2	Nima	4.600	.251	4.106	5.094
3	Godrej No. 1	3.000	.251	2.506	3.494
4	Superia	5.600	.251	5.106	6.094
5	Lifebuoy	5.867	.251	5.372	6.361
6	Vivel	5.667	.251	5.172	6.161
7	Rexona	6.200	.251	5.706	6.694
8	Lux	6.933	.251	6.439	7.428
9	Hamam	6.867	.251	6.372	7.361
10	Santoor	5.867	.251	5.372	6.361
11	Margo	8.533	.251	8.039	9.028
12	Medimix	7.533	.251	7.039	8.028
13	Fiama Di Wills	7.733	.251	7.239	8.228
14	Dettol	8.800	.251	8.306	9.294
15	Cinthol	8.733	.251	8.239	9.228
16	Liril	8.733	.251	8.239	9.228
17	Mysore Sandal	6.400	.251	5.906	6.894
18	Pears	9.600	.251	9.106	10.094
19	Dove	8.467	.251	7.972	8.961

- An increasing mean rating for soaps could be seen with increasing in prices with few exceptions.
- 'Pears' of HUL was found to have highest mean rating.
- 'Breeze' of HUL was found to have lowest mean ratings.

Hypotheses testing

Table-7.2: ANOVA test for different soap brands and different sub-division on brand equity

Tests of Between-Subjects Effects

Dependent Variable: Rating

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	Hypothesis	12948.214	1	12948.214	10138.025	.000
	Error	2.554	2	1.277[a]		
Soap	Hypothesis	985.186	18	54.733	200.127	.000
	Error	9.846	36	.273[b]		
Subdivision	Hypothesis	2.554	2	1.277	4.670	.016
	Error	9.846	36	.273[b]		
Soap * Subdivision	Hypothesis	9.846	36	.273	.290	1.000
	Error	215.200	228	.944[c]		

a. MS(Subdivision)
b. MS(Soap * Subdivision)
c. MS(Error)

- The significance of F-test for soaps was found to be 0.000 which is less than 0.05, so the first null hypothesis was rejected. This indicated that at a confidence level of 95 % mean rating given for nineteen brands of soaps are significantly different.
- The significance of F-test for subdivision (location) was found to be 0.260 which is more than 0.05, so the second null hypothesis is accepted. This indicated that at a confidence level of 95 % the subdivision (location) of respondent has no significant effect on mean ratings for the soap.

VIII. FINDINGS

[1] According to the study the mean rating of soap brands were found different for all nineteen soap brands.
[2] The subdivision (location) of respondent has no effect on mean ratings of the soap brand.
[3] 'Pears' brand of Hindustan Unilever Limited (HUL) was found to have highest brand equity.
[4] Breeze' of HUL was found to have lowest mean ratings or brand equity.
[5] 'Dove' was highest in the price table of selected soaps but had lesser brand equity than 'Pears' which ranks second in price list next to Dove.
[6] 'Mysore sandal' has unexpectedly lesser brand equity in rural markets.

Other Observations:

[1] Superia soap brand of ITC Ltd. was known to most of the people in the sampling region.
[2] Lifebuoy, Lux of HUL, Superia of ITC Ltd.,and Nima of Nirma are among selling soap brands.

IX. CONCLUSION

Brand equity can be measured indirectly, by measuring the potential sources of brand equity in terms of consumer brand knowledge, and directly, by measuring the different possible outcomes or manifestations of brand equity in terms of differential effects of marketing activity. Measuring sources of brand equity involves profiling consumer knowledge structures. There are many different ways to assess consumer knowledge and thus potential sources of brand equity. Although it is particularly important to capture the breadth and depth of awareness; the strength, favorability, and uniqueness of brand associations; the favorability of consumer responses; and the intensity and activity of consumer loyalty, other qualitative and quantitative measures should be employed. The brand equity measured in terms of rating of the soaps is an important input for marketers. Brand management requires a keen understanding of exactly how consumers think, feel, and act towards brands, for its success.

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ANNEXURE-1: List of the soap brands

2014-15 Msc - Psychology

Research Paper

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Psychology

KEYWORDS : Adolescence, Emotional intelligence

Gender Differences in Emotional Intelligence of adolescents

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ABSTRACT

The aim of this study is to examine the gender differences in emotional intelligence of adolescents. The sample comprised of 973 Pre University college students ranging in age between 16-18 years studying in second year Pre University in Dakshina Kannada and Udupi districts of Karnataka. There were 464 male and 509 female adolescents. The participants were administered Emotional intelligence scale developed by Mangal & Mangal (2004). t test were used for analysis. The results of the study indicated significant difference between males and females only in two components of emotional intelligence. Male adolescents showed a higher intrapersonal awareness which means they have higher understanding of their own emotions. Male and female adolescents showed higher ability to manage emotions in interpersonal relationships. These findings suggest a gendered emotional socialization reflective of Indian culture.

Introduction

Emotional intelligence(EI) refers to the capacity for recognizing one's own feelings and those of others, for motivating ourselves and for managing emotions well in ourselves and our relationships (Goleman, 1995). Emotionally intelligent person is skilled in four areas such as identifying, using, understanding and regulating emotions (Mayer &Salovey, 1993). Demographic factors like gender, socioeconomic status, and family structure contribute to the differences in emotional intelligence. Studies have shown gender differences in emotional intelligence of females and males because the society socializes the two genders differently. (Sanchez-Nunez et al, 2004; Sandhu and Mehrotra 1999). Chu (2002) reported that males have higher level of emotional intelligence than females. Tapia (1999), reported girls were high on empathy, social responsibilities and interpersonal relationships than boys. They were more sensitive towards their relationships with parents, friends and siblings. Katyal and Awasthi (2005) found emotional intelligence higher among females than males among adolescents of Chandigarh, significant relationship between emotional intelligence and type of family, parents' educational qualification and mother's occupation. However, no significant relation of EI was found with monthly income, birth order and father's occupation (Katyal & Awasthi, 2006). Some studies found emotional intelligence higher among males than females (Petrides & Furnham, 2000), difference only in a few components of emotional intelligence and not global Emotional intelligence such as interpersonal skills (Reiff et al,2001), and females being high on social skills (Petrides & Furnham, 2000). On the other hand Balci-Celik and Deniz (2008) investigated the difference in the EI levels of Turkish scouts and scouts from other countries with regard to age and gender and found no difference in emotional intelligence of boys and girls and with regard to age. In addition to this some factors like economic and social conditions could limit the development of emotional intelligence (Brown,George- Curran & Smith (2003). Low socio-economic status causes environmental deficiencies which results in low self esteem of students (US Department of Education, 2003).

In the Indian society which is largely patriarchal, boys are exposed to better social climate than girls. Biologically boys are able to control their emotions and express in a socially approved manner and thereby experience less anxiety and emotional conflicts (Audichya, 2005). But now, due to globalization and also schools and colleges providing equal opportunities in activities for self awareness and self expression, their emotional intelligence can be enhanced.

In the present study, recognising, using, understanding and regulating emotions (Mayer & Salovey, 1993) is conceptualized as interpersonal and intrapersonal awareness, interpersonal and intrapersonal management.

Interpersonal awareness is the ability to perceive, communicate and manage emotions, knowing what one is feeling at the moment, using preferences to guide one's decision and realistic assessment of one's abilities and having a well grounded sense of self confidence. Intrapersonal awareness is self regulating ones emotions, handling emotions so that it facilitates rather than interferes with the task at hand. Interpersonal management is the ability to experience and communicate and sustain positive emotions and contain negative emotions. Intrapersonal management is motivating oneself, using ones deepest preferences to move and guide them towards goals, to take initiative and strive to improve, to persevere in the face of setbacks and frustrations.

Objectives

To analyse the difference in emotional intelligence of male and female adolescents.

Hypothesis

HO There is no significant difference in emotional intelligence of male and female adolescents.

Method

Participants

Participants included 973 pre university college students, ranging in age between 16 and 18 years, out of which 464 were male and 509 were female adolescents. The sample was selected by stratified random sampling from both private and government pre university colleges of Mangalore and Udupi districts of Karnataka. With respect to geographical background they were 53.9% urban and 46.1% rural. Therefore the sample was representative.

Instruments

Emotional intelligence scale developed by Mangal &Mangal (2004) was used to measure the emotional intelligence of the participants. It consisted of 100 items measuring four components of emotional intelligence: a) intrapersonal awareness b) inter personal awareness c) intrapersonal management d) interpersonal management each having 25 items. The participants were required to respond either yes or no. The scoring was one mark for yes and zero for no response. For the present study, the Cronbach alpha for the Kannada translation of the scale was established and the value obtained was .78.

Procedure

The questionnaire was administered to the participants during their regular college hours. The participants responded to the instrument for a period of one hour in the presence of the researcher. Before taking the test the participants were instructed by the researcher that their participation is voluntary and they

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have the right to withdraw from participating in the study. The participants filled out a personal data blank with demographic details such as age, sex, socio economic status and geographical area.

Results and Discussion

Table 1
Mean, SD,'t' Value for the four components of emotional intelligence based on gender(Male, N=464, Female, N=509)

Emotional intelligence components	Male M	SD	Female M	SD	t value
Intrapersonal awareness	15.82	3.67	15.02	3.70	3.368**
Interpersonal awareness	14.24	4.11	13.81	3.60	1.737
Intrapersonal management	16.12	4.25	16.14	3.80	.088
Interpersonal management	15.41	3.57	16.30	2.73	4.403**
Total emotional intelligence	61.60	11.74	61.29	10.22	.441

**p<0.01

Results indicate significant difference in emotional intelligence of male and female adolescents. Among the four components of emotional intelligence independent t- test indicated a higher level of intrapersonal awareness among males (M = 15.8, SD= 3.6) than females (M=15.0, SD = 3.7), t (971) = 3.368, p = .001< 0.01. In the area of interpersonal management females had a significantly higher interpersonal management (M = 16.3, SD = 2.7) than males (M = 15.4, SD = 3.5), t (971) = 4.403, p = .001 < 0.01. No significant difference was found between gender in the components of interpersonal awareness (M = 14.24, SD = 4.11), (M = 13.81, SD = 3.60), t (971) = 1.737, p = .083 > 0.01, intrapersonal management (M =16.12, SD = 4.25), (M =16.14, SD=3.80), t (971) =.088, p =.930 > 0.01, and total emotional intelligence (M = 61.60, SD = 11.74), (M = 61.29, SD = 10.22), t (971) =.441, p =.659 > 0.01.

Results showed gender differences only on two components of emotional intelligence such as intrapersonal awareness and interpersonal management with males having a higher intrapersonal awareness and females having higher interpersonal management. This disparity between males and females on two components may be attributed to the Indian society which socializes the two genders differently where girls experience better emotional warmth and high self esteem and boys experience more rejection from their fathers (Rai, Pandey & Kumar, [illegible]

Girls are traditionally socialized to fit into the needs of the larger society (Menon, 2000) and understanding, accepting and adjusting is an important cultural value (Raval& Martini, 2011) that is ingrained in Indian cultures everyday interpersonal interactions which makes girls adept at interpersonal skills. In Indian families parents emphasize on relational socialization which is understood in terms of interdependence and relatedness (Markus &Kitayama, 1991; Kagitcibasi, 2005). In these cultures emotions are experienced but expression is avoided keeping in view the larger goal of maintaining harmonious social relation and also a sense of self from being disturbed. (Markus &Kitayama, 1991).

In contrast to earlier study (Ciarrochi et al, 2001; Katyal &Awasthi 2005; Hassan, Sulaiman & Ishak, 2009; Nandwana & Joshi, 2010) no significant difference was found between males and females on global emotional intelligence. But the significant difference in some components of emotional intelligence is supported by previous study which shows females as more perceptive, empathic and adaptable than males (Petrides & Furnham, 2000).

Conclusion

Therefore in the present study male adolescents showed higher intrapersonal awareness which means they have higher understanding of their own emotions and females showed higher ability to manage emotions in interpersonal relationships. So future research can extend the study to other regions to compare the differences in emotional socialization across India.

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Family Environment and Psychological Well-Being Among Private College and Government College Students

KEYWORDS: Family Environment, Psychological Well-being, College Students, Gender

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ABSTRACT This is an exploratory study that aimed to examine the differences in family environment and psychological well-being among private college and government college students of Bangalore. The sample for the study consisted of 60 male and 60 female degree students (average age=19 years). Simple Random sampling procedure was used for the study. The sample was administered the Family Environment Scale by Vohra and the Psychological Well-Being Scale by Sisodia and Choudhary. Two-Way Analysis of Variance was used to study the interactive effects of gender and nature of institution on different areas of family environment and psychological well-being. The findings reveal that private college students have betterfamily environment in different areas than government college students. Female college students were found to have better family environment in different areas than male students, and interactive effects of gender and nature of institution were found to be significant on the areas of cohesion, independence, moral orientation, organization and recreational orientation. The findings also reveal that, in the area of psychological well-being, female students had higher Satisfaction, Efficiency, Mental Health and Interpersonal Relations than male students. However, male students and females students did not differ significantly in the area of Sociability, and Significant interactive effects of gender and nature of institution were found on Efficiency and Sociability and not on the areas of Satisfaction, Mental Health and interpersonal Relations of psychological well-being.

Introduction:

Family Environment:

Family environment is the first and perhaps the most enduring context for growth. Family environment lays the foundation in identifying with models, accepting values, playing out family roles, developing affection, and eventually distinguishing one's own values and goals from those held by other family members. One central part of life after childhood is discovering all those motives, values and beliefs that were not accepted within the boundaries of one's family (Newman & Newman, 1981).

Different family environments vary in many aspects such as the parents' level of education, economic status, occupational status, religious background, attitudes, values, interests, parents' expectation for their children, and family size among others. The phrase "Family Environment" refers to all the entities, forces and conditions in the home which influence the child physically, intellectually and emotionally. Late adolescence is a phase of life when students face many psychological and social problems especially due to the family and/or peer pressure of acceptance and the academic stress. They also feel confused with the values of the family as well as the values followed by the peer group. The burden of coping with the stress leads to anxiety and a feeling of insecurity.

The dimensions of family environment studied in this research are Competitive Framework,Cohesion, Expressiveness, Independence, Moral Orientation, Organization, Recreational Orientation based on the Family Environment Scale (FES) developed by Vohra (1998).

Psychological Well-being:

Well-being is one of the most important goals which individuals as well as societies strive for. The term denotes that something is in a "good state". The concept of psychological well-being (Ryff, 1989) is based on the premise that "being well" encompasses a range of characteristics and perceptions; that is,positive functioning constitutes much more than one's current level of happiness.

In this study, five major components of psychological well-being are studied based on the Psychological Well-being Scale by Sisodia and Choudhary (2005).They are:Life Satisfaction, Efficiency, Sociability, Mental Health, and Interpersonal Relations.

Need for the Study:

Family environment is a broad construct that includes many areas. If the family environment is conducive, then there would 'scope for overall development of an individual, including psychological and psychosocial development. Adolescence and young adulthood are very crucial periods of development. Hence, any deficits or problems in the family environment could have adverse effects on them, such as depression, anti-social tendencies, substance abuse or psychological distress, etc. to name a few. Therefore, their psychological well-being is also another important factor that needs to be considered. Also, many socio-cultural and socio-economic factors contribute to family environment and psychological well-being. The role of these factors and their differences can be understood partly by considering the nature of institution, such as government colleges and private colleges; because, it is generally presumed that students of government colleges hail from lower socioeconomic strata and students of private colleges hail from middle to upper socioeconomic strata of society.Also, not many studies have explored family environment and psychological well-being among private college students and government college students;hence, there arises a need to study these variables.

Objectives:

- To study the family environment among private college and government college students
- To study the psychological well-being among private college and government college students

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- To study the gender differences in family environment among private college and government college students
- To study the gender differences in psychological well-being among private college and government college students
- To study the interactive effect of gender and nature of institution on family environment among private college and government college students
- To study the interactive effect of gender and nature of institution on psychological well-being among private college and government college students

Hypotheses:

- There is no significant difference in the different areas of family environment among private college and government college students
- There is no significant difference in the different areas of psychological well-being among private college and government college students
- There is no significant gender difference among private college and government college students in different areas of family environment
- There is no significant gender difference among private college and government college students in different areas of psychological well-being
- There is no significant interactive effect of gender and nature of institution on different areas of family environment among private college and government college students
- There is no significant interactive effect of gender and nature of institution on different areas of psychological well-being among private college and government college students

Research Design:

Ex-post facto, which is exploratory in nature.It is also a comparative study.

Variables:

Dependent variables: Family Environment and Psychological Well-being

Independent variables: Gender and Nature of Institution, i.e. Private College and Government College

Sample:

The sample for this study comprised of a total of 120 students, viz. 60(30 males and 30 females) degree students of private colleges and 60 (30 males and 30 females) degree students of government colleges, from urban setting with an average of 19 years. Degree students are those studying in in any under-graduate course such as B.A., B.Sc., B.Com., B.B.M., B.C.A., etc. Simple Random Samplingprocedure was used to draw the sample for the study.

Tests used:

1.**The Family Environment Scale (FES):** designed and developed by Vohra(1998). It includes 98 statements and the number of items for each dimension is divided equally, and each statement has two possible answers. It can be administered from 10 years of age and above, through adulthood, and it can be administered individually or large groups at one time. The reliability and validity of FES have been found to be adequate. Internal consistency, test-retest reliabilities and split-half reliabilities were for each of the areas. For validity, factorial validity co-efficients were calculated.

2. Psychological Well-Being Scale (PWB): Scale ... oped by Sisodia and Choudhary(2005). It consi... statements and includes five areas – satisfaction, ... sociability, mental health and interpersonal relation... with 10 items in each area.The PWB Scale is a reliab... valid tool. The test-retest reliability was .87 and ... consistency was .90. The external criterion validity ... cient obtained was .94.

Procedure:

The principals/heads of three private and three gov... ment colleges in Bangalore were approached to ob... the authorization to conduct the study. After obtaining the permission, tenmales and tenfemales from each col... were randomly selected. The purpose of the study ... briefed and rapport was established. Socio-demographic details were collected in the data sheet prepared, and was followed by the instructions separately to answer the two questionnaires. The subjects and the principals of the respective colleges were thanked for their co-operative participation.

Analyses of Results:

The obtained scores were analyzed using SPSS to compute descriptive statistics and Two-way ANOVA to study the differences and interactive effects of gender and nature of institution on Psychological Well-being and different areas Family Environment.

Table 1

Summary of Two-Way analysis of Variance for different areas of family environment between gender and Nature of Institution

Source	Dependent Variable	Mean Squares	df	F
Gender	Competitive Framework	40.83	1	18.36**
	Coherence	43.20	1	23.00**
	Expressiveness	33.07	1	11.83**
	Independence	22.53	1	10.05**
	Moral Orientation	34.13	1	16.49**
	Organization	9.63	1	5.36*
	Recreational Orientation	9.63	1	5.002*
Nature of Institution (NI)	Competitive Framework	246.53	1	110.87**
	Coherence	240.83	1	128.26**
	Expressiveness	249.40	1	89.23**
	Independence	252.30	1	112.59**
	Moral Orientation	235.20	1	113.68**
	Organization	258.13	1	143.82**
	Recreational Orientation	202.80	1	105.30**
Gender X Nature of Institution	Competitive Framework	.002	1	.001 NS
	Coherence	17.63	1	9.39**
	Expressiveness	2.40	1	.86 NS
	Independence	8.53	1	3.80*
	Moral Orientation	8.53	1	4.12*
	Organization	7.50	1	4.17*
	Recreational Orientation	8.53	1	4.43*

** P<0.01; *P<0.05; NS: Not significant

An inspection of Table-1 reveals that the 'F' ratios for gender in the areas of Competitive Framework, Coherence, Expressiveness, Independence, and Moral Orientation are statistically significant at 0.01 levels; and the 'F' ratios in the areas of Organization and Recreational Orientation are

Certificate of Publication

This is to Certify that Prof./Dr. **Anita Bhat**

has contributed a paper as author/co-author to

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Demographic Factors Contributing to the Psychosocial Competence of Adolescents

Psychology

KEYWORDS : Psychosocial Competence, Socio-demographic Factors, Adolescents

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ABSTRACT

No matter where one lives in the world, his surroundings, people and events do have some impact on human being. This holds well on adolescents also, who are influenced by their age, sex, order of birthand SES etc. This paper attempts to look into the demographic factors contributing to the psychosocial competence of adolescents. A sample of 220 adolescents studying in IX and X standards was drawn from the high schools of Dharwad city. Along with the demographic sheet, psychosocial competence scale constructed by Dindigal and Aminabhavi was used in the study. The results revealed that out of many demographic factors, number of siblings and SES have emerged as contributing factors to overall psychosocial competence of adolescents. Adolescents having two siblings have lower psychosocial competence and children from upper class have better psychosocial competence.

Demographic Factors Contributing to the Psychosocial Competence of Adolescents

Psychosocial Competence has been defined by WHO (1997) as "person's ability to deal effectively with the demands and challenges of everyday life", "It is a person's ability to maintain state of mental well-being and to demonstrate this in adaptive and positive behaviour while interacting with others, in his/her culture and environment." 'Adaptive' means that a person is flexible in approach and is able to adjust in different circumstances. 'Positive behaviour' implies that a person is forward looking and even in difficult situations, can find a ray of hope and opportunities to find solutions. A competency is more than just knowledge and skills. It involves the ability to meet complex demands, by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context.

Adolescence is like springtime in one's life. Just as the nature transforms into new by shedding old leaves and blossoming with all fresh leaves and flowers, adolescents too are in the process of transformation wherein they abandon their childish form of behavior, thoughts and emotions in place of more mature forms of behavior and thoughts. Adolescence is a period of transition of becoming brand new individuals. Physically, cognitively, emotionally and psychologically changes take place resulting in a totally different individuals. Adolescents attain physical maturity, establish their own identity and tend to become independent and responsible for their own betterment. However, this transformation is not so easy. Not all adolescents pass through this transitional period without difficulties. This process of transformation doesn't take place all at once. It is a gradual shift involving many important contributions from the significant persons, places, events and institutions. Collectively, these factors are known as socio-demographic factors. Studies have shown empirically that psychosocial competence can be enhanced through life skills training. Dindigal and Aminabhavi(2007) found that joint family has inverse relationship with psychosocial competence of adolescents. However,relatively few studies haveattempted to find out the significant contribution of demographic factors like age, gender, SES, number of siblings, birth order, religion and caste on psychosocial competence. Therefore an attempt was made here to find out the significant contribution of demographic factors to the psychosocial competence of adolescents.

Method

Procedure and Participants

Participants for the present study were 220 adolescents (of which 110 were boys and 110 were girls) studying in IX and X standards. The data were collected from Pavan English medium and Saint Joseph Convent schools of Dharwad district, Karnataka, India.

Measures

Psychosocial Competence Scale (2007)

The psychosocial competence scale constructed by Ajitha Dindigal and Dr. VijayalaxmiAminabhavi(2007) was used in this study. This scale consists of 100 items, focusing on 10 different life skills, such as,1) problem solving, 2)decision making, 3)critical thinking, 4)empathy, 5)self - awareness, 6)coping with emotions, 7)coping with stress, 8)interpersonal relations and 10)effective communication. This is a Likert type scale having 5 response categories. There are 75 positively keyed items and 25 negatively keyed items. The positively keyed items are assigned scores from 1 to 5 whereas the negative items are scored in reverse order that is, 5 to 1. Therefore the lower score indicates higher competence and vice versa. The authors have reported that the scale as a whole has split-half reliability coefficient by Cronbach alpha = 0.88, Spearman–Brown coefficient = 0.71 and Guttmann's split-half coefficient = 0.71($p < 0.001$). Similarly the concurrent validity of all subscales ranges from 0.38-0.76 ($p<0.001$).

In addition to this scale, demographic information is sought through a separate sheet containing information regarding age, gender, order of birth, number of siblings, parents' education, occupation and income, religion, caste etc.

Data Collection

The investigators collected the data by taking the consent from the concerned school authorities and administered the psychosocial competence scale and responses were obtained.Demographic information was collected at the same time.

Data Analysis

SPSS version 17 was used to analyze the collected data. Stepwise Multiple Regression Analysis was applied to know the significance of the contribution of the demographic factors to the psychosocial competence of adolescents.

Results and Discussion

It may be observed from Table 1 that out of many demographic factors some factors such as number of siblings, SES, order of birth, age, gender, religion and caste have found to be significantly contributing to various dimensions of psychosocial competence and also overallpsychosocial competence. Having two and one siblings have collectively contributed to 5.4% of the variance for problem solving dimension of psychosocial competence which is highly significant ($F=5.33$; $p<0.01$). Further, individually 1.9% and 3.9% of variance on problem

Table No. 1: Results of Stepwise Multiple Regression Analysis of the factors contributing to the psychosocial competence of adolescents (N=220, 110girls and 110 boys)

Sl.No.	Dimensions of Psychosocial Competence	Contributing Variables	Beta Coefficients	Standard Error	Contributed R^2	F-value	t- value
1	Problem Solving	Sibling 2 Sibling 1	5.96 3.98	1.83 1.72	.02 .02	5.33**	3.25** 2.31*
2	Decision Making	Siblings_2	4.51	1.41	.04	10.21**	3.20**
3	Critical Thinking	Age-16 Middle Born	-6.25 3.91	2.23 1.74	0.19 0.17	5.20**	-2.80** 2.25*
4	Creative Thinking	First Born Upper Class Upper- Middle class	-4.15 -6.21 -2.89	1.31 2.16 1.45	.04 .02 .01	6.10**	-3.17** -2.87** -1.98*
5	Self-Awareness	Lower upper class Lingayat	14.05 2.75	5.72 1.33	.02 .02	4.94**	2.46* 2.07*
6	Coping with Emotions	Age-16	4.54	2.19	.02	4.30*	2.07*
7	Coping with Stress	Christian Male	10.95 3.47	3.58 1.34	.03 .03	6.75**	3.06** 2.59*
8	Effective Communication	Siblings-2	3.17	1.43	.02	4.91*	2.22*
9	Overall Psychosocial Competence	Siblings-2 Upper Class	4.03 -4.40	1.42 2.00	.02 .02	5.69**	2.83** -2.20*

Note: As lower score indicates higher competence, negative sign indicates better competence and vice versa

solving can be predicted on the basis of having two and one siblings respectively. More specifically, adolescents having two siblings and one sibling have significantly lower problem solving compared to adolescents having no siblings and more than two siblings. Thus it can be inferred from the above facts that the contribution of having two and one siblings is highly significant and just significant but negative (t=3.25; p<0.01, and t=2.31; p<0.05 respectively) showing thatadolescents having one and two siblings have significantly lower problem solving compared to adolescents having no siblings and more than two siblings.

Number of siblings has contributed 4.0% of the variance for decision making component of psychosocial competence which is highly significant (F=10.21; p<0.01). 4% of the variance on decision making can be predicted on the basis of number of siblings. Adolescents having two siblings are having low decision making compared to their counterparts. The contribution of having two siblings is highly significant (t=3.20; p<0.01) but negative. This may be due to the fact that compared to having no siblings and one sibling, these adolescents with two siblings may develop dependency and make them less responsible leading to lower decision making.

Further, age and order of birth have emerged as significantly contributing factors to critical thinking dimension of psychosocial competence. These variables have collectively contributed to 5.6% of the total variance on critical thinking which is highly significant (F=5.20; p<0.01). Individually 1.9% and 1.8% of the variance on critical thinking can be predicted on the basis of age and birth order respectively. More precisely, the contribution of age-16 is significantly high (t=-2.80; p<0.01) and the contribution of middle born is just significant (t=2.25; p<0.05). Thus, adolescents belonging to age 16 have better critical thinking to their counterparts (who are 14 and 15 years old) whereas middle born adolescents have low critical thinking compared to first and last born children.

Results also reveal that factors like order of birth, and SES have emerged as contributing factors to creative thinking component of psychosocial competence. These variables have collectively contributed to 15.4% of the total variance on creative thinking which is highly significant (F 6.10; p<0.01). Individually 3.6%, 1.7% and 1.2% of the variance on creative thinking can be predicted on the basis of first born, upper class and upper-middle class respectively. The contribution of first born and upper class are highly significant (t=-3.17 and -2.87; p<0.01 respectively), and the contribution of upper-middle class is just significant (t=-1.98; p<0.05).

Thus it can be inferred from the above facts that first born children have better creative thinking compared to their counterparts. Findings from the study by Eisenman (1992) partially support the present finding that first-borns are more fearful, and that some first-borns show more anxiety and creativity.Similarly adolescents from upper and upper-middle class also have shown better creative thinking compared to the children coming from middle and lower middle class.

Further, SES and caste have emerged as contributing factors to self-awareness dimension of psychosocial competence. These variables have collectively contributed to 3.5% variance on self-awareness component of psychosocial competence which is highly significant (F=4.94; p<0.01). Individually 2.0% and 1.5% of variance can be attributed to SES and caste respectively. The contribution of lower upper class and Lingayat caste are just significant and negative (t=2.46& 2.07; p<0.05 respectively). Thus it is evident that adolescents belonging to lower-upper class and Lingayat caste have significantly low self-awareness compared to children from other classes and other castes.

Age has come out as contributing factor to coping with emotions. 1.5% of the variance can be predicted on the basis of age which is just significant (F=4.30; p<0.05). Further the contribution of age is just significant and negative (t=2.07; p<0.05). Thus it is revealedthat children belonging to age 16 group are low in coping with emotions compared to 14 and 15 years old children. Since they are about to finish their high school the expectations and pressures on them are considerably more compared to their counterparts.

Religion and gender have emerged as contributing factors to coping with stress component of psychosocial competence. These two variables collectively contribute to 5.0% of the total variance on coping with stress which is significantly high (F=6.75; p<0.01). Individually, 2.5% and 2.5% of the variance can be attributed to religion and gender respectively. More precisely,

adolescents who are Christians have significantly lower coping with stress (t=3.06; p<0.01) and boys too have significantly low coping with stress (F=2.59;p<0.05).

Number of siblings has come out to be the contributing factor for effective communication. 1.8% of the variance on effective communication can be predicted on the basis of number of siblings, which is just significant (F=4.91; p<0.05). Adolescents having two siblings have significantly low effective communication (t=2.22; p<0.05) compared to children having no siblings and more than two siblings.

Finally, number of siblings and SES have emerged as contributing factors to overall psychosocial competence of adolescents. These variables collectively contribute to 4.1% of the variance which is highly significant (F=5.69; p<0.01). Individually, 2.4% and 1.7% of variance can be attributed to number of siblings and SES respectively. Thus it is clear from the results that adolescents having two siblings have significantly low overall psychosocial competence (t=2.83; p<0.01) and children belonging to upper class (t=2.20;p<0.05) have significantly better overall psychosocial competence.

CONCLUSION

Social context plays a very important role in overall dev ment of individuals. The findings of the study show empir that demographic factors have significantly contributed t psychosocial competence of adolescents. Particularly, vari such as number of siblings and SES have emerged as signif contributing factors to many dimensions as well as overall p chosocial competence. Apart from these two, age, order of bi gender, caste and religion are the other factors contributing various life skills individually.

Main limitations of the study are use of exclusively urban samp who are in the age group of 14-16, and lack of representation the children from lower socioeconomic status group, which c be taken care of in future research. The study has important im plications for educators, policy makers, parents etc.

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12. Adjustment Problems Among College Students

* Sri Gopala Patwardhan, * Dr. Y. T. Balakrishna Acharya

Introduction:

The term adjustment refers to the extent to which an individual's personality functions efficiently in the world of people. There are certain patterns of behaviors that are unique to well adjusted and poorly adjusted students too. Well adjusted students enjoy a kind of inner harmony, in the sense that they are satisfied with themselves. At times there may be occasional setbacks and disappointment but still they move towards their goals. If they find these goals are unrealistic and high, they modify them to fit in to their capacities. In addition they develop harmonious relationship with people with whom they are associated. (Shukla T.R. & Mishra J.P. 2001)

Poorly adjusted students to college work show poor performance. This backwardness in them may be due to certain areas like home, health, social, emotional and economic. Apart from these, self acceptance plays a major role in adjustment. Some students assume their responsibilities approximately to their age. Even with these problems few of them cope with their studies and environment adequately while others fail. Many students develop unfavorable self concept, as a result they have difficulty in accepting themselves and their own potentialities, and often become self rejecting, and they have poor personal and social adjustments (Hasnain N, & Singh A.D. 1996)

Adolescence is a crucial stage in human development. Generally the adolescents grow up and adapt well in the society. Majority of the adolescents grow and live in a normal life when their life is secured by their parents, families and communities. However a minority group of adolescents are having various problems and living in great distress. Their problems are sometimes severe enough to impede their development as well as their ability to find place in society becomes a serious questions to them. (Santrock, J.W. 2005)

The problems of adolescents as a subject of study of sociologists, educationalists and social psychologists from many years. But in India research work related to adolescent and their education is scanty. Hence research findings in European and American countries are not completely applicable to Indian conditions. This is mainly because of cultural and geographical differences. Besides because of the vast differences in family relationship, socioeconomic conditions and values too they tend to be invalid.

Different aspects of family like parental unemployment, parental divorce, less parental care, negligence and the degree of emotional involvement of parents cause many problems in adolescents. This causes insecure feelings among adolescents and make them subject to feelings of inadequacy, inferiority, low self esteem, behavior problems and depression. Children with such a background are at great risk for delinquency and substance abuse and emotional problems. Educational level of parents, larger family size and economic condition of the family are some of the other factors which affect their adjustment to college work. When family relationships are marked by friction, feeling of insecurity are like to be prolonged and adolescents will be deprived of the opportunity to develop more mature pattern of behavior.

The other reasons for the poor adjustment in college activities are the life goals, college problems, personal problems like temperamental, moral and intellectual skills, health and psychological wellbeing during adolescence, self esteem, life satisfaction, personal control, peer influence do cause adjustment problems among college adolescents.

Objectives:

- To study the Degree of Adjustment Problems in different areas of adjustment among the students of Arts, Commerce and Science Disciplines.

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- To study the gender difference among different disciplines on various adjustment areas.
- To study the adjustment problems in various areas of adjustment between First year and Second year Pre-University students.

Hypothesis:

To study the above objectives the following hypothesis were framed in the present study.

- There is no difference in the areas of adjustment between disciplines.
- There is no gender difference in different areas of adjustment.
- There is no difference in the areas of adjustment between first and second Pre-University students.
- There is no interaction effect of discipline, gender and class (First PUC and Second PUC) in different areas of Adjustment.

Methodology

Present study is on adjustment problems among college students, college education is such a phase where students have to make adjustment in different areas. The selected areas in the study are family living conditions, socio psychological relations, personal psychological relations, adjustment to college work, future, vocation and education. Students from rural areas face still more problems than students in urban places. Many of the students of the rural are first generation to college education. Hence they lack proper guidance in their higher education.

The study involves a comparison of the adjustment problems in gender groups, age groups and different disciplines. The research design employed is a factorial design. The analysis of data was made by applying ANOVA.

Sample

The sample for the study consisted of 120 Pre-University Students of which 60 each from First PUC and Second PUC. Among them 60 were boys and 60 were girls. From each discipline Arts, Commerce and Science 40 students were selected by random sampling procedure.

Table 1
Composition of Sample

	Arts		Science		Commerce	
	I PUC	II PUC	I PUC	II PUC	I PUC	II PUC
Boys	10	10	10	10	10	10
Girls	10	10	10	10	10	10

Tool

Adolescent Problem checklist has been developed by Prof. Mrs. K. Abraham at Bangalore University from the Mooney Problem checklist. It is a paper pencil self administering checklist. The items in this checklist relate to problems that are unique to Indian culture. The language is simple. The essential purpose of the adolescent problem checklist is to help the Individuals express their problems. The problem marked may serve as a green light for initial discussion. The checklist contains 120 statements to measure 6 dimensions, namely family, living conditions and employment, social psychological relations, personal psychological relations, home and family, future vocation and education and adjustment to college work. Each dimension consists of 20 questions each.

Procedure

The sample selected for study were personally contacted and consent was obtained. The purpose of the study was explained. The questionnaires were distributed. They were asked to fill all the biographical details. The subjects were given clear instructions that they have to underline the statements which all really applicable to them.

Scoring

The students responses under the 6 problem areas were scored by giving one mark for each item underlined by the subject.

Analysis of Data

The number of items underlined by the subjects in each area was found out. The data was analysed by working out descriptive statistics, the mean, standard deviation and treated by applying ANOVA. The results were discussed with reference to the previous research studies and conclusions were dra[illegible]

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Results and discussions

The summary of ANOVA for adjustment areas in First PUC Arts discipline for both boys and girls, First PUC Commerce boys, First PUC Science boys and girls has shown no significant difference in their adjustment for all the 6 variables.

Table 2:

Mean and SD on adjustment areas among First PUC commerce girls:

Area	N	Mean	Std. Deviation
Family Living Conditions & Employment	10	2.40	1.51
Social Psychological Relations	10	5.10	2.60
Personal Psychological Relations	10	7.60	4.81
Home and family	10	2.60	2.12
Adjustment to College Work	10	4.60	2.59
Future, vocation, Educational	10	4.00	2.58

Table 3:

Summary of the ANOVA for adjustment areas in commerce discipline among First PUC girls:

	Sum of Squares	Df	Mean Square	F	Significance
Between Groups	181.68	5	36.34	4.19	.033
Within groups	468.5	54	8.68		
Total	650.18	59			

The summary of ANOVA for adjustment areas for girl students studying in First PUC Commerce, discipline has shown that their adjustment differed significantly indicating that these variables are not independent and affecting their personal psychological relations due to family living condition and employment.

The summary of ANOVA for adjustment areas in Second PUC Arts discipline for both boys and girls. Commerce boys and girls and science girls has shown no significant difference in their adjustment for all the 6 variables.

Table 4:

Mean and SD on adjustment areas among Second PUC science boys:

Area	N	Mean	Std. Deviation
Family Living Conditions & Employment	10	4.00	2.58
Social Psychological Relations	10	5.20	3.29
Personal Psychological Relations	10	3.50	2.01
Home and family	10	3.00	2.06
Adjustment to College Work	10	8.50	8.95
Future, vocation, Educational	10	2.90	2.23

Table 5:

Summary of the ANOVA for adjustment areas in science discipline among Second PUC boys:

	Sum of Squares	Df	Mean Square	F	Significance
Between Groups	225.48	5	45.10	2.44	.046
Within groups	997.5	54	18.47		
Total	1222.99	59			

The summary of ANOVA for adjustment areas for boys studying in Second PUC Science discipline has shown that the adjustment of the boys differed significantly indicating that these variables are not independent and affecting the college work due to their home, family environment, personal psychological relations, future, vocation and educational.

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Table 6:

Three ways ANOVA for the variable personal psychological relations.

Source	Sum of Squares	Df	Mean Square	F	Significance
Discipline	120.12	2	60.01	4.06	0.02
Class	19.20	1	19.20	1.30	0.26
Gender	4.80	1	4.80	0.32	0.57
Discipline*Class	10.05	2	5.03	0.34	0.71
Discipline*Gender	60.05	2	30.03	2.03	0.14
Class*Gender	0.03	1	0.03	0.00	0.96
Discipline*Class*Gender	1.82	2	0.91	0.06	0.95

Conclusion:

Students who were well adjusted to the college environment perform well in their studies. Students with adjustment problems do not cope with their studies indicates poor performance. Such students lack self-confidence and develop unfavorable self concept. The adjustment problems may occur due to unfavorable family environment, financial problems, interpersonal relations, poor study habits, further these problems lead to anxiety and academic failure, such students are at risk of delinquent behavior, drug addiction and other behavioral problem.

- The students studying in science discipline were found to be better adjusted in the areas of home and family, living conditions and employment, personal psychological relations, social psychological relations. Adjustment to college work when compared to students of other disciplines.
- The girl students studying in First PUC commerce discipline were found to have personal psychological problems due to family, living conditions and employment.
- The boys studying in Second PUC Science discipline were found to have difficulty in adjusting to college work due to academic environment, personal psychological relations, future, vocation and educational.

Limitations:

- The findings of the present study cannot be generalized as the sample size was small.
- The study is limited to the rural population and not considered the students of urban population for comparison.
- The other areas of adjustment like financial conditions student teacher relationship are not considered in the study.

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ABSTRACT

The study examined the effects of medium of instruction (English & Kannada) and gender on phonemic fluency in primary school students. The sample consisted of 30 boys and 30 girls studying in Class II and III, aged between 8 and 9 years. Simple Random sampling procedure was used for the study. The sample was administered the Controlled Oral Word Association Test (COWAT). The obtained data were subjected to statistical analysis. Descriptive statistics, 't' test of statistical significance and Two-Way Analysis of Variance (Two-way ANOVA) were performed to study the interactive effect of gender and medium of instruction on phonemic fluency. The findings reveal that English medium primary school students have higher phonemic fluency than Kannada medium students and there is no significant gender difference in phonemic fluency with respect to primary school students. The findings also reveal that, the interaction of gender and medium of instruction has no significant effect on phonemic fluency in primary school students; however, English medium girls have higher phonemic fluency than Kannada medium girls.

Introduction:

Fluency refers to intrinsic generation of responses or alternatives, typically within a set of constituents. It is a measure of the capacity to generate alternatives in a regulated manner. (Spreen & Strauss, 1998). It is an aspect of mental flexibility and exhibits a spontaneous flexibility that requires a ready flow of ideas and answers, often in response to a single question. (Eslinger & Grattan,1989). All languages are made of basic sounds called *phonemes*. A phoneme can be defined as any single change in the sound of a word that also makes a difference in meaning: *pin* versus *bin*, for example.

Verbal fluency refers to the capacity to generate new words in a regulated manner. Asking the subject to generate words beginning with a consonant or to generate words belonging to a category imposes the regulation. The former is known as *phonemic fluency* and the latter as *category fluency*. There are two basic measures of verbal fluency; phonemic and semantic. Phonemic verbal fluency is a test where words are generated for a letter in a set time limit, while semantic verbal fluency is a test where words are generated from a particular category within a set time limit. This study focuses on the measure of phonemic verbal fluency.

Most children gather some level of phonemic awareness and fluency in their younger years. However, if phonemic awareness and fluency have not been fully developed and implemented in primary school, students may have difficulty when they encounter unfamiliar words in middle school and high school. Difficulties with phonemic fluency and word level reading have been found to be a major influence on reading comprehension and speaking skills (Jenkins et al., 2003; Stanovich, 1991). Phonemic fluency reflects a child's language learning process, as well as the teaching and pedagogical method used. Poor phonemic awareness and fluency could be one of the indicators of Learning Disabilities.

Although, conventional tests and exams in schools measure language abilities in children, the spontaneous production of words or fluency is not accurately measured. Hence, there exists a need to study the phonemic fluency in children to assess the fluency and to find out reasons for deficits in fluency, if any; and to test whether the medium of instruction has any effects on phonemic fluency.

Phonemic fluency varies across age, gender and education background. The present study is an exploratory endeavour that considers the variable of phonemic fluency, and aims to identify the effects of medium of instruction and gender on it, among primary school students of class II and III within 8-9 years of age, hailing from Bangalore-Urban.

Objectives:

- To study the effects of medium of instruction (English and Kannada) on phonemic fluency in primary school students
- To study the gender differences in phonemic fluency
- To study the interactive effect of gender and medium of instruction on phonemic fluency.

Hypotheses:

- There is no significant difference in phonemic fluency between English medium and Kannada medium primary school students.
- There is no significant difference in phonemic fluency between primary school boys and girls.
- There is no significant difference in the interactive effects of gender and media of instruction on phonemic fluency.

Research Design:

Ex-post facto design, which is exploratory in nature.

Variables:

Dependent Variable: Phonemic fluency

Independent variable: Medium of instruction, i.e., English medium and Kannada medium

Sample:

The sample consisted of 30 English medium and 30 Kannada medium primary school children (15 boys and 15 girls from each medium) from urban setting between the age group of 8-9 years from Class-II and Class-III. Simple Random Sampling procedure was used to draw the sample for the study.

Test:

The Controlled Oral Word Association Test (COWAT, Benton & Hamsher, 1989) is a measure of phonemic fluency. The subject generates words based on the phonetic similarity of words. The subject generates words beginning with the letters F, A, S. Proper nouns and names of numbers are excluded. The same word is not repeated with a different suffix. Subjects who do not know the English Language are asked to generate words in their mother tongue (or Kannada, in the present study), commencing with the consonants "Ka", "Pa", "Ma". These consonants were chosen as they were effective in eliciting words in an earlier study ca

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ried out in NIMHANS (John, 1998). The test-retest reliability of the FAS Test of phonemic fluency in 8 year old children is reported to be .54. Concurrent validity has also been established indicating validity for letter fluency than for category fluency (Lezak, 1995).

Procedure:

The principals/heads of six different schools (Three English medium and three Kannada medium) were approached to obtain the authorization to conduct the study. After obtaining the permission, five boys and five girls from each school were randomly selected. The purpose of the study was briefed and rapport was established. Socio-demographic details were collected in the data sheet prepared, and was followed by the instructions to perform the test and simultaneously the responses were obtained. The subjects and the principals of the respective schools were thanked for their co-operative participation.

Results and Discussion:

The data collected were scored and a master sheet was prepared. The scores were analyzedusing SPSS v.14 to compute mean, S.D., and 't' scores to find out the differences in gender and medium of instruction on phonemic fluency. In addition, Two-Way Analysis of Variance (Two-Way ANOVA) was performed to study the interactive effects of gender and medium of instruction on phonemic fluency. To test the various hypotheses stated, the following analyses are made.

Table-1

Two-Way ANOVA for phonemic fluency among male and female English medium and Kannada medium primary school students

Source Type	Sum of Squares	df	Mean Square	F

Table-2

Mean, S.D. and 't' value of medium of instruction

Phonemic Fluency	N
Gender	
Boys	30
Girls	30
Medium of Instruction	
English	30
Kannada	30
English Medium	
Boys	15
Girls	15
Kannada Medium	
Boys	15
Girls	15
Boys	
English Medium	15
Kannada Medium	15
Girls	
English Medium	15
Kannada Medium	15

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...nic fluency for genders ...

...n	S.D.	't' value
37	5.372	.635 ns
20	4.781	
40	5.922	2.290*
17	3.405	
73	6.397	.640 ns
07	5.548	
00	3.851	.264 ns
03	3.016	
73	6.397	1.417 ns
00	3.851	
07	5.548	2.290*
03	3.016	

...effects of gender and mediu... icy, independent 't' tests we...

...s that, for phonemic fluenc... ...ued is .635 which is n... ...ed of significance. Hence, t... ...significant difference in ph... ...hool boys and girls", is proved ...icy among the two Media ... is 2.592 which is statistical ...ance. Therefore, the hypoth... ...nce in phonemic fluency b... ...ada medium primary scho... ...d. The 't' value obtained f... ...edium boys and English m... ...lly not significant at 0.05 l... ...is, "there is no significant di... ...en English medium boys an... ...nd hence it is accepted. T... ...Medium boys and Kannad... ...is .264 which is not statis... ...ificance. Hence, the null h... ...ferences in phonemic fluen... ...l Kannada medium girls.

Figure-1.Mean scores of Phonemic fluency for Gender and Medium of Instruction

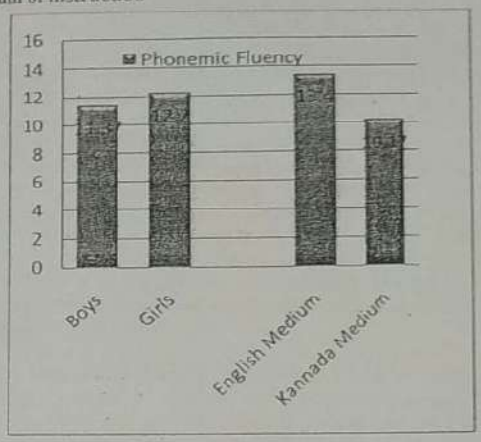


Figure-2.Mean Scores of Phonemic fluency for Medium of Instruction

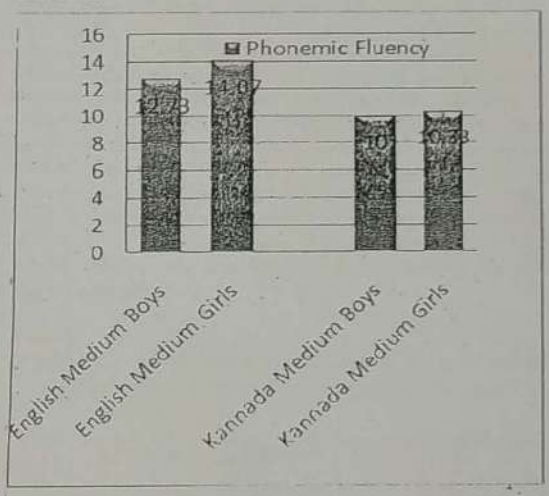
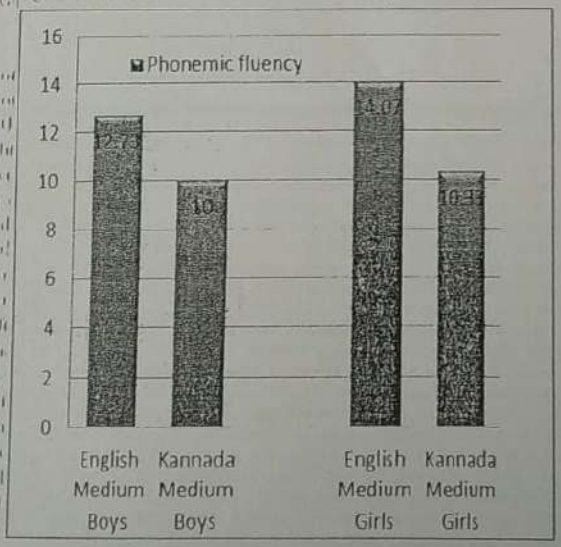


Figure-3.Mean scores of Phonemic fluency for Gender



The 't' value obtained for phonemic fluency among Boys of English medium and Kannada Medium, is 1.417 which is not statistically significant at 0.05 level of significance. Hence the null hypothesis, "there is no significant difference in phonemic fluency between English medium boys and Kannada medium boys", is proved and accepted. For phonemic fluency among Girls of English medium and Kannada Medium, the 't' value obtained is 2.290 which is statistically significant at 0.05 level of significance. The null hypothesis, "there is no significant difference in phonemic fluency between English medium girls and Kannada medium girls", is disproved and it is not accepted.

The findings of the present study, with respect to gender differences, are similar to the past studies of Brickman et al. (2005), and Tombaugh, Kozak & Rees (1999), whose results revealed that the gender of the participants had no significant effect on the performance in phonemic fluency tasks.

In the studies by Aronoff (2003), and Burton, Henninger, & Hafetz (2005), the results of phonemic fluency test revealed that female participants performed significantly better than male participants. The findings of the present study, however, are in contradiction as there is no significant gender difference existing in the performance of phonemic fluency. This can be substantiated by the studies of Rodriguez-Aranda & Martinussen (2006), Tallberget al. (2008), and John & Rajashekhar (2013) which indicate that phonemic fluency increases with age and level of education.

Conclusions:

The results indicate that there is a significant difference between the two media of instruction on phonemic fluency. English medium students have higher level of phonemic fluency when compared to Kannada medium students. The results also indicate that there are no significant gender differences in phonemic fluency, and the interaction of gender and medium of instruction has no significant effect on phonemic fluency among primary school students. However, English medium girls have higher phonemic fluency than Kannada medium girls.

Implications:

The findings can be used to investigate the method of teaching and classroom learning atmosphere for both high and poor performance in phonemic fluency in English medium and Kannada medium schools. The findings can also be applied to develop communicative modules of language teaching, focusing on learner centric approach at primary school level.

Scope for further research:

The study can be widened to examine the relationship between teaching methodology, parental education level and phonemic fluency in children. It can also be conducted to compare the differences in phonemic fluency and phonemic awareness between first language (L1) and second language (L2) among children, adolescents and young adults.

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statistically significant at 0.05 levels. Hence, the null hypothesis stated as, "there is no significant gender difference among private college and government college students in different areas of family environment, is disproved and rejected.

The 'F' ratios for nature of institution in the areas of Competitive Framework, Coherence, Expressiveness, Independence, Moral Orientation, Organization and Recreational Orientation are statistically significant at 0.01 levels. Hence, the null hypothesis stated as, "there is no significant difference in the different areas of family environment among private college and government college students", is disproved and rejected.

On the interactive effect of gender and nature of institution, the 'F' ratios in the areas of Competitive Framework and Expressiveness are not statistically significant at 0.05 levels. Hence, the sub- hypotheses stated as "there is no significant interactive effect of gender and nature of institution on the area of competitive framework in family environment" and "there is no significant interactive effect of gender and nature of institution on the area of Expressiveness in family environment" are proved and accepted. However, the 'F' ratio in the area of area of Coherence is statistically significant at 0.01 levels and the F ratios in the areas of Independence, Moral Orientation, Organization and Recreational Orientation are statistically significant at 0.05 levels. Hence, the null hypothesis stated as, "there is no significant interactive effect of gender and nature of institution on different areas of family environment among private college and government college students", is disproved and rejected.

Table 2

Summary of Two-Way Analysis of Variance for different areas of Psychological Well-Being between gender and Nature of Institution

Source	Dependent Variable	Mean Square	df	F
Gender	Satisfaction	658.008	1	49.63**
	Efficiency	418.133	1	25.35**
	Sociability	54.675	1	2.40 NS
	Mental Health	246.533	1	9.06**
	Interpersonal Relations	634.800	1	26.69**
Nature of Institution (NI)	Satisfaction	18.408	1	1.38 NS
	Efficiency	50.700	1	3.07 NS
	Sociability	1.408	1	.06 NS
	Mental Health	1.200	1	.04 NS
	Interpersonal Relations	2.700	1	.114 NS
Gender X Nature of Institution	Satisfaction	3.675	1	.27 NS
	Efficiency	145.200	1	8.80**
	Sociability	95.408	1	4.20*
	Mental Health	34.133	1	1.25 NS
	Interpersonal Relations	2.133	1	.09 NS

** P<0.01; *P<0.05; NS- Not Significant

Table-2indicates that the 'F' ratios for gender in the areas of Satisfaction, Efficiency, Mental Health, and Interpersonal Relations of Psychological well-being are statistically significant at 0.01 levels. Hence, the null hypothesis stated as, "there is no significant gender difference among private college students and government college students in different areas of psychological well-being", is disproved and rejected. However, the 'F' ratio in the area of Sociability is not statistically significant at 0.05 levels. Hence, the sub hypothesis stated as, "there is no significant gender difference among private college students and government college students in the area of sociability in psychological well-being", is proved and accepted.

For the nature of institution, the 'F' ratios in the areas of Satisfaction, Efficiency, Sociability, Mental Health and Interpersonal Relations of Psychological well-being are not statistically significant at 0.05 levels. Hence, the null hypothesis stated as "there is no significant difference between private college and government college students in different areas of psychological well-being", is proved and accepted.

On the interactive effect of gender and nature of institution, the 'F' ratiosfor Satisfaction, Mental Health and Interpersonal Relations are not statistically significant at 0.05 levels. Hence, the sub hypotheses stated as "there is no significant interactive effect of gender and nature of institution on the area of satisfaction in psychological well-being", "there is no significant interactive effect of gender and nature of institution on the area of mental health in psychological well-being", and "there is no significant interactive effect of gender and nature of institution on the area of interpersonal relations in psychological well-being", are proved and accepted. In the area of Efficiency, the obtained F ratio is statistically at 0.01 levels. Hence, the null hypothesis stated as, "there is no significant interactive effect of gender and nature of institution on the area of efficiency in psychological well-being" is disproved and rejected. In the area of Sociability, the F ratio is statistically significant at 0.05 levels. Hence, the null hypothesis stated as, "there is no significant interactive effect of gender and nature of institution on the area of sociability in psychological well-being" is disproved and rejected.

The results indicate that there is a significant gender difference among private college and government college students in the different areas of family environment and psychological well-being. There is also a significant difference between private college and government college students in different areas of family environment. However, there is no significant difference between private college and government college students in psychological well-being. There is a significant interactive effect of gender and nature of institution on the areas of cohesion, independence, moral orientation, organization and recreational orientation in family environment. However, there is no significant interactive effect of gender and nature of institution on the areas of competitive framework and expressiveness in family environment.

The findings of this study, with respect to family environment, are similar to the past studies of Shivane (2011) on Mental Health and Family Environment of tribal and urban Secondary Students, which showed that there was a significant difference between tribal and urban students in family environment in terms of expressiveness,conflict, acceptance and caring, independence, active recreational orientation,organization and control. This is substantiated by a study conducted by Kumar, Lal & Rajbala (2011) which revealed that there is a significant difference between high and low academic achievement groups on family environment.

Conclusions:

- Private college students have significantly better family environment than government college students, and female college students have significantly better family

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environment than male college students

- Interactive effects of gender and nature of institution have been found to be significant on the areas of cohesion, independence, moral orientation, organization and recreational orientation of family environment among private college and government college students. However, there is no significant interactive effect of gender and nature of institution on the areas of competitive framework and expressiveness
- Competitive framework of family environment is significantly higher in private college students than government college students, and female students have higher competitive framework when compared to male students
- Cohesion in family is significantly higher for private college students than government college students, and it is higher in female students than male students
- Expressiveness is significantly higher among private college students than government college students and it is higher in female students than male students
- In the area of Independence, private college students have significantly higher than government college students and it is higher in female students than male students
- Moral orientation is significantly higher in private college students than government college students and it is higher in female students than male students
- In the area of Organization in the family, private college students have significantly higher organization than government college students and it is higher in female students than male students
- Recreational Orientation is significantly higher in private college students than government college students and it is higher among female students than male students
- Private college students and government college students do not differ significantly in the different areas of psychological well-being
- Significant gender differences exist among private college and government college students in the different areas of psychological well-being
- Female students have significantly higher Satisfaction, Efficiency, Mental Health and Interpersonal Relations than male students. However, male students and females students do not differ significantly in the area of Sociability
- Significant interactive effects of gender and nature of institution have not been found on the areas of Satisfaction, Mental Health and interpersonal Relations and psychological well-being among private college and government college students. However, there is a significant interactive effect of gender and nature of institution on the areas of Efficiency and Sociability and psychological well-being among private college and government college students

Implications:

- The results help in identifying problems in the family and understanding their causes, and can be used in counseling& guidance, especially among government college students
- The findings can also be applied to develop life skill training modules focusing on enhancing the family environment among government college students
- The findings can be used to make qualitative analyses of the factors contributing to the psychological well being and enhancing them
- The findings can be useful for counseling the students, parents and teachers

Limitations:

- The study has not considered the influence of other factors such as social environment and college environment that contribute to psychological well-being
- The study has compared the differences in family environment and psychological well-being among college students and it has not considered the relationship between the two variables and the influence of one variable on the other
- The sample is restricted to urban background

Scope for further research:

- The study can be further extended to study the effects ofsocial support systems and family environment on psychological well-being
- The study can be widened to examine the relationship between teaching methodology or college environment, parental occupation, role of siblings on family environment and psychological well-being

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Gender Differences in Personality, Locus of Control And Social Motives Among Facebook Users

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ABSTRACT *The study was conducted to analyze the personality, locus of control and social motives among users and non-users of Facebook. Sample of 30 Facebook users and 30 Facebook non-users, consisting of 15 males and 15 females in each group were selected using random sampling technique. Assessment of personality was done using Eysenck's Personality Questionnaire developed by Eysenck and Eysenck (1969). Locus of control was assessed using Levenson's Locus of Control Scale developed by Levenson (1972). Social motives were assessed by using Social Motives Scale developed by Singh and Bhargava (1999). The data was analyzed by using descriptive statistics and 2-way ANOVA. The findings of the study indicate that Facebook users and Facebook non-users differ on the psychoticism and neuroticism sub-scales of Personality; all three sub-scales of Locus of Control; and all three sub-scales of Social Motives. Males and females differ on all three sub-scales of Personality; individual control sub-scale of Locus of Control; and, all three sub-scales of Social Motives. There is a significant interactive effect of Facebook usage and gender on extraversion, neuroticism, powerful others and chance control (external locus of control). Findings of the study can be used to understand the personality dimensions, style of attribution and the social motives of Facebook users and non-users. Based on the findings we can predict the reasons behind Facebook addiction.*

KEYWORDS : Personality, Locus of Control, Social Motives, Facebook.

Introduction

Personality is defined by Gordon Allport as the dynamic organization within the individual of those psychophysical systems which determine his unique adjustment to his environment. Locus of Control, as proposed by Julian Rotter, is the degree to which people believe their lives to be under their control and is an important dimension of individual variation. Social Motives are the motives implied in social events or behaviours. Facebook is an online social networking service that was founded on February 4, 2004 by Mark Zuckerberg.

Personality of an individual is an important determinant of his/her behavior. Locus of Control and Social Motives are the concepts that come under the larger concept of personality. Though people have their own, different reasons to use Facebook, it has been observed that the users tend to have a particular personality type, style of attribution and motives. Even gender plays a role in this behavior.

Users of Facebook tend to be less inhibited to disclose their personal information. Since they have already been exposed to many kinds of personalities on the social networking sites, they tend to be less nervous in social situations. They have a tendency to believe that their behavior and its consequences are under their control and not in the hands of people around them or controlled by luck, chance or fate.

The non-users of Facebook usually have a high wish to gain knowledge, wisdom, comforts, success, position etc. In the process of attaining and achieving all or some of the previously mentioned aspects in life, they may be less motivated to maintain close social contacts. However, users tend to have a high motive to control others, maintain good interpersonal relationships and remain socially active.

Personality, locus of control and social motives vary among men and women. Females usually have a lesser psychotic tendency but a more neurotic tendency compared to males. They have a more external locus of control than the males. Achievement and power motives are lesser in women than in men. However, the social-contact motives are more in women.

The above stated findings may vary with age, culture and economic status. For example, adolescent and old aged Facebook users may be more motivated to maintain close social relationships than middle aged users. In Eastern cultures like Japan and China, the average level of extraversion among Facebook users may be lesser than that of Westerners. These differences are due to the values promoted by different cultures. Individuals belonging to higher socio-economic classes are more motivated to gain power while those belonging to lower economic classes have a high achievement motive.

Objective

To study the gender differences among Facebook users and non-users with respect to personality, locus of control and social motives.

Hypotheses

1. There is no significant gender difference among Facebook users and non-users with respect to Personality.
2. There is no significant gender difference among Facebook users and non-users with respect to Locus of Control.
3. There is no significant gender difference among Facebook users and non-users with respect to Social Motives

Review of literature

Michikyan, Kaveri and Jessica (2014) examined the link between neuroticism, extraversion, as well as presentation of the real, the ideal, and the false self on Facebook. Self-reports were collected from 261 young adults (ages 18–30) about personality, online self-presentation, and Facebook use. Statistical correlation revealed that the level of extraversion was positively associated with Facebook activity level. A series of regression analyses revealed that young adults high in neuroticism reported presenting their ideal and false self on Facebook to a greater extent whereas those low in extraversion reported engaging in greater online self-exploratory behaviors. Findings suggest that young adults who are experiencing emotional instability may be strategic in their online self-presentation perhaps to seek reassurance, and those who have self-doubt further explore their self online. The highlights of this study were: Neuroticism was not related to Facebook activity level, or time spent on Facebook. Extraversion was related to Facebook activity level; was not related to Facebook time. Personality characteristics predict different kinds of online self-presentation. Greater neuroticism predicted greater online presentation of the ideal and false self. Lower extraversion predicted greater self-exploratory online presentation.

Tingya and Tang (2014) studied the possible relationships among personality traits, Facebook usages, and leisure activities. Three hypotheses were proposed: users with different personality traits may have different Facebook usages, users with different personality traits may have different leisure activities, and users with different Facebook usages may have different leisure activities. Convenient sampling technique was used to collect data from 500 college students in Taiwan. A questionnaire with 30 items was developed to collect data. Statistics methods such as descriptive statistics, independent *t* tests, ANOVA were used to analyze the data with a statistic significance of

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[illegible] the hypotheses were partially supported. Participants with high extraversion, low agreeableness and high openness tended to spend more times on Facebook and have more number of friends and photos. The findings confirmed that high extraversion and high openness people liked to socialize on Facebook (more time, more friends, more photos) also liked to socialize in real life (more time on [illegible] sports and recreational activities), but low agreeableness and low emotional stability people liked to use Facebook for socializing in lieu of real life socializing.

Method

Design:
The study adopts an ex-post factorial design.

Sample:
A total of 60 people belonging to the age group 20-35 years were selected using random sampling. Facebook user and non-user groups comprised of 15 males and 15 females each.

Definition of terms:

Personality:

Conceptual definition:
Eysenck defines personality as the more or less stable and enduring organization of a person's character, temperament, intellect and physique which determines his unique adjustment to the environment.

Operational definition:
Personality refers to the more or less stable and enduring organization of person's character across extraversion, psychoticism and neuroticism dimensions as measured by Eysenck Personality Questionnaire.

Locus of Control:

Conceptual definition:
It refers to the degree to which people believe their lives to be under the control of internal or external factors.

Operational definition:
It refers to the degree to which people believe their lives to be under the control of internal or external factors as measured by Levenson's Locus of Control Scale.

Social Motives:

Conceptual definition:
Social motives refer to the motives implied in social events or behaviours.

Operational definition:
Social motives refer to the achievement, power and social-contact motives implied in social events or behaviours as measured by Social Motives Scale.

Facebook User:

Conceptual definition:
Person who is using Facebook from a minimum of one month and falls in the age group 20-35 years.

Operational definition:
Person who is using Facebook from a minimum of one month and falls in the age group 20-35 years.

Tests:

1. Eysenck's Personality Questionnaire (Eysenck and Eysenck, 1969)

The questionnaire consists of 90 yes/no questions measuring three personality dimensions – Psychoticism, Extraversion and Neuroticism. It has lie scale.

Scoring:
If the answer to an item corresponds to the one given in scoring key 1 mark is given. Marks of items measuring the corresponding dimensions and lie scale are totaled separately. Sten scores are obtained using norms.

Reliability and Validity:
Test-retest correlation coefficients for different dimensions ranged from 0.78 to 0.89. It [illegible] degree of validity for psychotic population.

2. Locus of Control Scale (Levenson, 1972)
It is a 5-point Likert type scale consisting of 24 statements, measuring 3 aspects – powerful others, chance control and individual control.

Scoring:
1, 2, 3, 4 and 5 marks are allotted for the options strongly disagree, disagree, undecided, agree and strongly agree respectively. Marks of items measuring the corresponding aspects are totaled separately. Sten scores are obtained using norms.

Reliability and Validity:
Test-retest reliability was 0.76. Correlation coefficient was 0.56 when it was validated using Rotter's Locus of Control Scale.

3. Social Motives Scale (Singh and Bhargava, 1999)
It has 36 items measuring 3 areas – achievement, power and social-contact motives. Each item consists of 2 statements (one relating to each tendency – approach and avoidance). Subjects must respond by selecting 1 of the 2 statements and rating the degree (1, 2 or 3) to which it applies to them.

Scoring:
Rating given by the respondent for each item is itself the score for that item. Scores of items measuring the corresponding areas are totaled separately. Sten scores are obtained using norms.

Reliability and Validity:
Split-half reliability coefficients ranged from 0.52 to 0.88 for different areas. Construct validity was established by consensual decision of 5 judges.

Procedure:
The desired samples were personally contacted to get the approval to be a part of the study. The purpose of the study was briefed and rapport was established. The background information was collected in the answer sheets. The tests – Eysenck's Personality Questionnaire, Levenson's Locus of Control Scale and Social Motives Scale were administered according to the instructions given in the respective manuals. The participants were allowed to clarify their doubts, if any. After the completion of responses all three questionnaires were collected and subjects were thanked for their participation.

Results and Discussion

Table 1
Summary for 2-way ANOVA for facebook usage and gender on three dimensions of Eysenck Personality Questionnaire

Area	Source	Sum of Squares	df	Mean square	F
Extraversion	Usage	0.150	1	0.15	0.05 ns
	Gender	88.817	1	88.82	29.89**
	Usage*Gender	74.817	1	74.82	25.18**
Psychoticism	Usage	109.350	1	109.35	201.43**
	Gender	2.817	1	2.82	5.19*
	Usage*Gender	0.417	1	0.42	0.77 ns
Neuroticism	Usage	170.017	1	170.02	144.26**
	Gender	36.817	1	36.82	31.24**
	Usage*Gender	4.817	1	4.8[illegible]	4.09[illegible]

**P<0.01; *P<0.05; ns: Not Significant

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Facebook users and non-users differ significantly on psychoticism and neuroticism dimensions and don't differ significantly on extraversion dimension. Males and females differ significantly on all three dimensions of Eysenck Personality Questionnaire. There is a significant interactive effect among usage and gender variables with respect to extraversion and neuroticism dimensions. Hence the first null hypothesis that there is no significant gender difference among Facebook users and non-users with respect to personality is rejected.

Table 2
Summary for 2-way ANOVA for facebook usage and gender on three aspects of Levenson's Locus of Control Scale

Area	Source	Sum of Squares	df	Mean square	F
Powerful Others	Usage	365.067	1	365.07	468.89**
	Gender	0.067	1	0.07	0.09 ns
	Usage*Gender	15.000	1	15.00	19.27**
Chance Control	Usage	380.017	1	380.02	521.59**
	Gender	0.150	1	0.15	0.21 ns
	Usage*Gender	14.017	1	14.02	19.24**
Individual Control	Usage	256.267	1	256.27	241.87**
	Gender	26.667	1	26.67	25.17**
	Usage*Gender	1.067	1	1.07	1.01 ns

**P<0.01; ns: Not Significant

Facebook users and non-users differ significantly in all three aspects of locus of control – powerful others, chance control and individual control. Males and females differ significantly in the individual control aspect. There is a significant interactive effect among usage and gender variables with respect to powerful others and chance control. Hence the second null hypothesis that there is no significant gender difference among Facebook users and non-users with respect to locus of control is rejected

Table 3
Summary for 2-way ANOVA for facebook usage and gender on three areas of Social Motives Scale

Area	Source	Sum of Squares	df	Mean square	F
Achievement Motive	Usage	209.067	1	209.07	209.07**
	Gender	48.600	1	48.60	48.60**
	Usage*Gender	0.067	1	0.07	0.07 ns
Power Motive	Usage	268.817	1	268.82	111.13**
	Gender	43.350	1	43.35	17.92**
	Usage*Gender	1.350	1	1.35	0.56 ns
Social-Contact Motive	Usage	156.817	1	156.82	98.89**
	Gender	30.817	1	30.82	19.43**
	Usage*Gender	3.750	1	3.75	2.37 ns

**P<0.01; ns: Not Significant

Facebook users and non-users differ significantly on achievement, power and social-contact motives. Males and females differ significantly in all three areas of social motives scale. There is no significant interactive effect among usage and gender variables with respect to achievement, power and social-contact motives. Hence the third null hypothesis that there is no significant gender difference among Facebook users and non-users with respect to social motives is rejected

The results are not similar to the studies conducted by Michikyan, Kaveri and Jessica (2014). This may be due to the differences in socio demographic variables of the sample selected in the two studies.

Findings:

1. Facebook users and non-users differ on psychoticism and neuroticism sub-scales of Personality; all three sub-scales of Locus of Control; and all three sub-scales of Social Motives.
2. Males and females differ on all three sub-scales of Personality; individual control sub-scale of Locus of Control; and, all three sub-scales of Social Motives.
3. There is a significant interactive effect of Facebook usage and gender on extraversion, neuroticism, external locus of control (powerful others and chance control).

Scope for further study:

1. The study can be expanded by taking a larger sample.
2. Other age groups can also be considered.
3. Studies can be done by considering cultural factors.
4. Participants from different geographical areas may be studied.
5. Various other social networking sites can be consider

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Rural Brand Awareness and Preferences for FMCGs: An Empirical Study on Keonjhar District of Odisha, India

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Abstract: *The rural market has been growing steadily over the years and is now bigger than the urban market for FMCGs but their lies a great state wise disparity in India in terms of consumption pattern. Though Odisha's economy is expanding through sectoral shifts from agriculture to industry to service but in terms of per capita expenditure, rural Odisha remains one of the poorest states which is only at Rs. 904.78[1].*
Consumers brand preferences represent a fundamental step in understanding consumer behaviour. A deeper understanding of such preference can help marketers' better design marketing program and build a long term relationship with consumers. This warrants an empirical study for such specific rural pockets to help marketers improvise the dynamics of segmentation and marketing mix variables to capitalize their efforts to the fullest in rural markets.
The basic purpose of this paper was to explore the rural consumer buying behavior through brand awareness and influence of demographic factors on brand preference .This paper was based on primary as well as secondary data. The sampling regions included one of the rural district of Odisha viz, Keonjhar.
The results indicated that there were statistical relationships between age, gender, family type and education with brand preference. However, there was no statistical relationship between occupation and annual income with the brand preference. Thus age, gender, family type and education only had statistical relationship with the brand preference of rural consumers in the Keonjhar district of Odisha.

Key Word: *Rural, FMCGs, Bathing Soap, Demography, Brand Awareness, Brand Preference*

I. Introduction

1.1 Rural market in India:

The Census of India defines rural as any habitation where the population density is less than 400 per square kilometer, and where at least 75 percent of male working population is engaged in agriculture, and where there is no municipality or board. The same is defined by Reserve Bank of India (RBI) as any location with population up to 10,000 will be considered as rural and 10,000 to 1,00,000 as semi-urban. NABARD defined rural market as, all locations irrespective of villages or town, up to a population of 10,000 will be considered as rural.

Most companies in Fast Moving Consumer Goods (FMCGs) and agri-inputs sector define rural as a place with population of up to 20,000. Durable goods companies would consider any town with a population below 50,000 as a rural market (Kashyap and Raut2010: 3).

Rural India now accounts for almost 50 percent of country's income. It is a half trillion dollar economy. Already 54 percent of all FMCGs, 59 percent durables, 100 percent of agri-inputs and between 10 to 50 percent of four-wheelers and two-wheelers are sold in Rural India. The situation is similar in Insurance, Banking, Telecom and other services. The rural market is now bigger than the urban market for most categories. According to Mc. Kinsey's &Co., a global consulting firm, Indian rural market will touch 500 billion by 2020.

1.2 Fast Moving Consumer Goods (FMCGs)

FMCG is the abbreviated form of Fast Moving Consumer Goods. In West, FMCG is also called consumer- packaged goods. Any product that is used very frequently, sometimes daily and move relatively faster (consumption at least once in a month) at the retailer end can be classified as FMCG. Examples are soap, toothpaste, batteries, beverages and cigarettes. Thus, FMCGs are essential, low price goods, which get repeat sales. FMGCs are also termed as non-durable goods, a tangible item that is quickly consumed, worn out or outdated and consumed in single use or few uses (Majumdar, 1998)[2].

Some of the leading FMCG companies all over the world are Sara Lee, Nestlé, Unilever, Procter and Gamble (P&G), Coca-cola, Carlsberg, Kleenex, General Mills, Mars etc. The major players in the FMCG

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A Comparative Study of Spatial Clustering Methods for an Indian Administrative Data by using GEOSOM and GAM V4.0

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Abstract

In order to study the behaviour of the different clustering techniques, experiments are conducted in this paper by using the tools GeoSOM suite and GAM v4.0. Spatial clusters were produced from the Indian administrative data set by using the GeoSOM methods available in GeoSOM suite and by GAM v4.0 also. Quite a number of interesting results are obtained and comparative study is made. Some of the important conclusions are (i) GeoSOM suite not only is easy to use, but provides a wide range of powerful tools that enable the user to detect patterns that are hard to find by using other methods. (ii) It constitutes a useful environment for exploratory geospatial analysis, even if the particularities of the GeoSOM algorithm are not used and (iii) GeoSOM in real world problems does produce clusters that, while defined by non-spatial attributes, are geographically compact. Finally it is concluded that GeoSOM happens to be the best among the tools in predicting effective and efficient results. It is amazing to note the drawbacks of GAM v4.0 clearly thru our results which will certainly help the future researchers also.

Keywords: Spatial Data Mining, Spatial Clustering, Hierarchical Clustering, Geodata, U-matrices.

I. INTRODUCTION

The advent of remote sensing and survey technologies over the last decade has dramatically enhanced our capabilities to collect terabytes of geographic data on a daily basis [1]. However, the wealth of geographic data cannot be fully realized when information implicit in data is difficult to discern. This confronts GIS scientists with an urgent need for new methods and tools that can intelligently and automatically transform geographic data into information and, furthermore, synthesize geographic knowledge. It calls for new approaches in geographic representation, query processing, spatial analysis, and data visualization [2] [3]. Information scientists face the same challenge as a result of the digital revolution that expedites the production of terabytes of data from credit card transactions, medical examinations, telephone calls, stock values, and other numerous human activities.

In this context a generally accepted definition of data mining and knowledge discovery is given by Fayyad [4] et al. as: "the non-trivial process of identifying valid, novel, potentially useful and ultimately understandable patterns in data. The collection of data usually referred to as the database, contains information relevant to an entity Such as an organization, enterprise etc. The primary goal of a database system is to provide a way to store or retrieve database information that is both convenient and efficient. Geodata are different from traditional types of data in key ways. Among the most important differences is that geodata are high dimensional (highly multivariate) and auto correlated (i.e., nearby places are similar). Auto-correlation is a feature to be exploited (e.g., it allows predictions to be made about places for which there are no data) but it also prevents application of standard statistical methods. Some geospatial data contain distance and topological information associated with Euclidean space, whereas others represent non-Euclidean properties, such as travel times along particular routes or the spread of epidemics.

Digital representations of geospatial data are moving beyond the traditional, well-structured vector data (geometric shapes that describe cartographic objects) and raster data (digitized photographs and scanned images) formats. A more common conceptualization of geographic reality is based on the field and object representation models. The field model views geospatial data as a set of distributions over space (such as vegetation cover), whereas the object model represents the earth as a surface of discrete, identifiable entities (e.g., roads and buildings). Some geospatial entities are discrete objects, whereas many others are continuous, irregularly shaped, and inexact (or fuzzy). For example, a storm is a continuous four-dimensional (4D) phenomenon but must be represented in digital form as a series of approximate discrete objects (e.g., extent, wind velocity, direction), resulting in uncertainty, errors, and reduced accuracy. An integrated conceptualization combining the field and object perspectives is increasingly important and necessary to represent, for example, a storm as an object at one scale and to model its structure as a field at a different scale. The characteristics of geospatial data pose unique challenges to geospatial applications. The requirements of a geospatial data set such as the coordinate system, precision, and accuracy are often specific to one application and may be difficult to use or integrate with other geospatial applications. Spatial data mining tasks are considered as an extension of Data Mining

(DM) tasks [5] in which spatial data and criteria are combined. These tasks [6] aim at: (i) summarising data, (ii) finding classification rules, (iii) making clusters of similar objects, (iv) finding associations and dependencies to characterise data, and (v) looking for general trends and detecting deviation. They are carried out using specific methods, some of which are derived from statistics and others from the field of machine learning [7]. The problem is that the implementation of all those methods is not straightforward and right now, there is a lack of spatial data mining tools.

Here, we point out one major difference between traditional data mining and spatial data mining that is the notion of spatial relationships. These spatial relationships correspond to the spatial join operator and could be resolved by using "join index".

A spatial database is organized in a set of thematic layers. A thematic layer is a collection of geographical objects that share the same structure and properties. A theme can represent a road network, and another can represent towns. This allows to selectively using the relevant themes for a specific purpose [8].

The aim of Spatial Data Mining is to extract knowledge, spatial interactions and other properties that are not explicitly stored in the database. This process inherits from traditional data mining which could be performed by "a set of tools that allow extracting automatically or semi-automatically interesting and understandable knowledge (rule, regularities, patterns, associations etc.,) from a database".

Since traditional data mining methods [5] do not support location data or the implicit relationships between objects, it is necessary to develop specific methods for spatial data mining. As it is well known, geometric data and processing are more complex than traditional ones. Spatial applications also generate a huge volume of data. For these reasons, calculating these spatial relationships is time consuming. One major problem is to optimise analysis methods by taking into account the huge volume of data and the complexity of spatial relationships.

The requirements for mining geospatial data are different from those for mining classical relational databases. The reasons for this are the special properties of spatial data: high dimensionality, spatial autocorrelation, heterogeneity, complexity, ill-structured data and dependence on scale. A spatial database stores a large amount of space-related data, such as maps, pre-processed remote sensing or medical imaging data, and VLSI chip layout data. Spatial databases have many features distinguish them from relational databases. They carry topological or distance information, usually organized by sophisticated, multidimensional spatial indexing structures that are accessed by spatial data access methods and often require spatial reasoning, geometric computation, and spatial knowledge representation techniques.

Spatial data mining refers to the extraction of knowledge, spatial relationships, or other interesting patterns not explicitly stored in spatial databases. Such mining demands an integration of data mining with spatial database technologies. It can be used for understanding spatial data, discovering spatial relationships and relationships between spatial and non-spatial data, constructing spatial knowledge bases, reorganizing spatial databases, and optimizing spatial queries. It is expected to have wide applications in geographic information systems (GIS), geomarketing, remote sensing, image database

exploration, medical imaging, navigation, traffic control, environmental studies, and many other areas where spatial data are used. However, extracting interesting and useful patterns from spatial databases is much more difficult than extracting corresponding patterns from traditional numeric and characterized data due to the complexity of spatial data types, spatial relationships, and spatial autocorrelation.

II. CLUSTERING ALGORITHMS

The difference between the unsupervised clustering and the supervised classification is that in the case of supervised classification the instances are assigned to predefined classes, whose descriptions are obtained from the training dataset. The grouping in clustering is obtained solely from data generated without any involvement of training data [9]. Clustering algorithms can be either hierarchical or partitional [10]. Hierarchical clustering produces a nested structure of partitions, while partitional methods produce only one partition of data. Clustering can be hard, which allocates each data instance to a single cluster, or fuzzy (also called soft clustering), which assigns degrees of membership in several clusters to each data instance. Some clustering methods are based on the notion of density: these regard clusters as dense regions of objects in the feature space that are separated by regions of relatively low density. Graph-based clustering methods transform the clustering problem into a combinatorial optimisation problem that is solved using graph algorithms [9], [11].

Hierarchical clustering organises the clusters in a hierarchy. The root cluster represents all data instances available and is split into several subsets, each of them a cluster of items more similar to each other than to items in other subsets. These subsets are then split recursively using the same method. The hierarchical structure of clusters shows the nested partitions of patterns and the similarity levels at which the partitions change. Hierarchical clustering algorithms can be either agglomerative or divisive. Agglomerative algorithms begin with each data instance as the smallest possible clusters and then successively merge the clusters together until a stopping criterion is satisfied. Divisive algorithms begin with the complete dataset as one large cluster and perform splitting until some stopping criterion is reached.

Clustering is one of the most useful tasks in data mining process for discovering groups and identifying interesting distributions and patterns in the underlying data [12]. Clustering problem is about partitioning a given data set into groups (clusters) such that the data points in a cluster are more similar to each other than points in different clusters .A clustering procedure could group the customers in such a way that customers with similar buying patterns are in the same cluster. Thus, the main concern in the clustering process is to reveal the organization of patterns into “sensible” groups, which allow us to discover similarities and differences, as well as to derive useful conclusions about them. This idea is applicable in many fields, such as life sciences, medical sciences and engineering [13].

III. METHODOLOGY

The present work employs the following clustering methods for the data set considered.

GeoSOM: GeoSOM is an adaptation of SOM to consider the spatial nature of data. In GeoSOM, the search for the best matching unit (BMU) has two phases. The first phase settles the geographical neighbourhood where it is admissible to search for the BMU, and the second phase performs the final search using the other components. The general idea is that instead of defining a fixed geographical neighbourhood radius where clustering is admissible, that neighbourhood is indirectly defined by fixing a neighbourhood in the output space. In areas where data density is high, a given k-radius in the output space will represent a rather small geographic neighbourhood, meaning that we will only allow clustering of data that are quite close by [14].

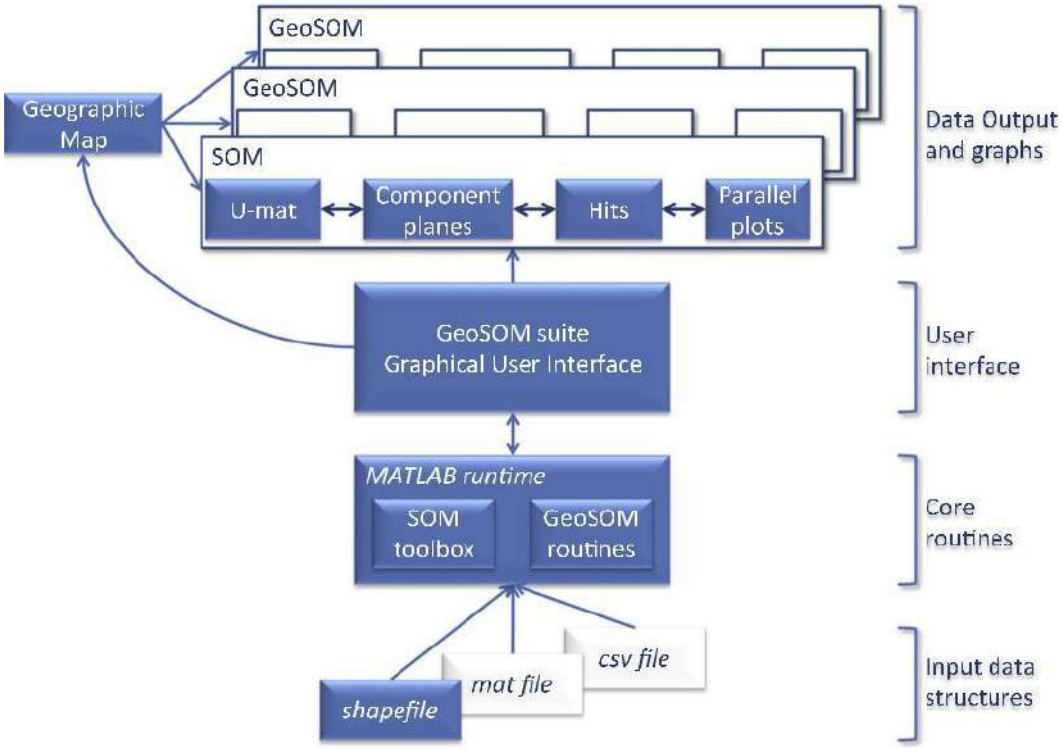

Fig. 1 GeoSOM suite architecture

Fig.1 shows the general GEOSON suite architecture. The GeoSOM suite is implemented in Matlab and uses the public domain SOM toolbox [15]. Basically, it consists of a number of Matlab routines (m-files). A stand-alone graphical user interface (GUI) was built, allowing non-programming users to evaluate the SOM and GeoSOM algorithms, and explore them with basic GIS tools. The above figure shows the general GeoSOM suite architecture that consists of: (1) access to spatial and non-spatial data;

(2) Matlab runtime components, SOM toolbox and GeoSOM routines; (3) a graphical user interface (GUI) and; (4) the routines that produce the output views. These views consist of geographic maps, U-matrices, component planes, the hit-map plots and parallel coordinate plots [16]. The GeoSOM suite allows multiple analyses to be shown at the same time. For example, one may use several different SOMs and GeoSOMs on the same dataset, and visually compare the results. **The GeoSOM suite's main functionalities are: (1) present spatial data; (2) train a self-organized map using the standard SOM or the GeoSOM algorithm; (3) produce several representations (views) and (4) establish dynamic links between windows, allowing an interactive exploration of the data.**

Different representations of data allows the user to analyze it from different perspectives, making interpretation easier. Presently, GeoSOM suite includes the following views: Geographic map U-matrices [17], Component plane plots Hit-map plots, Parallel coordinate plots Boxplots and histograms. U-matrices are calculated by finding the distances in the input space of neighbouring units in the output space. The most common way to visualize them is to use a color scheme or a gray scale to represent these distances. In this case, black represents the highest value while white represents the lowest value. Low values in the U-matrix (shown as white areas) are an indication that data density is high, thus there is a cluster of data. High values in the U-matrix (shown as dark areas), are an indication that data density is low, thus there is a separation between clusters.

Component planes [18] are another SOM representation where each unit gets a color based on the weight of each variable used in the analysis. A component plane exists for each variable showing the units' weights for that variable. By observing the component planes one can see how a given variable varies along the map. This may be useful, for example, to understand what characterizes each cluster. By comparing two or more component planes, one can visually identify correlations between variables, both globally and at a local scale.

GAM V 4.0: The Cluster Hunter program gives us several ways to analyse clusters in our data. This paper will take us through one analysing data with GAM. It should be noted that Cluster Hunter is an incomplete experimental program and behaves as such.

The software was originally developed in online format for the "Smart Spatial Analysis" project. While the original version is now offline, we can still read more about how the system works and what it does on the project pages.

GAM: Cluster hunting software (v4.0)

The Cluster Hunter program gives us several ways to analyse clusters in our data. It should be noted that Cluster Hunter is an incomplete experimental program and behaves as such. [20]

Cluster hunting is the term used to apply to a family of techniques that involve computationally intensive search procedures for point- and zone-based cluster identification. [21] They aim to identify clusters based on the spatial arrangements of incidents combined with basic information on the background population. They then search for clusters (areas of unexpectedly high incidence) by exhaustively examining all possible locations on a fine grid covering the study area. One of the most well-known of these techniques, GAM, is best described in the authors' own words (from the GAM web site):

"The Geographical Analysis Machine (GAM) is an attempt at automated exploratory spatial data analysis of point or small area data that is easy to understand. The purpose is to answer a simple practical question; namely given some spatial data of something interesting where might there be evidence of localized geographic clustering if you do not know in advance where to look. [This may be] due to lack of knowledge of possible causal mechanisms, or if prior knowledge of the data precludes testing more hypotheses on the same database. Or more simply put, you send GAM a geographically referenced point or small area referenced database and it will indicate where there is evidence of localized clustering and how strong it is"

Currently most of the proprietary GIS software systems lack sophisticated geographical analysis technology [3]. Attempts over the last decade to persuade the system developers to add spatial analysis functionality has so far failed to have much visible impact. The traditional arguments seemingly still apply; viz. no strong market demand, fear of statistical complexity, lack of suitable GIS-able methods, and a deficiency of statistical skills amongst the GIS system developers.

Various solutions to this dilemma have been suggested and tried out; in particular the development of spatial statistical add-ons tied to this or that GIS and the development of standalone statistical packages with either basic GIS functionality or easy linkage to one or more GIS systems. The problem is that these systems mainly serve research needs whereas most of the potential end-users of geographical analysis methods are not researchers in academia but involve the far larger numbers of global GIS workers. Typically these end-users want easy to use, easy to understand, easy to explain methods with all the complexity hidden away from their gaze. They are not necessarily statisticians and may not be trained in any spatial science. Yet these are the potential applications oriented end-users of geographical analysis tools.

There is a need for the development of user friendly methods need to be developed so that spatial analysis is no harder to apply than any other part of the GIS tool-kit. Unfortunately the potential users have no good idea of what tools they need because they may not know what is available or what is possible. Additionally, there has been considerable Ten years ago GAM/1 was a mixed blessing! It was praised by geographers as a potentially major development in useful spatial analysis technology. However, it was severely criticised by some statisticians, in part due to their ignorance of the geography of the problem and partly due to potential deficiencies in the statistical testing employed in GAM/1. Additionally, the software for GAM/1 was never distributed since it was not easily run and its dependency on a supercomputer severely

restricted its usefulness. GAM/1 did have some good aspects. In particular, it was automated. Prior knowledge of the data which would invalidate hypothesis testing was rendered irrelevant because the method had no prior knowledge, unlike human investigators who once they view a map of the data are instantly in a post hoc hypothesis testing situation. GAM also looked for localised clusters at a time when most spatial statistical methods mainly concentrated on global (whole map) measures of pattern. Additionally, GAM was a search technique and its search for local clusters was geographically comprehensive and it treated every location in the same way, whereas a deductive approach focused only on those locations where one or more a priori hypotheses were to be applied. GAM was thus unaffected both by prior knowledge of the data and ignorance of where to look for clusters, because it looked everywhere. GAM also incorporated a mechanism for handling data uncertainty arising from imprecision in the location of the point data. However, there were also some technical problems with GAM/1 [22]. In particular, there was the issue of multiple testing and various concerns about whether the statistical tests for pattern were appropriate. With time many of these criticisms faded.

There are three further difficulties. First, there is not a single dominant GIS so any spatial analysis technology likely to appeal to end-users has to be what might be termed "GIS invariant". It has to be compatible with all of the world's current GIS systems otherwise the majority of users will never be able to use it. Second, most potential end-users may need to be convinced by data trials and tests that a geographical analysis tool is worth using on their data and in their unique operational-institutional-organisational setting. These tests have to be capable of being easily performed since this is probably the principal mechanism for the diffusion of spatial analysis tools. If potential users can obtain at no expense and little effort potentially useful results on their own data then maybe the case for adding spatial analysis functionality to the GIS tool-kit will be greatly strengthened. Finally, any successful methods have to be available in a platform independent form so it can be moved subsequently on to local user systems.

IV DATA SET DESCRIPTION:

The data set used in the present investigation for our clustering example will focus on an Indian administrative data set. GADM is a geographic database of global administrative areas (boundaries).

% no of instances = 2300

% no of attributes = 19

% Variable definitions

ID

ISO

Name

ID_1

Name_1

ID_2

Name_2

ID_3

Name_3

Shape_Length

Shape_Area

V. EXPERIMENTS AND RESULTS

CASE 1: USING GeoSOM

This section contains the results of the experiments conducted on an Indian administrative data sets mentioned earlier. This data set consists of 2300 instances with 19 attributes. As mentioned earlier, the main objective of the present analysis is to predict the test clustering that will enable to take effective decisions.

Fig. 2 presents a screen-shot of the GeoSOM suite tool. The main window contains a table of attributes and a tree view pointing to all the views created.

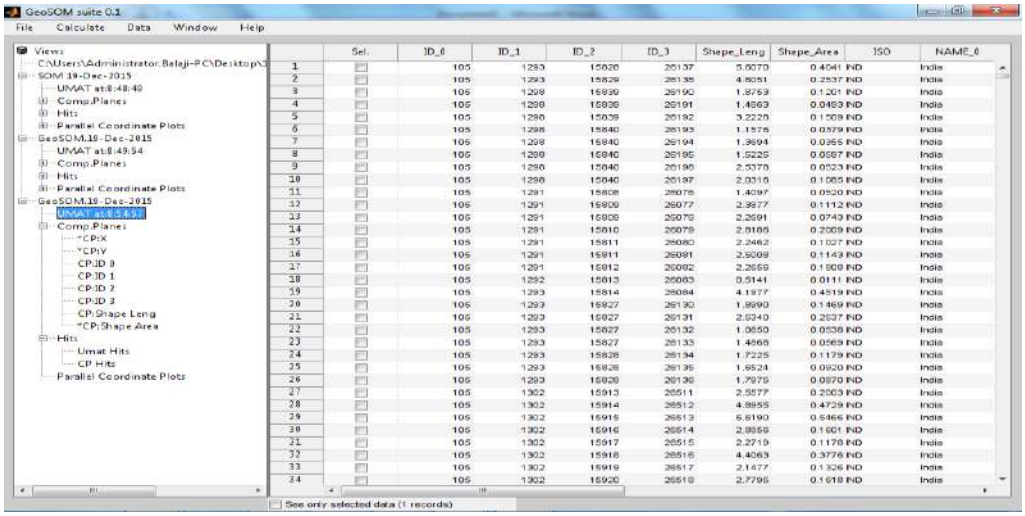

Fig 2 : GeoSOM suite main interface, with a tabular view of the dataset

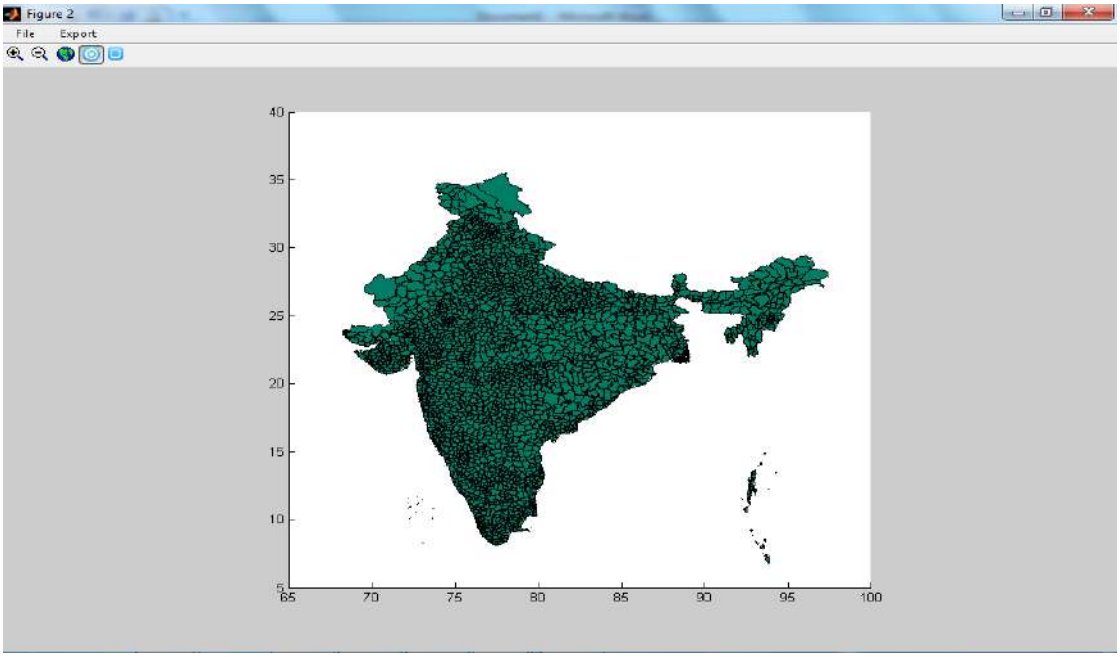

Fig.3 Dynamically linked views created by GeoSOM suite - the geographic map.

U-matrices are calculated by finding the distances in the input space of neighbouring units in the output space. The most common way to visualize them is to use a color scheme or a gray scale to represent these distances. In this case, black represents the highest value while white represents the lowest value (Fig.3 to Fig.5). Low values in the U-matrix (shown as white areas) are an indication that data density is high, thus there is a cluster of data. High values in the U-matrix (shown as dark areas), are an indication that data density is low, thus there is a separation between clusters.

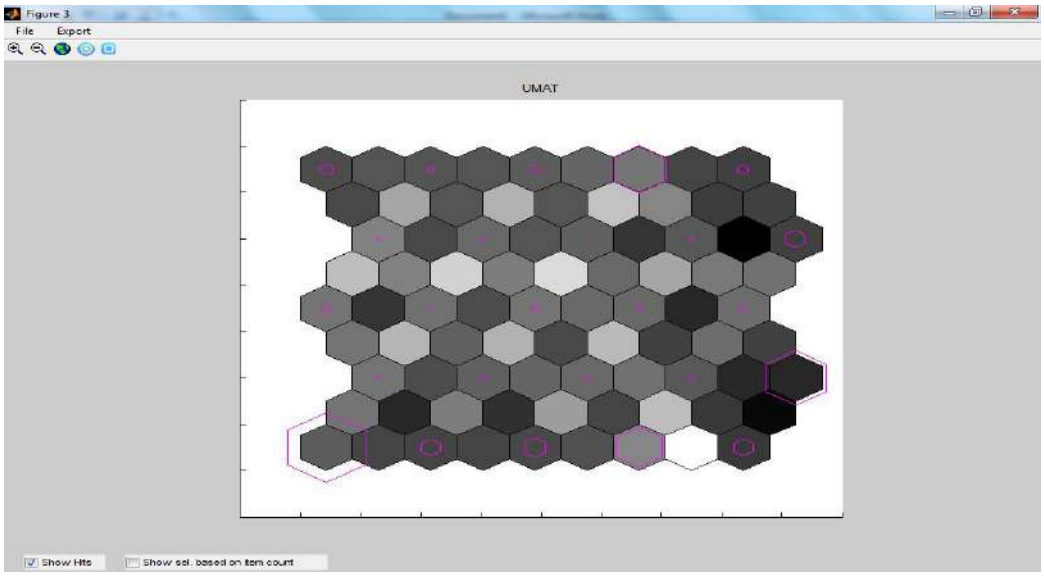

Fig. 4 Dynamically linked views created by GeoSOM suite - U-matrix

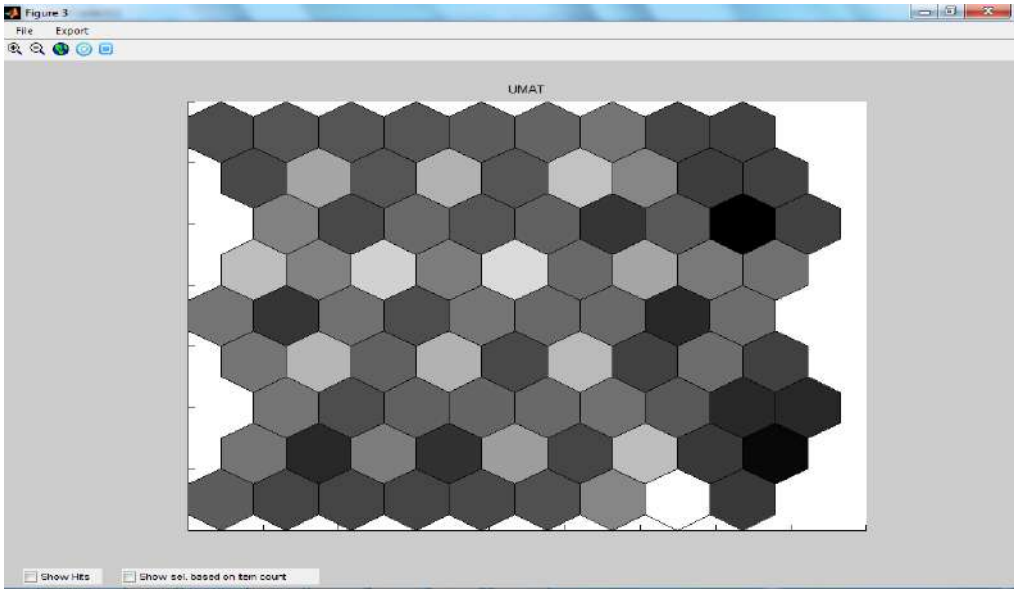

Fig. 5 Dynamically linked views created by GeoSOM suite - U-matrix without hits

Another possible view in the GeoSOM suite is the hit-map plot. This representation is usually superimposed on the U-matrix or on the component planes, and gives information about the number of data items represented by each unit, i.e. data items with the same BMU (Fig. 6). It can be used to see how a certain set of data points are mapped on the SOM, gaining more information about the clustering structure.

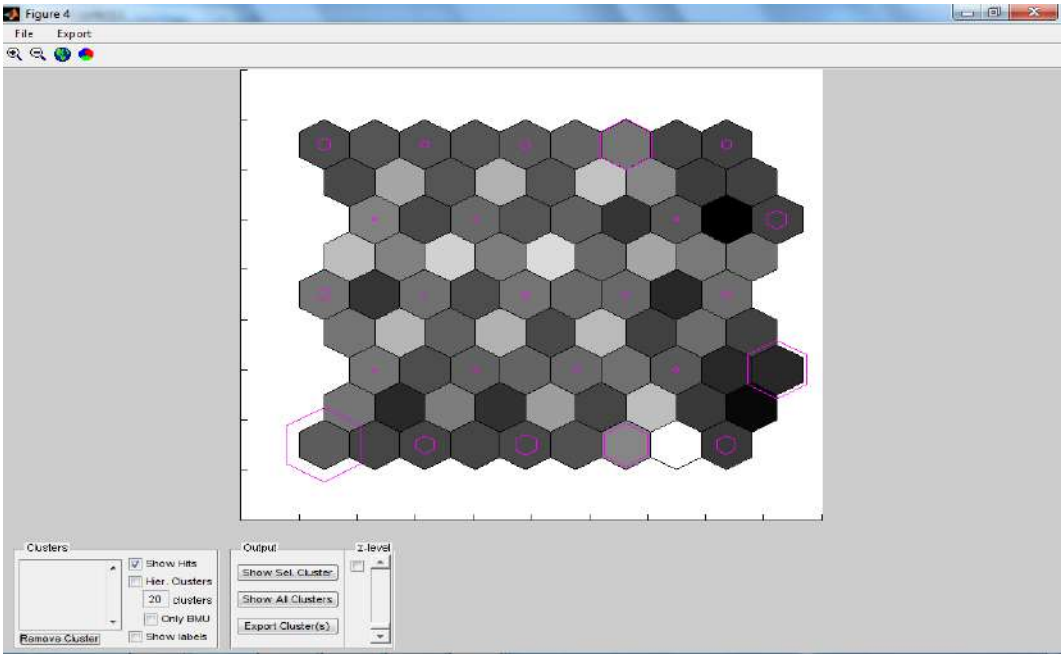

Fig. 6 Dynamically linked views created by GeoSOM suite - U-matrix with hits

The use of dynamically linked windows promotes interaction with the data, allowing users to analyze data from different perspectives. Observing the U-matrix (Fig. 7) the first thing that emerges is that on the right hand-side we have a lighter area separated from the rest by a vertical dark region. This means that the units in this area form a cluster.

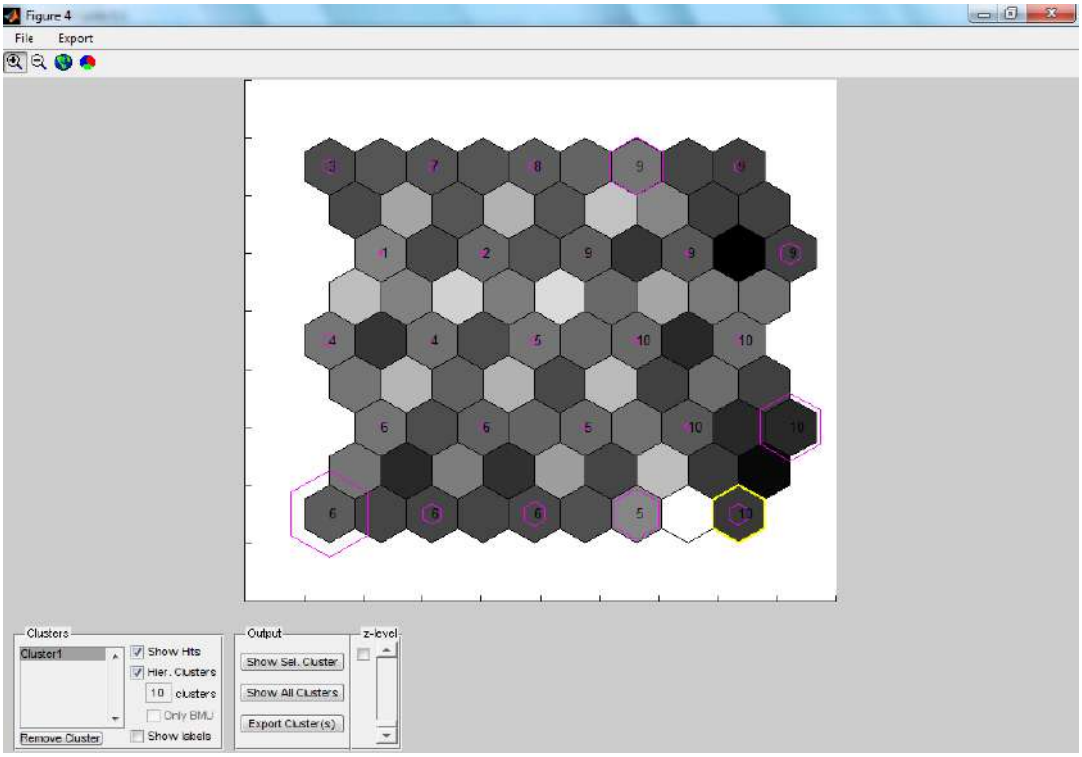

Fig. 7 Dynamically linked views created by GeoSOM suite - U-matrix with hire clusters

VI. EXPERIMENTS AND RESULTS

CASE 2: USING GAM v4.0

This section contains the results of the experiments conducted on an Indian administrative data sets mentioned earlier. This data set consists of 2300 instances with 19 attributes. As mentioned earlier, the main objective of the present analysis is to predict the test clustering that will enable to take effective decisions.

Fig. 8 presents a screen-shot of the GAM V 4.0 tool. The main window contains a table of attributes and a tree view pointing to all the views created.

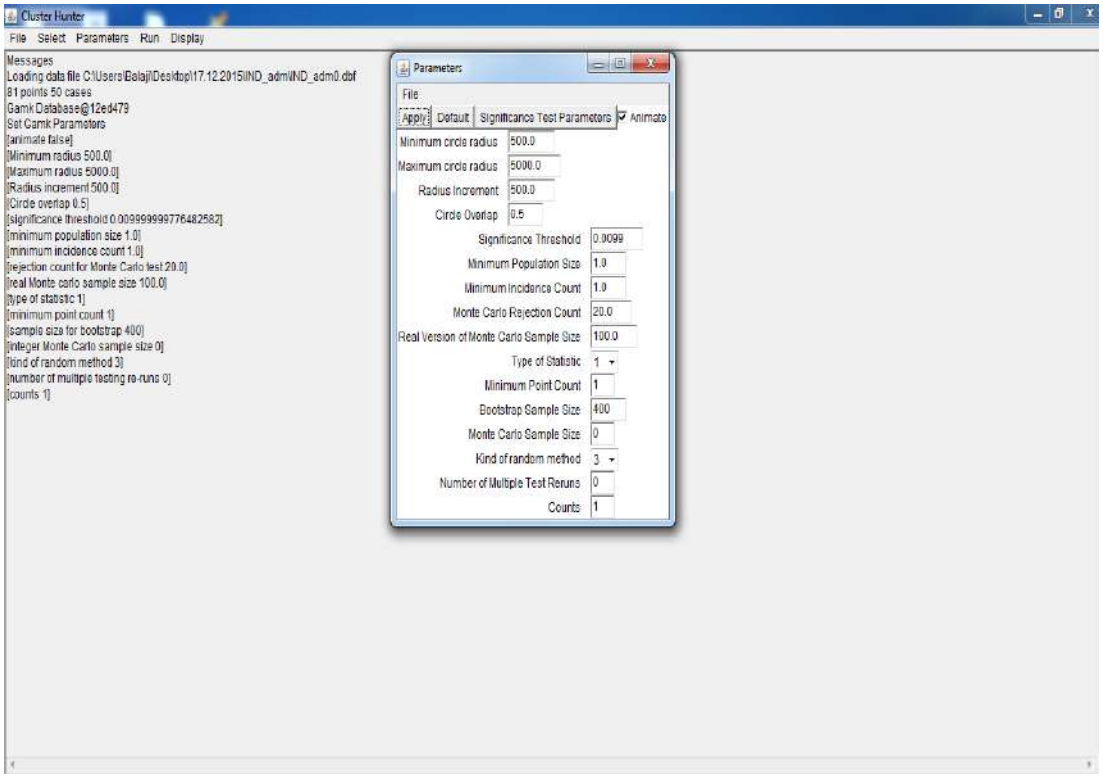

Fig. 8 Different statistics parameters in GAM

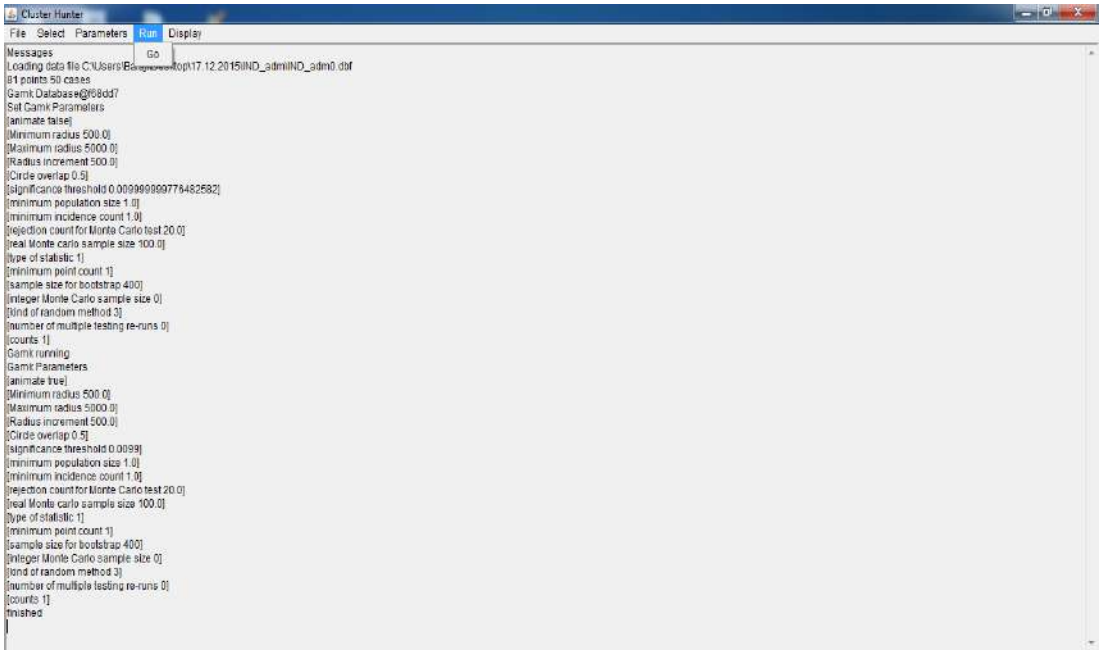

Fig.9 GAM results for Indian administrative data sets

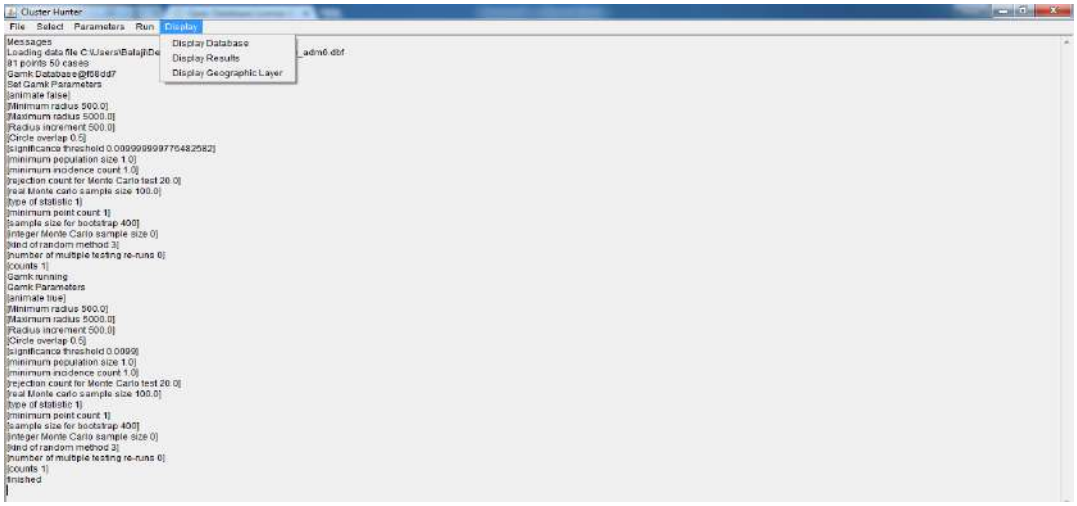

Fig.10 GAM results for Indian administrative data sets

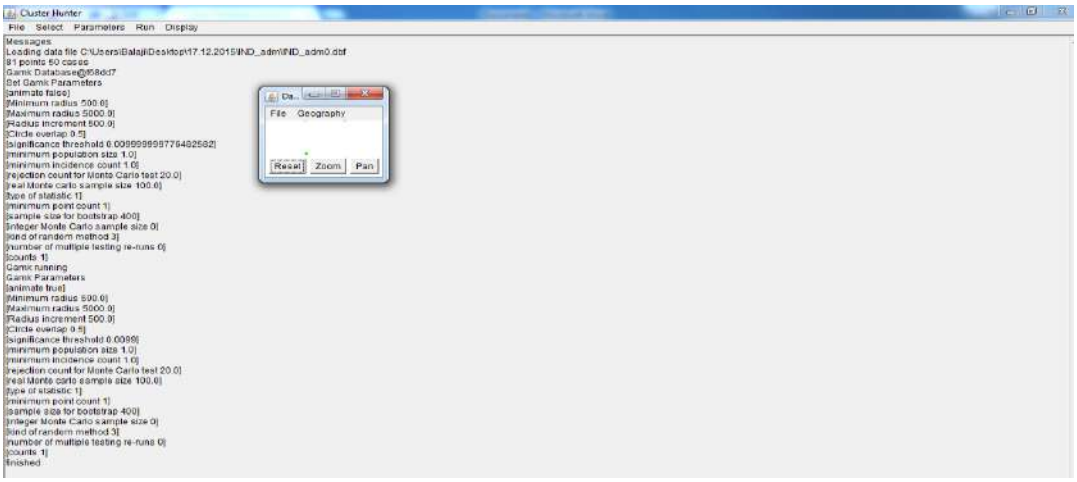

Fig.11 GAM results for Indian administrative data sets

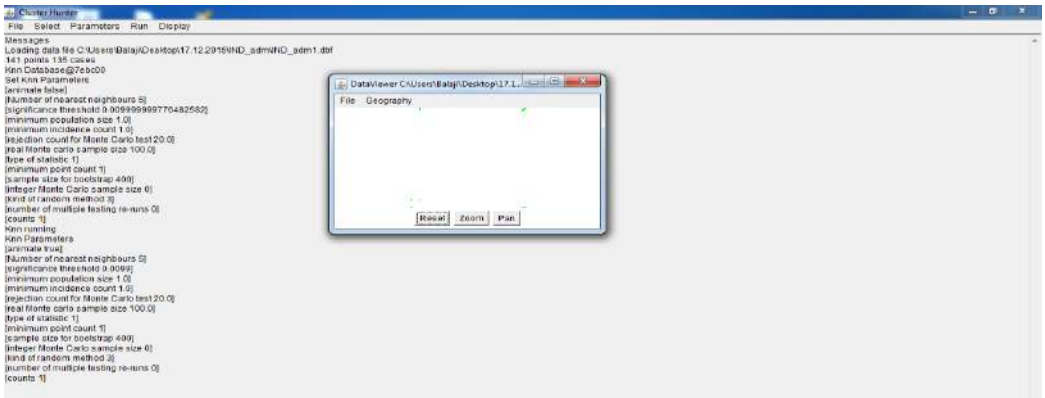

Fig.12 GAM results for Indian administrative data sets

VII. CONCLUSION

In this paper experiments on Indian administrative boundaries are conducted to study the behaviour of the different clustering techniques by using the tools GeoSOM suite and GAM v4.0. The data set comprises 2300 instances with 19 attributes. Here, we presented GeoSOM [19] suite as a new and efficient tool for exploratory spatial data analysis (ESDA) and clustering. It is observed that the GeoSOM, by explicitly considering spatial autocorrelation, is able to detect spatial homogeneous and heterogeneous areas. These heterogeneous areas are regions where, although spatial attributes are related (data points are close to each other) non-spatial attributes have little correlation. GeoSOM suite implements several visualization features, all dynamically linked, allowing a strong interaction between user and data, and thus an improved understanding of the data analysed is possible to compare both methods through several views such as U-matrices, component planes, parallel coordinate plots, etc. Four main conclusions were drawn from this analysis as explained in the previous section.

The present comparative study reveals the following points: GeoSOM suite not only is easy to use, but provides a wide range of powerful tools that enable the user to detect patterns that are hard to find using other methods. It constitutes a useful environment for exploratory geospatial analysis, even if the particularities of the GeoSOM algorithm are not used. A second important conclusion is that, Geo-SOM in real world problems does produce clusters that, while defined by non-spatial attributes, are geographically compact.

Finally it is concluded that GeoSOM happens to be the best among the tools in predicting effective and efficient results. It is amazing to note the drawbacks of GAM v4.0 clearly thru our results which will certainly help the future researchers also.

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A Review on Lean Thinking for Software Process Improvement

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Abstract: Software engineering is rapidly evolving field with new methodologies, technologies, design tools, and paradigms emerging every year. Software industry is a relatively young business, actively searching for innovative ways of developing products. The latest trends towards a more customer-centric, responsive, iterative software development are bringing up new paradigms, frameworks in the field of software development processes. Lean software development is a translation of Lean manufacturing and Lean IT principles and practices to the software development domain which introduces a Continuous Improvement Model that provides a stable development model for organizations. Lean has become a standard for efficiency in production systems. This paper mainly focused on lean, principles and practices of Lean with Agile, importance of lean in reducing wastes during software development and maintenance.

Keywords: Lean, Lean Thinking, Software Development life cycle, Lean Software Development[LSD], Process Improvement,defects, Software wastes,Software maintenance.

I. INTRODUCTION

Increasing role of technology has a major impact on our day-to-day life. The software industry is afflicted with problems, such as high cost, low quality, unexpected project failures, and missed deadlines. To overcome these limitations, Lean is one of the ways to improve software development and continuous process improvement.
In the late 1940s, as a small company, Toyota changed the way of producing cars and the way managers believed production should work. Since then, many companies have changed their production management by the Lean Thinking. One of the domains affected by the Lean Thinking was the software development, which generated the term Lean Software Development, according to the works of Mary and Tom Poppendieck [1].

A. LEAN SOFTWARE DEVELOPMENT

Lean software development is a product development paradigm with an end-to-end focus on creating value for the project owner and for the end user, eliminating waste, optimizing value streams, empowering people and continuously improving [2]. The Lean software development methodology does not impose a certain process in terms of conducting the project. The project owner's feedback is central to the Lean software development methodology [3].
Lean Software Development does not prescribe particular practice or model. It is more important to demonstrate that actual development process definitions are aligned with the lean principles and values.

B. APPLICATIONS OF LEAN DEVELOPMENT

- Standardized processes to ensure everyone uses best practices
- More successful projects (satisfied customers and project team, full-scope, on-time, under-budget).
- Faster project completion
- Reduced pressure on project team members.
- Reduction of the waste that causes project delays: Multi-tasking, queuing,

C. LEAN PRINCIPLES

Womack and Jones [4] bring forth five basic principles

1. Specify value from the standpoint of the end customer by product family.
2. Identify all the steps in the value stream, eliminating whenever possible those steps that do not create value.
3. Make the value-creating steps occur in tight sequence so the product will flow smoothly toward the customer.

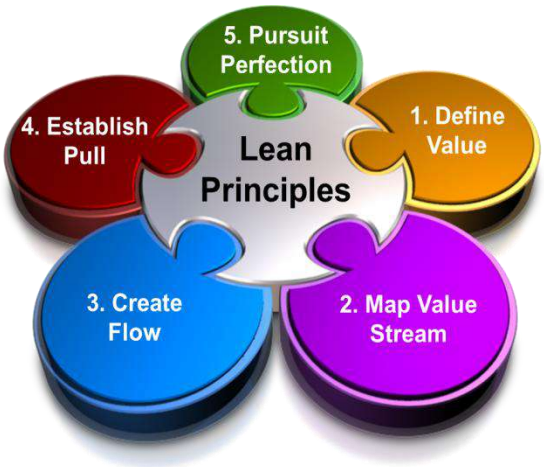

Fig 1: Lean Principles

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4. As flow is introduced, let customers pull value from the next upstream activity.
5. As value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, begin the process again and continue it until a state of perfection is reached in which perfect value is created with no waste.

D. LEAN SOFTWARE DEVELOPMENT PRACTICES

Lean practices, or what the Poppendiecks call "tools" are expressed slightly different from their equivalents in Agile software development, but there are parallels. Examples of such practices include [5]:

- Seeing waste
- Value stream mapping
- Set-based development
- Pull systems
- Queuing theory
- Motivation
- Measurements

Lean thinking represents a culture where all employees continuously look for ways to improve the process with the philosophy of eliminating all non-value added activities, encompassing wasted time, activities, inventory, and space – and create processes that flow and are initiated by customer demand.

II. LEAN AND AGILE

Agile and Lean are becoming widely accepted approaches in industrial, civil and software engineering. Their association is considered as a new competitive strategy and is claimed to be “the next wave of life-cycle process”.

Lean and Agile methods have been proposed to facilitate the effective project deployment and organization for minimizing resources, costs, durations and risks. Agile shares the same principles with Lean. Basically, agile approaches are instances of Lean thinking. Also it is practically proved that success ofAgile Software Developmentpractices can be explained by understanding the principles of Lean Software development [6].

Agile practices enables companies to respond quickly as needed when market conditions change, new technologies arise, or new ideas are developed.

A retrospective studies show that a part of Agile community has started to look toward Lean approaches capability, in addition to Agile methods such as XP and Scrum. Others even consider Lean as just another Agile method.

Some common principles shared between Lean and Agile software development.

- People centric – First priority is people. Processes, tools, technologies are here to support them.
- Increased value and reduced waste – providing what people really needs (value) and are willing to pay for.
- Seamless flow – process roles are just the decomposition of the process activities.
- Faster lead time – ability to deliver a product or service faster is quite important. The same applies also to responding to change and learning
- Built-in quality – quality is not just polishing at the end of the process, it is the aspect of every step in the value chain.
- Learning – continuous reflection and step-by-step improvement is necessary towards learning organization.

III. REVIEW OF LITERATURE

According to several studies from Standish Group, Gartner group, Cutter consortium, Centre of project management and others, on average:

- Approximately 23% of all software projects were successful
- Approximately 53% were completed but exceeded time and/or budget
- Approximately 24% were aborted

Also there seems to be a direct correlation between team size and project duration and high failure rate [4].

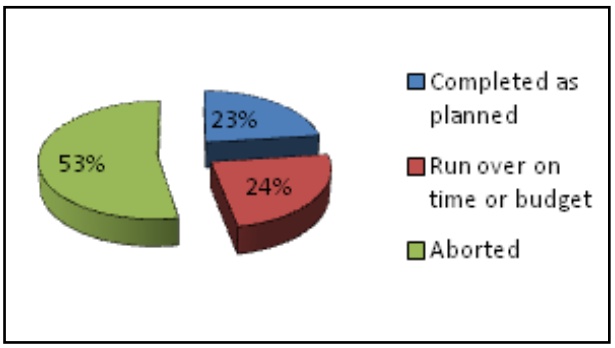

Fig 2: Project Success Rates

The general root causes for project failure are:

- Lack of Project management culture and maturity
- Project management regarded as heavy overhead bringing no benefits, therefore not implemented
- Organization not adapted to the project
- Missing method and process
- Unclear roles and responsibilities
- Information does not flow properly
- Proper tools not adapted
- Unclear scope and requirements
- Missing prioritization of requirements by stakeholders.

So there is always a room for improvement, especially in a fast changing world that needs to adjust quickly to ever-changing environments. Software companies could collect the project management’s best practices in the company from the domain experts and combine those in a single, documented process that everybody could use when managing the project [7].

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In recent years, Lean and Agile Software Development practices play a very important role with their principles and practices. 70% of all traditional development methodologies are replaced by these two approaches [8].
Lean Management is a system of organization based on continuous improvement with a strong participation of all personnel involved in the process.

A summary of the lean thinking principles discussed in relation to software development processes and the potential benefits that can be derived from these processes is presented in Table 1.

Table 1: Lean Thinking Principles, Software Development Processes and Potential Benefits.

Lean Thinking	Principle Software Development Processes	Potential Benefits
Eliminate Waste	Identify Waste	non-value adding steps
	Value Stream Mapping	Eliminates non-value adding steps
Amplify Learning	Software Development Feedback Loops	Allows feedback to developers early in the development cycle
	Set-Based Development	Allows for the development of multiple options in parallel
Decide As Late As Possible	Options Thinking Enables set-based development	Enables set-based development by examining all options
	The Last Responsible Moment	Enables the decision maker to have as much information as possible when making decisions, resulting in better decisions
Build Integrity In	Perceived Integrity	Better customer satisfaction and a product that meets the customer need (more sales).
	Conceptual Integrity	Better product that requires less and easier maintenance.

A. SEVEN SOFTWARE WASTES

As in manufacturing, lean thinking in software begins with the ability to identify these wastes. The technique for accomplishing this in software development is the same as in manufacturing: create a value chain and then look for steps in the value chain that add no customer perceived value and eliminate them [9].

The iterative process of learning and continual improvement is an important part of identifying waste and eliminating it.

The best approach to eliminate waste is to follow some basic principles.

- As soon as waste is detected, the priority should be to eliminate the waste and its cause
- The search for waste should be continuous; it should be performed by all the team members, all the time.
- Prioritize the waste to eliminate.

Seven important wastes identified in software development life cycle are shown in fig 2.

As waste elimination is one of the Lean principles and one of the most effective ways to increase quality and reduce cost.Lean Management involves all stakeholders to eliminate waste which reduce the efficiency and performance of a project.

Fig 3: Seven wastes in software development

B. LEAN AND AGILE SUPPORT FOR SOFTWARE MAINTENANCE

Several researchers stated that it is appropriate to adopt principles and practices of lean and agile for major disciplines involved in the software life-cycle in order to increase the success rates of projects.

i) Requirement engineering
ii) Architecture

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iii) Programming/Development
iv) Testing and verification
v) Integration
vi) Project Management/Maintenance

Middleton et al [10] studied an organization that had several problems with project resource allocation and tracking, with too high costs for development and the role of lean and agile principles in improving project management.
Software maintenance/project management is one of the major concerns of software development. Good maintenance process is very essential to maintain the quality of software [11].

This stage is very important as it:
- ✓ Ensures that the system remains running at Peak performance levels.
- ✓ Solves any software bugs/problems that arise.
- ✓ Customize the software to users' needs as user's needs may change with time.
- ✓ Adds increased functionality to the system.

C. ISSUES AND CHALLENGES

The maintenance phase of the SDLC lasts the longest of all the phases.Various research studies proposed that software maintenance consumes 60% to 80% of cost in whole development life cycle; these surveys also report that maintenance costs are mainly due to enhancements, rather than corrections [12].
There are several technical and managerial problems encountered while maintaining software [13].
a) Cost
b) Impact Analysis
c) Corrective Changes:
d) Adaptive Changes
e) Program Comprehension

IT organizations can improve their quality and productivity during application development is by eliminating its largest sources of waste – defects and the rework they cause. In many organizations, 30% to 50% of development effort is devoted to rework [14] [15]. That means defects become 10 times more expensive to fix for each major phase of the software life cycle. Under these circumstances, productivity is largely determined by quality.

D. LEAN PRINCIPLES IN MAINTENANCE/ PROJECT MANAGEMENT

Lean Thinking is the manufacturing concept borrowed into software development and management of IT products and services. There are few practices used in lean mainly to reduce the issues in post development phase, mainly focused on defects identification which reduces complexities in maintenance phase. There are many existing tools in which two of them described below:

Kanban is a lean and Just-in-Time process for regulating the flow of software development based on demand. It is a framework for optimizing workflow that maximizes efficiency, product quality and customer satisfaction.
The entire process of software development can be considered as a pipeline in which requested software features and development issues go through predefined steps to produce the deliverable and deployable software.
Kanban is defined to be executed in value stream with focus on delivery of value. Kanban in software development can be visualized as the features flowing across the value stream.
Six general practices of Kanban are:
1. Visualize
2. Limit work in progress
3. Manage flow
4. Make policies explicit
5. Implement feedback loops
6. Improve collaboratively, evolve experimentally.

Disadvantages of Kanban
- ❖ David Anderson said "It is actually not possible to develop with only Kanban. The Kanban Method by itself does not contain practices sufficient to do product development".
- ❖ Keeping the Kanbans resized as the demand frequently changes can be slow and difficult to manage.

Just visualizing the workflow and the other Kanban principles is not enough for software development. Software development has things like business value, technical complexity, and user experience/acceptance/adoption — all of which are not addressed directly by Kanban.
Several existing tools and practices in lean and agile such as Scrum, XP, Kanban, CMMI and etc. which are used for efficient project management process, with many pros and cons.
Present Lean Software development [LSD] mainly focused on three areas as the primary way to increase efficiency, assure quality, and improve responsiveness in software-intensive systems [16]:

- Understanding the customer journey,
- Architecture and automation to expose and reduce dependencies
- Team structures and responsibilities.

But in Lean the workability of the team decides success of development process. Also unsuitable business analyst or team members, excessive flexibility leads to more problematic situation. Projects and programs are basically flexible in nature that creates change. To successfully implement organizational strategy, companies need project and program managers with the appropriate skills to drive and navigate change.
Organizations that manage change effectively will stay ahead of the competition.The reality is only 18 percent of companies are effective change enablers [17].
Change enablers incorporate these practices:
- Having well-defined milestones and metrics

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- Having senior management committed to change
- Establishing and communicating concrete ownership and accountability
- Using standardized project management practices
- Having engaged executive sponsors

IV. OBSERVATIONS

Lean software Development practices are a good way to pinpoint bottlenecks in the existing processes. Since the lean principles focus on eliminating wasteful (non-value added) activities and optimizing the whole process using existing resources and functions.

The main aim of this paper is to summarise the concepts of lean applied for different SDLC activities. Literature review mainly focused on the seven software wastes in process activities and also issues and challenges in project management/maintenance phase.

Many IT organizations are currently implementing or leaning towards the modern development methodologies. Exponential growth is essential to the industry, and IT companies should know their way around processes that enable and support it.

The following are few observations from the literature survey:

- One of the key challenges in lean is identification of value generation stream and eliminating the non-value adding activities termed as 'Waste', in order to improve quality, speed, efficiency and productivity. Basic problem in this activity is identification of valid waste. For Example: the work done by an agile team towards a deadline, but when it is completed it ends up standing in a queue and from lean point of view this is waste. This kind of situations occurs in all the SDLC activities. Setting the clear standards, practices and principles of lean to identify and reduce these risks is the primary issue.

- As mentioned earlier more than 60% of development cost is consumed by maintenance phase. The two primary sources of waste in maintenance are rework due to defects or badly constructed software. By identifying structural defects that have a high probability of causing operational problems and result in maintenance rework, software analysis and measurement provides strong support for Software Maintenance.

- There may be so many barriers in all the organizations for implementing, aligning the lean principles according to the requirements and also achieving successful lean projects. It is proved that Lean Software Development is much more than just methods or tools. Even though there are many existing tools in agile and lean all are based on the underlying philosophical thinking and principles. Aligning these principles for the company's competitive situations also a major challenge.

In addition here are few downsides in the existing practices and methodologies:

- Rigidity in process design frameworks and development
- Process selection and integration are cumbersome
- Requires specialized skills, training and competency
- Requires organization cultural change
- Problems in architecture alignment and
- Continuous measure and improve the processes and its standards.

A few key areas/main activities is proposed in fig 4 which requires specific work standards and alignment of lean principles:

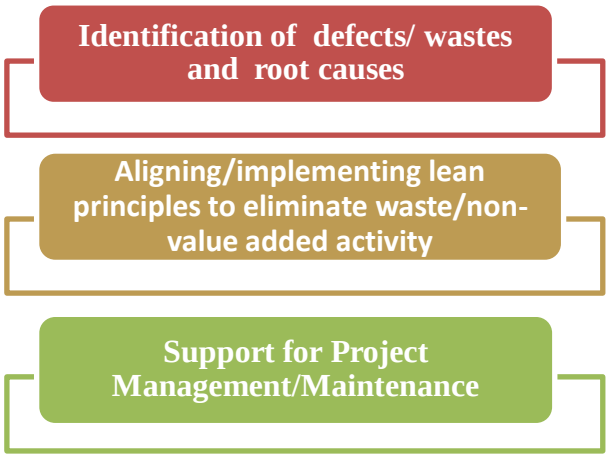

Fig 4: Key areas for lean implementation

Lean however does come with its own set of challenges and complications. Companies that find it difficult to imbibe and transform with Lean because of the following reasons:

1. The main problem of all Lean and Agile projects is their high dependence on the qualification and discipline of team members.
2. Lean isn't just a set of tools or a change program that can run its course over a short period; it takes considerable time for organizations to change and evolve
3. Lean is a change in thinking which doesn't apply only to specific departments or functions, but even the upper levels of management and the organization as a whole.

By focusing on the fundamentals of developing a project management culture, cultivating talent, and defining processes either using lean or agile, organizations will capture the value of project management and gain competitive advantage.

V. CONCLUSION

Increasing demand to find suitable projects management approaches for maintenance and support of applications has become a major task nowadays. Software development

using lean management system is changing the way that software is developed. With shrinking project outcomes, shifting global trends and an uncertain economy, organizations must shift their thinking and embrace project management as a strategic competency that can reduce risk, cut costs and improve success rates. In this regard lean and agile are aiming towards achieving business goals and satisfying customers with a competitive product of the best quality.

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Comparative Analysis of Corporate Performance of the selected HRA and Non-HRA Cement Companies in India

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Abstract:

Nowadays, in many countries, human resources are being used as a source of property by many social and economical organizations in order to enhance the level of their operation. It is evaluated as a potential organizational measurement tool. Investors and other related groups in order to make better decisions need to use some expressions related to the value of human resources. The annual reports published by various companies do have information increasing content in the form of value of human resources. It helps the investors while taking the investment decision. The main objective of this paper is to evaluate the value of human resources towards the performance of the organization.

Key words: *Human Resource Accounting, financial statement, profitability, efficiency, decision making*

Introduction:

The success or failure of an organization is ultimately linked with the people factor. In fact both academics and practitioners agree that as the dynamics of competition accelerate people are perhaps the only truly sustainable source of competitive advantage (Prahalad, 1983: Stewart, 1990). Effective management of human capital, even more so than physical capital, may be the ultimate determinant of organizational performance and survival (Snell & Youndt, 1995, P.711). Human resource is arguably the most valuable asset held by an organization today. With rare exception, HR simultaneously represents the single greatest potential asset and the single greatest liability that an organization will acquire as it goes about its business (Weatherly, 2003). It is evident from the literature that the HR is one of the vital factors in any organization and hence they should be managed well. Proper HR practices are to be developed and adopted for effective human resource management which will ultimately lead to better organizational performance. There are ample research studies showing the relationship between HR practices and firm performance. In some of the studies the relationship has been shown between an individual HR practice, such as compensation (Gerhart & Milkovich, 1990), and the firm-performance. But, as in reality the performance of an organization depends on the host of HR practices which are intertwined and interlinked. Contemporary researches have been carried out to analyze the effect of sets of HR practices on firm performance (Huselid, 1995; Huselid, Jackson & Schuler, 1997, Singh, 2004).

Objectives of the study:

In the present paper the researcher has tried to examine the impact of a single HR practice, i.e. Human Resource Accounting system, on the firm performance. Two dimensions had been used by the researcher to examine the firm performance – the financial aspect and the HR aspect.
Based on the above back drop the researcher has come out with the following objectives.

1. To know the financial performance of the HRA organizations and Non-HRA organizations.
2. To analyze whether the HR performance of the HRA organizations is better than the Non-HRA organizations.
3. To understand whether the overall performance of the HRA organizations is better than the Non-HRA organizations

Hypothesis:

H1: there is no significant difference between financial performance of HRA organizations and Non-HRA organizations.

H2: There is no significant difference between HR performance of HRA organizations and Non-HRA organizations.

H3: There is no significant difference between Overall performance of the HRA organizations and Non-HRA organizations.

Literature Review:

A study conducted by Dr. Zafar Mamoon on "Human Resource Accounting for Decision Making" investigates the possible inclusion of human asset into the accounting system known as human resource accounting and analyze development of modern accounting approach which can contribute to the new age of human resource management practices and the decision making of stakeholders.

A study titled "A Review of Human Resource Accounting and Organizational Performance" by Jacob Cherian & Sherine Farouq is to study the benefits of HR practices to the firm. This paper highlights the theoretical definitions of HRA and challenges faced during implementation of HRA measurement models to predict the organization's performance. This paper also says that HRA helps to calculate the human resource capital, worth of management development, and enhances the value of management accounting.

A research paper on "Impact of Human Resource Accounting on Organizational Performance" by Dr. Asha Sharma focuses on the current practices in Human Resource Accounting and to measure the impact of HRA on organizational performance. Aim of the study is to make aware about the role and contribution of human resources, to measure and value HRA. The outcome of the study says that the output of HRA system can be used to enhance performance of employees as well as company and to take a variety of decisions in the area of Human resource management.

A study which is conducted in Nigeria by Prince, F. Izedonme, Lucky, and G. Odeyile & Kingsley Kuegbe on Human Resource Accounting "Human Resource Accounting and its Impact on Organizational Performance" revealed that human capital and intangible asset had a positive and insignificant impact on organizational performance. However, the paper recommends that other possible variables that might contribute to human resource accounting and organizational performance be included in further empirical studies.

As per the literature review it is clear that there is a relationship between HRA and performance of the organization. So this research paper makes a comparative analysis of the performance of HRA and non-HRA organizations.

Research Methodology:

This research paper seeks to analyze the organizational performance and HR performance of the HRA and Non-HRA Cement companies in India. The companies not having the HRA practice have been phrased as 'Non-HRA' companies for the purpose of this study. The researcher has made an attempt to see whether the organizations having HRA system are better performers in terms of organizational and HR performance or not.

For this purpose the following organizations have been selected: ACC Ltd., CCI Ltd., both of these are under public sector and another three cement companies which are operating in private sector namely, Jaiprakash Associates Ltd., JK Cement Ltd., and Ultra Tech Cement Ltd. The companies of the Cement Industry have been selected because the HRA system is not prevalent in manufacturing sector. These companies have been selected on the basis of two factors – total revenue and their HR Practices. The information about the HR Practices of these companies have been obtained from the existing

literature available in company annual reports. Among these five companies, ACC and CCI have HRA System whereas the other three companies, JP, JK and Ultra Tech do not have an HRA System.

The data used in this research paper have been collected from the secondary sources, i.e. the annual reports of the selected enterprises hosted at their respective websites. For this study the indicators reflecting the organizational performance and the HR performance have been selected.

The Tools and Techniques of Analysis:

The indicators selected to highlight the organization performance are Return on Capital Employed (ROCE), Return on Owner's Equity (ROWE), Fixed Assets Turnover Ratio (FATR), Working Capital Turnover Ratio (WCTR), and Current Ratio (CR). For analyzing HR performance the following indicators have been selected – Profit Factor (PF), Expense Factor (EF), Remuneration Revenue Factor (RRF), Remuneration Expense Factor (REF), and Remuneration Factor (RF). For the study the ranking technique has been followed and the researcher has ranked the indicators on the basis of mean values of the indicators and coefficient of variation.

The various indicators which have been mentioned in the above paragraph are analyzed in the following tables.

Table 1: the performance indicators selected for the study

Organizational Performance Indicators:	
Return on Capital Employed (%)	ROCE
Return on Owner's Equity (%)	ROWE
Fixed Assets Turnover Ratio	FATR
Working Capital Turnover Ratio	WCTR
Current Ratio	CR
HR Performance Indicators:	
Profit Factor	PF
Expense Factor	EF
Remuneration Revenue Factor	RRF
Remuneration Expense Factor	REF
Remuneration Factor	RF

For analyzing the organizational and HR indicators the annual reports for the period 2012 to 2016 is considered.

Findings of the study:

Hypothesis Testing:

Table 2: Table showing Ranking Based on Average

Organizational performance indicators	**ACC**	**CCI**	**JP**	**JK**	**Ultratech**
ROCE	3 15	1 15.8	5 3.06	4 13.11	2 15.4
ROWE	2 11.2	4 3.2	5 (2.65)	3 9.27	1 14.03
FATR	1 1.58	5 0.03	4 0.62	2 1.18	3 1.07
WCTR	5 (31.32)	3 0.06	4 (34.36)	2 13.45	1 237.65
CR	5 0.89	2 1.23	3 1.22	1 1.29	4 1.05
Total of ranks which is mentioned in the top	16	15	21	12	11
Average Rank	3.2	3	7	2.4	2.2
Rank based on average	4	3	5	2	1
HR performance indicators					

PF	5 0.18	3 3.14	2 17.67	1 20.21	4 0.31
EF	5 0.08	2 7.24	3 3.86	1 7.37	4 0.04
RRF	2 152.09	4 61.8	5 (80.93)	3 111.1	1 256.72
REF	3 85.6	5 73.4	1 90.33	4 81.91	2 86.35
RF	4 0.35	2 5.35	3 3.49	1 6.04	5 0.07
Total of ranks which is mentioned in the top	19	16	14	10	16
Average Rank	3.8	3.2	2.8	2	3.2
Rank based on average	5	3.5	2	1	3.5

Form Table No. 2 ranking is done on the basis of mean values of the companies both for organizational performance and HR performance. From the table it is revealed that regarding the organizational performance on ROCE CCI (mean value 15.8) has got the first rank followed by Ultratech (mean value 15.4), ACC (Mean=15), JK (Mean = 13.11), and JP (Mean = 3.06). in case of ROWE Ultratech (Mean = 14.03) is ranked I, followed by ACC (Mean = 11.2), JK (Mean = 9.27), CCI (Mean = 3.2) and JP (Mean = 2.65). RATR ranks ACC (Mean = 1.58) as first followed by JK (Mean = 1.18), Ultratech (Mean = 1.07), JP (Mean = 0.62), and CCI (Mean 0.03). As far as WCTR is concerned, Ultratech has the highest mean value (Mean = 237.65) followed by JK (Mean 13.45), CCI (Mean = 0.06), JP has got the negative mean value (34.36) and ACC has also the negative mean value (31.32). With respect to CR, JK has got 1 rank, followed by CCI, JP, Ultratech and ACC. As per the sum of sum of the ranks obtained by selected organizations specific to the individual organizational performance indicators it is evident that Ultratech is Ranked number 1, and it is followed by JK, CCI, ACC and JP. So we can conclude that Ultratech is the best in terms of organizational performance.
With respect of HR performance indicators JK is ranked number 1 as it is having the lowest sum of the ranks based on mean values of HR performance indicators. The second position is occupied by JP. Next position is shared by Ultratech and CCI and the last position by ACC.

Table 3: Table showing Ranking Based on Consistency

Organizational performance indicators	**ACC**	**CCI**	**JP**	**JK**	**Ultratech**
ROCE	2 0.37	3 38.86	5 229.41	4 56	1 27
ROWE	3 0.34	1 17.99	5 379	4 39	2 28
FATR	2 10	5 39.34	4 26	3 11	1 9
WCTR	2 37	1 11.73	5 257	3 43	4 133
CR	2 6	5 79.62	4 19	3 9	1 4
Total of ranks which is mentioned in the top	11	15	23	17	9
Average Rank	2.2	3	4.6	3.4	1.8
Rank based on average	2	3	5	4	1
HR performance indicators					
PF	2.5 13	5 79.61	1 11	4 18	2.5 13
EF	5	4	1.5	3	1.5

	19	13.67	9	12	9
RRF	2 38	4 64.71	5 279	3 50	1 29
REF	2 38	4 64.71	5 279	3 50	1 29
RF	4 2	5 8.27	1 0.6	2.5 1	2.5 1
Total of ranks which is mentioned in the top	18.5	21	9.5	14.5	11.5
Average Rank	3.7	4.2	1.9	2.9	2.3
Rank based on average	4	5	1	3	2

In Table 3 an attempt has been made to rank the selected companies on the basis of the coefficient of variation (CV) value with respect to the various organizational and HR performance indicators selected for the study. When the ranking of the selected companies with respect to the organizational performance indicators has been done on the basis of the CV it is observed that Ultratech acquire the first position with lowest sum of the ranks based on CV. The second and third positions are held by ACC and CCI. The fourth and fifth positions are held by JK and JP respectively. The sum of the ranks of the HR performance indicators based on CV is lowest in case of JP. The next four positions are apprehended by Ultratech, JK, ACC and CCI respectively.

Table 4: Table showing Ranking Based on Average & Consistency

Organizational performance indicators	**ACC**	**CCI**	**JP**	**JK**	**Ultratech**
Rank Based on Average	4	3	5	2	1
Rank based on consistency	2	3	5	4	1
Sum of ranks based on average and consistency	6	6	10	6	2
Final rank	3	3	5	3	1
HR performance indicators					
Rank Based on Average	5	3.5	2	1	3.5
Rank based on consistency	4	5	1	3	2
Sum of ranks based on average and consistency	9	8.5	3	4	5.5
Final rank	5	4	1	2	3

In Table 4 effort has be made to obtain the final ranks of the selected organizations on the basis of the sum of the ranks based on mean value and CV of the various performance indicators selected for the study. In case of the organizational performance indicators it is observed that Ultratech is ranked number 1 and the following positions are held by ACC, CCI, JK and JP respectively. When the final ranking is done with respect to the **HR** performance indicators, it is observed that the first three positions are held by JP, JK and Ultratech. It will be more fascinating to know that these three companies are not having HRA system. The fourth and fifth positions are held by CCI and ACC respectively.

Table 5: Table showing Ultimate Ranking Based on Final Ranking

Organizational & HR performance indicators	**ACC**	**CCI**	**JP**	**JK**	**Ultratech**
Sum of ranks based on average and consistency in case of organizational performance Indicators	6	6	10	6	2
Sum of ranks based on average and consistency in case of HR performance Indicators	9	8.5	3	4	5.5
Sum of Final Rank	15	14.5	13	10	7.5
Ultimate Rank	5	4	3	2	1

In table 5, it has been attempted to obtain the ultimate rank based on the final ranks. For the ranking purpose the researcher has summed up the sum of the ranks based on mean and CV in case of both the organizational performance indicators and the HR performance indicators. The score obtained has been used to rank the selected organizations. In this case also it is observed that the first three positions are occupied by Ultratech, JK and JP respectively. The next two positions are held by CCI and ACC.

Conclusion:

From the above findings it could be concluded that the organizations which are not having proper HRA system are better performers than the organizations having HRA system. Even though the various literary works says that adoption of HRA system in the organization will improve the performance of the company, the present study has not proved that. The reason may be the method which is followed for valuing the human resources, the number of employees working in the company, and so on.

The conclusion may not be very strong for this study because of certain limitations such as methodology followed in this study is not strong enough to validate a strong statement like this. As per the literature study the general inference cannot be drawn that the HRA system does have an influence on the performance of an organization. When we look at the profile of these five companies the companies with good performance both organizational and HR are in the private sector. Whereas the companies with less performance are in public sector. This might be one of the reasons for the difference in the overall performance level of the organizations.

The HR practices which are followed by these (JK, JP, & Ultratech) companies should not be blindly copied as suggested by the present study. The HRA system may be adopted by an organization after fine tuning it in tune with strategic information need of the particular organization.

HRA is definitely having an influence on the HR performance as well as the financial performance of the company. We should keep in mind that competitors can easily duplicate competitive advantage obtained through better technology and products, but it is hard to duplicate competitive advantage gained through better management of people – (Khatri. 2000, P.337). Hence concentrating on the effective management of human resources through proper HR practices for gaining competitive advantage is required.

HRA system can be used as an effective tool for strategic human resource management. The information generated by the HRA system gives us necessary information about the HR's contribution to the attainment of corporate goals. In fact, it provides us the information about the alignment of the HR strategy with the corporate strategy. As a human resource measure it helps us to legitimately track HR's contribution to firm performance. Considering all this, we can say that adoption of HRA system is important.

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A CONCEPTUAL STUDY ON HUMAN RESOURCE VALUATION MODELS

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ABSTRACT:

Human resource accounting is getting more importance in recent years majorly because of two reasons. First: developments in modern organization theory, and second: the traditional framework of accounting is in the process of being expanded to include a much broader set of measurement than was thought possible in the past. The dichotomy in accounting between human and non-human capital is fundamental. The latter is recognized as an asset and is therefore recorded in the books and reported in the financial statements, whereas, the former is not accounted in many companies. Various theories and techniques have been developed in order to measure the human capital. The main purpose of this paper is to understand the various methods of valuing human resources and evaluate these methods. The first part of the paper consists of discussion of various models or methods of human resource accounting and the second part consists of applicability of these models to corporate life.

Keyword: *HR, HRA, human capital*

Introduction:

People are the most important assets of an organization and yet, the value of the assets does not appear in the financial statements. This information has not even been included as part of internal accounting and reporting for management purpose. The current accounting system is not able to provide the actual value of employee capabilities and knowledge. This indirectly affects the future performance of an organization. Human resource accounting is a direct part of the social accounting and aims to provide information on the evaluation of the most important components of the organization, namely human capital.

"Human resources are the greatest assets of any company. You can raise tariffs or prevent MNCs from entering, but one can't stop the employees from leaving if they are dissatisfied". – Narayana Murthy, Founder of Infosys Technologies. This quotation signifies the extent to which leading corporations value their human resources. They treat them as the most powerful assets and find good reason to work towards their satisfaction. The best companies in the world are those that realize the worth of their employees and continue to invest in them towards their growth and development. This is a conscious resource that shall fuel the growth of the company from within.

Objectives of the study:

1. To understand the concept behind quantifying and accounting for Human Assets
2. To examine the various methods of HRA
3. To analyze the pros and cons of each of these methods

Research Methodology:

Data used in this paper is secondary in nature. Data are collected mainly from two sources –

1. Various books written on human resource.
2. Various journals of renowned researcher and distinguished academicians.

Literature Review:

The concept of human resource accounting was first developed by Sir.William Petty in the year 1691. But research into true human resource accounting began in the year 1960 by Renris Likert.

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As per the American Accounting Association's committee (1973) HRA is the process of identigying and measuring data about human resources and communicating this information to interested parties. HRA, thus, not only involves measurement of all the costs / investments associated with the recruitment, placement, training and development of employees, but also the quantification of the economic value of the people in an organization.

Eric Flamholtz (1971) explained human resource accounting as accounting for people as organizational resources. Sackman et al.,(1989) define HRA as the measurement of the cost and value of people for the organization. Boudreau and Berger (1985) noted that HRA made significant contribution in solving numerous personnel selection problems. During this period, numerous experiments dealing with the influence of Human Resource Accounting information on decision – making were carried out. In 1995, European Commission (EC) prepared guidelines for the disclosure of Human Resource accounting information. Also, in Denmark the European centre for the development of vocational training (CEDEFOP) provided guidelines on Human Resources Accounting. Outline (2001) stated that one aspect of accounting that has received significant attention is the area of human capital. The money that enterprises spend of human resources had traditionally been reported in the account as a cost rather than as investment. More precisely, organizations do invest on training and development of their employees to get the best of them.

Methods of Measuring Human Resources:

Once it is accepted that human resources are an asset, the question of measuring the cost of this asset arises. The monetary approaches to measurement of human assets are broadly based either upon cost or economic value.

Following are the two methods of monetary approaches to measurement of human assets:

1. The cost approach and
2. The value approach

Cost Approach:

The cost approaches involve computation of the cost of human resources to the organization. The costs are capitalized and amortized over the useful life of the asset. Let us analyze the cost approaches. The methods under cost approach are:

1. Historical cost approach
2. The replacement cost approach
3. The opportunity cost approach
4. Asset multiplier method

I. The Historical Cost Approach

According to this approach the actual cost of recruiting, selecting, hiring, training, placing and developing the employees of an organization are capitalized and amortized over the expected useful life of the asset concerned.

It is easy to develop and operate these systems. It simply involves an extension of the concept of proper matching of costs with revenue. It will be treated very much like the cost of fixed assets. The same principles of capitalization and amortization are applied.

The problems faced by this system are:

1. Estimation of the number of years over which the capitalized expenditure is to be amortized is likely to be largely subjective
2. It is difficult to calculate the rate at which the total expenditure on human assets is to be amortized.
3. Unlike fixed assets, the economic value of human assets increases over time with training and experience.

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The Replacement Cost Approach:

This method consists of estimating the costs of replacing the existing human resources. It is nothing but the cost of parallel grooming. This approach takes into account the fluctuations in the job market and the general rise in the price level. The major disadvantage of this method is that while calculating the replacement value we may not get the same quality of the human resource.

The major disadvantage of this method is that it may not always be possible to obtain such a measure for a particular employee. It is difficult to find the similar replacement of the existing human resources in actual practice.

The Opportunity Cost Approach:

Hekimian and Jones proposed this method to overcome the limitations of the replacement cost method. According to them human resource values are measured through a competitive bidding process within the firm. Let us understand this concept with an example. A company has a capital base of Rs.20,00,000 and it earned profits of the amount of Rs.2,00,000. The return on investment (ROI) of the particular industry to which the company belongs is 12%. If the services of a particular executive are acquired, it is expected that the profits will increase by Rs.60,000 over and above the target profit.

If we capitalize Rs.60,000 at 12% rate of return, it works to Rs.5,00,000. The company may bid upto Rs.5,00,000 for the executive. However, the maximum bid can go upto the capitalized value of Rs.1,00,000.

But this approach narrows the concept of opportunity cost by restricting the next base use only to the organization. The inclusion of scarce employees in the asset base may be interpreted as discriminatory by other employees. This may result in lowering the employee morale.

Asset multiplier method:

This method is based on the assumption that there is no direct relationship between cost incurred on a employee and his value for the organization. This is because the value of an employee depends on factors like motivation, working conditions and their attitude towards work and organization. In this all employees working in an organization are broadly classified into four categories; viz., top management, middle management, supervisory management and operative and clerical staff.

The salary bill of each category is multiplied with appropriate multiplier to ascertain the total value of each category for the organization at a given point of time. Here multiplier is an instrument that related the personal worth of employees with the total asset values of the organization.

II. The value Approach:

The economic and current value approaches using the present value of expected future benefits have strong theoretical appeal. From practical point of view the measurement problems associated with these approaches are insurmountable. Quantification of future economic benefits is difficult. Several approaches have been suggested as substitute measure of economic value. Those various approaches are as follows:

1. Lev and Schwartz Present Value of Future Earnings Model
2. Stochastic Rewards Valuation Model
3. Jaggi and Lau Model for Human Resource Valuation

Lev and Schwartz Present Value of Future Earnings Model:

Lev & Schwartz advocated the estimation of future earnings during the remaining service life of the employee and then arriving at the present value by discounting the estimated earnings at the cost of capital. The assumptions in this method are realistic and scientific

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According to this model, the value of human capital embodied in a person who is 'y' years old, is the present value of his/her future earnings from employment and can be calculated by using the following formula –

$E(Vy) = \sum T=Y\ Py\ (t + 1)\ \sum T\ I\ (T)/(I + R)t - y$

Where, E (Vy) = expected value of a 'y' year old person's human capital

T = the person's retirement age

Py (t) = probability of the person leaving the organization

I (t) = expected earnings of the person in period I

r = discount rate

Some of the limitations of this method are:-

1. It has no indication about the accounting treatment of human resource.
2. It considers only the wages and salary which is not only the cost associated with the employees.
3. It ignores the possibility and probability that individual may leave an organization for reason other than death or retirement.

Stochastic Rewards Valuation Model

This model is an improvement over the present value of future earnings model. This model is developed by Eric Flamholtz. It is based on estimates of expected future services which was a major constraint of the earlier model.

According to Flamholtz model, the value is determined by multiplying the expected quantities of services of an employee in each service state with the respective probability of a person occupying these service states in the forthcoming period of time. The value of human resources of the organisation is ascertained by aggregating the present value of expected future services of all employees for the period of time.

The limitations of this model are

1. Obtaining valid data regarding the value of a service state in academic institution is very difficult.
2. A person's expected tenure, and the probabilities of occupying various service states at specific times is not properly available.

Jaggi and Lau Model for Human Resource Valuation:

The valuation of Human Resources on a group basis was suggested by the authors of this model. According to this model group means the team of homogeneous employees. It might be difficult to predict an individual's expected service tenure in the institution or at a particular level or position, but on a group basis, it is easier to ascertain the percentage of people in a particular group likely either to leave the firm during each of the forthcoming periods, or be promoted to higher levels.

This model is suitable to some extent for many of the organizations. But getting the information about the monetary data is a challenge.

Non-Monetary Methods for HRA:

The non-monetary methods for assessing the economic value of human resources also measure the human resource but not in money terms. They rely on various indices or ratings and rankings. These methods may be used as surrogates of monetary methods and also have a predictive value. The following are some of the non-monetary things of evaluating the Human Resources:

1. The skills or capability inventory is a simple listing of the education, knowledge, experience and skills of the firm's human resources.
2. Performance evaluation measures used in HRA include ratings, and rankings.
3. Assessment of potential determines a person's capacity for promotion and development.

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4. Attitude measurements are used to assess employee's attitudes towards their job, pay, working conditions, etc., in order to determine their job satisfaction and dissatisfaction.

Hermanson's Unpurchased Goodwill Model:

According to Hermanson, the unpurchased goodwill notion is based on the premise that 'the best available evidence of the present existence of un-owned resources is the fact that a given firm earned a higher than normal rate of income for the most recent year. Here Hermanson is proposing that supernormal earning is an indication of resources not shown on the balance sheet, such as human assets. Even though his method of valuing human resources is explicitly intended for use in a company's published financial statements rather than for internal consumption, this would necessarily involve forecasting future earnings and allocating any excess above normal expected earnings to human resources of the organization. However, the assumptions would be subject to the uncertainties involved in any forecast of future events.

The limitations of this method are as mentioned below:

1. Since the method limits recognition of human resources to the amount of earnings in excess of normal, the human resource base that is required to carry out normal operations is totally ignored.
2. The method uses the actual earnings of the most recent year as the basis for calculating human assets, thereby, ignoring the forecasts of future earnings that are equally relevant for managerial decision making.

Human Resource Accounting in India:

Human resource accounting concept was incorporated by Bharath Heavy Electrical Ltd., for the first time in India. It is one of the leading public enterprise during the financial year 1973-74. Later, it was adopted by other leading public and private sector organization in the subsequent years. Some of them are as follows:

1. Oil And Natural Gas Commission (ONGC)
2. Minerals And Metal Trading Power Corporation Of India (MMTC)
3. Steel Authority Of India Ltd., (SAIL)
4. National Thermal Power Corporation (NTPC)
5. Engineers India Ltd., (EIL)
6. Hindustan Machine Tools Ltd., (HMTL)
7. Cochin Refineries Ltd.,(CRL)
8. Madras Refineries Ltd., (MRL)
9. Associated Cement Company Ltd.,(ACC)
10. Infosys Technologies Ltd., (ITL)

Infosys has set the benchmark for disclosing the human resource value in the annual report. Even though it is very difficult to monetise the qualitative aspect like human resource Infosys has done it very effectively. It provides the information regarding particular of employees under the provision of section 21 7(2A) of the Companies Rules 1975. The company has used Lev & Schwartz model to monetize the human resources. The evaluation is based on the present value of future earnings of employees. To monetize the value of human resources certain assumptions are made as follows.

1. Employee compensation includes all direct and indirect benefits earned both in India and overseas
2. The incremental earnings based on group/age have been considered
3. The future earnings have been discounted at the cost of capital of on as average rate of 13%

Infosys will provide the information about number of employees and Median remuneration, ratio of remuneration to revenues, the proportion of women employees out of total employees, value of human resources etc.

Some of the information which is published in the annual report of Infosys Ltd. about the human resource is written below.

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The number of permanent employees on the rolls of the company as of March 31, 2015 and March 31, 2014 was 1,39,148 and 1,27,198 respectively. The revenue growth during fiscal 2015 over fiscal 2014 was 6.7 and net profit growth was 19.3%. The aggregate remuneration of employees excluding WTD grew by 6.4% over the previous fiscal. The aggregate increase in salary for whole time directors and other key managerial personnel was 57.7% in fiscal 2015 over fiscal 2014. This was based on the recommendation of the nomination & remuneration committee to revise the remuneration as per industry benchmarks.

Conclusion:

Determining the actual value of the human resource of the organization is very difficult. Even though various methods are available to compute the values of human resources it is not giving the answers for all the questions. Monetising the non monetary assets is not an easy task. There is no standard method proposed by any accounting standard committee for computing human resources. So there is no specific guideline for HRA. As a result any organization has the chance of manipulation of the financial statement for the negligence of the accounting standard committees. But the concept of HRA is gaining importance now-a-days. Even though it is not valued in many organizations recognition for human resource is increasing.

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N Heterocycles in Electrical Applications

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Abstract: **In order to boost sustainable growth in industries, formulating and implementing safe and effective productivity schemes is essential. Economic growth and national transformation would naturally follow. Risks to industries has been a potential hazard many times. Fires caused by faulty insulation systems have affected the safety in homes and in industries. Anhydride cured epoxy resins have been extensively used in the past for electrical insulation. The cure was accelerated with commercial accelerators which were known to be toxic and had a short shelf life. An effort is made in this paper to substitute the commercial accelerator with a suitable and safer alternate. A few N-heterocycles are prepared and they are used as the substitutes. They have a longer shelf life and have no known adverse physiological effects. They liberate nitrogen on heating providing an inert atmosphere in times of fire. Thus minimizing the damage. Various studies including kinetic, mechanical and electrical properties of these cured resins reveal that the results are comparable and at times better than those cured with commercial accelerator.**

Keywords: **Insulation, epoxy resins, N- heterocycles.**

I INTRODUCTION

The International Monetary Fund has projected slow growth in the advanced economies between 2012-17. In such a scenario, risks to business establishments can prove to be a serious obstacle to development. In order to stimulate growth, we need a risk free environment. It is important to analyse and quantify potentially destructive risks to industries so that sustainable growth can be assured. Risk surveys in industries show that almost 10% of the risk factor points to fire accidents [1].26% of industrial fires are attributed to faulty electrical circuits [2]. Electrical fires are mainly caused due to short circuiting. The smoke that evolves due to the incomplete combustion chokes and causes breathlessness and most deaths are due to this cause. Smoke kills faster than fire. An effort is made to substitute carbon atoms with nitrogen atoms in electrical insulation material to check if its properties can be improved.

Polymer materials like epoxy resin systems, have been associated with electrical applications since the early days of the electrical industry. Epoxy resins owing to their remarkable chemical resistance, good adhesion, extraordinary toughness, high mechanical strength and good heat resistance are extensively used as electrical insulators. When properly cured, epoxy resins yield tough materials, which find application in industrial flooring, foam, and electrical insulation. The applications of epoxy resins depend on the nature of curing. Generally curing takes place in the presence of a hardener or a curing agent. Anhydrides are used as curing agents for epoxy resins, and the latter are used in casting and laminations. Bases such as tertiary amines are commonly used to accelerate the curing process. Evaluation studies of cured epoxy resin systems are of considerable importance in understanding their electrical insulating behavior.

The perfection of cures depend on the nature of curing and accelerator. Material degradation may arise due to the formation of voids or cracks and these would promote the formation of destructive ionisation even under normal rated voltage of the equipment. A US patent [3] has revealed the use of 0.1 – 0.25 parts per hundred of an imidazole as curing agent in epoxy system. The infusible product obtained has been found to have excellent electrical properties. A Dutch patent [4] has revealed the use of amines and imidazoles in curing poly-epoxides and the product is reported to have outstanding electrical properties. Hardening of epoxy resins in the presence of benzimidazoles has been reported by Chernobai [5]. The samples obtained have retained longer shelf life and have had higher heat resistance and dielectric loss tangent. Beck Hans et al [6] have reported the use of heterocyclic compounds as reactive diluents and viscosity depressant for thermosetting epoxy resins. The product has been found to maintain a low dielectric loss factor.

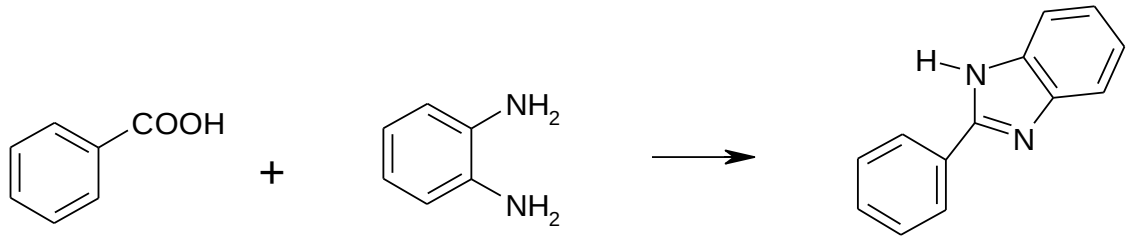
A Japanese patent [7] has revealed the use of benzimidazoles in curing epoxidized resins for good electrical and mechanical properties. Glass and quartz fabric – reinforced polymers including epoxy – poly benzimidazole laminating systems have been evaluated for application in high temperature microwave systems [8].

In this paper an attempt has been made to study the effect of different benzimidazolyl benzene and a commercial accelerator (K112) on the thermal and electrical properties of the cured resin- hardener system. The Gel time has been carried out. Thermal properties and electrical properties such as loss factor of the resin-anhydride system have been investigated. A cure mechanism has been suggested for the epoxy resin with carboxylic anhydride in the presence of 1,3-bis(benzimidazolyl)benzene [1,3Bz}involving tertiary and secondary nitrogen atoms.

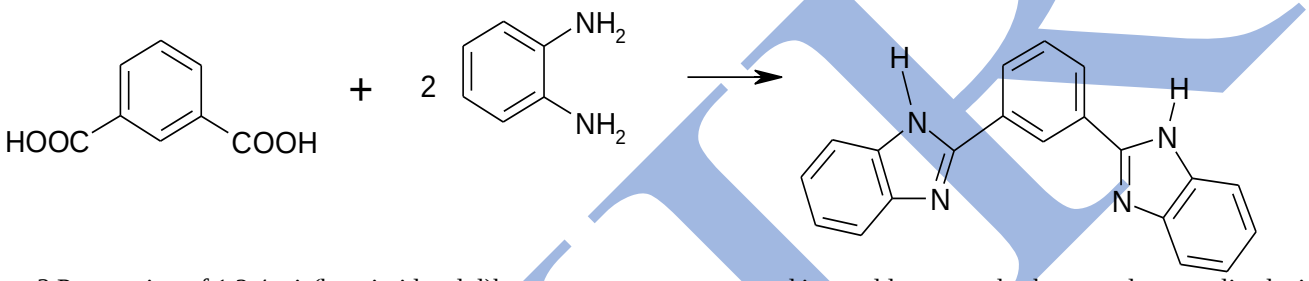
II PREPARATION OF BENZIMIDAZOLES

1.Preparation of 2-phenyl benzimidazole [9]

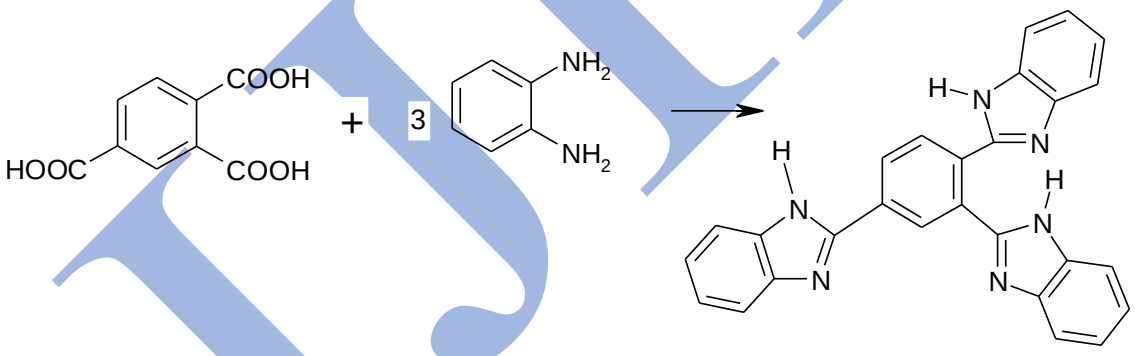
Benzoic acid (0.1 m mole) was added to a mixture of o-phenylene diammine (0.1 m mole) in syrupy phosphoric acid (50 ml) and stirred for 4 hours in a sand bath at 240^0C. The greenish blue melt that was obtained was poured into cold water and subsequently neutralized with 10% sodium carbonate solution. The pink coloured solid separated was recrystallised from ethanol and the resultant white needles was checked for its melting point (m.p.294^0C ; yield 88%.)



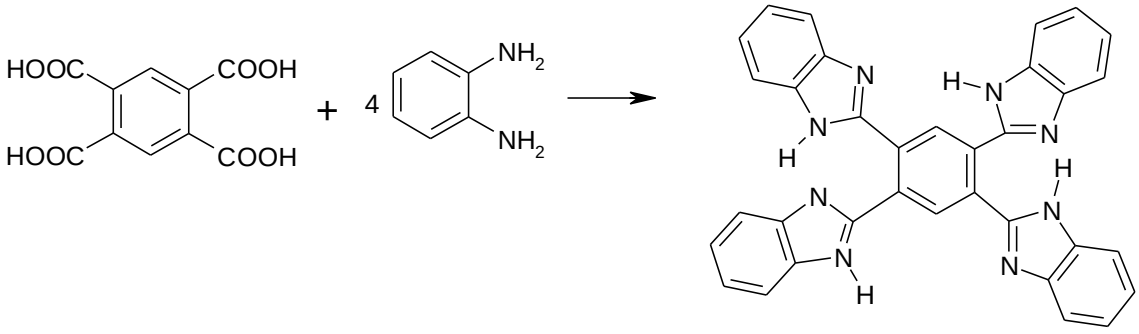
2. Preparation of 1,3-bis(benzimidazolyl) benzene [10]
Isophthalic acid (8.3 g, 0.05 m mole) was added to a mixture of o-phenylene diamine (10.8 g, 0.1 m mole) in syrupy phosphoric acid (50 ml) and stirred for 4 hours in a sand bath at 240^{0}C. The greenish blue melt that was obtained was poured into cold water and subsequently neutralized with 10% sodium carbonate solution. The pink colored solid separated was recrystallised from ethanol and the resultant white needles was checked for its melting point. (m.p. 185^{0}C; yield 85%)



3 Preparation of 1,2,4-tris(benzimidazolyl)benzene
1,2,4 benzene tricarboxylic acid (1m mole) was added to a mixture of o-phenylene diamine (3m mole) in syrupy phosphoric acid (50 ml) and stirred for 4 hours in a sand bath at 240^{0}C. The greenish blue melt that was obtained was poured into cold water and subsequently neutralized with 10% sodium carbonate solution. The pink colored solid separated was recrystallised from ethanol and the resultant white needles was checked for its melting point.(m.p. ; yield 75%)



4. Preparation of 1,2,4,5-tetrakis(benzimidazolyl)benzene
Pyromellitic acid (1 m mole) was added to a mixture of o-phenylene diamine (4 m mole) in syrupy phosphoric acid (50 ml) and stirred for 4 hours in sand bath at 240^{0}C. The greenish blue melt that was obtained was poured into cold water and subsequently neutralized with 10% sodium carbonate solution. The pink colored solid separate was recrystallised from ethanol and the resultant white needles was checked for its melting point (m.p. <450^{0}C; yield 85%)



III METHODOLOGY

The resin-hardener stoichiometry was determined using dynamic DSC runs by plotting enthalpy change ΔH against the amount of hardener used and the stoichiometry was found to be 1:1. For commercial applications the epoxy system is generally associated with suitable filler. In this study, silica flour was added as filler in such a way that the control system had the formulation of resin, hardener and filler in the ratio of 1:1:3.

Gel time of the benzimidazoles on resin-hardener system

The effect of benzimidazoles and their complexes on the gel time of the epoxy resin system at different temperatures was monitored. The values obtained at 0.125 – 0.5 phr of the accelerators are tabulated in Table 1

Thermal properties of the cured system

Thermal properties are measured and tabulated in Table 2

(i) Heat distortion temperature (HDT):

The degree of cure of a resin material is reflected in the magnitude of its heat distortion temperature (HDT) and it is usually measured according to ASTMD 648-56 method. HDT specimens are subjected to an arbitrary set of testing conditions at a specified heating rate of 2^0/min. The data could be used to predict the behavior of the test material at elevated temperature.

(ii) Glass Transition Temperature (T_g):

It provides a means of characterizing the cure and often defines the optimum temperature of use. Enthalpy relaxation accompanying the glass transition would give information about the thermal history or physical aging of thermosets [11]. According to Fava [12] the glass transition temperature of an epoxy system increases smoothly as the reaction proceeds to completion. An empirical correlation between relative degree of cure and glass transition temperature has been established by Gray [13].

(iii) Thermo-Gravimetric Analysis (TGA):

This is a technique that measures the amount and rate of change in the weight of a material as a function of temperature or time in a controlled atmosphere. A sensitive balance is used to follow the weight change of the sample as a function of temperature. The temperature is increased at a constant rate for a known initial weight of a substance and changes in weight are accurately recorded at different times.

Electrical properties:

The power factor or the dielectric loss factor or the tan delta property of a material is required to be known in order to find its suitability to any electrical application. For applications in high-voltage insulation involving generators, transformers, and A.C motors, the highest voltages used usually dictate the limitations. Hence, the present epoxy samples were subject to variations of voltage. The loss factor of the cured epoxy resin system at 0.5phr (parts per hundred) of the ligand and K112 have been studied both at room temperature as well as at higher temperatures at 500V. They are recorded in Figure 1.

Cure mechanism:

IR spectra before and after cure is shown in Figure 2

IV RESULTS AND DISCUSSION

Gel time studies

The results indicate that the gel times of the resin system in the presence of benzimidazole are lower when compared with the blank system which does not have any accelerator. The values decrease with increase in temperature. The gel time data of 2-phenyl benzimidazole and 1,3-bis(benzimidazolyl)benzene are comparable with that of the commercial accelerator (K-112).

Table 1 Effect of gel time on cured epoxy system

System	Concentration of accelerators (phr by weight)	Gel Time (mins) at temperature (K)				
		373	393	413	433	453
Blank System	----------	**1110**	690	257	114	43
2-phenyl benzimidazole	0.5	73	22	12	06	03
	0.375	89	32	13	08	05
	0.25	96	43	15	08	05
	0.125	140	61	30	16	10
1,3-bis(benzimidazolyl)benzene	**0.5**	**111**	32	08	07	04
	0.375	**125**	45	11	08	05
	0.25	**140**	55	15	14	08
	0.125	**180**	80	25	18	10
1,2,4-tris(benzimidazolyl)benzene	0.5	113	37	19	12	11
	0.375	160	90	55	28	20
	0.25	179	110	65	33	23
	0.125	186	450	225	66	47

1,2,4,5-tetrakis(benzimidazolyl)benzene	0.5	800	352	157	50	31
	0.375	870	473	213	52	17
	0.25	912	598	252	63	20
	0.125	960	612	257	76	28
K-112	**0.5**	**70**	19	06	05	03
	0.375	85	32	08	07	05
	0.25	101	47	13	12	18
	0.125	135	60	16	15	09

Thermal Properties

Table 2 Thermal properties of the blank, and the systems cured with 1,3 Bz and K112

Accelerator	HDT (K)	Transition temperature (K)	TGA (K)
Blank	349	380	350
K112	358	386	356
1,3 Bz	365	392	379

(i) Heat distortion temperature (HDT):

Higher values of HDT correspond to higher degree of cross-linking of the cured system. This test could be used as a rough guide to a range of temperatures over which the physical and electrical property would remain almost constant. The system cured with 1,3 Bz seems to be superior compared to the one cured with commercial accelerator.

(ii) Glass Transition Temperature (T_g):

The glass transition temperature is the temperature at which the molecular rotation about single bonds becomes restricted. It is the temperature at which transition from the glassy to the high elastic state or vice versa occurs. The results show that the system with 1,3 Bz is superior compared to other systems.

(iii) Thermo-Gravimetric Analysis (TGA):

The system cured with 1,3 Bz showed a very high level of stability since its value is 379K.

Effect of Electrical properties of the benzimidazoles on resin-hardener system

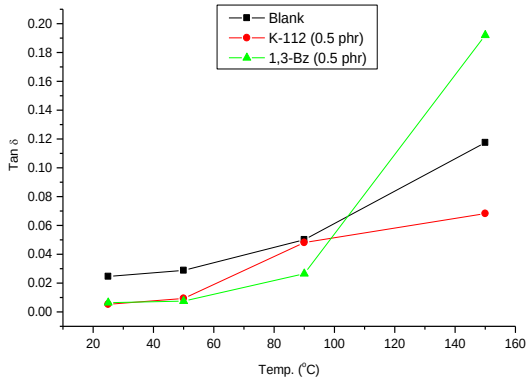


Figure 1: Tan ∂ values with respective to temperature for cured systems

It has been observed that at room temperature, the presence of accelerators have not altered the tan ∂ value. With increase in temperature the plot indicates that the trend in loss values is almost equal to the blank. Thus, this electrical property is not deteriorated by the addition of an accelerator.

Cure mechanism:

IR spectra for Cure Mechanism

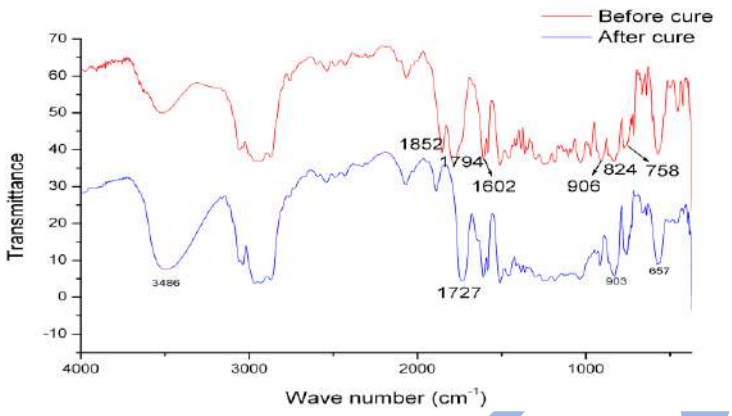
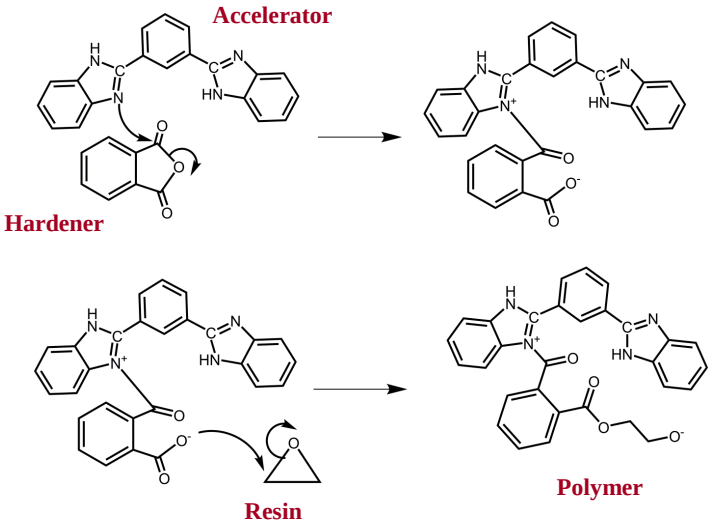


Figure 2 : IR Spectra before and after curing

It has been observed in the IR spectra of the resin-hardener system that the intensity of the band at 3486 cm-1 (which is characteristic of hydrogen bonded OH group), has increased as the cure reaction proceeded. A peak at 1534 cm-1 because of C=C stretching and CH bending of the benzimidazole has shifted and merged with the band at 1495 cm-1 band due to the hardener. Both the hardener and 1,3-bis(2-benzimidazolyl)benzene exhibited a peak at 975 cm -1, and this band has been attributed to the ring breathing vibration. Another band at 824 cm -1 of 1,3-bis(2-benzimidazolyl)benzene ring vibration has merged with a peak at 888 cm-1 of the hardener. The 758 cm-1 band because of the out of plane CH deformation vibration of benzimidazole and benzene ring has shifted to 713 cm-1 . It has been observed that the intensities of these bands have decreased as the curing of the resin-hardener system progresses. This suggests an increase in the extent of cross linking.

A band at 1512 cm-1 because of coupled C-N stretching and NH bending mode of 1,3-bis(2-benzimidazolyl)benzene has overlapped with the band at 1329 cm-1 of the hardener. This band has decreased in intensity but has broadened as the reaction progressed. The bands at 1623 and 1602 cm-1 because of C=C and C=N stretching modes showed marginal change in intensity. The peaks at 1852 and 1794 cm-1 because of the anhydride are affected as the cure reaction proceeded. The former decreased in intensity, where the latter has shifted to 1732 cm-1 without appreciable change in its intensity. This is indicative of the two carbonyl groups reacting in different ways, and this is evident by the gradual disappearance of the epoxy peak at 906 cm-1. This suggests that the epoxy ring opens up during the reaction.

The following mechanism may be proposed for the hardener reacting with the tertiary nitrogen of 1,3-bis(benzimidazolyl)benzene.



The tertiary nitrogen would open up the anhydride ring through coulombic interaction with one of the carbonyl groups. Subsequently, the carbonyl group may interact covalently with the imine hydrogen of 1,3-

bis(benzimidazolyl)benzene resulting in a covalent O-H bond as shown. Alternatively, in the presence of epoxide, the carbonyl group would open up the epoxy ring, facilitating the curing of resin-hardener system.

V CONCLUSIONS

Epoxy resins can be converted to thermosetting materials by the action of curing agents, which are either Lewis acids or Lewis bases or reagents containing NH hydrogen. The addition of accelerator to the resin system decreases the cure time. 1,3 (benzimidazolyl)benzene enhances the curing activity of bisphenol-A-based resin, and its activity is comparable with that of the commercial accelerators.. The thermal property has improved with the addition of benzimidazoles to the resin system. Electrical properties remain unaltered at ambient temperature.

Since then other N heterocycles and their complexes have also been prepared and their properties evaluated.

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Performance of Different Statistical Techniques on Indian Administrative Data by Using GeoDa

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ABSTRACT: This paper deals with the different statistical functionality of Indian administrative data by using GEODA tool. Spatial mining is an emerging interdisciplinary research area that mainly felicitates to take effective decisions with regard to the development of India in the taluk levels. The data comprises 2340 instances and 14 attributes. The results provides us with a natural path through an empirical data analysis and geovisualization moving on to exploration, spatial autocorrelation analysis.

KEYWORDS: Spatial data mining, clustering, geovisualization, spatial autocorrelation, Moran statistics.

I. INTRODUCTION

Spatial Data Mining is the process of discovering interesting and previously unknown, but potentially useful patterns from large spatial datasets [1]. Extracting interesting and useful patterns from spatial datasets is more difficult than extracting the corresponding patterns from traditional numeric and categorical data due to the complexity of spatial data types, spatial relationships, and spatial autocorrelation.

Spatial databases reside terabytes of spatial data that may be obtained from topographic maps, aerial photos, satellite images, medical equipment's, laser scanners, video cameras among others in public and private organizations which also access several databases comprising census, economic, security, and statistical information for enterprise business processes[2]. It is costly and often unrealistic for users to examine spatial data in detail and search for meaningful patterns or relationships among data. Spatial data mining (SDM) aims to automate such a knowledge discovery process in large databases along with visual exploration techniques for correct communication.

Voluminous geographic data have been and continue to be, collected with modern data acquisition techniques such as Global Positioning Systems (GPS), high-resolution remote sensing, location-aware services and surveys and internet-based volunteered geographic information [3]. There is an urgent need for effective and efficient methods to extract unknown and unexpected information from spatial data sets of unprecedentedly large size, high dimensionality and complexity. To address these challenges, spatial data mining and geographic knowledge discovery has emerged as an active research field, focusing on the development of theory, methodology and practice for the extraction of useful information and knowledge from massive and complex spatial databases.

The number and the size of spatial databases, such as geographic or medical databases, are rapidly growing because of the large amount of data obtained from satellite images, computer tomography or other scientific equipment. Knowledge discovery in databases (KDD) is the process of discovering valid, novel and potentially useful patterns from large databases. Typical tasks for knowledge discovery in spatial databases include clustering, characterization and trend detection [4]. The major difference between knowledge discovery in relational databases and in spatial databases is that attributes of the neighbours of some object of interest may have an influence on the object itself. Therefore, spatial knowledge discovery algorithms heavily depend on the efficient processing of neighbourhood

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relations since the neighbours of many objects have to be investigated in a single run of a typical algorithm. Thus, providing general concepts for neighbourhood relations as well as an efficient implementation of these concepts will allow a tight integration of spatial knowledge discovery algorithms with a spatial database management system. This will speed-up both, the development and the execution of spatial KDD algorithms.

Related Work

No doubt most of the related works have used Spatial Data Mining Techniques but their objectives and analysis are different. Some of the recent works are from [2], [3], [6], [7], [10], [12], and [14]

II. SPATIAL DATA MINING TECHNIQUES

Spatial clustering is a process of grouping a set of spatial objects into clusters so that objects within a cluster have high similarity in comparison to one another, but are dissimilar to objects in other clusters. For example, clustering is used to determine the "hot spots" in crime analysis and disease tracking. Hot spot analysis is the process of finding unusually dense event clusters across time and space. Many criminal justice agencies are exploring the benefits provided by computer technologies to identify crime hot spots in order to take preventive strategies such as deploying saturation patrols in hot spot areas. Spatial clustering can be applied to group similar spatial objects together; the implicit 10 assumption is that patterns in space tend to be grouped rather than randomly located. However, the statistical significance of spatial clusters should be measured by testing the assumption in the data. The test is critical before proceeding with any serious clustering analyses [5].

The goal of **cluster analysis** is to partition a set of spatial objects into clusters so that objects within a cluster have similarity in comparison to one another, but are dissimilar to objects in other clusters. The application range of cluster analysis is enormous. There is now a well-established body of literature on application of cluster analysis in the context of spatial research and environmental research. For example, the authors provides an overview of studies about using cluster analysis to group cities and towns [6] [7].

III. METHODOLOGY

The present work employs the following statistics components for the data set considered.

GeoDa [8] a free software program intended to serve as a user- friendly and graphical introduction to spatial analysis for non-geographic information systems (GIS) specialists. It includes functionality ranging from simple mapping to exploratory data analysis, the visualization of global and local spatial autocorrelation, and spatial regression. A key feature of GeoDa is an interactive environment that combines maps with statistical graphics, using the technology of dynamically linked windows.GeoDa[9] is the latest incarnation of a collection of software tools designed to implement techniques for exploratory spatial data analysis (ESDA) on lattice data. It is intended to provide a user friendly and graphical interface to methods of descriptive spatial data analysis, such as autocorrelation statistics and indicators of spatial outliers.

In a quantile map, the data are sorted and grouped in categories with equal numbers of observations, or quantiles. The Quantile Map command invokes a simple dialog to specify the number of quantiles or categories. A Box Map is a special case of a quartile map where the outliers are shaded differently. As a result, there are six legend categories: four base categories (one for each quartile), one for outliers in the first quartile (extremely low values) and one for outliers in the fourth quartile (extremely high values).A Percentile map is also a special case of a quantile map. In this case, no additional categories are created, but the categories are grouped to accentuate the extreme values.

Global spatial autocorrelation analysis is handled in GeoDa by means of Moran's I spatial autocorrelation statistic and its visualization in the form of a Moran Scatter Plot. The Moran Scatter Plot is a special case of a Scatter Plot and as such has the same basic options. It is linked to all the graphs and maps in the project, allowing full brushing.After the variable of interest and a spatial weights file are specified, a window is created with a scatter plot that shows the spatial

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lag of the variable on the vertical axis and the original variable on the horizontal axis.

A bivariate Moran's I is scatter plot with the spatial lag of the first variable on the vertical axis and the second variable on the horizontal axis. Both variables are standardized internally (such that their mean is zero and variance one), and the spatial lag operation is applied to the standardized variables.

IV. DATA SET DESCRIPTION

Geographic Information System(GIS) has become an important tool for managing, analysing and decision making, by seamlessly combining both spatial and non-spatial data, promising to enhance the delivery of public goods and services to citizens not only by improving the processes and management of government, but also by redefining the traditional concepts of information handling [10]. In India, a vast volume of spatial data sets have been generated through GIS projects undertaken by several departments and agencies, hence the key challenge is to integrate and coordinate these varied and disparate efforts to build a GIS structure for the state as a whole.
The data set used in the present investigation for our example will focus on the Indian administrative data sets. The description is as follows:
% Data on Indian Administrative Area.
% no of instances = 2340
% no of attributes = 14

V. EXPERIMENTS AND RESULTS

This section contains the results of the experiments conducted on the Indian administrative data sets mentioned earlier. This data set consists of 2340 instances with 14 attributes. As mentioned earlier, the main objective of the present analysis is to predict different statistical techniques to take effective decisions.

Figure 1 and 2 represent the different types of maps for the given data:
In a quantile map, the data are sorted and grouped in categories with equal numbers of observations, or quantiles. A standard deviational map groups observations according to where their values fall on a standardized range, expressed as standard deviational units away from the mean. The Standard Deviational Map creates a choropleth map with the categories corresponding to multiples of standard deviational units. A Percentile map is also a special case of a quantile map. In this case, no additional categories are created, but the categories are grouped to accentuate the extreme values.

Figure 3,4,5,6 and 7 represents the following statistical results for the given data. Local spatial autocorrelation analysis is based on the Local Moran LISA statistics. This yields a measure of spatial autocorrelation for each individual location. Both Univariate LISA as well as Multivariate LISA are included in GeoDa. The latter is based on the same principle as the Bivariate Moran's I, but is localized. In addition, the LISA can be computed for EB Standardized Rates.

Moran Scatter Plot for EB Rates deals with variance instability for rates or proportions, which served as the motivation for applying smoothing techniques to maps may also affect the inference for Moran's I test for spatial autocorrelation. Bivariate Moran Scatter Plot I creates a scatter plot with the spatial lag of the first variable on the vertical axis and the second variable on the horizontal axis. Both variables are standardized internally (such that their mean is zero and variance one), and the spatial lag operation is applied to the standardized variables.

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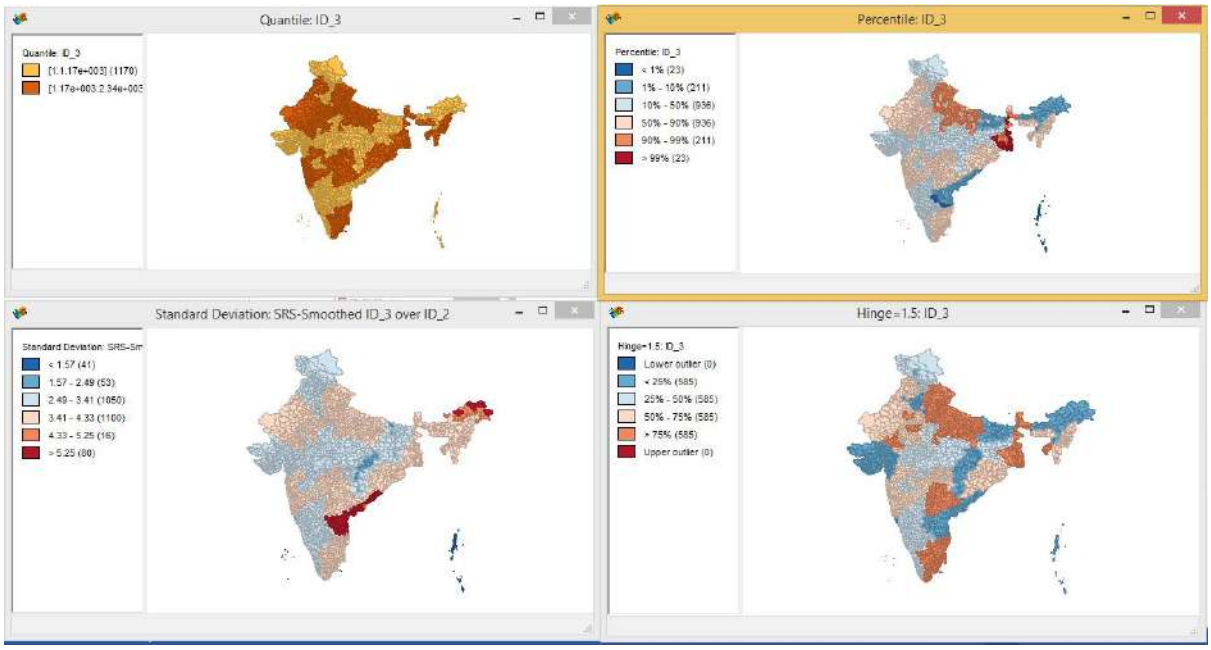

Fig. 1 Classification of different MAPs using GeoDA

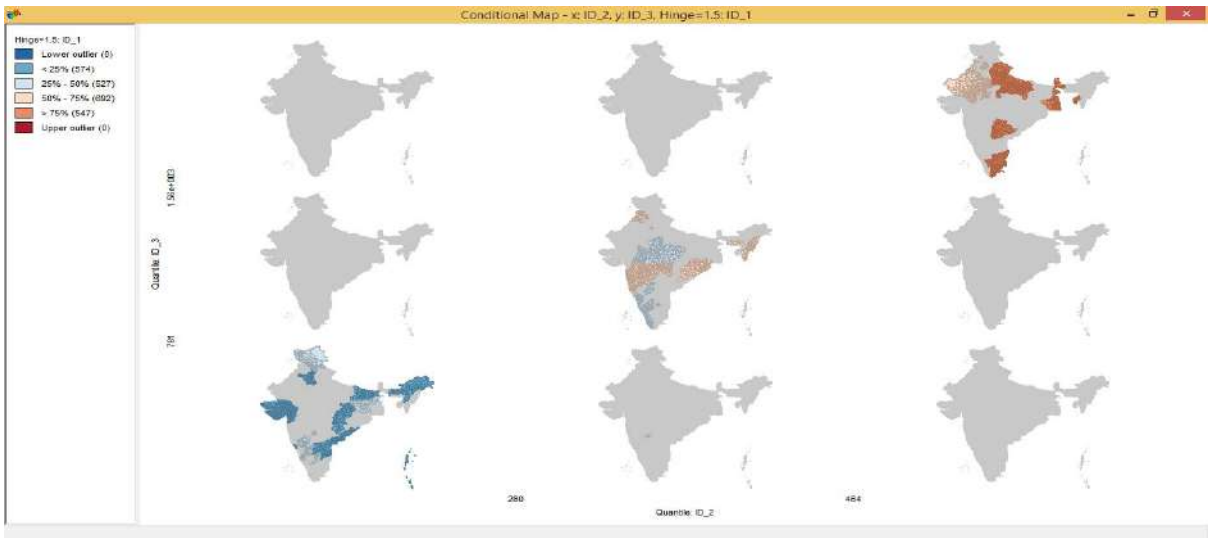

Fig. 2 Conditional MAP using GeoDA

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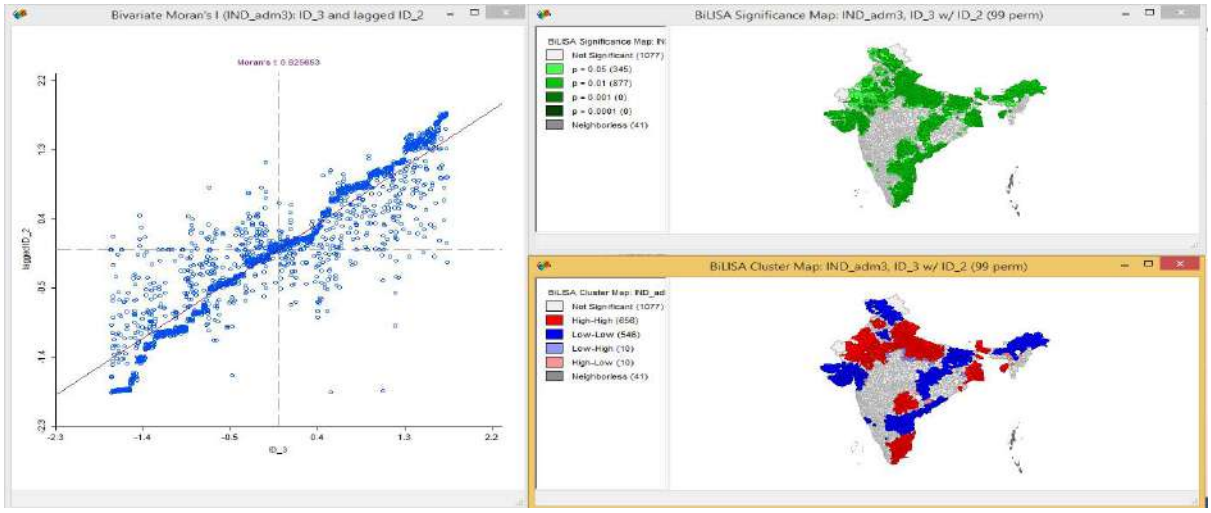

Fig. 3 Bivariate Local Morans using GeoDA

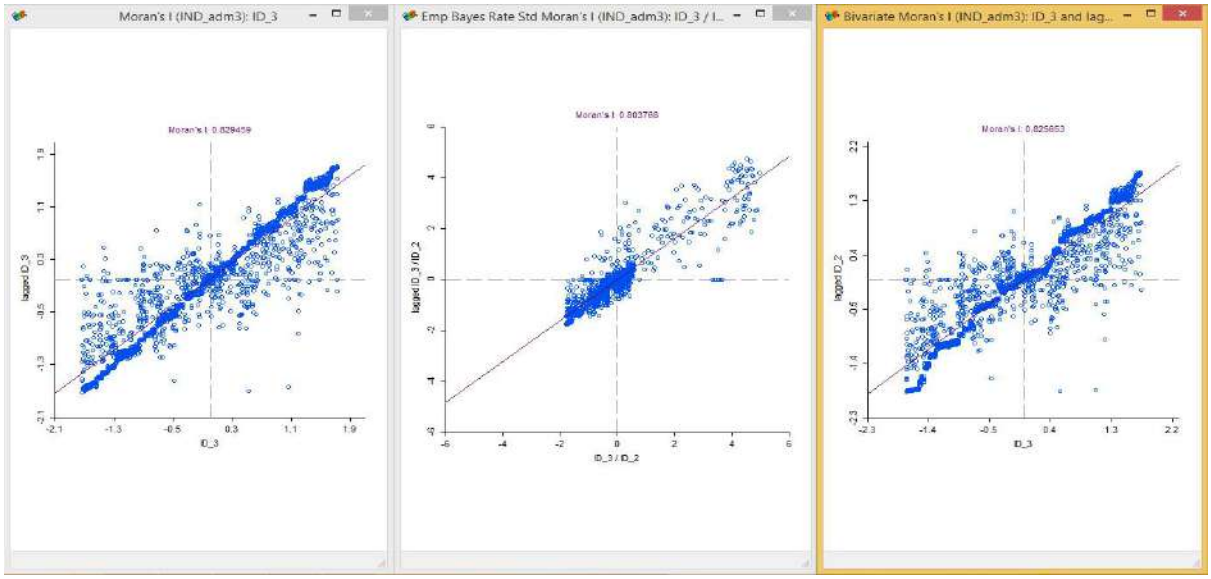

Fig. 4 Univariate, Bivariate and Moran's I with EB rate usingGeoDA

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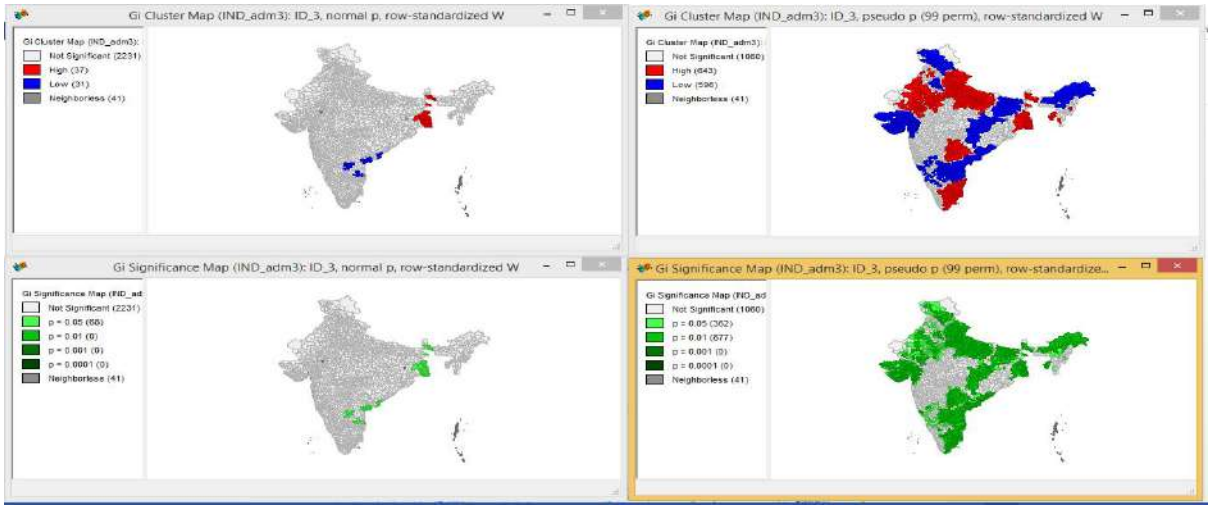

Fig. 5Local G Statistics using GeoDA

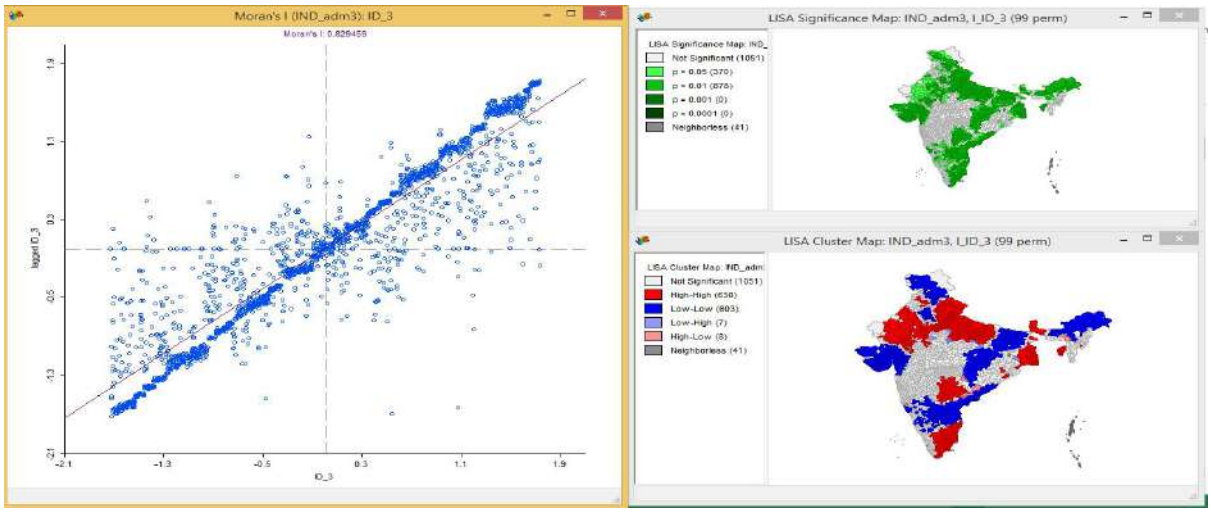

Fig. 6 Univariate Local Morans using GeoDA

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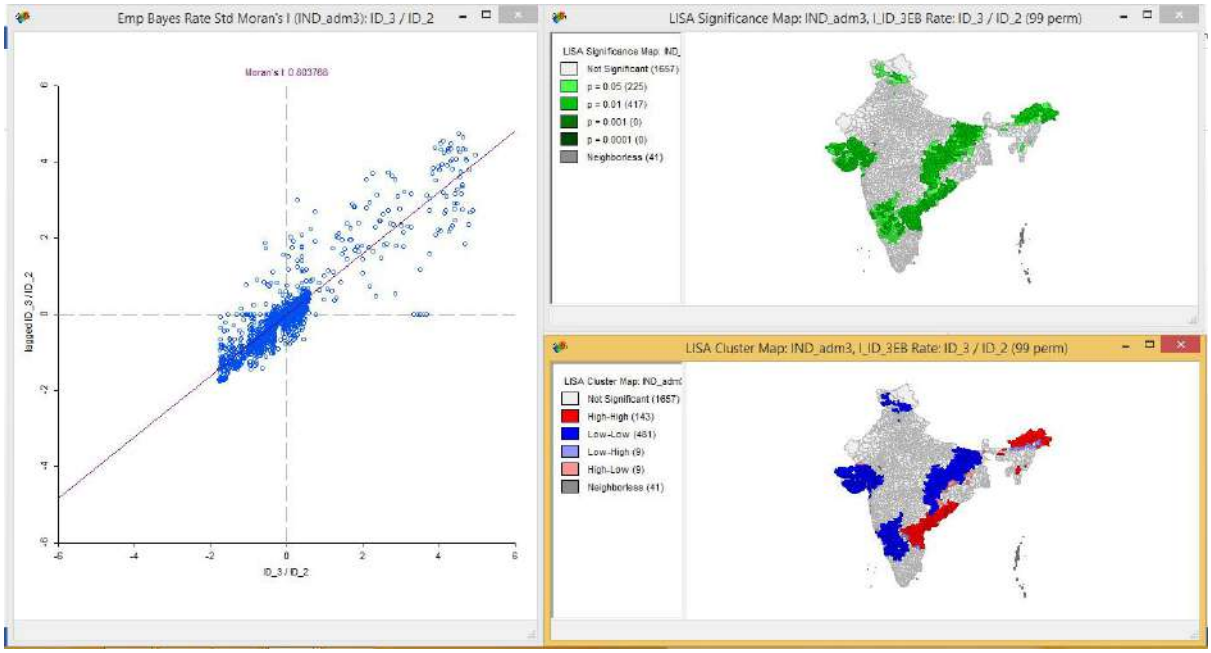

Fig. 7 Local Morans with EB rate using GeoDA

VI. CONCLUSION

In this paper, experiments on Indian administrative data set are conducted to study the behaviour of the different GeoDa functionalities. The data set comprises 2340 instances with 14 attributes. The raw data is obtained from the data on Indian Administrative Area and the results obtained are discussed in detail. These results provide an excellent platform for making effective decisions. In developing country like India, by using the above results we can do implementation and monitoring of national and regional development strategies in state, district and taluk level. All the above results are being promoted and sponsored by public administrations because geographic information is a basic resource for their operational work.

ACKNOWLEDGEMENT

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INNOVATIONS IN RURAL MARKETING IN INDIA: A CRITICAL REVIEW OF SELECT CASES

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ABSTRACT

The urban markets are crowded and saturated and the share of agriculture in GDP (Gross Domestic Product) is going down but India still lives in her villages. A considerable proportion of the global population resides in the rural pockets of the world. Though this segment constitutes a significant part of the population, it took longer for corporates to make inroads to create market. Hence it is proposed to study the potentiality and early innovations made in Indian Rural Market. As the primitive urban market required some breakthrough innovation to accelerate the process of evolution, this market also calls for relevant and path breaking innovations in different sectors. This paper critically reviews the pragmatic pre-emptive innovations made in rural markets for better penetration using secondary data and case studies collected from various sources.

KEYWORDS

rural marketing, innovation, e-rural marketing, e-governance, organised retailing.

I. INTRODUCTION

"*The organizations have only two functions, one is marketing and other is innovation".*

Peter Drucke

Modern day marketing has completely metamorphosed the nature and dynamics of business. Marketers today need to be adaptive to survive. Marketing of products has taken precedence over the process of production itself. This can be attributed to the fact that the new-age consumer equipped with the potent tool of information, seeks more knowledge about the product, its features and uses.

Customer today indeed is the 'King'. He can make or break the business organization. And when this information is presented in a creative and effective manner, it creates an everlasting impression on the consumer's mind and may even alter his perception of what he needs.

The urban consumer has always been pampered with the most dazzling array of goods and services from every industry. But the urban market is fast shrinking due to saturation caused by the competition, and the growth rate over the past few years has consistently shown a declining trend. In the hunt for fresh pastures, the vast and hitherto vastly unexplored terrains of rural India consistently sought by marketers (Patel, 2013).

1.1 WHY RURAL INDIA?

According to the third annual edition of Accenture Research, "Masters of Rural Markets: From Touchpoints to Trust points - Winning over India's Aspiring Rural Consumers," The hinterlands in India consist of about 6,50,000 villages. These villages are inhabited by about 850 million consumers making up for about 70 per cent of population and contributing around half of the country's Gross Domestic Product (GDP). Consumption patterns in these rural areas are gradually changing in an increasing order resembling the consumption patterns of urban areas. Some of India's largest consumer companies serve one-third of their consumers from rural India. Owing to a favourable changing consumption trend as well as the potential size of the market, rural India provides a large and attractive investment opportunity for private companies.

1.2 RURAL MARKET SIZE AND GROWTH

India's per capita GDP has grown at a Compound Annual Growth Rate (CAGR) of 12.3 percent during 2009-10 to 2015-16, due to significant growth achieved in the rural sector.Nielsen estimates that the fast moving consumer goods market in rural India will hit USD 100 billion by 2025 from USD 12 billion currently[1]. Moreover, the government's efforts to improve the efficiency of welfare programs with cash transfers will further boost rural consumption; it plans to deposit USD 570 billion in the accounts of 100 million poor families by 2014[2].

Therural economy has rapidly transformed in the last decade and is now being led by manufacturing. Indeed, agriculture accounts for only about one-fourth of rural GDP compared to half a decade ago. About 55 percent of manufacturing GDP is rural; nearly 75 percent of new factories built in the last decade were in rural areas, and rural factories account for 70 percent of all new manufacturing jobs[3]. Industrial development in rural India has increased household purchasing power and income stability. Rural India accounts for about 50 percent of India's GDP and nearly 70 percent of India's population. This enormous opportunity has been clear fora decade or more. However, only in recent years have these markets lived up to their promise. Per capita rural GDP has also experienced strong improvement over the past few years. Since 2000, it has grown faster than per capita urban GDP, 6.2 percent compound annual growth rate(CAGR) versus 4.7 percent[4].Between 2009 and 2012, rural consumption per person grewat 19 percent per annum, two percentage points higher than its urban counterpart. In incremental terms, spending in rural India during these two years was USD 69 billion, significantly higher than the USD 55 billion spent by urban populations[5]. As incomes rise, rural consumption shifts from necessities to discretionary goods and lifestyle products, including mobile phones, television sets and two-wheelers. Nearly 42 percent of rural households owned a television in 2009-2010, up from 26 percent five years earlier. Similarly, 14 percent of rural households had a two-wheeler in 2009-2010, twice the penetration during 2004-2005[6].About one in every two rural households has a mobile phone today, evening India's poorest states such as Bihar and Orissa. Rural consumers have been trading up, and their consumption basket is beginning to mirror that of the urban consumer. Premium products are replacing entry-level versions, and commodities are giving way to branded products. While companies have realized that rural markets offer significant growth

[1] "Rural Spending in India Outpaces Urban Consumption", *Knowledge @Wharton*, September, 2012.
[2] "India to Roll Out World's Biggest Direct Cash Transfer Scheme for The Poor", *International Business Times*, November 2012
[3] "Rural India no longer an agrarian economy: Study", *The Economic Times*, April, 2012.
[4] "Rural Spending in India Outpaces Urban Consumption", *Knowledge @Wharton*, September, 2012.
[5] "Sustaining the rural consumption boom", *CRISIL Research Insight*, August, 2012.
[6] National Sample Survey Office (NSSO).

opportunity, a large proportion have remained unsure of the profitability. Bigger corporates with long term goals realized it early and diffused innovations to rural markets for the benefits of rural folk vis-à-vis profitability.

1.3 RURAL MARKETING

Rural marketing is planning and implementation of marketing function for the rural areas. It is a two-way marketing process which encompasses the discharge of business activities that direct the flow of goods from urban to rural areas (for manufactured goods) and vice-versa (for agriculture produce), and also within the rural areas (Gopalaswamy, 2005, p. 6).

According to National Commission on Agriculture, rural marketing is a process which starts with a decision to produce a saleable farm commodity and involves all aspects of market structure or system, functional and institutional, based on technical and economic considerations, and includes pre and post-harvest operations, assembling, grading, storage, transportation and distribution.

Kashyap and Raut (2010) defined rural marketing as, "two-way process that includes the flow of goods and services from rural to urban areas and the flow of goods and services from urban to rural areas, as well as the flow of goods and services within rural areas" (p. 12).

Krishnamacharyulu and Ramkrishnan (2011) defined corporate rural marketing as, "a function that manages all activities involved in assessing, stimulating and converting the purchasing power of rural consumer into an effective demand for specific products and services and moving these products and services to the people in rural areas to create satisfaction and a better standard of living and thereby achieving organizational goals" (p. 26).

Rural marketing amounts to dealing with various inputs, projects and services meant for the rural market. In this sense, it is different from agricultural marketing which means marketing of rural products or output to the urban consumer or institutional market. When we integrate these perspectives to have a holistic view, then on the basis of the scope of activities performed, rural marketing can be illustrated in a tabular form as shown in the Table 1.

TABLE 1: RURAL MARKETING SCOPE: FLOW OF GOODS AND SERVICES

From/To	Rural	Urban
Urban	1. Consumables 2. Consumer durables 3. Agricultural inputs	1. Not Concerned
Rural	1. Rural Marketing, services and products	1. Agriculture and allied production 2. Rural artisans and rural industry products

Source: Table from "Understanding Rural Buyer Behaviour" by M. Jha, 2003*, IIMB Management Review, 15* (3), p. 89.

Therefore, rural marketing is a distinct specialized field of the marketing discipline which encompasses a customized application of the marketing tools and strategies to understand the psyche of the rural consumer in terms of needs, tailoring the products to meet such needs and effectively delivering them to enable a profitable exchange of goods and services to and from the rural market (Dogra & Ghuman, 2011, p. 3).

1.4 RURAL INNOVATIONS

Innovation is the main reason behind the growth of any country. There is the widespread agreement that economic growth of any country depends largely on how that country innovates, and reinvents itself in the competitive environment. Marketers make consistent attempts to innovate tools and strategies to overcome the challenges that they face in business arena. As the rural market is different from urban, the marketers realized that there is a strong need to approach the rural market with different innovations. The business innovations are broadly classified as product/service innovations and process innovations.

1.4.1. ROLE OF INNOVATIONS IN RURAL MARKETS

The main challenges or the areas of innovations in rural areas are as follows.

a. Physical Distribution: To serve more than 0.6 million villages, spread over 3.3 million sq. km.

b. Channel Management: To manage multiple intermediaries in the entire supply/value chain serving rural markets.

c. Promotion and Communication: To communicate with existing or prospective consumers living in media dark areas.

d. Poor Infrastructure: Only 50 percent of villages in India are connected with *pucca* roads and less than 50 percent of homes have electricity.

e. Uneconomical Market size: As villages have very small populations, it is not profitable for marketer to approach each and every village.

f. Consumer Profile: Rural consumers are very diverse in terms of socio-economic profile (Kashyap & Raut, 2010).

The principles and practices of innovation to be adopted in rural market have to take into consideration of needs, lifestyles and consumer behavior of the rural population. It is extremely important that the product, pricing, promotion and distribution strategy are not just innovative alone but they must make product value proposition attractive and relevant for rural consumers (Desai, 2013).

The positive results achieved by ITC's *e-Choupal,* HUL's Project *Shakti,* Colgate's Project *Jagruti,* Escort's *Rajdoot* motorcycle, etc., are due to the fact that they had structured their rural marketing in terms of planning, effort, operations distinctively from their urban marketing. This proves the justification for treating and approaching rural marketing distinctively from urban marketing.

II. REVIEW OF LITERATURE

The market Dynamics are changing and because of the companies wooing the same set of customers, the market has become an arena of cut through competitions. Therefore, the real market promise in the future is expected to come not from the developed markets like urban areas, but from the under privileged segments, through largely untapped till now have the potential of expediting a substantial growth rate if catered to properly. "Managers who focus on gross margins will miss the opportunity at the bottom of the pyramid; managers who innovate and focus on economic profits will be rewarded" (Prahlad and Hart. 2002). However, catering to these lesser tapped markets including the rural markets calls for a radical restructuring of the business process and developing marketing approaches to suit the demographics and psychographics of the newly developed markets. Thus, effective penetration in the emerging markets calls for a rethinking of a marketing programs directed at these markets (Dabvar & Chattopadhyay, 2002). As in the bottom of the pyramid market effective penetration into the rural market requires a judicious use of innovation. Innovation must be used in such a way so as to avoid undesirable inclusions or undesirable exclusions. In order to effectively survive in the rural markets and to bring a sustainable growth, it is important that the neglected rural lot are not merely treated as consumers' but as strengthened producers (Jaiswal, 2008).

III. OBJECTIVES OF STUDY

1. To Study the status and potential of Rural Market in India.
2. To Compare Rural and Urban marketing on various dimensions.
3. To analyze select innovative marketing cases in Rural India.

IV. RESEARCH METHODOLOGY

This is an exploratory research. The secondary data and case studies were collected from different authentic sources like textbooks, research articles, newspapers, internet etc. The cases on rural marketing innovations were rigorously reviewed to draw conclusions on their feasibility, viability and profitability which can pave the way to other marketers.

V. INNOVATIONS IN RURAL MARKETS

5.1. E-RURAL MARKETING/ICT INITIATIVES

E-marketing can be defined as, achieving marketing objectives through use of electronic communication technology. In very simple terms e-Rural Marketing refers to customized application of e-marketing for the rural markets. As the technology usage environment and the corresponding benefits that are sought in the rural

markets are very different from urban markets, the overall implementation of e-marketing in the rural areas becomes quite different from that of the urban markets. Therefore, e-rural marketing represents application of Internet based technologies as a tool, to facilitate efficient and effective exchange with and from the rural market.

Some of the organisations have successfully harnessed the potential lying dormant in the rural areas through the application of advanced technology, in a manner that is relevant and user friendly for the rural consumers. Many organisations have integrated Internet as a part of their strategy to cater to the rural market and others are creating a business model through its application. Some of the successfully implemented Internet initiatives in the rural market are discussed as following.

E-RURAL MARKETING: SELECT CASE STUDIES

5.1.1. ITC'*se-Choupal*

ITC launched three web-based initiatives (e-Choupals) as part of its strategy to vertically integrate its sourcing operations in the year 2000. Company launched **aquachoupal.com** in Andhra Pradesh for shrimp farmers, **soyachoupal.com** for Soya farmers in Madhya Pradesh and **plantersnet.com** for the coffee farmers in Karnataka. These portals also act as facilitators for inputs to farmers in aqua, soya and coffee domains. ITC Infotech structured the entire virtual interaction model for providing inputs like fertilisers, pesticides etc. that the farmers in different states can use. It had deployed a total of 970 kiosks serving 6,00,000 farmers who supplied it with soya, coffee, shrimp, and wheat from 5,250 villages spread across six states: Madhya Pradesh, Karnataka, Andhra Pradesh, Uttar Pradesh, Maharashtra and Rajasthan by the first half of 2005. Its plan was to set up 3000 kiosks to cover 10,00,000 farmers by adding 30 new villages a day. It was also using this network for distributing products for other organisations. Adding additional services such as selling seeds, fertilisers, and crop enhances the profitability of the system even further. ITC installed computers with solar charged batteries for uninterrupted power and the V-Sat connection suitable for the rural environment. Thus, thee-choupal network became independent of erratic power supply which is a regular feature in rural India. Local farmer (*sanchalak*) operates the computer on behalf of ITC but for farmers. The services offered to the farmers of the villages are information on weather forecast and prices of crops in local language, knowledge about farming methods, soil testing, expert advice, purchase of seeds, fertilisers, pesticides, cycles, tractors, insurance policies, products and services of over 37 companies and sale of crops to the ITC centre, after checking the prices on the net.

5.1.2. TARA*haat*

TARA*haat* Information and Marketing Services Ltd., promoted by Development Alternatives Group, (an alliance between Hughes Escorts Communication, Hewlett Packard, Oracle, KLG Systel, jaldi.com, Global Development Gateway (sponsored by World Bank and Gates Foundation), Excelsior Ventures Management, LLC and James Martin one of the world's leading NGOs), is an organisation that focuses on rural India for taking the benefits of technology to the rural population.

www.TARAhaat.com, an Internet portal was launched by this organisation on June 1, 2000, in Bundelkhand near Jhansi in Madhya Pradesh, which aims to connect rural India to the external world. Since then, it has expanded into Uttar Pradesh, Punjab and Haryana and had 38 centres by the end of 2005. The portal is supported by franchise network of cyber cafes or TARA*kendras* providing wide gamut of services like entertainment, information and commercial needs. Each TARA*kendra* serves villages within 5 km radius, which comes to about 4 villages. Then next are the TARAkiosks called TARA*dhabas,* which operate in the same manner as local PCO booths providing education and entertainment services. TARA*haat* has a rural ambience to increase the acceptability of the rural users. It is extremely user friendly portal and has sound and media animation for simplifying the navigation process for those who cannot read, as the system can process simple voice instructions. Even children, housewife or an illiterate Person can use it. Computer displays content in local language and has self-explanatory animated icons. Its email service TARA*dak* supports 11 languages thus, making it relevant and easy to use for the rural consumers who are only familiar with vernacular language. It has integrated delivery systems called TARAvans (TARA*rath*), or vans which are franchised to local people to deliver the goods ordered by the villagers at his doorstep. TARAcards have been provided to regular users enabling them to make transaction without paying money in advance. TARAcard enables villagers to buy the products and services listed at portal, although cash transactions are also possible. Rural producers are also able to connect to global market and sell their products to distant clients through the sister portal called TARA*bazar.* TARA*guru*, a decentralized university provides guidance and consultancy to the micro enterprises established by rural entrepreneurs. TARA*gyan* offers range of computer enabled education services ranging from basic IT training to English proficiency to vocational skills in areas like textile cutting, plumbing, TV repair, etc. The person operating these kiosks and cyber cafes can provide these services using the same infrastructure. This not only enhances the knowledge of the people in rural areas but also create avenue to earn money and reduce problem of unemployment in rural areas by creating opportunities of self-employment. TARAscouts, collects latest information to update the site and TARAvendors are suppliers, dealers or agents for supplying TARA approved products. It also contains information on topics like health, nutrition, first aid, healthy motherhood, diseases, livelihood, law, government schemes, water, agriculture, entertainment, etc. It also guides on selection of projects and developing project reports, finance, registration, clearances and licensing for setting up small-scale industry.

5.1.3 EID Parry's Indiaagriline

EID Parry and Nagarjuna Fertilisers have launched a portal, **www.indiaagriline.com** an experiment with Information Technology for the rural markets in Tamil Nadu in 2001. In 2004 the Parry's Indiaagriline had 30 franchised access centres or kiosks known as Parry corners already operational. These Parry corners were franchised to local villagers who owned and operated them in their own homes. These kiosks are equipped with PC, printer, telephone, furniture and a power source with a backup. The farmers could log on at www.indiangriline.com, through the kiosks located in the village itself and be informed with regard to farming activities in the area. This platform provides information on five crops namely banana, sugarcane, cashew, tapioca and groundnut and focuses on 271 villages around its Nellikuppam factory near Cuddalore. This information helps the farmer to increase their yield on one hand and provides good quality output to the organisation on the other. The increases in productivity of farmers, enables the organisation to sale its agri-inputs in the market better than it would have been possible otherwise. It not only builds a strong brand in the rural areas but also creates additional buying capacity for the company's produce. It has tried to integrate the entire model into the daily life of the people living in the target villages by providing information that is useful, needed and relevant for the rural population.

5.1.4. HUL's Project *i-Shakti*

The Project *i-Shakti* kiosks set up by HUL in partnership with women self-group of Andhra Pradesh have got overwhelming response prom local people. At the launch of these kiosks, important members of the village community like *sarpanch.* School teachers, doctors are invited to reinforce social relationships within villages. The kiosks remain open from 9 a.m. to 7 p.m. six days a week. To gain access to the services offered, the users have to first register themselves and obtain a unique registration number. An ID card with the registration number is given. The kiosks offer information chiefly in the form of the audio visuals in the areas like, (a) Health and Hygiene, (b) E-Governance, (c) Education, (d) Agriculture, (e)Employment, (f) Legal Services, and (g) Veterinary Services. The information provided in above areas is put together from the best available resources, focussing on locally relevant information based on inputs from home-grown experts. These experts are also available on request to help provide solutions to problems through a query-mailing system. People can also send queries on health and hygiene to local doctor for a speedy response.

5.1.5. Kandhamal Apex Spices Association for Marketing (KASAM)

KASAM is a registered Apex Society formed by 61 Spices Development Societies (SDS) of the Kandhamal district, most of which are self-help groups for women. Situated in small town of Bandhgarh, in Orissa, this co-operative was set up to trade fairly with, and to help the KuttiaKondh tribe in 1998. This co-operative is vital to the welfare of more than 12,000 subsistence tribal farmers in a region where average family plot is only around one third of a hectare. The Kandhamal region of Orissa, in eastern India, is the poorest region of the second poorest state of India (after Bihar).

Orissa's Kandhamal district produces organic turmeric, which is grown without using any chemical fertilizers or pesticides. 70 per cent of the population is below the poverty line and literacy percentage is only 32 per cent. Under such demographic environment, the Kandhamal turmeric is organic by default. The tribal practice traditional, primitive methods of cultivation. Thus, it is good for health and skin care and does not pose any health hazards at all. It has a characteristic aroma and can be stored for more than 2 years. This organic turmeric has a huge demand in Europe, America and Australia, but neither the state administration nor the farmers in Kandhamal had the resources to tell the world where to come for it. The farmers used to sell their produce to local merchants at nominal prices of Rs. 8-10 per kg as there were no linkages with the market and the farmers on their own could not access the highly profitable markets because of lack of resources, information and the huge distances.

KASAM has started marketing of organic spices in a big way. It has developed infrastructure for production and supply of value added spices. It took up organic spices export from the year 2000. KASAM is now preparing to sell some of its production in the domestic market directly to branded spices companies and institutional buyers. It has entered into a marketing tie-up with Orissa State Co-operative Milk Producers' Federation (OMFED), whose website www.omfed.com prominently features Kandhamal turmeric powder. OMFED has established its processing unit at Phulbani, the district headquarters of Kandhamal to do the value addition to the natural produce. The sun dried turmeric is processed and graded within a co-operative owned factory, and from there it is exported worldwide. The organic turmeric has also been certified by SKAL, Netherlands the international certification awarder with EKO, the Dutch equivalent of the British Soil Association. With this certificate, KASAM can export organic spices to countries such as the USA, UK, Netherlands, Egypt, South Africa, Bangladesh and Sri Lanka, through exporters under the active guidance of the Spices Board of India (Dogra & Ghuman, 2011).

5.2. ORGANISED RURAL RETAILING

An overwhelming proportion of the Rs. 400,000 crore Indian retail market is unorganized. In fact, only a mere Rs. 20,000 crore segment of the market is organized. The presence of the organized retail format is limited to metro cities only. In terms of physical size, 96 per cent of the 5 million-plus outlets are smaller than 500 square feet in area. India's per capita retailing space of about 2 square feet (16 square feet in the United States) is the lowest in the world. The organized retail industry was expected to grow to Rs. 1,60,000 crores by 2005. There is no role model for Indian retailers to follow or adapt in their attempts to expand into rural markets. Urban centres already have a well-defined retail network and international retail models are adapted after relevant contextual changes have been incorporated. In rural India, *haats*, mobile traders and village shops form the traditional retail network. In such conditions, marketers are trying to experiment with new models such as Self-Help Groups by HUL and ITC's ChoupalSagar to serve end consumers in rural markets.

The government has also established some good rural retail networks such as the Public Distribution System (PDS), Khadi and Village Industries Commission (KVIC), rural banks and Indian Farmers Fertilizer Co-operative Limited (IFFCO).

During post liberalization, a few corporates have taken initiatives to set up organized retail formats in rural areas. ITC was the first to take such an initiative and launched the country's first rural mall in Madhya Pradesh, signalling the arrival of organized retailing in rural India. The mall, christened *ChoupalSagar*, offers a diverse product range, including soaps, detergents, toothpastes, televisions, DVDs, sewing machines, grinders, etc., in an attempt to provide farmers a one-stop destination for all their needs. Other initiatives include DCM Shriram Consolidated's *HariyaliKisan Bazaars,* which started by offering farm-related inputs and services but soon planned to sell FMCGs and durables also. Other corporate houses that are setting up agri-stores to provide products/services targeted at farmers include Escorts and Tata Chemicals (with *Tata KisanSansar*). The Godrej Group runs a chain of agri-stores named *Adhaar* in Maharashtra and Gujarat that serve as one-stop shops for farmers selling agricultural products and also provide farmers with instructions on how to effectively utilize these products.

ORGANISED RURAL RETAILING- SELECT CASES

5.2.1. Mahindra *Shubhlabh* Services Ltd. (MSSL)

MSSL is a subsidiary company of Mahindra & Mahindra Ltd., the largest farm equipment company in India. MSSL has revolutionized agri-business by aggregating the factors of production under the brand *Mahindra KrishiVihar* through farming solutions specific to crop, region and market. It provides a complete range of products and services to improve farm productivity and also establishes market linkages to optimize the commodity supply chain. The staff provides support and guidance to farmers in the selection and usage of products in terms of crop health and environmental and human safety. *Mahindra KrishiVihar* offers a platform for banking institutions to provide loans to farmers with minimum documentation, quick sanctions and attractive interest rates, while the participating financial institutions develop a lower-risk portfolio and reduce their overhead costs through this channel.

5.2.2. ITC's *ChoupalSagar*

ChoupalSagar was the first rural mall in India, with an impressive 7,000 square feet area. It offers a self-service facility, with attractive merchandise displayed on open shelves (lining the neat aisles). It stocks almost everything, from toothpastes to televisions, hair oils to motorcycles, mixer-grinders to water pumps, shirts to fertilizers. Most of the brands that *ChoupalSagar* sells are national brands, such as Marico, LG, Philips and Eveready and shirts from ITC's apparel business, bikes from TVS and tractors from Eicher. The mall is located near the stock points of ITC's *e-Choupals,* making it an integrated model. To offset the huge investments made in the distribution network, ITC has partnered with other companies interested in serving the rural market. This has not only widened their product offerings, but has also spread out the overhead costs.

5.2.3. *Mahamaza*

Mahamaza, introduced in 2000, is a network of virtual dealers scattered around the country. Today it has an amazing network of 275,000 Web store dealers in small towns. They deal with extraordinary range of products, from motorcycles to cycles (Atlas) and cell phones of (Nokia). In total, they sell 28 brands across 15 industries. This website uses an offline network of Web Store Owners (WSO), who are registered after paying about Rs. 5,100 each. WSOs interact customers face to face and report transactions to the nearest of the four offices located in Delhi, Lucknow, Dehradun and Pune. Payments are made through pay orders or demand drafts and goods are delivered within a week. *Mahamaza* can avail of attractive discounts from the participating companies because it buys in bulk. It achieved a turnover of Rs. 90 crores in 2004. Durable goods companies have acknowledged the significance of this channel in their entire distribution channel in penetrating villages and small towns (Kshyap & Raut, 2010).

5.3. INNOVATIVE RURAL DISTRIBUTION

5.3.1 HUL's Project *Shakti*

Hindustan Unilever Limited (HUL) to tap this market conceived of Project Shakti. This project was started in 2001 with the aim of increasing the company's rural distribution reach as well as providing rural women with income-generating opportunities. This is a case where the social goals are helping achieve business goals. The recruitment of a Shakti Entrepreneur or Shakti Amma (SA) begins with the executives of HUL identifying the uncovered village. The representative of the company meets the panchayat and the village head and identify the woman who they believe will be suitable as a SA. After training she is asked to put up Rs 20,000 as investment which is used to buy products for selling. The products are then sold door-to-door or through petty shops at home. On an average a Shakti Amma makes a 10% margin on the products she sells.

An initiative which helps support Project Shakti is the Shakti Vani programme. Under this programme, trained communicators visit schools and village congregations to drive messages on sanitation, good hygiene practices and women empowerment. This serves as a rural communication vehicle and helps the SA in their sales.

The main advantage of the Shakti programme for HUL is having more feet on the ground. Shakti Ammas are able to reach far flung areas, which were economically unviable for the company to tap on its own, besides being a brand ambassador for the company. Moreover, the company has ready consumers in the SAs who become users of the products besides selling them.

This model has been the growth driver for HUL and presently about half of HUL's FMCG sales come from rural markets. The Shakti network at the end of 2008 was 45,000 Ammas covering 100,000 plus villages across 15 states reaching 3 million homes. The long term aim of the company is to have 100,000 Ammas covering 500,000 villages and reaching 600 million people. We feel that with this initiative, HUL has been successful in maintaining its distribution reach advantage over its competitors. This programme will help provide HUL with a growing customer base which will benefit the company for years to come (www.hul.co.in).

5.4. RURAL MARKET MAPPING

The advertising agencies and rural marketing consultancy organizations now have developed database on the rural market in the electronic form. These databases are integrated in software's, which generates reports for selection of villages to be targeted on the basis of select parameter. They provide classified information to clients with the help of which an organization can make a decision where to invest its resources in the rural market. The organization now are in a position to map the market with a significant precision for market potential analysis as well as media market fit decision.

MARKET MAPPING TOOLS

5.4.1. Thompson Rural Market Index

Hindustan Thompson Associates took first attempt to map the rural marketing potential by developing 'Thompson Rural Market Index' in 1972. This database provides comprehensive information on Market Potential Value (MPV) of different districts. This potential was determined for 335 districts of India on the basis

of first 11 variables and then 26 variables. The data with regard to demographic variables, occupational pattern, and agriculture based information and availability of commercial banks was incorporated to determine the comparative potential of the different districts of India. This tool determined the relative potential of the different districts on the basis of demographic factors and the overall agriculture potential of the district. This tool was effective for segmenting the rural market directly for the agricultural inputs and durables and indirectly for other consumables and durables.

5.4.2. MICA Rural Market Rating

It ranks districts according to seven parameters like population, fertilizer consumption, etc. It also depicts census data in digital maps, where one can pin point on district level details. It was priced at Rs. 35,000 in 1999.

5.4.3. Linquest

Market mapping tool from AP Lintas was the predecessor of Lincompass. It ranked districts on 42 variables. It was available for Rs. 75,000 in the year 1999[7].

5.4.4. Indian Market Demographics

This comprehensive information based study is compiled by NCAER on regular basis. The findings of this are based on largest research sample. Its 10 year White Book gives detailed information on income-classes, durable trends, etc.

5.4.5. Business Intelligence Unit

This Chennai based research unit has introduced a purchasing potential based ranking of 500 districts. It correlates agriculture zones with the purchasing power.

5.4.6. Lincompass

Lintas has developed a specialised rural marketing division named Linterland and it also has developed a software tool that does the mapping of the rural market named Lincompass. Software has calculated a fixed market potential for a district. This geographical information system based software has data on 6,26,000 villages from all over the country barring Jammu and Kashmir. Each of these districts can be analysed with 256 parameters of which 32 are considered key to avoid overlaps[8]. The parameters included are: agriculture, literacy, civic amenities, village composition, income and distance from national and regional highways[9].

5.4.7. ARCVIEW

This knowledge based intelligence system depicts the 5,87,962 villages as digitised points on the maps depicting the market potential of an area as a cluster. It generates maps of different kind: agricultural maps, socio-cultural maps, national & state highway maps and river maps. This tool can be used for optimal decisions for distribution and logistics applications, territory planning and dealer development. It identities potential markets from state to district to village or town. It also analyses accessibility, coverage and penetration enabling cost-effective transportation planning.

5.5. E-GOVERNANCE IN RURAL MARKET

E-governance may be understood as the performance of the governance via the electronic medium in order to facilitate an efficient, speedy and transparent process of disseminating information to the public and other agencies and for performing government administration activities. E-governance is generally considered as a wider concept than e-government, since it can bring about a change in the way how citizens relate to governments and to each other.

RURAL E-GOVERNANCE-SELECT CASES

5.5.1. *Gyandoot*

In Dhar District of Madhya Pradesh this project was initiated. *Gyandoot*was Rs. 26 lakh intranet, conceptualized and implemented in just 51 days in Dhar District of the soya bean and cotton belt of Madhya Pradesh that handled transactions worth over Rs. 400 crore a year[10].

Gyandoot was launched on January 1, 2000, with the installation of a low cost rural intranet covering twenty villages that has expanded to 39 Kiosks covering 311 *panchayats*over 600 villages and serves the population of around 5 lakhs. *Gyandoot* serves as government-to-citizen platform and connects the district headquarter to multimedia kiosks or rural cyber cafes, called *soochnalayas.* Each *soochnalaya serves* 20-30 villages, which is between 20,000-30,000 people. It provides local entrepreneurs with internet and telecommunications access, as well as with governmental, educational, and other services.

The services available on *Gyandoot* include: daily commodity marketing information including price and volumes, copies of land records, bank loan forms and maps, online registration of applications for income, domicile certificate, other certificates and redressal of grievances. E-mails in Hindi are sent through the *soochnalaya* when the certificate is ready for the citizen to come and collect it. An e-mail reply is assured within seven days.

5.5.2. Andhra's Card

In Andhra Pradesh a CARD (Computer-Aided Administration of Registration Department) is the pioneering effort in registering real-estate transactions. Starting with two centres in 1997, the Rs. 25 crore project now covers 239 offices and some 24 lakh transactions have been registered till date. Using a sophisticated document management system with imaging technology, the land registration department digitised 24 lakh land records dated from 1983 onward and implemented the project in 387 offices around the state. For land registration process, workflow has not changed. But, the quality of interaction between citizen and the system has changed. All the steps are now transparent and easy to access and sequence of steps to be followed is also clear. All interdependent steps are completed automatically.

5.5.3. Andhra Pradesh's e-Seva

Chandra Babu Naidu, the chief minister of Andhra Pradesh decided in 1998 to make his state the model state in India. He decided to use digital technologies and the Internet as the basis for making his government responsive and citizen-centric. E-Seva can be accessed via the Internet or through the kiosks set up by the government. Citizens can pay water and electricity bills through e-Seva. They can get their driver's license. They can pay their property taxes. There are more than 45 integrated state and federal services currently available to citizens through this system.

5.5.4. Punjab's PRISM

Punjab also launched PRISM (Punjab Registration Information System Module) project. Instead of pleading and bribing the *patwari* for registration documents which were needed for applying for loans, farmers now pay Rs. 10 and instantly get the necessary documents.

5.5.5. Karnataka's *Bhoomi* (Land)

In Karnataka, the *Bhoomi*project, has put most of 1.7 crore land records on the Internet since July 2000, at a cost of Rs. 1.8 crore. Farmers now pay just Rs. 15 for a printout of their papers, in comparison of Rs. 100-500 bribe they had to pay to *patwari* earlier.

5.5.6. n-Lounge Communications

n-Lounge Communications was set up by the Telecommunications and Computer Networks (TeNet) of IIT, Madras (IITM), a group which is dedicated to evolving technically superior and cost-effective solutions for a poor country like India. n-Logue is in the business of providing Internet, voice, e-governance and other rural services through a network of Local Service Providers (LSPs) and kiosks by establishing and maintaining corDECT (wireless access) based communication systems. The basic business model has three tiers, (i) the village kiosk operator, (ii) the LSP, and (iii) n-Logue Communications.

The kiosk operators are largely young men or women from the local villages who invest in and operate a tele-kiosk. While the LSP provides the first level of support, whether training, hardware maintenance or raising awareness. The kiosk operator assists customers in sending and retrieving voice and text messages and online forms, accessing the information they seek and in general acting as an interface between them and technology. Their most important function is to communicate the potential benefits of the tele-kiosk to the villagers in an understandable and appealing way. The kiosk operator invests Rs. 50,000 in the basic kit (which includes the corDECT connection, personal computer with a colour monitor, multimedia equipment and a web camera, a power source with a four-hour backup battery and a dot-matrix printer). The LSP invests in the business by becoming a partner with n-Logue. On an average, each LSP covers a couple of small towns and about 35 villages. In addition to the tele-kiosks, the LSP will provide connectivity to government offices, primary health centres, schools and colleges, small businesses and other local institutions. The services delivered by the n-Logue kiosks include basic communication services, computer training, desktop publishing, word

[7]Bansal, S., Joseph, S. and Bhatacharjee, P. (1999). Rural Market: Who is Winning and How.*Business World,* October 11, 1999, p. 29.

[8]Balakrishnan, R. (2004, February 4). Rustic Never Sleeps, Brand Equity, *The Economic Times*

[9]Bhasin, A. (2005, May 19). Using Technology: Conceptual Framework of LINCOMPASS, In *Rural Asia Conference.* Conference conducted at BIMTECH, New Delhi.

[10]Sharma, E.K. &Babu, V. (2002). Experience in E-Governance, *Business Today,* January 20, 2002, p. 51.

processing, school curriculum-based tutorial classes using multimedia applications and astrological predictions. In addition, the kiosks offer online consultancy through agricultural and veterinary experts, doctors and student counsellors' access to online land records through the *Bhoomi* projects and access to online medical databases in collaboration with Web Healthcare. n-Logue earns its revenues through agency fees and initial set-up fees paid by the LSPs. Additionally, the company collects annual franchise fees from local entrepreneurs. By building local capacity and utilizing local resources, this business model aims to reduce the costs presently associated with providing both telephony and Internet access to rural India. n-Logue presently has about 3000 kiosks in the states of Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Andhra Pradesh and Gujarat.

5.6. INNOVATIVE BANKING AND FINANCE

5.6.1. Kisan Credit Card (KCC)

The government of India has taken several policy initiatives for strengthening of rural credit delivery system to support the growing credit needs of the agricultural sector. Some of the important innovations taken in the recent years for improving agricultural credit flow are Kisan Credit Card scheme, Agricultural credit at lower rate of interest, simplification in lending policies and revamping of cooperative credit structure. The emphasis of these policies has been on progressive institutionalization for providing timely and adequate credit support to farmers with particular focus on small and marginal farmers and weaker sections of society to enable them to adopt modern technology and improved agricultural practices for increasing agricultural production and productivity.

Kisan Credit Card aims at ensuing educate and timely supply of Credit to farmers. KCC Scheme is under implementation by Banks throughout the country since 1998-99. KCC is simple card cum passbook. Farmers may approach the nearest branch of any Banks or Primary Agricultural Credit Societies (PACS) for it.

5.6.2. HDFC's Rural Branches

HDFC bank has announced a tie up with Indian Oil Companies Ltd. where rural petrol Pump outlet exists, *Kisan Kendra* will act as Bank Business Correspondent (BCs). This is a finest of its kind marriage of strengths of bank and oil distribution company to make modern Banking services available to people residing in semi urban and rural India that remain inaccessible by the current Hub Branch Network. HDFC Opens 87 Rural Branches in a day in Punjab & Haryana States in this endeavor.

5.6.3. Government Plans to Cross Merge RRB

Government is all set to cross and merge regional rural banks (RRB) in some eight states in a bid to create economics of scale and push its financial inclusion agenda. Cross merger is a blending of RBI under different state wise rural banks in future. Rural Banking is likely to see addition of over one lakh ATM in recent years with banks expanding their rural and semi urban network towards achieving greater financial inclusion.

5.6.4. Union Bank ties with Jain Irrigation

The aim is to partner the farmers for drip irrigation system. The partnership will deliver hassle free credit facilities to farmers, empowering them to fetch higher and faster return on investment. Jain Irrigation will extend guidance to farmers on Crop and Irrigation Management the Banks arrange sensitization campaigns on drip irrigation in high values crop growing areas affected by marginal water quality and undulated land.

5.6.5. NABARD cut refinance rate, Launches crop Lots

NABARD has cut the rate of interest on refinance provided to banks for investment credit. The refinance rate has been revised to lower 20 basis points as per a decision taken by the NABARD board that met in New Delhi. The bank has approved 3 crop specific projects for Potato in Hoogly, tomato in Karnal and Onion in Nasik.

5.6.6. Corporation Bank's Farm Lending

It has launched a year plan campaign to promote agriculture credit and financing initiative at all its branches. The focus of corporation bank will be to assist farming families especially those with small and marginal holdings, the weaker sections, minority and self-help /Joint Liability groups engaged in agriculture and allied activities. They will be pursued during the camps at the bank's branches (Tulsian & Saini, 2014).

VI. CONCLUSION

These innovative rural marketing initiatives may seem to be small in the context of a giant market called rural India but this is a remarkable beginning in the post liberalised era. We prospect the second Green Revolution in the near future if these experiments prove to be successful. The corporate involvement in agri-business, organised retailing, e-marketing, e-governance, CSR initiatives at all levels in the food chain will not only provide much needed assured markets to the farmers but will also bring the latest know-how to the farmers. It will also lead to better earning opportunities for the farmers through higher yield, higher prices for the produce on one hand and this will also create direct and indirect employment opportunities for the farmers who are finding it difficult to be part of service led growth on the other hand. These innovations are positively impacting the family, farmers and the rural youth. Family can have better health, farmers can have the better productivity and youths have better employment opportunities. Rural people have an opportunity to have vast amount of relevant information, which they can use to make informed decisions. They also now have a platform because of these innovations, which can create urban like self-employment opportunities in the village itself.

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Role of corporate sector in rural marketing: A critical review of select cases

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Abstract
In India approximately 70% of population lives in rural areas, therefore improvement in living conditions in rural areas is essential for the development of the wholesome Indian economy. More than 50% of the national income is generated in rural India and there are opportunities to market modern goods and services in rural areas and also rural agricultural products in urban areas. Rural markets have always been an intriguing segment for businesses. While these markets bring huge potential for growth and expansion, achieving sustainable volumes and optimal distribution networks in the remote rural areas, is often a huge challenge for businesses. This paper critically reviews the corporate innovations made in rural markets for better penetration using secondary data and case studies collected from various sources.

Keywords: Rural Marketing, Rural Innovation, Agri-business, Organised Retailing, CSR

1. Introduction

The rise of rural markets has been the most important marketing phenomenon of the1990s, providing volume growth to all leading companies. Many corporate have been trying to get a grip on rural market. But the challenges are many; how to make the product affordable, how to penetrate villages with small population, connectivity, communication, language barriers, spurious brands etc. The reasons why companies are going rural are manifolds. Higher rural incomes driven by agricultural growths, increasing enrolments in primary schools, high penetration of TV and other mass media have increase the propensity to consume branded and value-added products in rural areas. The marketing mix of many companies is now being tailored to rural tastes and lifestyles. Rural marketing is a two way marketing process that includes the flow of goods and services from rural to urban areas and the flow of goods and services from urban to rural areas, as well as the flow of goods and services within rural areas. According to planning commission towns with population up to 15000 are considered as rural. According to LG electronics, "the rural and semi urban areas are defined as all other cities other than the 7 metros" (Vyas & Vyas, 2014) [17].

The urban consumer has always been pampered with the most dazzling array of goods and services from every industry. But the urban market is fast shrinking due to saturation caused by the competition, and the growth rate over the past few years has consistently shown a declining trend. In the hunt for fresh pastures, the vast and hitherto vastly unexplored terrains of rural India consistently sought by marketers (Patel, 2013)[1].

India's per capita GDP has grown at a Compound Annual Growth Rate (CAGR) of 12.3 percent 2009-10 to 2015-16, contributed by growth in rural sector. Nielsen estimates that the fast moving consumer goods market in rural India will hit USD 100 billion by 2025, up from USD 12 billion currently[2]. Moreover, the government's efforts to improve the efficiency of welfare programs with cash transfers will further boost rural consumption; it plans to deposit USD 570 billion in the accounts of 100 million poor families by 2014[3].

Therural economy has rapidly transformed in the last decade and is now being led by manufacturing. Indeed, agriculture accounts for only about one-fourth of rural GDP compared to half a decade ago. About 55percent of manufacturing GDP is rural; nearly 75 percent of new factories built in the last decade were in rural areas, and rural factories account for 70 percent of all new manufacturing jobs[4]. Industrial development in rural India has increased household purchasing power and income stability. Rural India accounts for about 50 percent of India's GDP and nearly 70 percent of India's population. This enormous opportunity has been clear fora decade or more. However, only in recent years have these markets lived up to their promise. Per capita rural GDP has also experienced strong improvement over the past few years. Since 2000, it has grown faster than per capita urban GDP, 6.2 percent compound annual growth rate (CAGR) versus 4.7 percent[5]. Between 2009 and 2012, rural consumption per person grewat 19 percent per annum, two percentage points higher than its urban counterpart. In incremental terms, spending in rural India during these two years was USD 69 billion, significantly higher

[1] Patel, S.K. (2013)The Challenges And Strategies of Marketing in Rural India, *Asia Pacific Journal of Marketing and Management Review, 2* (7), 38-39

[2] "Rural Spending in India Outpaces Urban Consumption", Knowledge @Wharton, September 2012

[3] "India To Roll Out World's Biggest Direct Cash Transfer Scheme For The Poor", International Business Times, November 2012

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[5] "Rural Spending in India Outpaces Urban Consumption", Knowledge @Wharton, September 2012

than the USD 55 billion spent by urban populations[6]. As incomes rise, rural consumption shifts from necessities to discretionary goods and lifestyle products, including mobile phones, television sets and two-wheelers. Nearly42 percent of rural households owned a television in 2009-2010, up from 26 percent five years earlier. Similarly, 14 percent of rural households had a two-wheeler in 2009-2010, twice the penetration during 2004-2005[7]. About one in every two rural households has a mobile phone today, even in India's poorest states such as Bihar and Orissa. Rural consumers have been trading up, and their consumption basket is beginning to mirror that of the urban consumer. Premium products are replacing entry-level versions, and commodities are giving way to branded products. While companies have realized that rural markets offer significant growth opportunity, a large proportion have remained unsure of the profitability. Bigger corporates with long term goals realized it early and diffused innovations to rural markets for the benefits of rural folks vis-à-vis profitability.

Kashyap and Raut (2010) [7] defined rural marketing as, "two way process that includes the flow of goods and services from rural to urban areas and the flow of goods and services from urban to rural areas, as well as the flow of goods and services within rural areas" (p. 12).

Krishnamacharyulu and Ram Krishnan (2011) defined corporate rural marketing as, "a function that manages all activities involved in assessing, stimulating and converting the purchasing power of rural consumer into an effective demand for specific products and services and moving these products and services to the people in rural areas to create satisfaction and a better standard of living and thereby achieving organizational goals" (p. 26).

Due to significant differences in almost all the major marketing variables, it becomes very difficult to optimally tap the rural market potential with an urban mindset. In most cases, it requires a modified approach, philosophy and marketing mix. Therefore, the domain of rural marketing is significantly different from the way marketing is planned and implemented in urban areas.

Innovation is the main reason behind the growth of any country. There is the widespread agreement that economic growth of any country depends largely on how that country innovates, and reinvents itself in the competitive environment. The positive results achieved by ITC's *e-Choupal,* HUL's *Project Shakti,* Colgate's Project *Jagruti,* Escort's Rajdoot motorcycle, etc., are because they had structured their rural marketing in terms of planning, effort, operations distinctively from their urban marketing. This proves the justification for treating and approaching rural marketing distinctively from urban marketing.

2. Objectives of the Study

A. To understand the rural market.
B. To Study the Indian Rural Market Potential.
C. To identify the Corporate Initiatives and Innovations in Rural India.

3. Review of Literature

The market Dynamics are changing and because of the companies wooing the same set of customers, the market has become an arena of cut through competitions. Therefore the real market promise in the future is expected to come not from the developed markets like urban areas, but from the under privileged segments, through largely untapped till now have the potential of expediting a substantial growth rate if catered to properly. "Managers who focus on gross margins will miss the opportunity at the bottom of the pyramid; managers who innovate and focus on economic profits will be rewarded" (Prahlad and Hart, 2002). However, catering to these lesser tapped markets including the rural markets calls for a radical restructuring of the business process and developing marketing approaches to suit the demographics and psychographics of the newly developed markets. Thus and effective penetration in the emerging markets calls for a rethinking of a marketing programs directed at these markets (Dabvar & Chattopadhyay, 2002). As in the bottom of the pyramid market and effective penetration into the rural market also requires a judious use of innovation. Innovation must be used in such a way so as to avoid undesirable inclusions or undesirable exclusions. In order to effectively survive in the rural markets and to be bringing a sustainable growth, it is important that the neglected rural lot are not merely treated as consumers' but as strengthened producers (Jaiswal, 2008).

4. Research Methodology

This is an exploratory research. Researchers have extensively relied on Secondary Sources of Data. The secondary data and case studies were collected from different authentic sources like textbooks, research articles, newspapers, internet etc. This research is limited to India.

5. Role of Corporate Sector in Various Areas

5.1 Corporate Sector in Agri-Business: Cultivation, Processing& Retailing

For long, farmers of India were facing the obstacles. They were forced by law to sell their produce at *mandis*, a system of local markets, which was established to protect poor farmers from exploitation. But, this system more or less got transformed into a cartel of traders, bureaucrats, and moneylenders. Farmers were paid the official minimum price or less for their produce, but no one was there to guide them about which varieties they should produce for better yield and the best farming practices to increase their productivity and improve the quality.

Corporate sector has realised the potential of agriculture in rural sector. The second green revolution, which is being driven by corporate sector, is emerging in the country. The stage is getting set for corporate India's thrust into the agri-business by building the infrastructure that connects Indian farms to national as well as international supermarkets. They are getting involved in all facets of agri-business right from research and development, production, processing, marketing and even retailing. They are providing or enabling setting up of much needed linkages that were missing in the traditional marketing and distribution system.

[6] "Sustaining the rural consumption boom", CRISIL ResearchInsight, August 2012

[7] National Sample Survey Office

Corporate Sector in Agri-Cultivation & Processing: Select Case Studies

5.1.1. Pepsi

Pepsi's venture of contract farming, processing and marketing in horticulture is a perfect example of an obligation turned into an opportunity. Investing into farming and food processing were preconditions for Pepsi's entry into India.

1. Horticulture

Pepsi's involvement with Punjab farmers for pulping tomatoes began in the 1990s as a part of mega-marketing effort to obtain government permission to produce and sell its soft drinks in India. The company imported state of art tomato processing plant from Italy to Punjab in 1989 to process tomatoes to make ketchup for the export markets. The plant's processing capacity was 35,000 tonne a year. It introduced new varieties of tomatoes and educated farmers on better cropping methods. Though it sold the tomato processing plant to HUL in 1995 but the seeds of change and improvement had already become a robust tree by then.

2. Citrus Cultivation

After it revolutionised the horticulture in Punjab through contract farming, Pepsi entered the citrus cultivation. It is developing saplings of kinnows in its greenhouses in the state. Company flew some farmers to America in early 2004 to show them citrus plantations in Florida. All operational costs are being borne by Pepsi, while Punjab government and farmers meet capital expenses. By the end of 2005 over one-lakh samplings were planted in Punjab and number of trees were increased to two lakh by 2007. It was a five-year programme with the Punjab government to provide several hundred farmers with forty lakh sweet-orange trees by 2008. The output of these plantations was fed to Pepsi's packaged juice brand, 'Tropicana', raw material for which was being imported.

3. Seafood Farming

Pepsi has also launched ambitious seaweed cultivation programme in Andhra Pradesh in 2004. Pepsi is also developing a seaweed crop for a food-gelling agent on 4,000 rafts off the Southern coast of India.

4. Other Projects

Pepsi has introduced Punjab farmers to high-yielding varieties of other crops, such as basmati rice, mangoes, potatoes, chillies, peanuts, and barley, which it uses for its Frito-Lay snacks and sells to domestic and foreign buyers. It has an arrangement with farmers to grow grapes in Belgaum and it is also involved in production of low water consuming peanut crop. Information technology tools are being employed for imparting training to farmers through Power Point presentations, video shows and distribution of print manuals.

5.1.2 Bharti

The business model of Bharati was to link Indian fields to the world market, by providing premium quality fresh produce to the markets worldwide through contract farming. It is leasing large tracts of land in Punjab and Rajasthan and has developed an arrangement with a group of farmers in Uttaranchal as well. It is also tying up with orchards in Maharashtra for planting grapes and mangoes. It is sourcing its products from Punjab, Jammu and Kashmir, Himachal Pradesh, Haryana, western Uttar Pradesh and Uttaranchal. The investments includes an agriculture research centre and model farm in Punjab, which will spread latest farming practices and technologies. The company will export fresh fruits and vegetables to Europe, Southeast, Middle East and CIS countries. FieldFresh Food started selling produce to EU, Southeast Asia, Gulf and central Asia in 2006. Field Fresh exports only fruits and vegetables and focuses on niche international markets that demand specific fruits and vegetables from India. It plans to sell apples, mangoes, grapes, cherries, tomatoes, baby corn, okra and iceberg lettuce. Cold storage, processing plants and refrigerated transport facilities are also planned to be established. Instead of the farmers produce being wasted, it can be taken to Europe at a price point that can be competitive.

5.1.3 Reliance

Reliance Industries, one of India's largest industrial groups, in June 2006 announced a USD 5.6 billion (Rs. 25,200 crore) multiyear investment in agriculture and retail sectors.

1. Reliance Life sciences

Reliance Industries got involved in cropping and sale of medicinal and herbal plants (MAP), through Reliance Life sciences, as a separate organisation since January 2001. It is a biotech venture of Reliance with Rs.22 crore 50 lakh investment. It has developed a 200 acre herbal garden in Navasari, Gujarat, where it grows plant such as *ashwagandha*, *aloe-vera, patchouli, geranium and lemon grass*. It planned to invest Rs. 1000 crore in the venture and already has MAP brands in the market under the name 'Redicare'. The company is betting on the potentially large applications of MAP in pharmaceuticals and alternative health therapies both in India and abroad.

2. Food Processing and Exports of Fruits and Vegetables

Reliance is entering food processing and export of fruits and vegetables through contract farming and establishing chain of cold stores. These cold stores were established in Punjab and through its supply chain it intends to supply the fresh fruits and vegetables from the airport in Amritsar to the developed world and Middle East. It has planted 1, 00,000 mango trees in Jamnagar, Gujarat on land adjacent to Reliance's oil refinery and plans to become India's biggest exporter, selling 3,600 tonnes annually within five years.

5.1.4 ITC

ITC is facilitating farmers through e-choupal model. It is now getting into larger format retail stores branded as *Choupal Sagars*, at a cost of Rs 5 crore each.

5.1.5 BILT

Paper industry depends on the agriculture sector for the availability of its raw material. BILT, a leading paper products manufacturer sources wood pulp for paper production through farm forestry. For its paper unit in Jeypore, Orissa, BILT had to get wood from distances ranging between 500-1,000 kilometres resulting in high freight costs and delays. In the year 2000 company got into a buy-back arrangement with marginal farmers to grow eucalyptus for which it provided the seedlings. Over 9,000 farmers are involved in BILT's social forestry initiatives.

5.1.6 DSCL
DCM Shriram Consolidated (DSCL) has put in place a relationship model for ensuring supply of sugarcane for its sugar production business. With improved inputs, better technology and modern farm practices, the company achieved a sugar recovery of 10.4 per cent, the fourth highest in the country, for the financial year 2004-05. Its productivity at 40 tonnes an acre was achieved due to the combined initiatives of the farmers and the company's 350-odd field workers. DSCL is also employing IT tools for dissemination of information to enable farmers to increase their productivity through better cropping practices. The improved sugarcane production is leading to increased incomes for farmers in Uttar Pradesh in the last 7-8 years.

5.1.7 GGCL
Thapar Group's Global Green Company Ltd. (GGCL) is helping farmers in Andhra Pradesh and Karnataka to grow gherkins. The company markets 30,000 tonnes of gherkins and has a contract farming arrangement with 12,000 farmers. The business model has enabled the company to earn substantial hard currency from international market. Over 95 per cent of GGCL's products are exported to 23 countries through 15 leading retail chains.

5.1.8 Tata Chemicals
The company undertakes contract farming in 15,000 acres of land. It grows paddy and vegetable seeds in Uttar Pradesh and Punjab and fruits in Karnataka and Maharashtra. The produce is sold to retail chain or exporters.

5.1.9 Mahindra's
Mahindras are also involved in corporate farming in over a lakh acre. It grew oilseeds and cereals in 2003 and went for horticulture in the form of aromatic plants and flowers in 2004.

5.1.10 Chambal Fertilisers
In 2002, the company entered the food processing by taking over a food-processing unit in Haryana. The unit processes and freezes fresh vegetables and markets them under Ever Fresh Brand.

5.2 Corporate Sector in Agri-Business: Organised Rural Retailing
Corporate sector is entering the semi urban and rural areas with the large format branded retail store for rural markets as a forward integration strategy. It is a big change from the time when rural consumers were served from tiny and dingy *dukaans* (retail outlets) with almost no additional or value added facilities.

The retail stores set up by corporate sector are banking on the strategy to present their stores as a solution to the problems associated with the traditional distribution channel. For example, (i) In the traditional channel the push strategy was employed and the consumer interest was not the driver, (ii) Brands that are available were not displayed and consumer most of time had to buy brands recommended by retailers. (ii)Spurious, Adulterates and Counterfeits are also available in large percentage along with the genuine products. Rural customers have limited ability to distinguish the between the two, (iv) Rural customers have limited choice both in terms of product range as well as brand choice.

Organized Rural Retailing: Select Case Studies
5.2.1 ITC's *Choupal Sagar*
The country's first rural mall known as *Choupal Sagar* was established in Madhya Pradesh at Rafiqganj, which is not even a city, but a little village, about 4 km from Sehore town. It signalled the arrival of retailing in rural India. It is located on an eight-acre plot with a shopping area of 7,000 square feet. It has been set up at a cost of Rs 4.5 crones and based on the learning from this experiment and evaluating its success.

Along with soaps, detergents and the toothpaste mall sells everything, like, TVs, DVD players, pressure cooker, sewing machine etc. Farmers can also buy motorbikes, or even tractors. ITC has also launched its own rural range of clothing and shoes, trousers at Rs. 166 a pair tailored for the rural people is a value for their money.

Choupal Sagar is an extension of ITC's warehouses. The farmers will be in position to make purchases for all their requirements from a place where they sell their produce. The ready availability of cash after the sale and the transport facility in the form of emptied trolley or cart would provide an opportunity to make bulk purchases for the coming season. It can lead to better utilisation of space along with proximity to the consumers. It will also act as an information centre for market prices for products.

For the sustainability of this model it has already tied up with LG, Sansui, agri-input companies and others services organisations like banks and insurance companies. Sansui has even invested in infrastructure and manpower training for *Choupal Sagar.*

5.2.2 TATA *Kisan Sansar*
Till 2003, the TATA group's two companies TATA Chemicals and Rallis India ran separate rural retail initiatives. TATA Chemicals had a chain called *Tata Kisan Kendras* in Uttar Pradesh, Haryana and Punjab. The centres offered farmer a host of products and services ranging from agri-inputs (seeds, fertilisers), financing to advisory services. Rallis, another Tata company manufacturing chemicals for agriculture was running *Kisan Kendras.* It was involved in an integrated programme with select farmers of Madhya Pradesh. The company partnered ICICI Bank and HUL, in offering solutions to farmers that covered operation from pre-harvest stage to post-harvest stage. Farmers were first provided with seeds, pesticides and other farm inputs, through Rallis, but mostly funded through loans offered by ICICI Bank. Once the crop was ready, it was bought by HUL and ICICI Bank loan was repaid through the income from the sale. But the experiment did not sustain for long. In April 2003 Rallis' operations were merged with TATA Chemical's TATA *Kisan Kendras* and on October 26, 2004 the company relaunched its *Kisan Kendras* as TATA *Kisan Sansar* (TKS). These are planned to evolve as networks of one-stop shops for farmers providing everything from inputs to know-how. In December 2004, it comprised of 421 centres and all franchisee run stores were in three states covering 14,000 villages. The centres are linked to 20 hubs owned and managed by TATA Chemicals. TATA Chemicals have three broad sources of income from these stores: sale of inputs, provision of advisory services and fee charged on sale of partners' goods. TKS already had 15 partners in December

2004 including ICICI Bank, ING, SB1I and agri-input companies [8].

5.2.3 Delhi Cloth and General Mills (DCM) Shriram's *Kisan Hariyali Bazaar*

Setting up of chain of the rural malls, *Kisan Hariyali Bazaar* promoted by DCM Shriram Consolidated Limited (DSCL) has created one stop shops offering everythingfrom sickle to technical advice as a forward integration strategy. Utilising its experience in the sugar, agri-chemicals and seed business it has set up 13 *Kisan Hariyali Bazaars* or rural mans in five states: Punjab, Haryana, Rajasthan, Uttaranchal and Uttar Pradesh. Each store has a customer base of 7000 to 10,000 farmers[9].

Three qualified agronomists would be available at the stores throughout the day and two other would be in the field to get in touch with the farmers and guide them on products and services he should go in, at his doorstep. These stores will not only save farmer from buying spurious material but will also provide requisite quality assurance. *Kisan Haryali Bazaars* offer multiple brands for each product category to meet the farmers' preference and choices. Although, the retail ambience of the store is modem, the manner in which service is offeredis farmer friendly. It also brings the contract farming opportunities to farmers thereby they can now sow new crops, sell is farmer friendly their produce directly to processors and get better prices. The idea is to build a relationship with farmers and enhance their productivity[10].

5.2.4 Godrej's *Aadhaar and Manthan*

What started with a small animal feeds sub-division of the soap division in 1974 has become a Rs. 1.000crore agribusiness for the Godrej Group, under its two companies Godrej Agrovet and Goldmohur Foods. The company's products include natural pesticides, animal feed, oil palm plantlets and other farming inputs. Godrej also acquired and merged HUL's agri-business with its own. As a forward integration strategy it has entered the rural retail business.

The group was testing two concepts, *Aadhaar and Manthan. Manthan* focuses on supplying animal feeds for dairy and poultry. On the other hand *Aadhaar*, is a supermarket, which retails agricultural inputs such as fertilisers, pesticides, animal feeds and small implements along with FMCGs, appliance and also services. Services like soil analysis and veterinary care are also offered to the farmers. *Aadhaar* stores have been opened in Maharashtra and Andhra Pradesh to sell Godrej's brands as well those of others. *Aadhaar* has a synergic link with Godrej's urban retail outlet 'Nature's Basket' which retails fruits and vegetables in the metros. *Aadhaar* provides connectivity for sourcing fruits and vegetables for urban markets. The company expanded the number of *Aadhaar* outlets from 14 to 18 during the September quarter of 2005 and targets to have a few hundred such outlets over the next five years[11].

5.2.5 Mahindra's Shubhlabh

In order to sell farm inputs and equipment including M&M brands, Mahindras established *Shubhlabh*, which is a chain of franchised store for the rural market. It had 36 such franchisee stores in ten states by the end of 2004. It provides rural financing and borrowing support through these stores as Mahindra *Krishi Vihar*, a platform for banks to provide loans to farmers with minimum documentation, quick sanction and attractive interest rates. For banks, it's easy, safe to lend their money without too many overheads. Farmer's access to funds gets easier and for bank's loan is relatively safer[12].

5.2.6 Warna Bazaar

Warna Bazaar is the name of two superstores in Kolhapur and Sanghli in Maharashtra, which are set up in the area of 10,000 sq. ft. Along with that they have 30 stores of 500-1,000 sq. ft at the village level. These stores retail products like apparel, food, grocery, agn-inputs, vehicles, consumer durables and hardware. The store's retail sales productivity is nearly Rs. 11, 650/sq. ft.[13].

5.2.7 Kasti Society

Kasti Society has established organised co-operative rural retailing near Ahmednagar in Maharashtra, which serves 70 surrounding villages. Numbers of shops are arranged in the shopping centre format with three supermarkets with total retail space of 5,000 sq. ft. with sales productivity of Rs. 7,000 per sq. ft.[14]

5.2.8 Indian Oil

Indian Oil is setting up large number of retail outlets to sell non-fuel products like soaps and fertilisers along with petrol and diesel in the rural market. Oil companies already have a widespread network of close to 30,000 petrol pumps all over the country, which they are planning to leverage by selling the non-fuel products from the same retail outlets. It is a good option for the companies to sell through petroleum retail outlets as they get a very good platform to sell their products in rural market.

5.2.9 Bharat Petroleum

Bharat Petroleum is planning to target cluster of smaller villages with a population of about 200 to 250 households. The pumps it is planning to set up for these small villages will be smaller in size and therefore will be low priced units in terms of the cost of the infrastructure to establish these outlets. These retail outlets will serve a radius of seven to eight such villages and company plans to set up thousand such pumps. These outlets can also sell non-fuel products to the people of the surrounding villages. Organisations can develop understanding with the parent organisation or even with the dealers to place their products at these outlets.

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[8]Saran, R.,Bhupta, M. &Goyal, M. (2004). New Deals foe Rural India. *India Today*, December 13,2004, p. 57

[9]Bhatt, P. (2005) Farmers needs under one roof, *The Tribune*, December 10, 2005.

[10]Saran, R.,Bhupta, M. &Goyal, M. (2004). New Deals foe Rural India. *India Today*, December 13, p. 58

[11]Venkatraman, L. and Menon, S.G. (2005). FMCGs Sector Buoyancy to Continue: Adi Godrej, *The Hindu Business Line*, October 25, 2005.

[12]Saran, R.,Bhupta, M. &Goyal, M. (2004). New Deals foe Rural India. *India Today*, December 13,2004, p. 59

[13]Panigrahy, B.P. (2006). ITC's ChoupalSagar: An Innovative Rural Mall, Marketing Mastermind, ICFAI University Press, Febuary 2006, p. 54.

[14]Panigrahy, B.P. (2006). ITC's Choupal Sagar: An Innovative Rural Mall, Marketing Mastermind, ICFAI University Press, Febuary 2006, p. 55.

5.3 Corporate Social Responsibility in Rural Markets

The corporates with leading market share in the rural areas in their respective product categories should not just compete for share of the pie but should also aim at increasing the size of the pie year after year. Therefore, the development of the rural market by providing them with better education, better earning opportunities and increasing their overall disposable income is the frontier on which the leading companies should focus in the new millennium. Social responsibility initiatives place the brand names in the hearts and minds of relationship seeking rural consumers. This is a bond which others will find difficult to beat in the marketing warfare.

CSR Campaigns in Rural Markets-Select Cases

5.3.1 AMARON-*Amaragaon (Our Village)*

Amaron Harvest tractor batteries from Amara Raja has initiated a programme 'Amaragaon' to empower rural people by giving them access to knowledge through Internet connectivity. *"Gyanke Sang, Unnati ki Umang"* is the tagline of Amara Raja Batteries new corporate social responsibility campaign, Amaron-Amaragaon. This campaign aims to take rural digital, by bringing in Internet solution to the villager's doorstep. This campaign is about bridging the digital divide in rural India by getting the farmers to make Internet an essential part of their lifestyle through which they can not only access important agricultural information but also access land records, e-governance and on the whole can use it to have increase in the yield and the overall income. The company has set up twenty Internet kiosks in the villages across eight states: Uttar Pradesh, Rajasthan, Maharashtra, Punjab, Haryana, Gujarat, Uttranchal and Andhra Pradesh. In Punjab, Amara Raja has adopted Chachrari village, near Phagwara in which 3,000 people are being benefited.

The objective of the Amaragaon progamme was to make a positive impact on the lives of villagers by offering global connectivity via Internet [15].

The content is customised to suit the needs of farmers and residents of the village. Host of offline services such as educational CDs with English courses, Microsoft office courses, computer operator courses and so on can be imparted through these kiosks. The villagers can also get on the spot photographs shot and printed at the low cost, get official documents typed in the local language.

The farmers no longer need to go all the way to the district headquarters to resolve queries such as getting solutions for pest attacks, or getting a copy of land record. All this can be done online for a nominal charge. They can even access cash certificates, license application forms, examination results and mark sheets, e-mail, railway and bus tickets and embassy appointments. It also facilitated communication between the district administration and the village *panchayat*.

5.3.2 ITC's Csr Initiative in Rural Areas

1. Sunehra Kal (Better Tomorrow)

ITC has started comprehensive natural resource management initiative called *SunehraKal*in the vicinity of *choupals*[16]. *SunehraKal* is a social forestry programme, launched by ITC in 224 villages in 14 mandals around its Bhadrachalam plant in Andhra Pradesh. It had provided earning opportunity to 6,405 households by the March 2005 after four years of its launch in 2001. This is a part of 'Triple Bottomline' concept of ITC covering economic, social and ecological goals of the organisation. This programme targeted at economically backward communities, living below the poverty line involves afforestation, soil and water conservation, community development, health and sanitation, education and watershed management. It provides attractive land use alternative to both traditional farmers and wasteland owners.The ITC is supplying planting stock and provides extension services and market for the produce.

2. Live Stock Development Programme

ITC's livestock development programme, in collaboration with an NGO has created 32 cattle development centres covering 635 villages in Bihar, Uttar Pradesh and Madhya Pradesh by 2005 and had a plan to add 600 new villages every year to its ambit. The aim of the programme is to create the high yielding progenies through genetic improvements.

3. Other Initiatives

As part of rural community development programme 40,000 women-at-risk and children under five have been covered under the mother and child health programme. Rupee 1 from every 'Classmate' notebook sold by ITC goes toward supporting rural development initiatives including primary education in villages.

5.3.3 HUL's Vindhya Valley Project

In the year 2000 HUL helped state owned Khadi Board through an advisory relationship with the government of Madhya Pradesh. It helped the board to brand local produce from villages and tribal areas, such as natural honey collected from forests in the state under the brand name 'Vindhya Valley'. The product range including edible products like papads, pickles, masala and turmeric, was launched in 2002. These products were made by groups under DWCRA (Development of Women and Children in Rural Areas) and distributed through their own outlets. HUL provided the corporate expertise, marketing acumen and quality parameters, while the state government bore the marketing expenses for the brand building Thus, it has not only built a brand for the state government but it also touches the lives of 35,000 to 40,000 tribals and contributes meaningfully to their upliftment.

5.3.4 HUL's *Swasthya Chetna* Campaign

HUL is positioning its largest selling soap brand Lifebuoy on the health and hygiene platform. In 2002, HUL launched Lifebuoy *Swasthya Chetna* campaign to build awareness about good health and hygiene and how simple habits like washing of hands regularly with soap could prevent transmission of disease. The project was pilot tested in MP, Chattisgarh, UP, West Bengal, Orissa and Bihar and involved interaction with students and elders who were expected to be change agents. It touched the lives of 7 crore Indians in 18,000 villages in ten Indian states through repeated exposures to health and hygiene message.

[15]Bureau (2003, June 22) Empowering Villagers, *The Tribune*, Chandigarh

[16]Deveshwar, Y.C. (2005, August 1). Inclusive and Sustainable Growth: ITC's Enduring Contributions, *The Times of India*, August 1, 2005.

5.3.5 Colgate's Project *Jagruti*

Colgate executes this rural oral hygiene drive along with the IDA (Indian Dental Association). In 1998, 60 lakh people in 20,000 villages were contacted under this project, of which 15,000 villages had no experience to the availability of toothpaste and tooth powder let alone toothbrushes. Though the aim of this drive is to promote the brand in rural areas, but the overall strategy is also spreading the vital information on oral hygiene among the lesser aware rural folks.

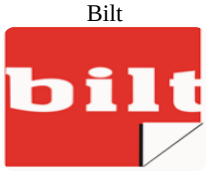
5.3.6 Chambal Fertiliser's *Uttam Bandhan*

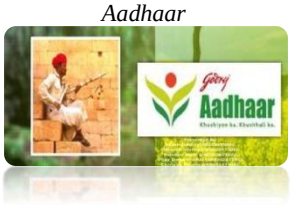
In the year 2000 the K.K. Birla group's flagship company Chambal Fertilisers and Chemicals Ltd. (CFCL) launched community welfare initiative in Rajasthan called *Uttam Bandhan*. Under the programme, the company trains unemployed rural youth as extension workers known as *krishi sewaks*, who interact with fanners and advise them. *Uttatm Bandhan* also manages an Internet website www.uttamkrishi.com which provides information on weather, cropping techniques and markets[17].

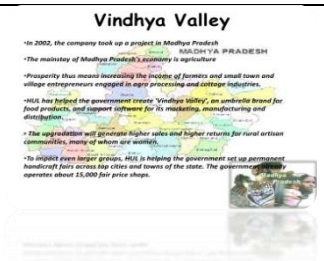
Table 1: Corporate Innovations for Rural Market

Company	Industry/ Segment	Product/Program	Description	Impact
Godrej & Boyce	Consumer Durables	ChotuKool Refrigerator 	Powered by battery, a perfect refrigerator for rural population. Does not require regular electricity supply unlike the conventional models.	Providing the rural/ semi-urban areas with a high-end product, the company pays commission of US$ 3/ refrigerator to the rural agent; making rural population the last mile connectivity of its supply chain.
Vortex	Banking	Low cost ATM 	Low-cost Automated Teller Machines (ATM) which provide banking solutions to people in rural/ semi-urban areas. The machine consumes very less power, and has an elegant, rugged and reliable Cash Dispense Module. A wide range of products meant for rural and semi-urban bankers makes the financial operations seamless and uncomplicated	A wide range of products meant for rural and semi-urban bankers makes the financial operations seamless and uncomplicated.
Tata Chemicals	Consumer goods	Water Purifier 	Swach range of water purifiers promise pure drinking water to the rural people at a very low cost of INR 999. It does not require running water or electricity to provide harmless, bacteria-free drinking water.	The winner of the gold at the Asian Innovation Awards 2010 would be rolled out nationally and then in emerging markets across Africa, South-East Asia and Latin America.
HUL	FMCG	KhushiyonkiDoli 	The multi-brand rural engagement module-KhushiyonkiDoli- initiated by HUL, provides various personal care and home care brands such as Wheel, Surf Excel, Fair & Lovely, Sunsilk, Vim, Lifebuoy and Close Up.	The main objective of the campaign is to reach out to media dark villages with HUL brand messages to inculcate good personal hygiene habits among the people. Shakti distributors now account for 15 per cent of the company's sales in rural India
Nestle	FMCG	Smaller packs of maggi noodles and tomato ketch-ups	The initiative aimed at 'indianising' Nestle's global portfolio to propel its growth in the rural markets. The company promises nutritionally superior products for people residing in the hinterlands.	With an aim to penetrate into rural markets, Nestle has strived to create products specifically for the consumers at the bottom of the pyramid. The taste maker introduced not only

[17]Saran, R.,Bhupta, M. &Goyal, M. (2004). New Deals foe Rural India. *India Today*, December 13, p. 58

				delights the taste buds, but also adds nutritional quality to the food.
Nokia	Software	Nokia Life tools 	The mobile application, launched in June 2009, empowers people to have access to agricultural, educational and entertainment content	Nokia has tied up with government organizations, NGOs and Reuters for this campaign and has partnered with Idea Cellular as the service provider. It has launched an ancillary microfinance campaign to facilitate handset purchase in the rural areas.
ITC	Agriculture	e-Choupal 	An initiative by ITC, e-Choupal aims to empower farmers with up-to-date agricultural and marketing information through access to internet and computers. The campaign was launched in 2000 and targets to empower 10 million farmers by 2012.	e-Choupal delivers real-time information and customised knowledge to improve the farmer's decision-making ability, thereby better aligning farm output to market demands; securing better quality, productivity and improved price discovery.
GlaxoSmithKline	FMCG	Asha- milk food drink 	GlaxoSmithKline's Asha, which is 40 per cent cheaper than the regular variant of Horlicks, is the first product from the UK-based MNC designed for rural consumers.	Realising that right product needs to reach the right consumer in time, the company will continue to identify and bridge need gaps for BoP consumers, particularly in terms of nutrition products and their availability.
Hero Honda	Consumer Durable	Splendor 	Hero Honda Motors Ltd., a joint venture between India's Hero Group and Japan's Honda Motor Co., has bet big on rural India by selling fuel-efficient motorcycles designed for shallow pockets. The Splendor, for instance, costs US$ 800.	Cost-effective motor bike for rural population.
TATA	Agri-Input Retail Chains	TATA *Kisan Sansar* 	TATA relaunched its *Kisan Kendras* as TATA *Kisan Sansar* (TKS). These are planned to evolve as networks of one-stop shops for farmers providing everything from inputs to know-how.	Easing out purchasing problems of Rural Farmers.
BILT	Contract Farming for Paper Industry	Bilt 	BILT, a leading paper products manufacturer sources wood pulp from farmers of Odisha. In 2000 company got into a buy-back arrangement with marginal farmers to grow eucalyptus for which it provided the seedlings.	Over 9,000 farmers are involved in BILT's social forestry initiatives and earning livelihood.
Chambal Fertilizers	Food Processing and Cold storage	Ever Fresh	In 2002, the company entered the food processing by taking over a food-processing unit in Haryana. The unit processes and freezes	Decreased Perishability of farm produce.

			fresh vegetables and markets them under Ever Fresh Brand.	
GGCL	Contract Farming for Gherkins	GGCL 	Thapar Group's Global Green Company Ltd. (GGCL) is helping farmers in Andhra Pradesh and Karnataka to grow gherkin cucumbers.	The company markets 30,000 tonnes of gherkins and has a contract farming arrangement with 12,000 farmers.
ITC	Agri-Input Retail Chains	ITC'*schoupalSagar* 	*Choupal Sagar* is an extension of ITC's warehouses. The farmers will be in position to make purchases for all their requirements from a place where they sell their produce.	The ready availability of cash after the sale and the transport facility in the form of emptied trolley or cart would provide an opportunity to make bulk purchases for the coming season.
DCM Shriram	Agri-Input Retail Chains	*Haryali Bazaar* 	DCM Shriram created one stop shops offering everything from sickle to technical advice as a forward integration strategy. This *Kisan Haryali Bazaars* offer multiple brands for each product category to meet the farmers' preference and choices.	Easing out purchasing problems of Rural Farmers.
Godrej	Agri-Input Retail Chains	*Aadhaar* 	*Aadhaar*, is a supermarket, which retails agricultural inputs such as fertilisers, pesticides, animal feeds and small implements along with FMCGs, appliance and also services.	Easing out purchasing problems of Rural Farmers.
Warna Bazar	Rural Shopping Mall	Warna Bazar 	These stores retail products like apparel, food, grocery, agri-inputs, vehicles, consumer durables and hardware.	Easing out purchasing problems of Rural Farmers.
Mahindra	Agri-Input Retail Chains	Shubhlabh 	In order to sell farm inputs and equipment including M&M brands, Mahindras established *Shubhlabh*, which is a chain of franchised store for the rural market.	Easing out purchasing problems of Rural Farmers.
HUL	Agri-Produce Branding	Vindhya Valley	It helped the board to brand local produce from villages and tribal areas, such as natural honey collected from forests in the state under the brand name 'Vindhya	This has not only built a brand for the state government but it also touches the lives of 35,000 to 40,000 tribals

			Valley'. The product range including edible products like papads, pickles, masala and turmeric, was launched in 2002.	and contributes meaningfully to their upliftment.

Source: Company Websites

6. Conclusion

Rural markets are indispensable for all consumer product companies. This is because most urban markets are getting saturated. The intensity of competition in urban markets decide the profitability of the firms. The rural markets have also gained importance because of the socio-economic changes, which are sweeping rural India. These changes are being fuelled by satellite television, internet and telecommunication. This has enhanced rural consumer's awareness and aspirations. Also concerted attempts are being made by self-help groups to generate incomes in the poor areas, which, in turn is helping create demand for products and services. The corporate involvement in agri-business, organised retailing, e-marketing, e-governance, CSR initiatives at all levels in the food chain is not only providing much needed assured markets to the farmers but also is bringing the latest know-how to the farmers. It is leading to better earning opportunities for the farmers through higher yield, higher prices for the produce on one hand and this is also creating direct and indirect employment opportunities for the farmers who are finding it difficult to be the part of service led growth. These corporate innovations are positively impacting the family, farmers and the rural youth.

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Quality of work life among IT and Bank Employees

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Abstract

A high Quality of work life is very much essential to retain employees of high caliber since it has impact on human outcome, productivity, absenteeism etc. An exploratory research design has been employed with the objective of examining the gender differences in QWL among Bank and IT employees. A sample of 60 employees from State Bank of India, of which 30 male and 30 female employees and 60 employees from Accenture IT company, of which 30 male and 30 female employees have been selected through simple random sampling technique. The Quality of work life Scale developed by Dhar, Dhar and Roy (1989)is used in the study. The obtained data were analysed by using two-way ANOVA. The findings indicated that IT and Bank employees differ in their QWL. The study has important implications for managers, employers and government.

Keywords: Quality of Work Life, Bank, IT employees

The term quality of work life (QWL) was initially introduced in the late 1960's as a way of focusing on the effects of employment on workers health and general well being, and a way to enhance the quality of a person's on-the-job experience.quality of work life (QWL) is probably the most powerful type of reward that manager can offer to employees in today's competitive business world (Dargahi & Yazdi, 2007). Moreover, QWL has a direct impact on human outcomes and it significantly reduces absenteeism, minor accidents, grievances, and resignations (Havlovic, 1991). A high quality of work life is essential for organizations to continue, to attract and retain employees (Sadique, 2003).

The quality of work life covers a wide range of issues both financial and non-financial relating to work context, work contents and work relations. In many ways, quality of work life represents a blending of the very real concern for human values in today's society with an awareness that all individuals devote the greater part of their mature lives to work, expending time, energy, physical and mental resources to this endeavour. Positive aspects of QWL result in organization's excellence in human resource activities. (Subba Rao, Neelima Alfred, 2003).

QWL in Banking Sector

Due to bank's wide spectrum of exposure across industries, their performance is considered as a proxy for the economy as a whole. Unfortunately for India, the banking sector has historically remained under the impact of non-competitiveness, poor technology integration, high NPAs and grossly underproductive manpower. Banking sector in India has a wide mix, comprising of joint sector, nationalized sector, specialized corporate financial institutions, co-operative sector and foreign sector (Bagga, Arora, and Arora 2008). Today the Indian banking industry is witnessing boom times better than ever

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before. The availability of skilled managerial and technical manpower in India will contribute considerably to the prosperity of the banking industry in future.

QWL in IT Sector

The tremendous advancements in the Information Technology have dramatically changed the life of youth working in the IT field. Their lifestyle, preferences and priorities vary significantly from the rest of the population. Nature of work, financial and non-financial incentives, work schedules and shifts all these factors contribute to the QWL of employees.

Aloys, (2013) studied on working Environment Factors that Affect QWL among Attendants in Petrol Stations in Kitale Town in Kenya. The objective was to identify working environment affect QWL. The method used was exploratory survey with coefficient of correlation test for data analysis. Findings showed that positive co-relation between work environment and mode of QWL job enrichment, job rotation, autonomous, flexible working time, workgroups, career growth and development, relation with supervisor. The result showed that there is no significance relation between experience, career growth and development. There was the most significant relationship between work environment and organizational trust then physical environment. The relationship between colleagues and supervisor affects the work environment on QWL.

Ayesha et al (2011) examined the QWL among male and female employees of private commercial banks in Bangladesh to find out there is any significant difference among male and female bank employee's perception over QWL issues. The sample consisted of 128 male and 64 female employees. The study revealed that asignificant difference exists between male and female employees QWLand in the following factors of QWL; adequate and fair compensation,flexible work schedule and job assignment, attention to job design,and employee relations. As a significant number of female participants from the labor force are now entering in the banking sector, this finding may add value to the management of the banks.

Both Banking and IT industries are facing international competition. Both Banking and IT sector are taking care of their employees' welfare and professional growth. Yet the concept of QWL has not been highly researched in the IT setting. Therefore the present study is an attempt to compare the QWL of Bank and IT employees so that the best practices of each of the settings can be applied in a right sense.

Method

Sample

Participants for the present study were 120 employees (of which 60 were Bank employees and 60 were IT employees). The data were collected from State Bank of India and Accenture IT company, Bangalore, Karnataka, India.

Tools

Quality of work life Scale (2006)

The Quality of work life scale developed by Dhar, Dhar and Roy, (2006) was used in this study. The scale consists of 45 statements. The reliability and validity of the scale is 0.89 and 0.94 respectively.In addition to this scale, demographic information was sought through a separate sheet containing information regarding age, gender, years of experience etc.

Results and Discussion

The data were collected by taking the consent from the concerned institutional authorities and the quality of work life questionnaire was administered and

responses were obtained. Demographic information was collected at the same time. SPSS version 16 was used to analyze the collected data. Two-way ANOVA was used to test the significant differences between IT Male and Female and Bank Male and Female employees on quality of work life.

Results (Table2) revealed that the male and female bank and IT sector employees were found to have similar quality of work life with respect to proactivity, human relations and learning organization dimensions. However there was significant difference in work life balance (F=169.49, p.<.01) and overall quality of work life (F= 8.94,p<.01). Thus gender differences were found to be significant in case of work life balance and overall quality of work life dimensions.

As far as the difference in bank and IT sector employees is concerned it was found (Table 2) that the bank and IT sector employees differed only in case of overall quality of life dimension(F= 34.94,p<.01). The mean scores on overall quality of work life for the IT sector employees was 84.10 where as it was 118.84 in case of bank employees and thus the banking sector employees have had better quality of work life.

Table 1: Means and SDs of IT and Bank Male and Female Employees on Quality of Work Life

Sl. No.	Variables	Proactivity		Work Life Balance		Human Relations		Learning Organization		QWL Total	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	IT-Male	68.20	8.42	38.87	5.73	49.10	7.07	19.63	2.92	84.10	31.02
2	Bank-Male	68.97	8.18	40.23	8.01	48.43	7.40	19.90	3.02	101.27	28.49
3	IT-Female	68.86	9.09	57.33	10.32	48.10	7.48	19.93	2.55	84.10	31.02
4	Bank Female	69.37	8.72	60.00	7.42	48.33	7.51	19.36	2.70	136.40	37.50

Table 2 Summary of ANOVA

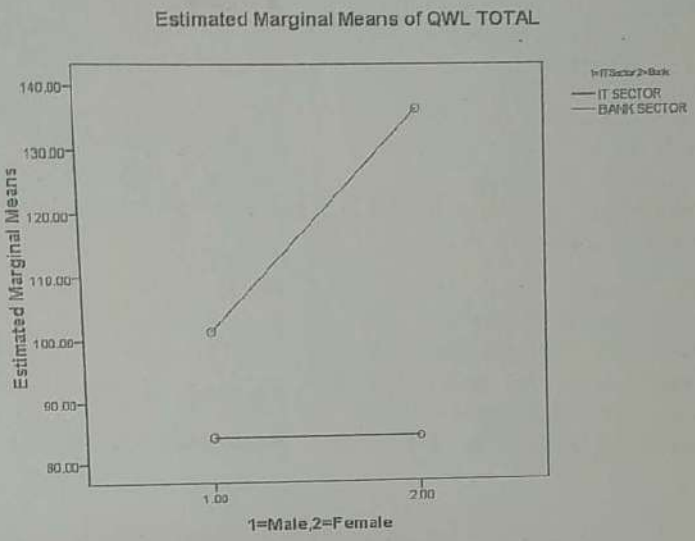
Source	Sum of Squares	Mean Squares	'F' Value
Proactivity			
Gender	8.53	8.53	.12
Sector	12.03	12.03	.16
Gender*Sector	.53	.53	.007
Human Relations			
Gender	9.075	9.075	.167
Sector	1.408	1.408	.026
Gender*Sector	6.075	6.075	.112
Work life balance			
Gender	10963.41	10963.41	169.49**
Sector	122.01	122.01	1.89
Gender*Sector	12.68	12.68	.196
Learning Organization			
Gender	.408	10963.41	.05
Sector	.675	122.01	.09
Gender*Sector	5.208	12.68	.66
Overall Quality of life			
Gender	9257.63	9257.63	8.94**
Sector	36192.13	36192.13	34.94**
Gender * Sector	9257.63	9257.63	8.94**

**P< 0.01, *P<0.05 Level

The only significant interactive effect was in case of overall quality of life of banking sector and IT sector male and female employees (F=8.94, p<.01). An inspection of results (Table 1) reveal that there was no difference in the overall quality of life of the male and female IT sector employees where as the banking sector employees have scored differently(male mean scores= 101.27, female mean score=136.40).

Quality of work life has attracted the attention of the researchers in the recent days since it is going to have a profound influence on the employees both on the job as well as off the job. The present study findings revealed that irrespective of the nature of the work, women employees tend to experience better Quality of work life

Figure 1: Interactive effect of Sector and Gender on overall Quality of Work Life



than the male employees. When compared for the differential impact of the sector, it was revealed that Female Bank employees have better QWL than female employees of IT sector. Findings from the previous study by Ganesh and Ganesh, (2014) endorse the same finding that women employees have better QWL than male employees. Even though women are overloaded by their dual roles they appear to have a balancing ability to manage both situations effectively. The findings unlock the stigma against women that they struggle to balance between work and life. In fact the study findings reveal that they are better equipped to manage dual roles compared to men.

The study has certain obvious limitation like small sample size, restricted to Bangalore area, therefore a similar study using larger sample can be conducted to verify the findings. In spite of this drawback the study has important implications for the policy makers, employers and employees of different organizational sectors.

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ABSTRACT *The study was conducted to analyze the personality and locus of control among Business administrative students (30 male and 30 female). Assessment of personality was done using NEO FFI developed by Costa and McCrae (1991), locus of control using Levenson's Locus of Control Scale developed by Levenson (1972). The data was analyzed by using descriptive statistics and Independent 't' test. The findings of the study indicated that there is no significant difference between male and female Business administration students in various dimensions of personality such as neuroticism, extraversion-introversion, openness, agreeableness and conscientiousness. On locus of control business administration male and male students were found to have External locus of control and no significant difference was found in chance control and individual control.*

INTRODUCTION

The word "personality" originates from the Latin *persona*, which means mask. Personality also refers to the pattern of thoughts, feelings, social adjustments, and behaviors consistently exhibited over time that strongly influences one's expectations, self-perceptions, values, and attitudes. It also predicts human reactions to other people, problems, and stress. "Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought" (Allport, 1961). "The characteristics or blend of characteristics that make a person unique" (Weinberg & Gould, 1999).

Big Five personality traits

The **Big Five personality traits**, also known as the **five factor model (FFM)**, given by Costa &McCrae. The five factors have been defined as: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, often listed under the acronyms OCEAN or CANOE.

Openness to experience: (*inventive/curious* vs. *consistent/cautious*). Appreciation for art, emotion, adventure, unusual ideas, curiosity, and variety of experience. Openness reflects the degree of intellectual curiosity, creativity and a preference for novelty and variety a person has. It is also described as the extent to which a person is imaginative or independent, and depicts a personal preference for a variety of activities over a strict routine. High openness can be perceived as unpredictability or lack of focus.

Individuals with high openness are said to pursue self-actualization specifically by seeking out intense, euphoric experiences, such as skydiving, living abroad, gambling. Individuals with low openness seek to gain fulfillment through perseverance, and are characterized as pragmatic and data-driven-sometimes even perceived to be dogmatic and closed-minded.

Conscientiousness:

(*efficient/organized* vs. *easy-going/careless*). A tendency to be organized and dependable, show self-discipline, act dutifully, aim for achievement, and prefer planned rather than spontaneous behavior. High conscientiousness is often perceived as stubborn and obsessive. Low conscientiousness are flexible and spontaneous, but can be perceived as sloppy and unreliable.

Extraversion: (*outgoing/energetic* vs. *solitary/reserved*). Energy, positive emotions, assertiveness, sociability and the tendency to seek stimulation in the company of others, and talkativeness. High extraversion is often perceived as attention-seeking, and domineering. Low extraversion causes a reserved, reflective personality, which can be perceived as aloof or self-absorbed.

Agreeableness: (*friendly/compassionate* vs. *analytical/detached*). A tendency to be compassionate and cooperative rather than suspicious and antagonistic towards others. High agreeableness is often seen as naive or submissive. Low agreeableness personalities are often competitive or challenging people, which can be seen as argumentative or untrustworthy.

Neuroticism: (*sensitive/nervous* vs. *secure/confident*). The tendency to experience unpleasant emotions easily, such as anger, anxiety, depression, and vulnerability. Neuroticism also refers to the degree of emotional stability and impulse control.High need for stability manifests as a stable and calm personality, but can be seen as uninspiring and unconcerned. Low need for stability causes a reactive and excitable personality, often very dynamic individuals, but they can be perceived as unstable or insecure.

Locus of control

It refers to the extent to which individuals believe they can control events affecting the individual (Julian Rotter). A person's "locus" (Latin for "place" or "location") is conceptualized as either internal (the person believes they can control their life) or external (meaning they believe their decisions and life are controlled by environmental factors which they cannot influence, or by chance or fate). Locus of Control is an aptitude that to be relevant control in excess of outcomes. People considering themselves able to control their outcomes are known as internals possessing internal Locus of Control. External locus individuals with external Locus of Control considered their outcomes beyond of their control. Individual with internal locus of Control have high motivation for achievement and low outer directedness. On the other side externals always keep trying

to search out explanations for their failures. We may also refer internals as "self control" or "self determination".

In the recent time the study of human resources is of great importance in the corporate and organizations to develop interpersonal relationships, personality development, leadership training etc. The researchers have studied personality and psychosocial factors among student population in different streams. In a study, Cetinkalp (2010) examined the relationship between locus of control and the achievement goals among the student population. Kaur (2013) analyzed personality and achievement motivation among engineering students. The results revealed conscientiousness and extraversion differentiates between boys and girls with high achievement motivation. Zeidi and Mohsin (2013) studied locus of control among graduate students. Men were found to be high on internal locus of control than women. Mokhtari and Haghi (2014) compared five personality factors between athletes and non-athlete students. The athlete students were found to be high on extraversion, agreeableness and conscientiousness and low in neurotic behavior. Naik (2015) studied locus of control among college students by considering gender, locality and course of study. The results did not reveal significant difference in locus of control. The overall review indicated that the studies are sparse on business administration students on personality and locus of control. Therefore the present study explores five dimensions of personality such as Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness and Locus of Control with reference to gender in Indian socio-cultural context.

OBJECTIVES

- To study the gender differences among Business administration male and female students on Personality.
- To study the gender differences among Business administration male and female students on Locus of Control.

HYPOTHESES

- There is no significant gender difference among Business administration male and female students on Personality.
- There is no significant gender difference among Business administration male and female students on Locus of Control.

METHOD

Design: The personality dimensions and locus of control have been explored among the Business administration male and female students, and used between group design.

Sample: A total of 60 Business administration students (30 male and 30 female) belonging to the age group 21-25 years were selected using simple random sampling.

Variables

Independent variable: Gender and MBA course.

Dependent variable: Personality dimensions as measured by NEO Five Factor Inventory and Locus of control as measured by Levenson's Locus of Control Scale.

TESTS

1. NEO FFI (McCrae and D' Costa, 1991)

It is a 5-point Likert type scale consisting of 60 statements, measuring 5 dimensions of personality – Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness.

Scoring: Five dimensions are measured by the test. The response sheet is modelled in such a way that each column measures one dimension i.e Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness, with the help of scoring key raw scores are obtained for all five dimensions. By plotting these raw scores on the profile sheet, T-score and interpretation is obtained.

Reliability: Internal consistency and test-retest reliability are the most commonly used indices of the reliability of the test.Internal consistency, calculated as co-efficient alpha. The co-efficient alpha calculated for various dimensions of NEO Five Factors are given. For Neuroticism it ranges from 0.69-0.86, Extraversion: 0.74-0.82, Openness: 0.60-0.87, Agreeableness: 0.69-0.90 and Conscientiousness:0.70-0.82.

Validity: Construct validity for entire pattern of the scale was established and was found to be forNeuroticism is 0.60,Extraversion is 0.73,Openness is 0.65,Agreeableness is 0.62 and Conscientiousness is 0.34.

2. Locus of Control Scale (Levenson, 1972)

It is a 5-point Likert type scale consisting of 24 statements, measuring 3 aspects – powerful others, chance control and individual control.

Scoring: 1, 2, 3, 4 and 5 marks are allotted for the options strongly disagree, disagree, undecided, agree and strongly agree respectively. Marks of items measuring the corresponding aspects are totaled separately. Sten scores are obtained using norms.

Reliability and Validity: Test-retest reliability was 0.76. Correlation coefficient was 0.56 when it was validated with Rotter's Locus of Control Scale.

PROCEDURE

The desired samples were personally contacted to get the consent to be a part of the study. The purpose of the study was briefed and rapport was established. The background information was collected in the answer sheets. The tests -NEO PI-R and Levenson's Locus of Control Scale were administered according to the instructions given in the respective manuals. The participants were allowed to clarify their doubts, if any. After the completion of responses the questionnaires were collected and subjects were thanked for their participation.

RESULTS AND DISCUSSION

The obtained data were analyzed by using descriptive statistics and Independent 't' test. Further the results were discussed with reference to previous studies.

Table 1

Mean, Standard deviation and 't' value among male and female Business Administration students on various dimensions of Personality NEO-Five Factor.

Personality-Dimensions	Business Administration				't' value
	Male students		Female students		
	Mean	S.D	Mean	S.D	
Neuroticism	24.53	3.62	25.03	3.97	0.51 NS
Extroversion	26.17	3.91	26.43	3.29	0.29 NS
Openness	24.67	4.13	23.80	4.19	0.81 NS

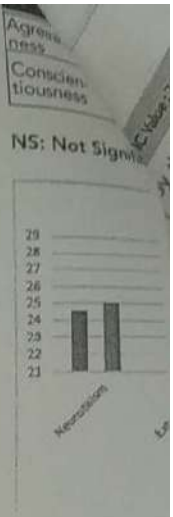

Figure1. Mean
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Agreeableness	24.90	4.35	23.90	4.63	0.86 NS
Conscientiousness	27.60	4.11	28.03	3.57	0.44 NS

NS: Not Significant

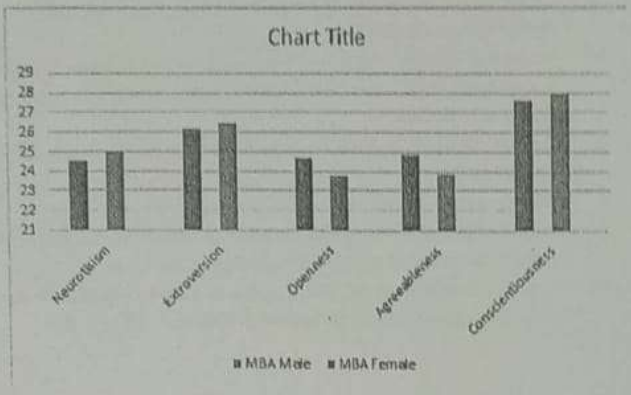

Figure1. Mean scores of Business administration male and female students on various dimensions of Personality NEO-Five Factors.

The above table revealed there is no significant difference between male and female Business administration students on various dimensions of personality. The hypothesis formulated as there is no significant difference between male and female Business administration students on various dimensions of personality is proved. However the analysis of the different areas explored are presented below.

To study the personality the null hypothesis was formulated as "there is no significant difference between male and female Business administration students on various dimensions of personality such as Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness". The following corollary hypotheses for different areas of personality were formulated.

Corollary hypothesis 1: "There is no significant difference between male and female Business administration students on neuroticism".

Business administration male and female students did not differ significantly in the neurotic dimension of personality. However, both the groups were found to be high on Neuroticism facet indicating anxiety, worry, tension, apprehensive and defensive.

Corollary hypothesis 2: "There is no significant difference between male and female Business administration students on Extroversion".

Business administration male and female students did not differ significantly in the extroversion dimension of personality. However, both male and female Business administration students were found to be moderately active, show enthusiasm, value privacy, sociable, warm and outgoing.

Corollary hypothesis 3: "There is no significant difference between male and female Business administration students on openness".

Business administration male and female students did not differ significantly in the openness dimensions of personality. However both the groups were found to be practical, insightful, idealistic and unconventional.

Corollary hypothesis 4: "Thereis no significant difference between male and female Business administration students on agreeableness".

Business administration male and female students did not differ significantly in the agreeableness dimension of personality. However both the groups were found to be generally warm, trusting, competitive, co-operative and avoid conflict.

Corollary hypothesis 5: "Thereis no significant difference between male and female Business administration students on conscientiousness".

Business administration male and female students did not differ significantly in the conscientiousness dimension of personality. However both the groups were found to be efficient, confident, organized, ambitious, enterprising, industrious and always strive to achieve goals.

Table 2
Mean, Standard deviation and 't' value among Business Administration male and female students on Locus of control.

Dimensions	Business administration				't' value
	Male		Female		
	Mean	S.D	Mean	S.D	
Powerful others	25.37	6.67	20.97	8.25	2.27*
Chance control	22.90	7.77	22.93	8.40	0.01 NS
Individual control	24.60	6.35	25.93	6.71	0.79 NS

***P<0.05;NS: Not significant**

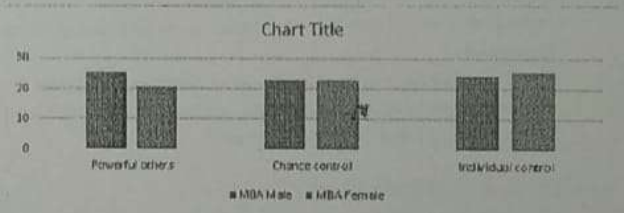

Figure 2. Mean scores of Business Administration male and female students on Locus of control.

To study the Locus of Control the null hypothesis was formulated as "there is no significant difference between male and female Business administration students on Locus of control". The Following corollary hypotheses for different areas of Locus of control were formulated.

Corollary hypothesis 1: "There is no significant difference between male and female Business administration students on Powerful others".

Business administration male students were found to significantly differ from female students on the area powerful others indicating they believe that their outcome is controlled by other people in the environment and other social forces.

Corollary hypothesis 2: "There is no significant difference between male and female Business administration students on chance control". However, both male and female Business administration students did not differ significantly in the area chance control. However, both male and female Business administration students consider that Chance are random events control their outcomes.

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Corollary hypothesis 3: "There is no significant difference between male and female Business administration students on individual control".

Business administration male and female students did not differ significantly in the area individual control. However, both male and female Business administration students indicated their current situations, rewards and personal hard work control their outcomes.

The findings of the study by Cetinkalp (2010) corroborated with the findings of the present study indicating male students reported significantly higher external LOC compared to their counterparts.

CONCLUSIONS

- Business administration male and female students significantly did not differ significantly on neuroticism, extraversion, openness, agreeableness and conscientiousness areas of NEO five factors of personality.
- Business administration male and female students were found to be high on Neuroticism facet indicating anxiety, worry, tension, apprehensive and defensive.
- They were found to be moderately active, show enthusiasm, value privacy, sociable, warm and outgoing on Extraversion dimension.
- On openness facet, they were found to be practical, new ways of doing things, insightful, idealistic and unconventional.
- On Agreeableness dimension, they were generally warm, trusting, competitive, co-operative and avoid conflict.
- On Conscientiousness domain, they were found to be efficient, confident, organized, ambitious, enterprising, industrious and always strive to achieve goals.
- On locus of control, both male and female students were found to be high on all the three dimensions: Powerful others, Chance control and Individual Control.
- On Powerful others male students were found to be significantly higher indicating other people control their outcomes.
- Business administration male and female students consider that Chance or random events control their outcomes.
- Business administration male and female students indicated their current situations, rewards and personal hard work control their outcomes.

SCOPE FOR FURTHER STUDY

- The study can be expanded by taking other personality variables with a larger sample for generalization
- Studies can be done by considering socio-demographic and cultural factors.

IMPLICATIONS

- The findings of the study are highly useful in understanding the personality profile of business administration students, thereby aid in career counseling and guidance.
- Findings also help to develop a training module for personality development during the course itself which enable for better placement.

ACKNOWLEDGEMENT

The investigator is highly indebted to Mrs. Archana Surana, Managing Trustee, GDA Foundation, Bangalore for sponsoring the research project. I acknowledge my students Ms. Eshika A.S. and Ms. Ashwini M. for assisting in data collection.

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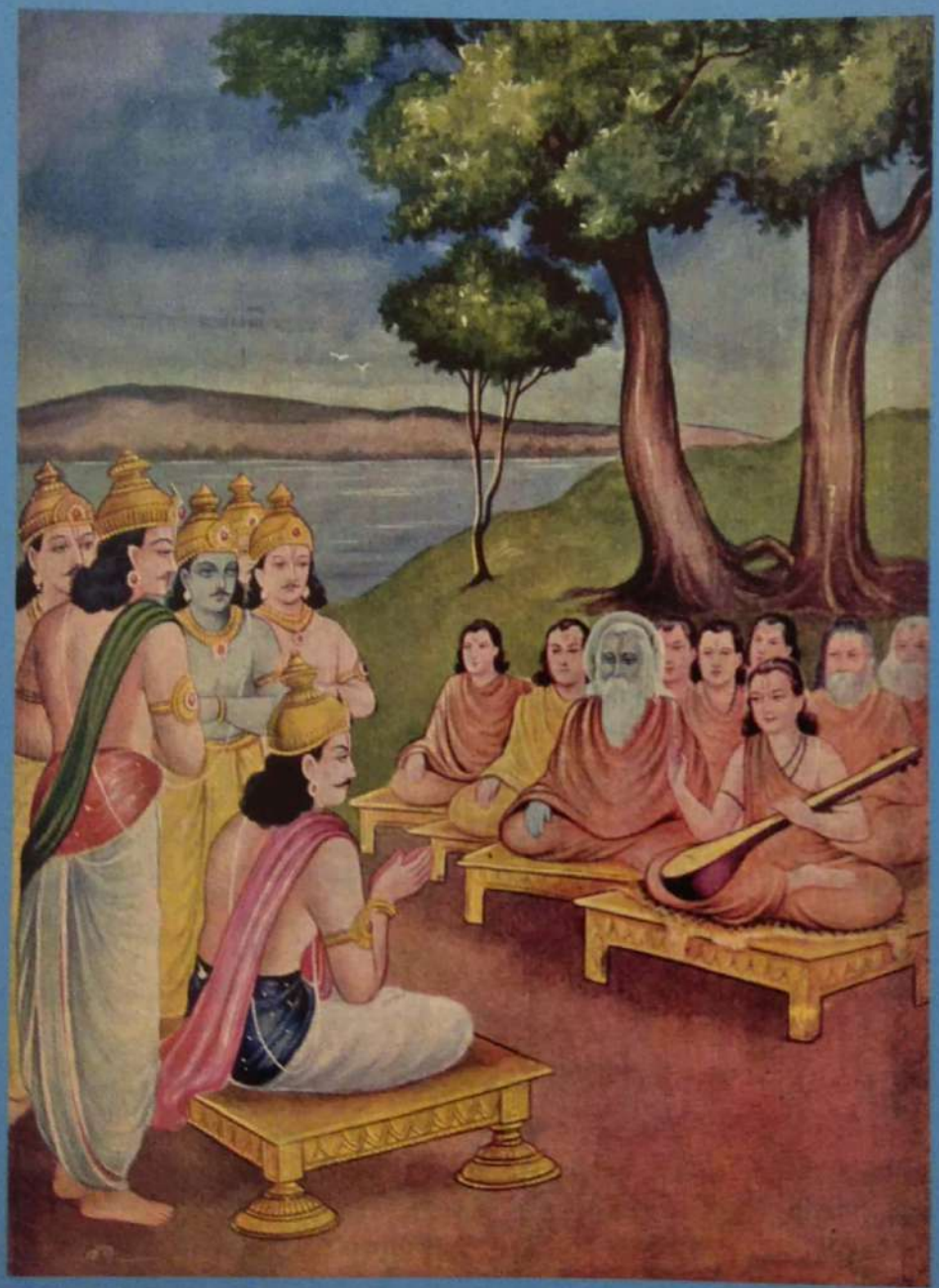

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व्यावहारिकसंस्कृते प्रादेशिकभाषाणां प्रभाव:[54]

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शारदा शारदाम्भोजवदना वदनाम्बुजे। सर्वदा सर्वदास्माकं सन्निधिं सन्निधिं क्रियात् ॥

संस्कृतं पूर्वं व्यवहारभाषा आसीत् इति ग्रन्थेषु बहुधा उल्लेख: अस्ति। मध्यकाले कैश्चित् कारणै: तस्या: भाषाया: भाषितभाषात्वं यद्यपि क्षीणतां गतं, तथापि सा भाषा एषु वर्षेषु पुनरुज्जीव्यमाना दृश्यते।

सर्वासु भारतीयभाषासु संस्कृतस्य प्रभाव: अस्ति इति विषय: तु सर्वै: ज्ञात: एव। एवमेव इतरभाषाणां प्रभाव: अपि संस्कृते वर्तते इति विभिन्नभाषाभाषिणां संस्कृतसम्भाषणेन अवगम्यते। यथा - कर्णाटकीयानां सम्भाषणे कन्नडच्छाया, तमिळभाषाभाषिणां सम्भाषणे तमिळभाषाप्रभाव:, तेलुगुभाषाभाषिणां सम्भाषणे तेलुगुप्रभाव:, केरलीयानां संस्कृतसम्भाषणे मलयाळभाषाप्रभाव:, हिन्दीभाषाभाषिणां सम्भाषणे हिन्दीप्रभाव: च दृश्यते। अयं च प्रभाव: पदेषु, वाक्यशैलीषु उच्चारणे च दृश्यते। वस्तुत: सर्वासां प्रादेशिकभाषाणां प्रभाव: अत्र न दर्श्यते विस्तारभिया। क्रमश: तासु तासु भाषासु कानिचन उदाहरणानि अत्र प्रदर्श्यन्ते।

संस्कृते कर्णाटकभाषाया: प्रभाव:

"अपाय:" इति किञ्चन पदम्। अपायो नाम विश्लेष:, वियोग:[55] इत्यर्थ:। तथा च - "ध्रुवमपायेऽपादानम्" इति पाणिनिसूत्रम्[56]। अप उपसर्गपूर्वकस्य इण् (गतौ)

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[54] इदं शोधपत्रं सर्वेक्षणपद्धतिद्वारा सज्जीकृतम् । अत:, अत्र प्रस्तुतानाम् उदाहरणानां प्रमाणानि "आधुनिकसंस्कृते प्रान्तीयभाषाणां प्रभाव:" इत्यस्मिन् शोधप्रबन्धे द्रष्टव्यानि।

[55] श. कौ. पृ. सं - १३१

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Comparative Study of Statistical Tools for Spatial Data Mining

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Abstract: The main objective of this study is to discuss about various statistical techniques for spatial data and various analysis are conducted by using the tools GeoDa and SaTScan. The various spatial statistical methodologies are obtained from the Indian sub districts administrative data sets by using Geoda as well as SaTScan tools. Several interesting results and comparisons are attained from the results. From the results it is found that GeoDa happens to be the best among the tools in predicting effective and efficient statistical results. It is amazing to note the drawbacks of SaTScan clearly through our results which will certainly help the upcoming researchers too.

Keywords: Spatial Data Mining, Spatial Statistics, Local Spatial methods, LISA, Scan Statistics.

I. INTRODUCTION

Spatial data mining is the application of data mining to spatial models. In spatial data mining, analysts use geographical or spatial information to produce business intelligence or other results. This requires specific techniques and resources to get the geographical data into relevant and useful formats [1].

Challenges involved in spatial data mining encompass identifying patterns or finding objects which might be applicable to the questions that drive the research assignment. Analysts can be looking in a large database area or other extraordinarily big facts set with the intention to find just the applicable statistics, using GIS/GPS gear or comparable structures.

One exciting factor about the term "spatial data mining" is that it's far commonly used to talk about finding beneficial and non-trivial styles in facts. In other words, simply putting in place a visual map of geographic statistics may not be considered spatial mining by way of professionals. The middle intention of a spatial information mining mission is to differentiate the records so one can construct real, actionable styles to give, apart from things like statistical twist of fate, randomized spatial modelling or inappropriate outcomes. One way analysts can also do that is with the aid of combing through statistics searching out "identical-item" or "item-equivalent" models to provide correct comparisons of different geographic places.

II. SPATIAL DATA MINING

Those hazardous growth for spatial data and across the board utilization of spatial databases underscore require for the robotized disclosure for spatial knowledge. Spatial data mining is the process of discovering interesting and previously unknown, but potentially useful patterns from spatial databases. Those unpredictability of spatial data and inalienable spatial relationships limits the convenience from claiming traditional data mining methods for extracting spatial outlines [2].

Till a few years back, statistical spatial evaluation had been the maximum commonplace method for analyzing spatial records. Statistical evaluation is a nicely-studied location and therefore there exist a huge variety of algorithms such as numerous optimization strategies. It handles thoroughly numerical facts and generally comes up with realistic fashions of spatial phenomena. The primary downside of this method is the idea of statistical independence some of the spatially dispensed records [3]. This causes troubles as many spatial facts are in reality interrelated, i.e., spatial items are motivated with the aid of their neighboring objects. Kriging (interpolation technique) or regression fashions with spatially lagged styles of the established variables may be used to alleviate this trouble to a degree. Statistical strategies also do no longer work well with incomplete or inconclusive information. Another trouble associated with statistical spatial evaluation is the steeply-priced computation of the effects. With the appearance of facts mining, various methods for coming across expertise from big spatial databases were proposed and plenty of such strategies can be advanced to the specific sort of datasets.

The difference between classical and spatial data mining parallels the difference between classical and spatial statistics. Spatial data tends to be highly self-correlated. For example, people with similar characteristics, occupations as well as backgrounds, tend to cluster together in the same neighborhoods. The economics of a region tend to be similar. In fact this property of like things to cluster in space is so fundamental that geographers have elevated it to the status of the first law of geography: Everything is related to everything else, but nearby things are more related than distant things [4]. In spatial statistics, an area within statistics devoted to the analysis of spatial data, which is called spatial autocorrelation.

III. TOOLS USED FOR COMPARATIVE STUDY

In this work we utilize the following statistics tools for the data set considered.

A. GeoDa

The main objective of the software is to provide the user with a natural path through an empirical spatial data analysis exercise, starting with simple mapping and geovisualization, moving on to exploration, spatial autocorrelation analysis, and ending up with spatial regression. In many respects, GeoDa is a reinvention of the original SpaceStat package [5], which by now has become quite dated, with only a rudimentary user interface, an antiquated architecture, and performance constraints for medium and large data sets. The software was

redesigned and rewritten from scratch, around the central concept of dynamically linked graphics. This means that different ‘‘views’’ of the data are represented as graphs, maps, or tables with selected observations in one highlighted in all. In that respect, GeoDa is similar to a number of other modern spatial data analysis software tools, although it is quite distinct in its combination of user friendliness with an extensive range of incorporated methods.

The design of GeoDa consists of an interactive environment that combines maps with statistical graphs, using the technology of dynamically linked windows. It is geared to the analysis of discrete geospatial data, that is, objects characterized by their location in space either as points (point coordinates) or polygons (polygon boundary coordinates). The current version adheres to ESRI’s shape file as the standard for storing spatial information. It contains functionality to read and write such files, as well as to convert ASCII text input files for point coordinates or boundary file coordinates to the shape file format.

B.SatScan Tool

SaTScan is a free software that analyses spatial, temporal and space-time data using the spatial, temporal, or space-time scan statistics. SaTScan can be used for discrete as well as continuous scan statistics [6]. For discrete scan statistics the geographical locations where data are observed are non-random and fixed by the user. These locations may be the actual locations of the observations, such as houses, schools or ant nests, or it could be a central location representing a larger area, such as the geographical or population weighted centroids of postal areas, counties or provinces. For continuous scan statistics, the locations of the observations are random and can occur anywhere within a predefined study area defined by the user, such as a rectangle.

For discrete scan statistics, SaTScan uses either a discrete Poisson-based model, where the number of events in a geographical location is Poisson-distributed, according to a known underlying population at risk; a Bernoulli model, with 0/1 event data such as cases and controls; a space-time permutation model, using only case data; a multinomial model for categorical data; an ordinal model, for ordered categorical data; an exponential model for survival time data with or without censored variables; a normal model for other types of continuous data; or a spatial variation in temporal trends model, looking for geographical areas with unusually high or low temporal trends. A common feature of all these discrete scan statistics is that the geographical locations where data can be observed are non-random and fixed by the user.

For the discrete scan statistics, the data may be either aggregated at the census tract, zip code, county or other geographical level, or there may be unique coordinates for each observation. SaTScan adjusts for the underlying spatial inhomogeneity of a background population. It can also adjust for any number of categorical covariates provided by the user, as well as for temporal trends, known space-time clusters and missing data. It is possible to scan multiple data sets simultaneously to look for clusters that occur in one or more of them. For continuous scan statistics, SaTScan uses a continuous Poisson model.

IV. METHODOLOGIES AND DATA SET DESCRIPTION

The dataset used in the present study for our example will focus on the Indian sub-districts level administrative data sets which consists of five attributes and 5470 instances. The different methodologies which is analyzed are:

(a) Quantile Map:

In a quantile map, data are organized and gathered in groups with equivalent numbers of observations, or quantiles. The Quantile Map conjures a basic exchange to specify the quantity of quantiles or classifications (expecting a variable has been specified).The default number of classes is 4 for a quartile map.

(b)Outlier maps

Outlier maps highlight areas with extraordinary qualities (both high and additionally low). GeoDa contains two sorts of exception maps, a Box Map and a Percentile Map [7]. These arechoropleth maps and in that capacity they require that a shape record has been stacked into the project. Furthermore, a variable more likely than not been indicated.

(c)Box Map

A Box Map is a unique instance of a quartile guide where the outliers (if available) are shaded in an unexpected way. Thus, there are six legend classes: four base classifications (one for every quartile), one for anomalies in the principal quartile (to a great degree low values) and one for exceptions in the fourth quartile (to a great degree high values). Each of the classes in enclosures the quantity of perceptions that fall in this classification. For the second and third quartile, this is dependably of the quantity of perceptions. For the first and fourth quartile, this number will fluctuate, contingent upon what number of exceptions there are.

A Box Map is designed to show quartile distributions with outliers defined by upper and lower hinges. The “hinge” values allow us to identify outliers based on the values for the interquartile ranges (IQR). A hinge value of 1.5 will identify high and/or low outliers as those observations that are greater or less than the 75th or 25th percentile (respectively) by more than 1.5 times than the IQR.

(d)Local Indicators of Spatial Association (LISA)

Local spatial autocorrelation study depends on the Local Moran LISA insights [8]. This yields a measure of spatial autocorrelation for every individual area. Both Univariate LISA and Multivariate LISA is incorporated into GeoDa. The last depends on an indistinguishable guideline from the Bivariate Moran's I, however is confined. Furthermore, the LISA can be registered for EB Standardized Rates.

Local Indicators of Spatial Association (LISA) indicate the presence or absence of significant spatial clusters or outliers for each location. A Randomization approach is used to generate a spatially random reference distribution to assess statistical significance. The Local Moran statistic implemented in GeoDa is a special case of a LISA. The average of the Local Moran statistics is proportional to the Global Moran's I value.

LISA maps are particularly useful to assess the hypothesis of spatial randomness and to identify local hot spots. However, since LISA maps are univariate, they may mask multivariate associations, variability related to scale mismatch, and other spatial heterogeneity. For rates, the option of computing LISAs with EB standardization is available in GeoDa. Local Moran's I is a local test statistic for spatial autocorrelation.

(e)Bivariate Local Moran’s I

The LISA principle can be applied to a bivariate measure of local spatial autocorrelation in a straightforward way. The same four graphs can be generated as for the Univariate LISA, except that they pertain to a bivariate measure of local spatial

autocorrelation [9]. All options are the same as for the Univariate LISA. The bivariate LISA is a straightforward extension of the LISA functionality to two different variables, one for the location and another for the average of its neighbors

(f)Local Moran's I with EB rate

The LISA principle can also be applied to an EB standardized rate variable. This operates the same as for the standard univariate measure of local spatial autocorrelation, except that the variable specification dialog requests for both Event and Base variables. The same three graphs can be generated as for the Univariate LISA, except that they pertain to a measure of local spatial autocorrelation computed for EB rates. All options are the same as for the Univariate LISA. In GeoDa, the EB standardization has been implemented for the Local Moran statistics as well.

(g)Local G Statistics

Local G Statistics map showing clusters of significant high and low values and the significance map indicating the p-values for each polygon. We can change the number of permutations and the p-value similarly did with the LISA maps.

(h)Global Spatial Autocorrelation

Global spatial autocorrelation investigation is dealt with in GeoDa by methods for Moran's I spatial autocorrelation measurement and its perception as a Moran Scatter Plot [10]. The Moran Scatter Plot is a unique instance of a Scatter Plot and thusly has a similar fundamental alternatives. It is connected to every one of the charts and maps in the venture, permitting full Spatial Scan Statistic

The standard absolutely spatial scan measurement forces a round window on the map. The window is focused on each of a few conceivable framework focuses situated all through the study area. For every grid point, the span of the window differs persistently in size from zero to some maximum breaking point determined by the user. Along these lines, the round window is adaptable both in area and size. Altogether, the technique makes a vast number of unmistakable land hovers with various arrangements of neighboring information areas inside them. Each circle is a conceivable applicant group.

(i)Space-Time Scan Statistic

The space-time filter measurement is characterized by a round and hollow window with a roundabout (or elliptic) geographic base and with tallness relating to time. The base is characterized precisely with respect to the absolutely spatial scan measurement, while the stature mirrors the day and age of potential groups.

(j)Temporal Scan Statistic

The temporal scan statistic utilizes a window that moves in one measurement, time, characterized in an indistinguishable path from the stature of the cylinder utilized by the space-time examine measurement. This implies it is adaptable in both begin and end date. The greatest fleeting length is indicated on the Temporal Window Tab moved in space and time, so that for every conceivable geological area and size, it additionally visits every conceivable era. As a result, we get a limitless number of covering chambers of various size and shape, mutually covering the whole review district, where every cylinder reflects a conceivable group.

(k)Bernoulli Model

With the Bernoulli method, there are cases and non-cases spoke to by a 0/1 variable. These factors may speak to individuals with or without a sickness, or individuals with various sorts of illness, for example, early and late stage bosom growth [11]. They may reflect cases and controls from a bigger populace, or they may together constitute the populace all in all. Whatever the circumstance might be, these factors will be signified as cases and controls all through the client manage, and their aggregate will be indicated as the populace. Bernoulli information can be investigated with the simply transient, the absolutely spatial or the space-time filter insights.

(l)Discrete Poisson Model

With the discrete Poisson mode1, the quantity of cases in every area is Poisson-dispersed. Under the invalid speculation, and when there are no covariates, the normal number of cases in every territory is corresponding to its populace estimate, or to the individual years around there. Poisson data can be investigated with the absolutely temporal, the absolutely spatial, the space-time and the spatial variety in transient patterns scan measurements.

SaTScan can be used for discrete as well as continuous scan statistics [12]. For discrete scan statistics the geographical locations where data are observed are non-random and fixed by the user. These locations may be the actual locations of the observations, such as houses, schools or ant nests, or it could be a central location representing a larger area, such as the geographical or population weighted centroids of postal areas, counties or provinces. For continuous scan statistics, the locations of the observations are random and can occur anywhere within a predefined study area defined by the user, such as a rectangle.

V. EXPERIMENTS AND RESULTS

Figure 1 represent the different types of maps for the given datasets. In figure 1, a quantile map, the sub districts are sorted and grouped in categories with equal numbers of observations based on length and area. Figure 2 represents box map. Here the Indian sub districts are classified into six different classes. First four are basic classifiers, the next quartile represent the highest degree of low values, and the last quartile represents highest degree of high vales in the sub districts area.

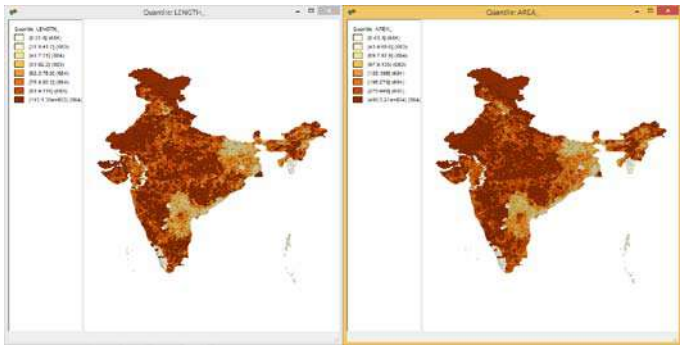

Figure 1: Quartile Maps for Indian sub districts based on length and area

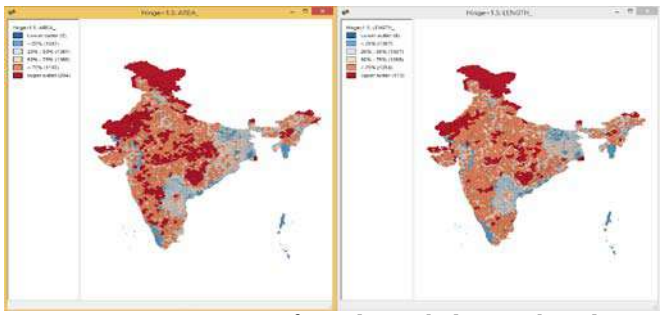

Figure 2: Box Maps for Indian sub districts based on length and area

Figures 3 and 4 is called LISA Moran's I interpretation map. In this map red highlighted the sub districts having high values of the length and area as well as having neighbors with high values also (high-high). As mentioned in the map, blue area are low-low in the same scheme, while pale blue regions are low-high and pink areas are high-low. The strongly colored sub

districts are therefore those that contribute significantly to a positive global spatial autocorrelation outcome, while paler colors contribute significantly to a negative autocorrelation outcome. Three different types of maps and graphs are produced here called a significance map, a cluster map and a Moran scatter plot. In this cluster map is the most powerful map which is given. This map provides essentially the same information as the significance map, but with the significant sub districts colure coded by type of spatial autocorrelation. The combination of the Cluster Map and the Significance Map allows us to see which sub districts are contributing most strongly to the Indian administrative scenario and in which direction.

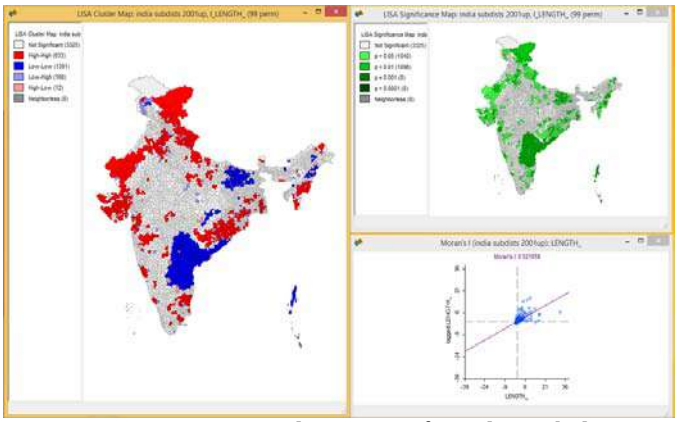

Figure 3: Univariate Local Moran's I for Indian sub districts administrative area based on length

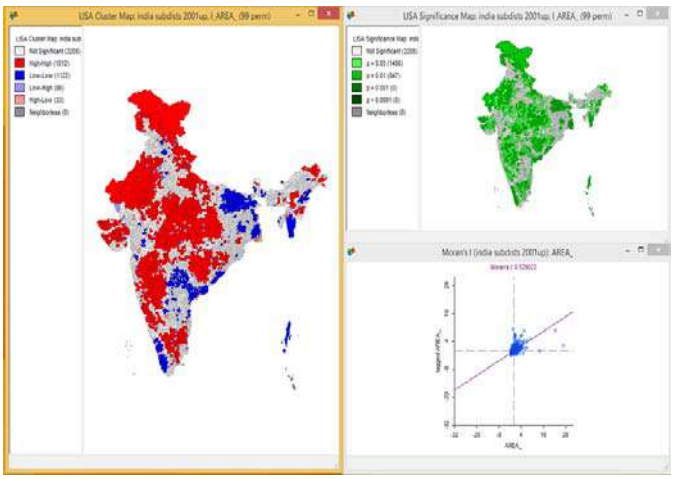

Figure 4: Univariate Local Moran's I for Indian sub districts administrative area based on area

Figures 5 represent the Bivariate Local Moran's I. All the three graphs which is discussed in local Maran's I are generated in this type too, except that they pertain to a bivariate measure of local spatial autocorrelation. The bivariate LISA is a straightforward extension of the LISA functionality to two different variables, in our study we used one for the length and another for the area of sub districts of Indian administrative area.

Figure 6 and 7 represents local Moran's I with EB rate variables. In this map also three graphs are generated as for the Univariate LISA, except that they pertain to a measure of local spatial autocorrelation computed for EB rates.

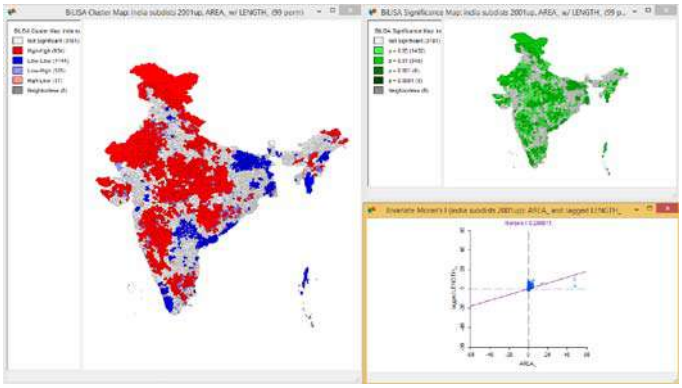

Figure 5: Bivariate Local Moran's I for Indian sub districts administrative area

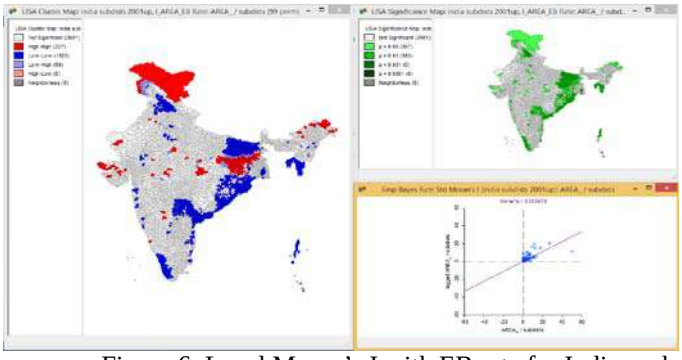

Figure 6: Local Moran's I with EB rate for Indian sub districts administrative area based on length

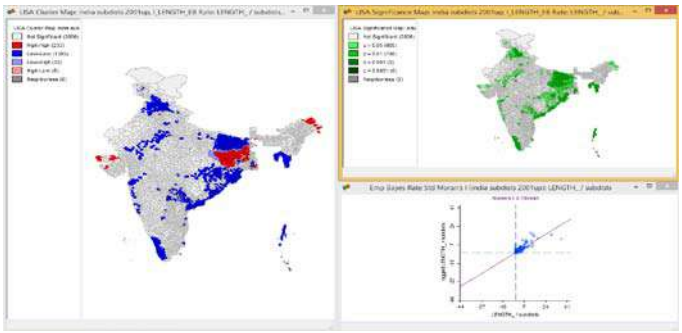

Figure 7: Local Moran's I with EB rate for Indian sub districts administrative area based on area

Figure 8 represents local G Statistics map showing clusters of significant high and low values in the sub districts and the significance map indicating the p-values for each polygon in the sub districts of Indian administrative area.

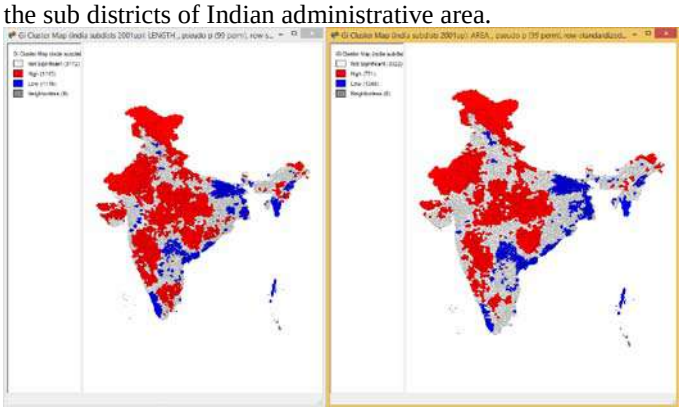

Figure 8: Local G Statistics for Indian sub districts administrative area

The following tables discussed about various SaTScan tool results which we have gotten from Indian sub districts administrative area. Table 1 gives summary of data results obtained. Table 2 and 3 provides the cluster details obtained from SaTScan tool for the given Indian administrative datasets. Table 4 provides the various parameter settings such as analysis, inference and other output.

Table 1: Summary of the results using SaTScan

SUMMARY OF DATA
Study period.....: 2000/1/1 to 2015/12/31
Number of locations.....: 5463
Total population.....: 1210622
Total number of cases.....: 506000
Annual cases / 100000.....: 2612.2

Table 2: Clusters analysis results using SaTScan

Table 3: Clusters analysis results using SaTScan

CLUSTERS DETECTED
1.Location IDs included.: location3975, location3987, location3980, location3982, location3979, location3983, location3053, location3981
Overlap with clusters.: No Overlap
Coordinates / radius..: (11.925267 N, 79.832070 E) / 25.88 km
Gini Cluster.....: Yes
Population.....: 390
Number of cases.....: 5015
Expected cases.....: 162.86
Annual cases / 100000.: 80439.3
Observed / expected...: 30.79
Relative risk.....: 31.09
Log likelihood ratio..: 12359.088039
P-value.....: < 0.00000000000000001
2.Location IDs included.: location4734, location4732, location4735, location4602, location4739,location4738, location4736, location4765, location4731, location4737, location4733, location4754, location4740, location4614, location4604,location4730, location4759,location4601, location4755, location4753, location4766, location4760, location4726, location4756, location4603, location4758, location4742,location4757, location4600,location4769, location4767, location4615, location4728, location4768, location4729, location4752, location4741, location4770, location4727,location4660, location5040,location4745, location4725, location4751, location4616, location4746
Overlap with clusters.: 8
Coordinates/radius:(21.714451N, 83.839124E)/ 77.87km
Gini Cluster.....: Yes
Population.....: 7184
Number of cases.....: 4309
Expected cases.....: 3002.50
Annual cases / 100000.: 3748.9
Observed / expected...: 1.44
Relative risk.....: 1.44
Log likelihood ratio..: 251.870882
P-value.....: < 0.00000000000000001

Table 4: Analysis, Inference and Output analysis results using SaTScan

Analysis
Type of Analysis : Purely Spatial
Probability Model : Discrete Poisson
Scan for Areas with : High Rates
Spatial Window
Window Shape : Circular
Isotonic Scan : No
Inference
P-Value Reporting : Default Combination
Number of Replications : 999
Adjusting for More Likely Clusters : No
Spatial Output
Report Hierarchical Clusters : Yes
Report Gini Optimized Cluster Collection : Yes
Report Gini Index Cluster Coefficents : No
Restrict Reporting to Smaller Clusters : No
Run Options
Processer Usage : All Available Proccessors
Suppress Warnings : No
Logging Analysis : Yes

VI. CONCLUSION

In this paper, experiments on sub districts of Indian administrative data sets are conducted to analyze the various statistical methodologies by using Geoda and SaTScan tools. Here, the data set contains five attributes and 5470 attributes.

From the above results it's proved that GeoDa consists of an interactive environment that combines maps with statistical graphics, using the technology of dynamically linked windows. Along with that Geoda mapping functionality contains the different graphs such as histogram, box plot, scatterplot and implements brushing for both maps and statistical plots. In addition, GeoDa contains a Moran scatterplot and LISA maps, both univariate as well as bivariate. Whereas SatScan method may uncover clusters that are not relevant to the exposure. At present, SaTScan does not operate within popular GIS applications such as ArcGIS. Datasets have to be exported for SaTScan, and results have to be linked back to the GIS data for visualization.

Finally it is concluded that GeoDA happens to be the best among the tools in predicting effective and efficient statistical results. It is amazing to note the drawbacks of SaTScan clearly thru our results which will certainly help the future researchers also.

VII. ACKNOWLEDGMENT

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Influence of Celebrity Endorsement on the consumer's purchase decision among students

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Abstract

This study aims to analyze the influence of celebrity endorsement on the consumers purchase decision among college students. The concept of celebrity endorsement is frequently used by the marketers for promoting their brand and thus enhances sales and ultimately increase market share. Celebrities are widely used in various advertisements in the present media world and most of them are evaluated positively by the viewers. The purpose of this research study is to evaluate whether the process of celebrity endorsement is still effective or not and to measure the degree of relationship that a celebrity's persona has with his or her creditability after the impact of a scandal. A very comprehensive approach towards the entire process has been gathered from both questionnaire and historical data while quantitative data collection has been through questionnaire. The data collected, both qualitative and quantitative, have been analysed and findings have been presented with the help of various charts and figures and off course with the help of statistical tools. In the concluding part of the paper, the research findings have been presented in a compact form so that the readers can generate insights from the research very clearly.

Introduction

INDIA is one country which has always idolizes the species of the celluloid world. Over three million televisions commercial are made each year in India. 80% of people forget information in just 24 hours. However it is the increasing rate of such endorsements, which forms a huge part of the advertisement industry today. Celebrity Endorsement has been established as one of the most preferred tools of advertising. It has become a trend and perceived as a winning formula for product marketing and brand building. It is very easy to have a celebrity for a product or brand but it is very tough to establish a very strong association between the product and the endorser. Because the objective is to build a brand not the celebrity. As people know celebrity endorsement is always a two-edged sword and it has a number of positives, if properly matched it can do wonders for the company, and if not it may Boomerang.

Research Methodology

Research methodology is defined as a systematic effort to gain knowledge. It is the way of systematically solving the research problem. It may be understood as a science of studying how research is done scientifically. My research will focus on investigation influence of celebrity endorsement on the consumer's purchase decision. Research methodology is an important phase in research study.

Nature of Study

The study is quantitative one which has used structured questionnaire to collect details from respondents in the age group of 17-24. The study describes the Impact of

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Proposition of a Hybrid Approach for Sentiment Analysis of Travel Domain Data

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ABSTRACT: Sentiment analysis is a process of extracting, identifying and categorizing a writer's emotion, expressed in the form of text, by implying a computational method. The dominance of machine learning and lexicon-based approaches in the field of sentiment analysis has motivated this proposition of a hybrid approach that uses supervised machine learning methods. The travel domain data is concentrated more due to various reasons mentioned in this proposal. The proposed hybrid approach is a novel approach to sentiment analysis with an inclusion of effective POS tagging is supposed to yield better results.

KEYWORDS:Sentiment analysis; POS tagging; machine learning; lexicon analysis; supervised learning.

I. INTRODUCTION

Sentiment analysis is a standout amongst the most worked subfield of Natural Language Processing (NLP) and has seen a lot of research done amid past decade. It is a procedure of extracting, identifying and distinguishing sentiments from content information. Emotion artificial intelligence or opinion mining are some alternative terms used for sentiment analysis. Sentiment analysis is imperative from business point of view for all online networking or any item based advertising. The social media mammoths like twitter are intensely relying upon sentiment analysis to continuously develop a large portion of their marketing and application development. While recent studies are concentrating more on social media data to try sentiment analysis with, our approach is to try the same on travel domain related data. Many algorithms are being used for sentiment analysis, fall under either of the two well established computing approaches: Machine Learning and Lexicon analysis.

Machine learning approach to the sentiment analysis can be done in two ways. The first one, supervised learning in its simplest form, is a type where to produce a predicted outcome training data sets are used on a set of known inputs. A well-known algorithm is used to carry out this process. The output is already known in supervised learning. It is one of the mostly implemented machine learning methods in modern industries. Decision trees, linear and rule based classifiers fall in this category of approach [1]. The second one is called as unsupervised learning, where there are no training data sets and outputs are known. That is why it is a more complex method and is being used in far smaller number of applications so far. In unsupervised learning, an Artificial Intelligence (AI) agent goes into the problem without having any prior knowledge about the problem. The other approach to sentiment analysis apart from machine learning is Lexicon-analysis. Dictionary-based approach is one of the methods under lexicon-analysis. Few words which have maximum influence on the output of the content in term of sentiment score are collected and their possible synonyms and antonym are searched in well-known dictionary repositories like thesaurus or WordNet etc. The word seed will be added with these newly found synonyms and are used every time the word is used in searching.

In Corpus-based approach of Lexicon-analysis, opinion words with context specific orientation are searched depending on syntactic patterns or patterns that occur together along with a seed list of opinion words to find other opinion words in a large corpus [2].

Apart from these mainstream approaches, Part-of-Speech tagging is an important part of sentiment analysis. In corpus linguistics, part-of-speech tagging (POST or POS tagging), also called grammatical tagging or word-category disambiguation, is the process of marking up a word in a text (corpus) as corresponding to a particular part of speech, based on both its definition, as well as its context—i.e. relationship with adjacent and related words in a phrase,

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sentence, or paragraph [3]. A simplified form of this is used in the identification of words as nouns, verbs, adjectives, adverbs, etc. Filtering a text for useful content involves tokenization and normalization. Tokenization is the name given to the process of chopping up sentences into smaller pieces (words or tokens). The segmentation into tokens can be done with decision trees or customized tokenizers like openNLP tokenizer, Stanford tokenizer etc.

The approach made for sentiment analysis will be a hybrid one including Dictionary-based lexicon analysis and Support Vector Machines (SVM). Although it may look strange involving two methods from different principles to conduct sentiment analysis, it is necessary for addressing issues related to analysis of datasets of various backgrounds. The absence of a single efficient method to fulfil the purpose has given an idea of proposing such a complex yet efficient mechanism. The figure below depicts different phases of this proposed analysis.

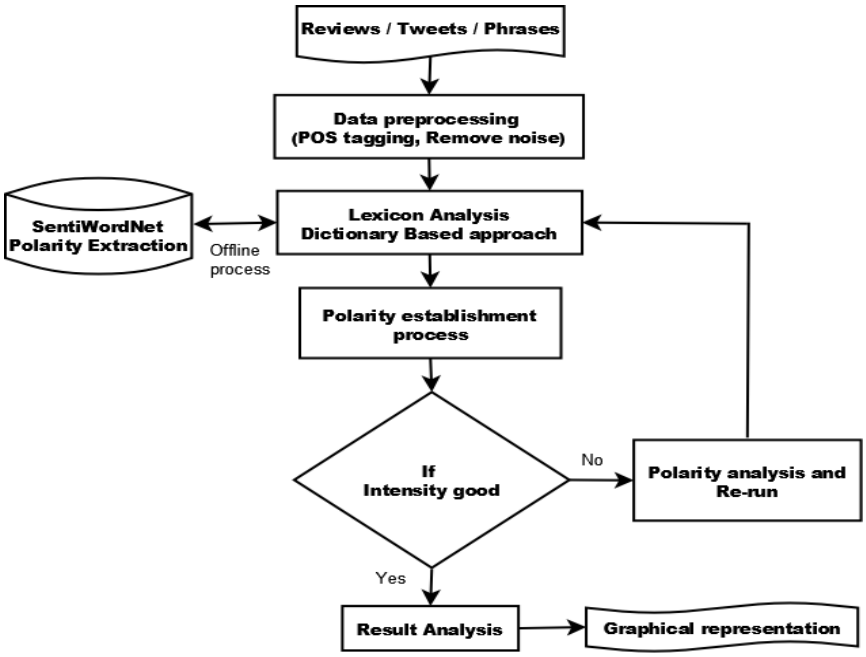

Figure 1. A hybrid approach for sentiment analysis

Following contents will briefly discuss about the different phases shown in the diagram. The whole process of sentiment analysis using hybrid approach has been divided into 5 phases namely, Data acquisition, Text preparation, Sentiment detection, Sentiment classification and result analysis.

II. DATA ACQUISITION FOR HYBRID APPROACH

Sentiment analysis carries a huge importance in various fields due to its ability to classify emotions using text as input. Consumer product marketing, social media marketing are few areas that are benefited through sentiment analysis. The proposed approach is concentrated more on user provided data related to travel domain. Travel domain having huge demand for creative and effective advertising, can easily be profited from sentiment analysis just like any other domain. The intended data collection for the analysis is from travel domain. Most of the contents of such data are user reviews. The data can be used either in text format or in JSON (JavaScript Object Notation). The reason why JSON is also considered is because of the popularity, flexibility provided by the JSON format. Most of the programming languages used today support JSON. It is one of the simplest data representation and interchange format which stores data in a simple {name : value} form. Also, it is easy to attach polarity value to the words if the data representation is in JSON.

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III. INPUT TEXT PRE-PROCESSING

Text pre-processing is an important phase in the process of sentiment analysis. Pre-processing includes text filtering, POS tagging and removing noise from the input data. A text may have many words which have no effect on sentiment analysis result. Such words are removed from the input first. Next in line are those words which are either misspelled or slang words. Stop word removal is another step in pre-processing to remove adverbs, articles, prepositions which have no contribution to the sentiment score [4]. Stemming can also be done on the text to reduce a word to its root form. For example, talking and talker have common root word talk. So, the stemmed form of both these word is talk.

Another part in the pre-processing is the Part-of-Speech tagging (POS tagging). It is an integral part of sentiment analysis because of its ability to identify and classify different words based on their nature. Sentiment analysis cannot be applied on all sorts of text contents. Some parts of the text are invaluable to the analysis process. For example, nouns, adverbs etc. don't contribute to the final sentiment score. To determine emotions it is necessary to look at few specific words. In a sentence, 'The car's seats were wonderful', the word 'wonderful' is the one useful for analysis and give rise to a positive result. Words like, 'the', 'car', 'seat' may not have much effect on the result. Sentiment analysis has several benefits from POS tagging. First, POS tagging is essential in Word Sense Disambiguation. Words with similar characters may have more than one meaning. For example, the word "bear" has more than one meaning. Its meaning depends on the 'part of the speech'. 'The bear starts running' and 'In future it may bear some fruits' are two sentences with same word 'bear' in them but with different meaning. The meaning can only be understood by an analyser only if POS tagging is done on that sentence. Second, further steps of sentiment analysis can be benefited by POS tagging of words. POS tagging not only identifies words but it can identify characters like comma, semicolon etc. These neutrally placed characters have no influence on sentiment score. Identifying them could be very useful in further processing.

POS tagging for this proposed hybrid approach for sentiment analysis is done using Stanford coreNLP [5]. The input is fed in the form of a text file and POS tagged output is provided as an xml file. Following figure 2 is a snapshot of an example of POS tagging done using Stanford coreNLP.

Input sentence: **Nothing to complain but nothing to feel too good about either.**

Result of POS tagging through Stanford coreNLP

Id	Word	Lemma	Char begin	Char end	POS	NER	Normalized NER	Speaker	Sentiment
1	Nothing	nothing	0	7	NN	O		PER0	
2	to	to	8	10	TO	O		PER0	
3	complain	complain	11	19	VB	O		PER0	
4	but	but	20	23	CC	O		PER0	
5	nothing	nothing	24	31	NN	O		PER0	
6	to	to	32	34	TO	O		PER0	
7	feel	feel	35	39	VB	O		PER0	
8	too	too	40	43	RB	O		PER0	
9	good	good	44	48	JJ	O		PER0	
10	about	about	49	54	IN	O		PER0	
11	either	either	55	61	CC	O		PER0	
12	.	.	61	62	.	O		PER0	

Figure 2. POS tagging on an input sentence and result table

To understand the result of a POS tagging process, one that is shown in above example, one must understand the meaning of abbreviations used in POS tagging. Following table number 1 shows these meanings [6].

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Table 1. Description of POS tags used in sentiment analysis

S.no	TAG	Description	S.no	TAG	Description	S.no	TAG	Description
1.	CC	Coordinating conjunction	13.	NNS	Noun, plural	25.	TO	to
2.	CD	Cardinal number	14.	NNP	Proper noun, singular	26.	UH	Interjection
3.	DT	Determiner	15.	NNPS	Proper noun, plural	27.	VB	Verb, base form
4.	EX	Existential there	16.	PDT	Predeterminer	28.	VBD	Verb, past tense
5.	FW	Foreign word	17.	POS	Possessive endings	29.	VBG	Verb, present participle
6.	IN	Preposition	18.	PRP	Personal pronoun	30.	VBN	Verb, past participle
7.	JJ	Adjective	19.	PRP$	Possessive pronoun	31.	VBP	Verb, non-3rd person singular
8.	JJR	Adjective, comparative	20.	RB	Adverb	32.	VBZ	Verb, 3rd person singular present
9.	JJS	Adjective, superlative	21.	RBR	Adverb, comparative	33.	WDT	Wh-determiner
10.	LS	List item marker	22.	RBS	Adverb, superlative	34.	WP	Wh-pronoun
11.	MD	Modal	23.	RP	Particle	35.	WP$	Possessive wh-pronoun
12.	NN	Noun, singular or mass	24.	SYM	Symbol	36.	WRB	Wh-adverb

IV. DICTIONARY BASED APPROACH

The hybrid approach comprises of two step sentiment analysis process where Lexicon-analysis being the first step. Utilization of a vocabulary is one of the two principle ways to deal with sentiment analysis and it includes ascertaining the opinion from the semantic introduction of word or expressions that happen in content [7]. With this approach, a lexicon of positive and negative words is required, with a positive or negative sentiment value allotted to each of the words. Diverse ways to deal with making lexicons have been proposed, including manual and programmed approaches. For the most part talking, in lexicon based methodologies a bit of instant message is spoken to as a pack of words. Following this representation of the message, sentiment values from the dictionary are assigned to all positive and negative words or phrases within the message. The final sentiment of the input is determined using after applying a sum or an average operation on these collected sentiment scores of individual words. Apart from a sentiment value, the aspect of the local context of a word is usually taken into consideration, such as negation or intensification.

In the lexicon-analysis corpora like SentiWordNet are used to extract polarity for each eligible word from the input sentence. Many such corpora provide a dictionary of polarized words to support Lexicon-analysis. But this process gets complex with complex input set. A complex input set is the one which has metaphors, sarcasm involved. In such cases the result of lexicon-analysis won't be efficient. Hence, it reduces the effectiveness of sentiment analysis.

V. POLARITY ESTABLISHMENT AND ANALYSIS

Machine learning is the second step of sentiment analysis process done after the lexicon-analysis. The method used here is called Support Vector Machines (SVM) of supervised learning [8]. Supervised learning is a part of machine learning methods which are easy to implement because inputs provided here are known and labelled. Another peculiar character of supervised learning is predictable outputs. SVM is a classification technique in machine learning that can act on a set of labelled data to classify it using defined parameters. SVM uses something called as a hyperplane or decision plane to classify these values. A hyperplane is the deciding factor to all the classification done using SVM. There is a possibility of defining more than one such hyperplanes for a set of labelled data. The classification is

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represented on n-dimensional graph where each dimension is a defined feature of those set of objects. An optimal hyperplane would be the one that has highest marginal gap between itself and the nearest plots of the graph.

Keeping an option of a re-run of the algorithm in case of not meeting the intensity of the polarity assignment is the integral part of the proposed hybrid approach. This step could prove to be the best solution against the use of odd sentences in input. A simple algorithm to check the polarity intensity can be used in this step.

VI. RESULT ANALYSIS

Polarity establishment divides positive and negative words. This step is crucial for the analysis because individually polarized words contribute to the overall sentiment of the sentence. To analyze the result graphical representation will be used. Now, the methods used for sentiment analysis vary depending on their ability to decide the overall sentiment of an input. There is no single method that can be considered as ideal for sentiment analysis. Their efficiency is lying upon the way inputs are written. In other words, most of them work well when input sentences are clearly written (For ex: written without any emoticons, sarcasm, metaphor etc.). But the ability of such methods are questioned with addition of contents which are naturally not-part-of a language. In such cases it is easy to get undesired results.

Representation of the results must be done in such a way that, it must allow expressing the actual sentiment involved. This won't be a difficult task if the polarity establishment is up to the mark. Various tools and methods are available to plot graph or display the results in many form to distinguish such polarity.

Following figure 3 sums all the phases of proposed hybrid approach.

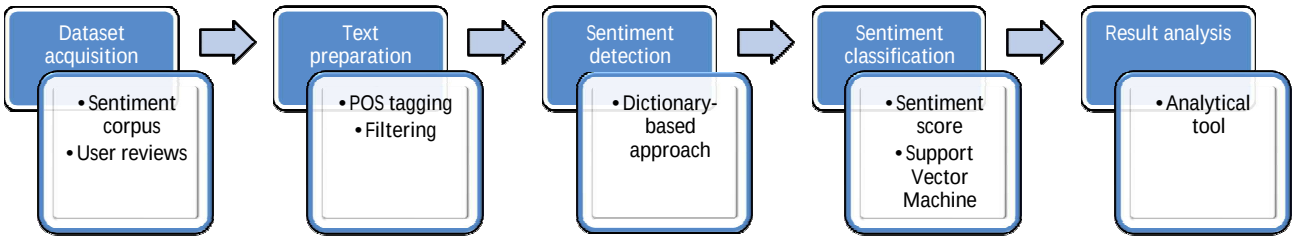

Figure 3. Phases in hybrid approach for sentiment analysis

VII. CONCLUSION AND FUTURE WORK

The proposed approach comprising of both lexicon based approach and machine learning could prove to be one of the viable approaches for sentiment analysis due to its simple design and efficiency. Even though, the hybrid approach is in the phase of proposition and it is yet to be put to practice, it is certain that the combination of predictive approach of machine learning and a well-defined corpora can yield desired results for sentiment analysis. The main intension of contents of this article is to present an outline for a hybrid approach for sentiment analysis using two predominant methods in the field. Also, the importance of POS tagging in the process of sentiment analysis is briefed in this paper.

As a future work this approach can be implemented using different methods of machine learning. Since, the lexicon-based approach doesn't offer many options in replacing the method; many supervised algorithms like Naïve Bayes, decision trees, neural networks can be used for sentiment analysis. One of these can replace Support Vector Machine in hybrid approach.

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Research Article

BIOACTIVITY OF 1, 3-BENZIMIDAZOLYL BENZENE AND ITS COPPER COMPLEX

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ABSTRACT

Bioactivity of benzimidazoles and their metal complexes have been reported extensively since they exhibit a wide range of biological properties. In the present study, the evaluation of the antioxidant effect of 1, 3- bis (benzimidazolyl) benzene and its copper complex was studied by DPPH method. The percentage of inhibition at 200-1000µg/ml concentration of 1, 3- benzimidazolyl benzene and its Cu 2+ complex was compared with a standard phenol. The tested compounds were found to have less antioxidant activity compared to the standard. The antibacterial effect of these compounds on gram-positive bacteria, Staphylococcus aureus, Strptococus mutans and Enterococcus faecalis was studied using Resazurin microtitre plate method. These bacteria are frequently found in dental caries, which is one of the most prevalent and chronic dental diseases. The studied compounds showed an effective antibacterial activity against all three bacteria. The highest activity was observed against Streptococcus mutans and lowest activity was observed against Enterococcus faecalis.

Keywords: 1, 3- benzimidazolyl benzene, copper complex, dental bacteria and bioactivity.

INTRODUCTION

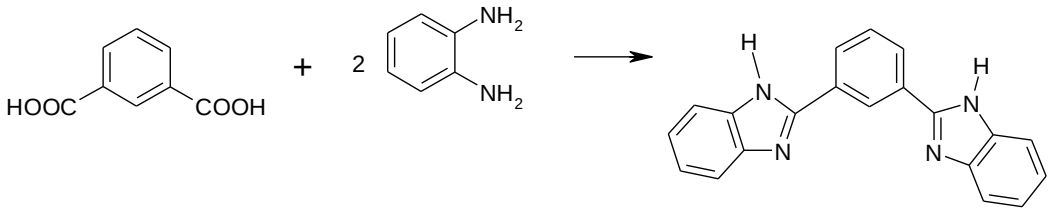
Benzimidazoles are a group of heterocyclic, aromatic and bioactive organic compounds which exhibit a wide range of biological properties. They are sometimes used as pharmaceutical targets[1]. Benzimidazoles are synthesized by the condensation of o-phenylenediamine and benzoic acids. Benzimidazoles and their derivatives have a broad spectrum of therapeutic uses specifically as antitumor, antifungal, antiparasitic, analgesics, anti-viral,anti-histamine,anti-ulcerative, anti-inflammatory, antiproliferative, anti-allergic, anti- hypersensitivity, anthelmentic, anti-convulsant, anti-diabetic and anti-inflammatory compounds. They are also used in treating cardiovascular diseases and in neurology, endocrinology and ophthalmology[2-6]. Since benzimidazoles and their metal complexes are associated with clinical medicine and development of new drugs, several scientists have synthesized and reported various derivatives of benzimadazoles for the pharmacological applications[7,8,9]. Benzamidazole derivatives are structural isomers of naturally occurring nucleotides, which allow them to interact freely with biopolymers of living systems[10]. Hence, benzimidazoles, their derivatives and metal complexes have been a subject of interest concerning their therapeutic potential. Based on this, the present study was conducted to evaluate the antioxidant effect of 1, 3-bis (benzimidazolyl) benzene and its copper complex by DDPH method. Their antibacterial effect on gram-positive bacteria which are frequently found in dental caries is also studied by Resazurin micro titer plate method and reported. Resazurin is a redox indicator used to assess viability for antimicrobial activity[11, 12]. It is blue in colour and on reduction turns pink. A change in color from blue to pink indicated the growth of bacteria. In the presence of an antibacterial compound the wells of the plate remain blue. The Minimum Inhibitory Concentration (MIC) was estimated by using various concentrations of the compounds [1,3-bis(benzimidazolyl)benzene and its copper complex] to record the lowest concentration that inhibited the growth of bacteria after incubation for 24 h at 35-37 °C.

MATERIALS AND METHODS

Preparation of Ligand and complex

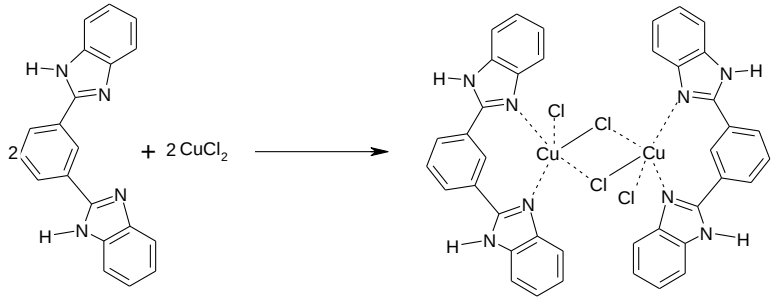
Preparation of 1, 3-bis (benzimidazolyl) benzene

Isophthalic acid (0.05mM) was added to a mixture of o-phenylene diamine (0.1mM) in phosphoric acid syrup and stirred for 4 hours in a sand bath at 240^{o}C. The greenish blue melt obtained was poured into cold water and subsequently neutralized with 10% sodium carbonate solution. The pink colour solid separated was recrystallised from ethanol. The resultant white needles were checked for melting point at 185^{o}C[13].



Preparation of Dichloro bis[1,3-bis (benzimidazolyl) benzene] dicopper (II)

To a solution of 1, 3-bis (benzimidazolyl) benzene (1mM) in ethanol, 1mM $CuCl_2$ was added. The brown coloured compound instantaneously precipitated was allowed to remain for 1 hour at room temperature and then washed with ethanol and dried in vacuum over P_2O_5 [14].



Determination of antioxidant activity by DPPH method

The antioxidant activity of 1,3- bis (benzimidazolyl) benzene and its copper complex was assessed on the basis of their radical scavenging effect on 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical according to the standard method[15]. DPPH free radical accepts an electron from the compounds to form a stable diamagnetic molecule. This ability of DPPH to undergo reduction by an antioxidant is measured in terms of decrease in its absorbance at 517 nm. As DPPH radical reacts with a suitable reducing agent, the odd electron becomes paired and the solution loses color from purple to yellow stoichiometrically depending on the number of DPPH radicals that have undergone reduction. The degree of discoloration indicates the scavenging potential of antioxidant compounds. The lower absorbance of reaction mixture indicates higher free radical scavenging activity. Two milliliters of various dilutions of the compounds were mixed with 5mL of 0.1mM methanolic DPPH solution and incubated at 37^{o}C for 30 min. The wavelength of maximum absorbance of DPPH was measured at 517 nm using the spectrophotometer. The percentage of free radical scavenging activity of each concentration was calculated according to the formula:

$$\text{DPPH scavenged (\%)} = \frac{(A_{control} - A_{test})}{A_{control}} \times 100$$

Assays were performed in triplicate for each sample and at each concentration.

Determination of antibacterial activity by Resazurin microtiter plate method

The Gram-positive pathogens such as *Staphylococcus aureus, Stryptococus mutans* and *Enterococcus faecalis* were obtained from Azyme Biosciences, Bangalore. The antibacterial activity of 1, 3-bis (benzimidazolyl) benzene and its copper complex against these pathogens was studied by Resazurin microtiter plate method.

Resazurin microtitre plate preparation

Resazurin solution was prepared using 10g of Resazurin in one liter of deionized water as a stock solution. It was saved and frozen at -20°C and diluted 1:10 in deionized water just before the experiment. Bacterial culture was prepared with *Staphylococcus aureus, Strptococus mutans,* and *Enterococcus faecalis.* The samples 1, 3 bis (benzimidazolyl) benzene and its copper complex were prepared in serially diluted samples (1000, 500, 250, 125, 62.5, 31.25, 15.25, 7.81µg/ml). Lysogeny broth (LB), a nutrient-rich growth media primarily used for the bacterial growth. The control wells were prepared with LB broth, Resazurin dye, and deionized water, the wells turned blue in color. Blank wells were prepared with broth and water only which remained colorless.

To all the wells of microtiter plate, 200µl of deionised water (to prevent the samples from drying), 100µL of sterilized LB broth, 30µL of 0.1% Resazurin solution and 100µl each of serially diluted samples (1000, 500, 250, 125, 62.5, 31.25, 15.25, 7.81µg/ml) was added. Finally, the 100µl bacterial culture was inoculated into different wells. The plates were sealed and incubated for 24 hr at 37°C. After incubation, the activity of the samples was noted to see which samples inhibit the dye reduction. The changing color was then assessed visually. When there was no growth of organisms the wells remained blue. Whereas, when there was the positive growth of organisms, the color changed to pink and orange. The Minimum inhibitory concentration (MIC) was estimated by using various concentrations of the compounds 1, 3-bis (benzimidazolyl) benzene and its copper complex to record the lowest concentration that inhibited the growth of bacteria after incubation for 24 h at 35-37 °C.

RESULTS AND DISCUSSIONS

Antioxidant activity of 1, 3- bis (benzimidazolyl) benzene and its copper complex

The free radical scavenging properties of benzimidazole and its complexes were measured using DPPH, which is frequently used for the evaluation of the ant oxidation potential of various samples. DPPH undergo reduction by an antioxidant, measured in terms of decrease in its absorbance at 517nm. As DPPH radicals react with a suitable reducing agent, the electron becomes paired and color of the solution changes from purple to yellow. Table 1 shows the scavenging ability expressed as a percentage of inhibition of DPPH radical. The antioxidant activity of samples investigation showed a fall in absorbance indicating significant antioxidant activity in 1,3- bis (benzimidazolyl) benzene, the ligand, and its Cu^{2+} complex. The highest percentage of DPPH radical scavenging ability was 66% in Cu^{2+} complex of 1, 3 -benzimidazole benzene. The results clearly indicate that the ligand has less free radical scavenging potential of 46.6%. The percentage of inhibition at different concentrations (200-1000µg/ml) of 1, 3-bis (benzimidazolyl) benzene and its Cu^{2+} complex were compared with the standards Catechol (phenol), whereas, the tested samples were found to have less antioxidant activity compared to standard which ranged from 34.06 to 92.0% in different concentrations (Fig 1).

Table 1: Antioxidant activity of 1,3-bis (benzimidazolyl) benzene, its Cu^{2+} complex and standard

Sl.No	Samples	Percentage of inhibition (%)				
		200 µg/ml	400 µg/ml	600 µg/ml	800 µg/ml	1000 µg/ml
1.	1,3bis(benzimidazolyl) benzene	1.9	16.8	20.2	41.6	46.6
2.	Cu^{2+} complex of the ligand	7.5	28.8	31.8	58.4	66.0
3.	Standard (Catechol)	34.06	61.86	87.32	90.41	92.0

A possible mechanism behind the increased rate of radical scavenging of DPPH with the copper (II) complex is suggested. Copper (II) can be reduced to copper (I) by the ligand.

$$Cu^{++} + L \rightarrow CuL^{++} \rightarrow Cu^{+} + L^{+}$$

followed by a reaction of the copper(I) with DPPH. Cu^{+} + DPPH → diamagnetic complex.

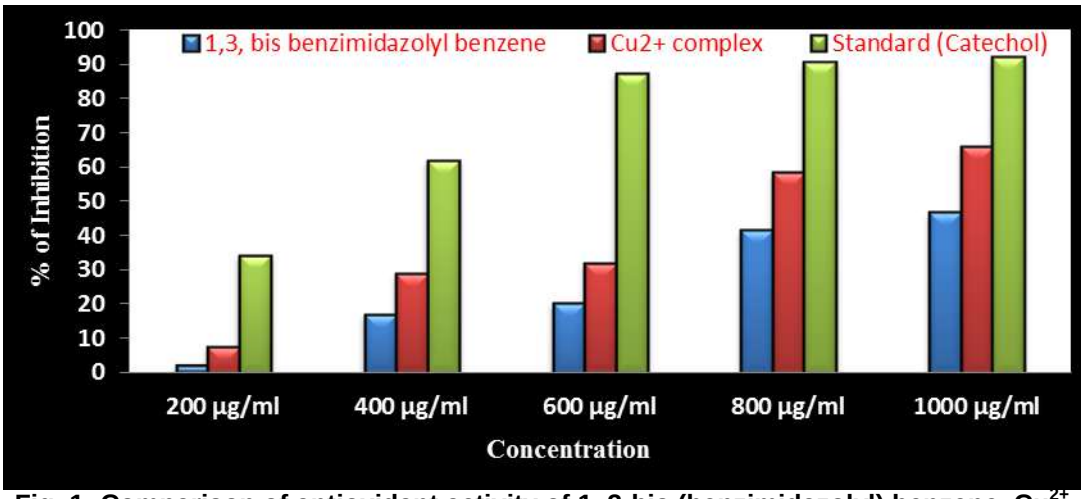


Fig. 1: Comparison of antioxidant activity of 1, 3-bis (benzimidazolyl) benzene, Cu^{2+} complex and standard in different concentrations

Antibacterial assay

The antibacterial activity was determined by Resazurin titer plate method and the results are summarized in Table 2. Resazurin titer plate method has provided a potentially useful technique for determining Maximum Inhibitory Concentration (MIC) of large numbers of test samples. MIC in microbiology is the lowest concentration of antimicrobials that will inhibit the visible growth of microorganisms after required incubation. MIC is important in diagnostic laboratories to confirm resistance of microorganisms to an antimicrobial agent and also to monitor the activity of new antimicrobial agent[16].

Resazurin is an active blue compound, has been potentially used for a novel antibacterial therapy where the active bacterial cells reduce the non-fluorescent resazurin (blue) to the fluorescent resorufin (pink) which can be further reduced to hydroresorufin[17,18].

The antibacterial potential of both 1, 3 -bis (benzimidazolyl) benzene and its copper complex were evaluated according to their color change against *Staphylococcus aureus, Strptococus mutans,* and *Enterococcus faecalis*. The results revealed that the studied compounds showed an effective antibacterial activity against all three bacterial strains. The sample, 1,3-bis (benzimidazolyl) benzene was found to inhibit *Enterococcus faecalis* at a concentration of 1000 µg/ml and *Streptococcus mutans* was inhibited at the concentration of 500 µg/ml. Whereas, 1,3bis(benzimidazolyl) benzene did not inhibit the growth of *Staphylococcus aureus* up to the concentration of 7.81µg/ml. Similarly, the effect of Cu^{2+} complex of the benzimidazole was found to inhibit the growth of *Staphylococcus aureus* and *Enterococcus faecalis* at the concentration of 1000µg/ml and *Streptococcus mutans* at the concentration of 250µg/ml (Fig 2). Among the two compounds studied, the copper complex of the legend showed the highest degree of inhibition.

Table 2: Minimum Inhibition Concentration of 1, 3-bis (benzimidazolyl) benzene and its Cu^{2+} complex

Test Organism	Minimum Inhibition Concentration	
	Ligand	Cu^{2+} complex
Staphylococcus aureus	-	1000
Streptococcus mutans	500	250
Enterococcus faecalis	1000	1000

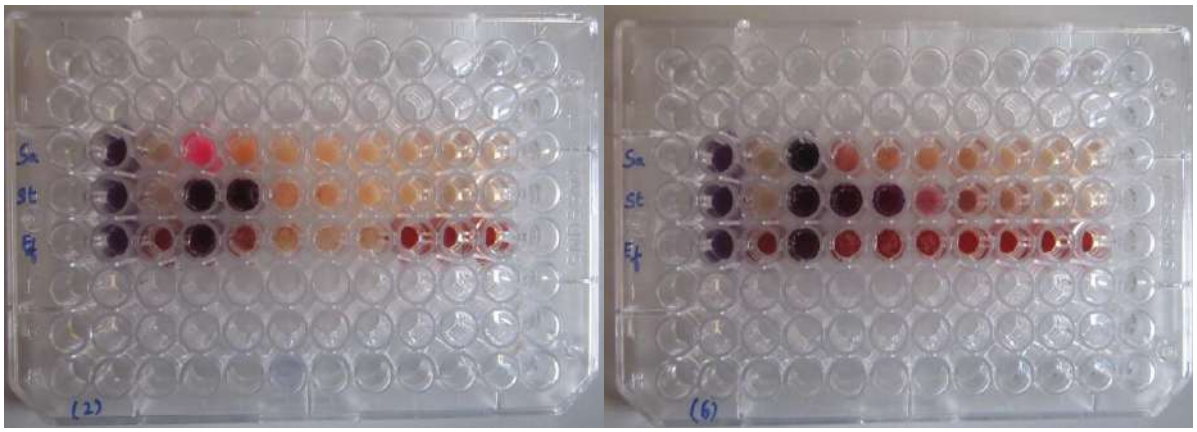


Fig. 2: Resazurin micro titer plate with 1, 3-benzimidazolyl benzene and its copper complex

CONCLUSION

Benzimidazole ring is an important pharmacophore in modern drug discovery and their derivatives are a resource for medicinal research. According to the present study,

1, 3-bis (benzimidazolyl) benzene, the ligand and its Cu^{2+} complex were found to have significant free radical scavenging potential. The results of the antibacterial assay of these compounds against gram-positive pathogens of oral cavity have proved their potential as antibacterial agents. The biological properties of benzimidazole derivatives may be because they are similar to naturally occurring nucleotides, which allow them to interact freely with biopolymers of living systems. Nevertheless, this study attempted a comparison of antioxidant and antibacterial activity among the ligand and its Cu^{2+} complex. The Cu^{2+} complex seems to be a more promising antioxidant and antimicrobial agent than 1, 3-bis (benzimidazolyl) benzene, the ligand. The results of the study may support the pharmaceuticals with the development of new antimicrobial and antioxidant drugs from both the compounds.

ACKNOWLEDGMENT

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A Study on Investment pattern of Employees related to Beverage Industry

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Abstract

Investment pattern or savings habit is one of the key feature for the individual's development and growth in life style and represent him/her involvement in the Economic activity. The investment system also involves risk. To have an active investment activity an individual will have certain perception on it and this paper discovers the problems faced by practitioners and risk". This paper concentrates on the factor which affects the investors to choose the proper investment and explore the challenges of the investment on the investors and the impact on investor's choice on a proper investment avenue.

This paper depicts Investment pattern impact on investors and their finding Problems in investments.

Introduction to Investment

In the present day financial markets, investing money has become a very complex task. Most of the investors are unaware of the fact that investing is both an art and a science. Majority of people irrespective of their education, status, occupation etc., are involved by investments. Investment is an economic activity in which every person is engaged in one form or another. Even though the basic objective of making investment is earning profits, not everybody who makes investment assistances from it. Those who incur losses have not managed their funds scientifically and have just followed others blindly. All investments are risky to some degree or other as risk and return go together. The art of investment is to investment is to see that the return is maximized with the minimum degree of risk.

Investment generally fallouts in obtaining an asset also called an investment. If the asset is accessible at a price worth investing it is normally expected either to generate income, or to appreciation in value, so that it can be sold at a higher price.

Investors generally expect higher returns from dicier investment financial asset range from low risk, low return investment such as high grade government bonds to those with higher risk and higher expected equal reward such as emerging markets stock investments.

Investors particularly beginners are often advised to receive an investment strategy and multiplicity of their portfolio.

Though every investment involves an element of risk, yet investment cannot be equated with speculation. This can be differentiate based on the three criteria such as risk, capital gains and time.

Investment involves an outlay of funds after carefully evaluating the various criteria like safety of principal, moderate and continuous return and long term commitment.

Introduction to research

The Purpose of research is to improvement of the knowledge, which will be used for cracking problems or satisfying ones dryness for facts. One can also for define research as scientific search for relevant information on a specific topic. In fact research is an art of scientific enquiry. The investigation must be comprehensive and precise. In order to achieve the goal of the investigator, the evidence as to be composed.

Investigation is an academic activity and as such the term should be used in technical intelligence.

According to the professor Gilford Moody "research encompasses defining and redefining problems, expressing hypothesis or recommended solution, collecting, organising and evaluating data. Making deduction and making conclusion and at the last, prudently testing the conclusion to determine whether they fit the formulated hypothesis".

Research common parlance refers to search for knowledge. Once can also define research as a scientific and systematic search for pertinent information on a precise topic. In fact, research is an art of scientific investigation. The advance learner dictionary of recent English lays down the meaning of research as "careful investigation or enquiry especially through search for new facts in any branch of information."

Research design

A research design is a rational and systematic planning and it helps in a portion of research. Research design is the agenda that guides the process of collecting analysis and inferring the observation. Design is the blue print of the proposed study. This study has undergone a descriptive study and other statistical tools too.

Problem statement:

1. The respondents for this research are purely established to employees of **Hindustan Coca – Cola Beverages Pvt. Ltd."** only.
2. This research is mainly concentrating only on an investment avenues and part of investment. But not on an income and savings much.

Objectives of study:

1. To know investment avenues of employees with reference to **Hindustan Coca – Cola Beverages Pvt. Ltd."…**
2. To evaluate different investment avenues.

3. To know the distribution of an income and percentage of savings.

Scope of study:

1. The research problem is recognised in this contest investment avenues of employees with reference to **Hindustan Coca – Cola Beverages Pvt. Ltd.”..**
2. After detail discussion with my guide I have selected the topic study on **“Investment pattern of an employees of Hindustan Coca – Cola Beverages Pvt. Ltd**
3. The research has been selected to know more about outlay avenues of employees in future.
4. This study may help other employees to invest proportion of their income in different ways in the future.

Limitations of the Study

1. Time constraints limited wide attention of the study.
2. The study conducted is restricted to in to available from the personnel of the company only
3. The study is concerned to only one financial aspect

   Ex: Investment pattern
4. Study is based on only Questionnaires

Literature Review

1. STUDY: INVESTMENT PATTERN AND AWARENESS OF SALARIED CLASS INVESTORS.
   a) Mr. C Sathiyamoorthy b)Dr. K. Krishnamurthy

This articles is based on primary sources of data which collected by distribution of a closed ended questionnaire. Through the obtained respondents of the questionnaire, one thing is mainly founded here is that investors or respondents are concentrating mainly on savings their incomes through the bank deposits for their future investments. This was predicted through the test of “chi-square”. Where this study is going to be highlighting that savings and investment of the investors.

In this study “T-test” was applied to ascertain the difference between investor’s nativity and their different investment avenues. Here the investors another main predictions of their earnings is bank deposits, Insurance policies and Government securities and with the lack of investment information about DERIVATIVES, because the investors are mainly concentrating on safety of their life than their handsome return.

2. STUDY: SAVINGS AND INVESTMENT PATTERN OF SALARIED EMPLOYEES.
   a) Bindu T

In this particular is on the investment of an employees with the concept of, "wide range of investment avenues are available and not just the traditional tax planning methods"

The main objective of this study is to identify the investment behaviour of salaried employees and it is based on primary data and it is collected from 40 salaried employees on a particular place. In the study there is also explained that people not know much about the investment in stock market with the nuisance of which is very risky in fact.

Research Methodology

According to the demand of the study I have selected primary method of data collection for the study. In this primary method I have preferred **questionnaire** method of collecting the information from the respondents.

1. Discussion with the company and the management to get the universal information about the activities.
2. Broad discussion about the income and savings of the employees.
3. General study about the different investment paths with the employees of the company.

Steps:

- Collecting the data by distributing the questionnaires to the employees.
- Questionnaire is containing of both open ended and closed ended questions
- Data is collected by circulating the questionnaires to 100 respondents
- This study is undergone a Descriptive method
- Collected data are converted into SPSS form
- By using Chi-square statistical tool Hypotheses is found out
- After applying a statistical tool (Chi-square) this study shows a positive results.

Population

A sample is a random selection of member of a Population. It is a smaller group drawn from the population that has the characteristics of the entire population.

In the present study I have chosen a people or an Employees of Hindustan coca-cola Beverages Private Limited Company.

Sample Frame

Sample frame is the source material or device from which a sample is drawn and it is a list of all those within a population who can be sampled and may include individual, households or institutions.

Sample Unit

A sample unit is one of the units into which an aggregate is divided for the purpose of sampling, each unit being regarded as individual and invisible when the selection is made.

Sample size

Sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample.

Sample size determination is the act of choosing the number of observations or replicates to include in a statistical sample.

Statistical Tool

Mathematical concepts, formulas, models techniques used in statistical analysis of random data. In comparison, deterministic methods are used where the data is easily reproducible or where its behaviour is determined entirely by its initial stage and inputs.

Percentage Method

The percentage of completion method is an accounting method in which the revenues and expenses of long-term contracts are recognized as a percentage of the work completed during the period.

SPSS

The statistical package for the social sciences is a software package used in statistical analysis of data. **There are various tests are there in SPSS tool and this study is undergone by Chi-Square.**

Chi-Square

A Chi-Square statistical is a measurement of how expectations compare to results.The data used in calculating a Chi-Square statistical must be random, raw, mutually exclusive, drawn from independent variables and drawn from large enough sample.

Hypotheses

A Hypotheses is a proposed explanation for a phenomenon for a Hypotheses to be a scientific Hypotheses, the scientific method requires that one can test it.

*When P value is more than 0.05Null Hypotheses isAccepted, whereas P Value is less than 0.05then Alternative Hypotheses is accepted.

Data collection method:

Collection of the data may be follows primary method or secondary method.

The sources of data classified into two types, they are

1. Primary data
2. Secondary data

INDUSTRY PROFILE

India is famous for its food and beverages service industry. It is one among the most vibrant industries which established extraordinary growth in the recent past. The industries is continues to expand rapidly. This growth can be attributed on account of changing demographics, growing disposable income, urbanization and growth of retail industry. India is one of the largest producers of food and dairy products but when it comes to processed packaged food and beverages, the market is largely unorganized with huge growth potentials. Continuous urbanization and changing consumer habits, has resulted in greater reliance of people on packaged foods and beverages. With the influx of major international players like Coca-Cola and PepsiCo and efforts by large domestic players like Dabur and Parle Agro, the industry is getting more organized. As a result, the industry is generating more opportunities in sectors like marketing, supply chain, storing, warehousing, manufacturing, packaging and R&D.

Industry Profile are in – depth leaflets that give vision into an industry, where it came from and where it seems to be going. Forcesaffecting the industry, typical report looks at Industry leaders and financial data for the industry.

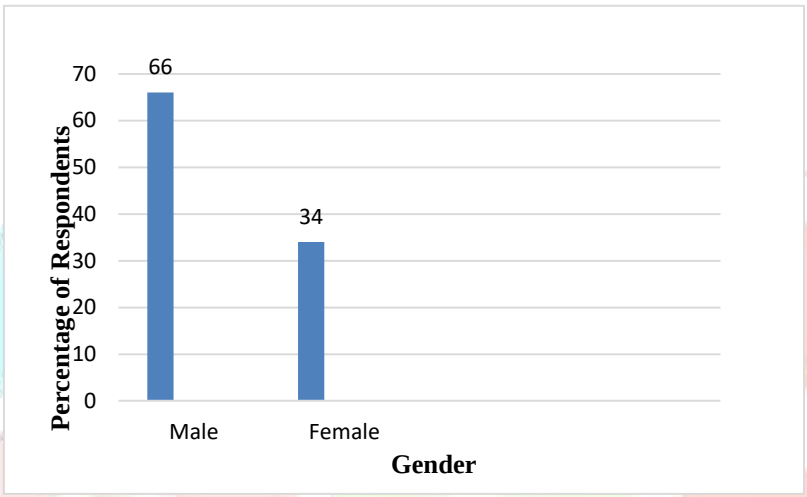
Food and Beverage Industry – these two items go a long way along with food industry and also in the modern peoples' day to day life.

The present study is purely based on Food and Beverage Industry or Beverage Industry. Modern age, cultured people, fashion trends – these all are close parts of the 21st century world citizens and among these parts, food and Beverage Industry will be on top of the priorities. Example for popular soft drink is Coca-Cola Beverage Industry, Pepsi Beverage Industry, Red Bull Beverage Industry Etc.

PepsiCo believes that R&D plays a crucial role for the growth of the business and to develop new products and technologies to meet consumer requirements in near future. The major threat to PepsiCo is from the unorganized sector and the large multinational corporations like Coco-Cola Corporation, Parle Agro etc. PepsiCo is offering substantial product differential by increasingly giving emphasis to health conscious trend, with increasing flavours and verities.

Data Analysis and Interpretation

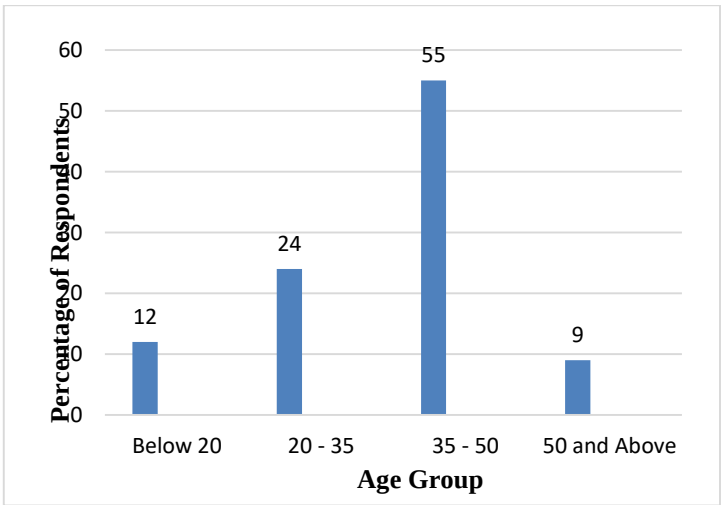
Chart showing The Gender of the Respondents



Interpretation

66% of the Respondents are Male and 34% of the Respondents are Female.

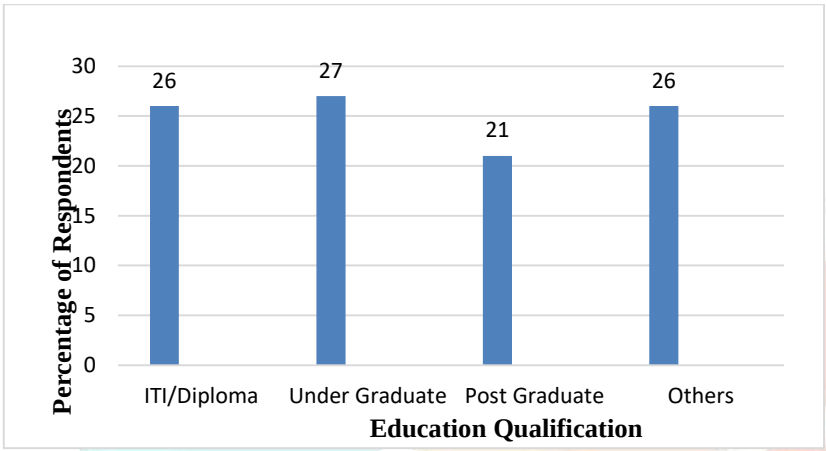
Chart Showing the Age Group of the Respondents



Interpretation

12% of the Respondents are has the age group of Below 20 Years. 24% and 55% of the Respondents are Aged for the category 20 – 35 and 35 – 50 Years Respectively and 09% of the Respondents are acquired the age group of 50 and above.

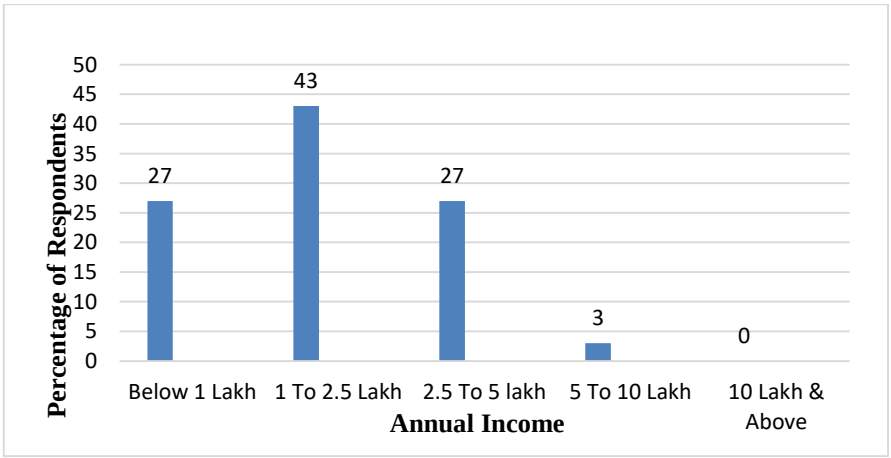
Chart Showing the Educational Qualification of the Respondents



Interpretation

Out of 100% of respondents, 26% are ITI/Diploma holders, 27% are Under Graduates, and 21% are Post graduate and among remaining 26% of the Respondents are from Other Category.

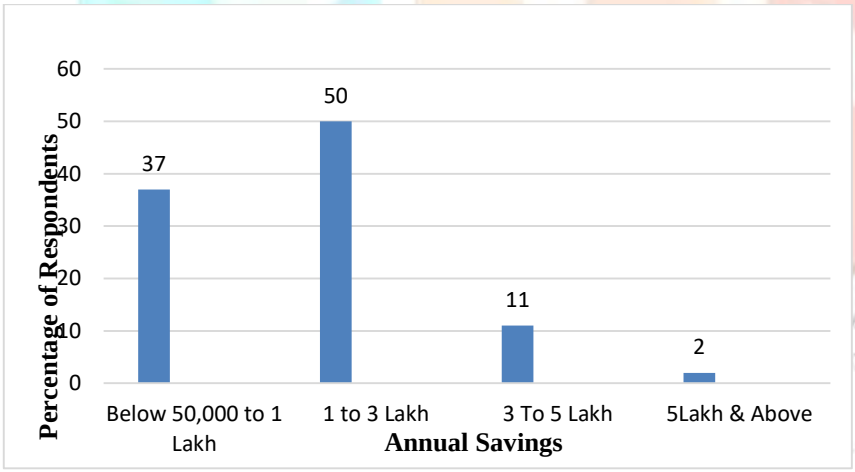
Chart Showing the Annual Income of the Respondents



Interpretation

27% of the respondents have a Percentage of annual Income below 01 lakh, 43% of the Respondents have an Annual Income Between 1 Lakh to 2.5 Lakh, 27% of the respondents have an annual Income Between 2.5 lakh to 5 lakh, Only 03% of the Respondents have an annual Income range between 5 Lakh to 10 Lakhs and No respondents have an annual Income between 10 Lakhs and above.

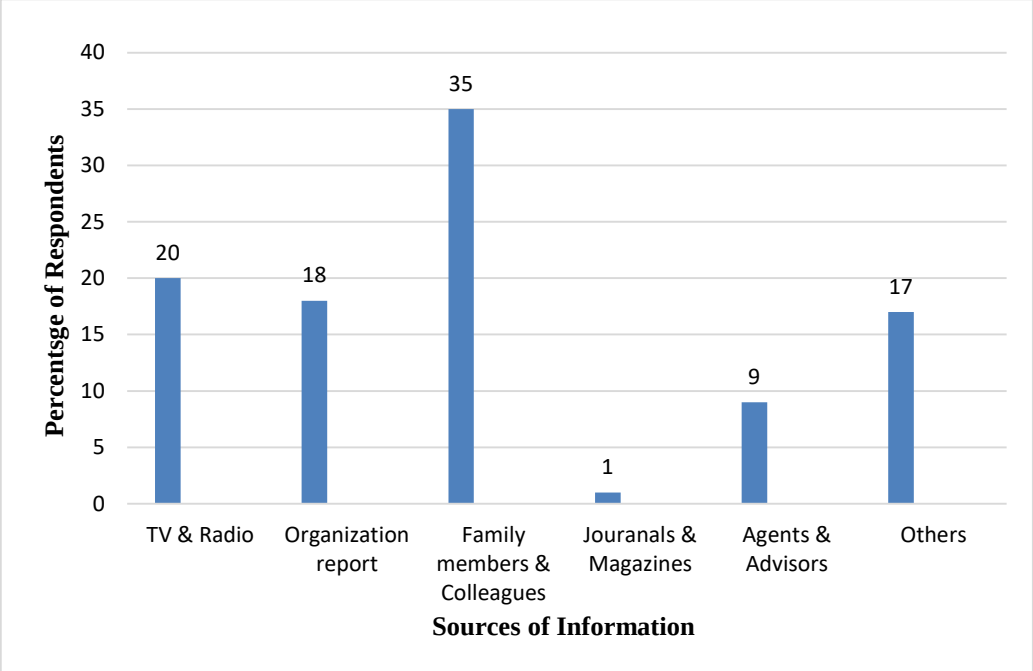
Chart Showing the Annual Savings of the Respondents



Interpretation

From the above Chart it is understood that 37% of the respondents have an annual savings between Below 50,000 and 50,000 To 1 Lakh. 50% of the Respondents have an annual Savings from 1 Lakh to 3 Lakh, 11% of the respondents will save annually about 3 Lakh To 5 Lakh and only 2% of the respondents have the saving limit of 5 Lakh and Above.

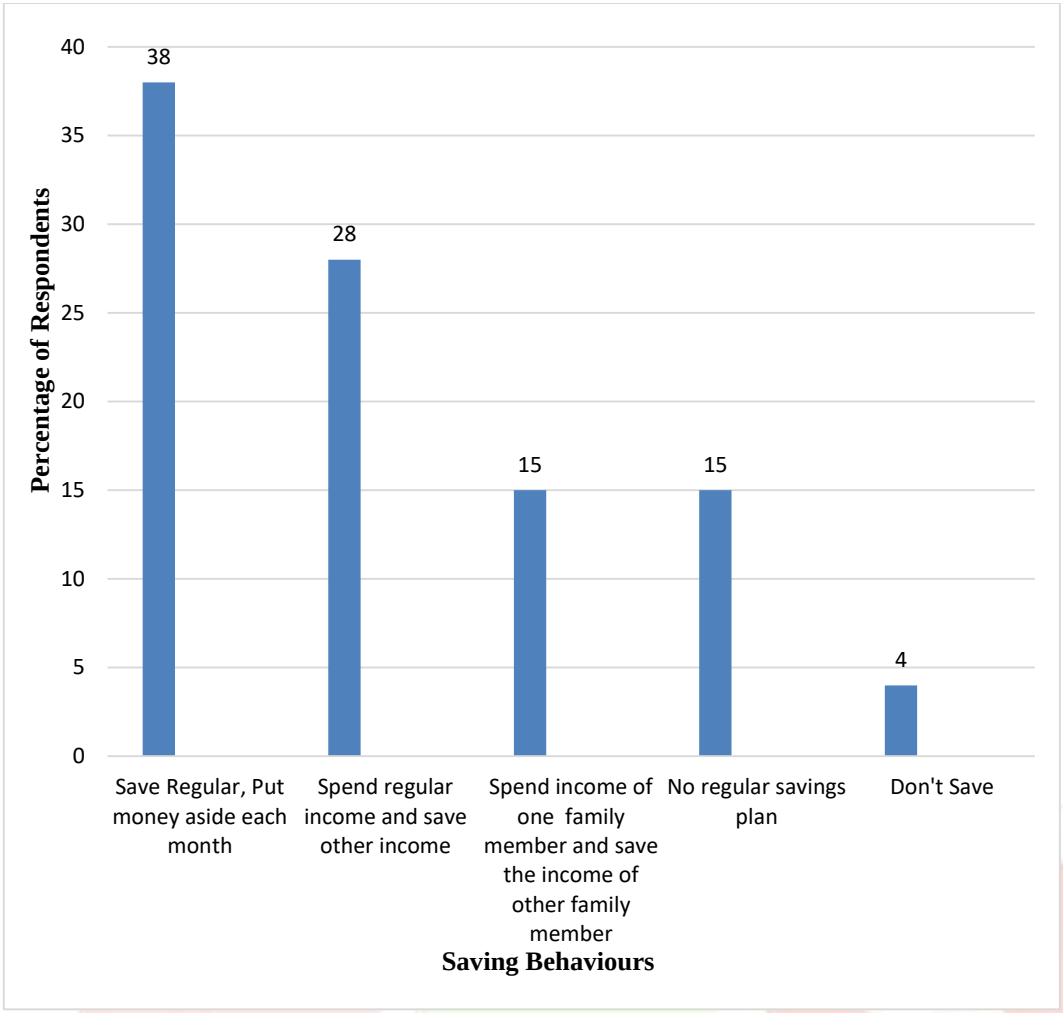
Chart Showing Sources of Getting Information for the Investment to the Respondents.



Interpretation

20% of the respondents will get an information for their Investment from T.V. & Radio, 18% and 35% of the respondents are getting this investment information from the Reports of an Organization and their own family members and Colleagues, only 01% of the respondents are getting their information from the Journals and magazines, From Agents and Advisors about 09% of the respondents are getting investment information and Finally about 17% of the respondents will get these investment information's from other Categories.

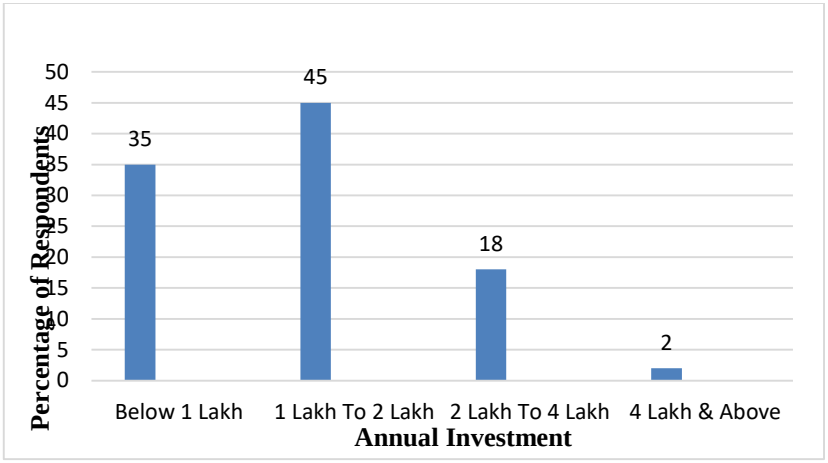
Chart showing the Respondents usual saving Behaviour for their Investments



Interpretation

This chart is providing a different saving behaviour of the respondents like, 38% of the respondents will have a regular saving habit but they put money aside each month, 28% of the respondents are spend their regular income and save other income, both the category like spend income of one family member and save the income of other family member and the another category like they do not have regular saving plan are have equal percentage of saving behaviour i.e. 15%. Only 04% of the respondents have not save their income at all.

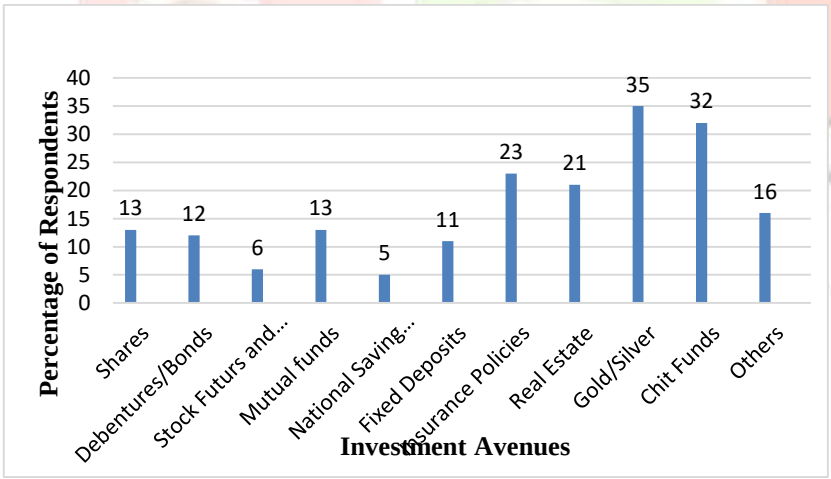
Chart Showing the Amount Investing Per Annum



Interpretation

By studying the above chart 35% of the respondents are have an annual Investment of rupees Below 1 Lakh, 45% of the respondents and 18% of the respondents are have an annual investment range between 1 Lakh and 2 Lakh and 2 Lakh and 4 lakh respectively and only 02% of the respondents will make above 4 Lakh rupees of investment annually.

Chart Showing the Avenues of an Investment

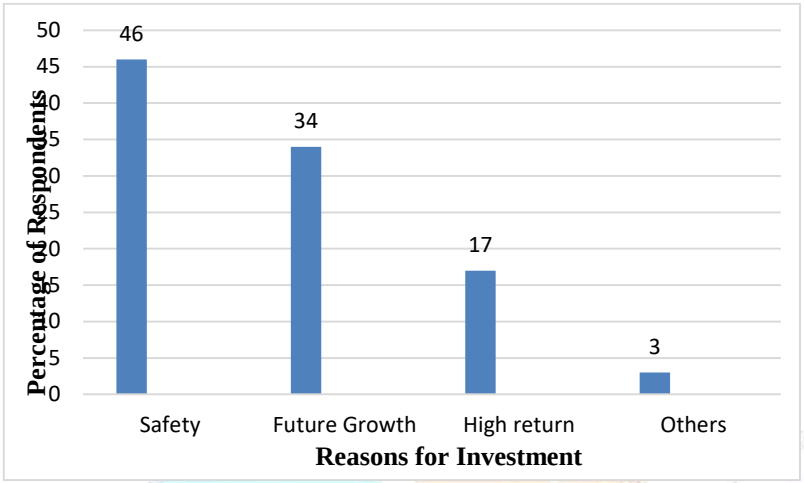


Interpretation

13% of the Respondents invests in Shares, 12% of the respondents invests in Debentures/bonds, out of remaining 6%, 13%, 05% of the respondents are have their investment in Stock futures and options, Mutual funds and National saving certificates/Public Provident Funds/Employee provident Funds respectively. If 11% and 23% of the respondents go for Fixed Deposits and Insurance policies then another 21%, 35% of the respondents are make their investment in real estate and Gold/Silver respectively. Among

remaining 35% and 32% of the respondents are prefer the chit Funds and Other category of the investment avenue.

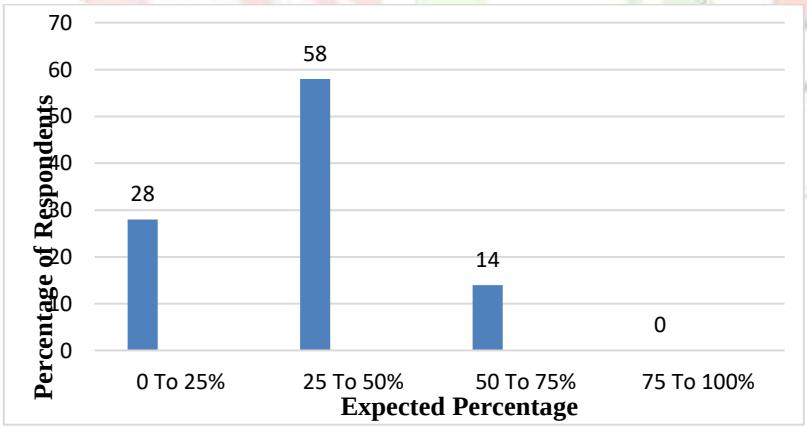
Chart Showing the Reason for an Investment



Interpretation

46%, 34%, 17% and 03% of the respondents gave the reason that Safety, Future Growth, High return and others respectively for the investment.

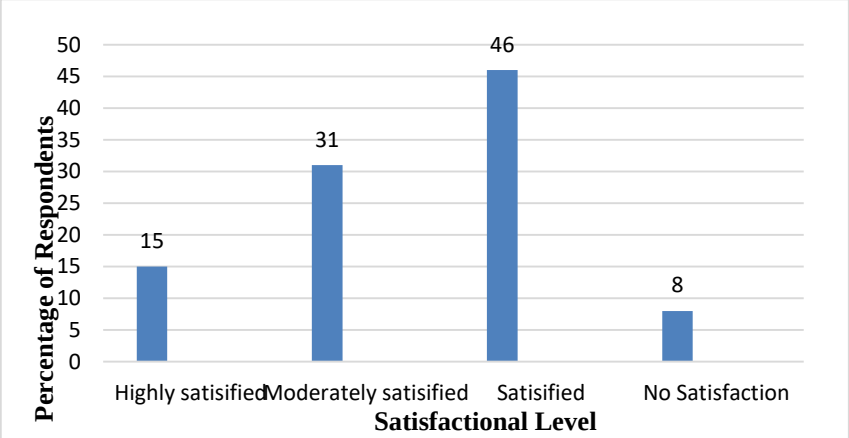
Chart Showing the Expected Percentage of the Return



Interpretation

28% of the respondents have an Expectation between 0 To 25% returns, 58% of the respondents have an expectation between 25% To 50%, 14% of the respondents have an expectation between 50% To 75% and no respondents have an expectation between 75% To 100% return.

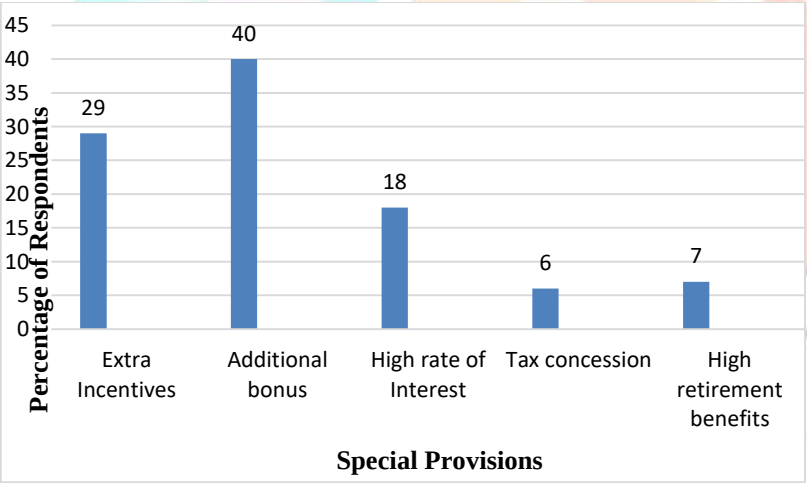
Chart Showing theSatisfaction Level from the Respondents



Interpretation

15% of the respondents are highly satisfied, 31% of the respondents are moderately satisfied, and 46% and 08% of the respondents are satisfied and not satisfied about the Investment respectively.

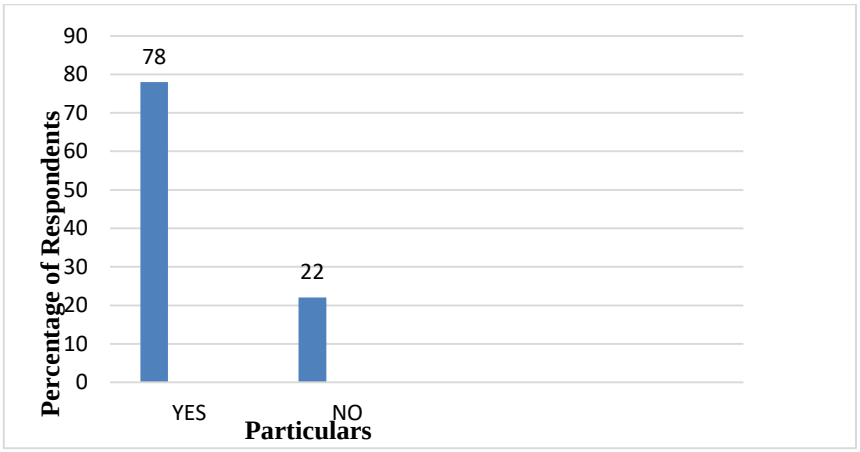
Chart Showing the Special Provisions for the Respondents to Boost up Their Investment



Interpretation

29% and 40% of the respondents need Extra Incentives and additional bonus to boost up their investment, 18% of the respondents needs High rate of Interests, 06% and 07% of the respondents are expected to have a Tax concession and High retirement benefits to boost up their Investment.

Chart Showing the Respondents Suggests others to Investment



Interpretation

Out of the 78% of the response which I got about suggesting others to invest in future and remaining 22% of the respondents doesn't suggest others to invest in future.

Testing of Hypotheses

Hypotheses: 01

HO: There is no association between gender and satisfaction with regard to investment pattern.

H1: There is association between gender and satisfaction with regard to investment pattern.

Table: 01: Gender with Satisfaction from Investment

Particulars			Satisfaction from investment				Total
			Highly satisfied	Moderately Satisfied	Satisfied	No Satisfactions	
Gender	Male	Count	10	22	31	3	66
		Expected Count	9.9	21.8	29.0	5.3	66.0
		% of Total	**10.0%**	**22.0%**	**31.0%**	**3.0%**	**66.0%**
	Female	Count	5	11	13	5	34
		Expected Count	5.1	11.2	15.0	2.7	34.0

	% of Total	**5.0%**	**11.0%**	**13.0%**	**5.0%**	**34.0%**
Total	Count	15	33	44	8	100
	Expected Count	15.0	33.0	44.0	8.0	100.0
	% of Total	**15.0%**	**33.0%**	**44.0%**	**8.0%**	**100.0%**

Interpretation:

From the above table it is evident that 22% of male are moderately satisfied with regard to investment pattern.5% of female are highly satisfied.

Table: 01: Chi-square tests

Particulars	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.294[a]	3	.348
Likelihood Ratio	3.104	3	.376
N of Valid Cases	100		

From the chi square table **the P value is greater than 0.05**.Therefore null hypothesis is accepted Therefore there is no association between gender and satisfaction of investment pattern.

Hypotheses: 02

HO: There is no association between Annual Income and reasons for Investment with regard to investment pattern.

H1: There is association between Annual Income and reasons for Investment with regard to investment pattern.

Table: 02 : Annual Income with Reasons for Investment

Particulars			Reasons for Investment				Total
			Safety	Future Growth	High Return	others	
Annual Income	Below 1 Lakh	Count	13	9	3	1	26
		Expected Count	12.0	8.8	4.4	.8	26.0
		% of Total	**13.0%**	**9.0%**	**3.0%**	**1.0%**	**26.0%**
	1 Lakh To 2.5 Lakh	Count	21	15	6	2	44
		Expected Count	20.2	15.0	7.5	1.3	44.0
		% of Total	**21.0%**	**15.0%**	**6.0%**	**2.0%**	**44.0%**
	2.5 Lakh To 5 Lakh	Count	11	8	8	0	27
		Expected Count	12.4	9.2	4.6	.8	27.0
		% of Total	**11.0%**	**8.0%**	**8.0%**	**0.0%**	**27.0%**
	5 lakh To 10 Lakh	Count	1	2	0	0	3
		Expected Count	1.4	1.0	.5	.1	3.0
		% of Total	**1.0%**	**2.0%**	**0.0%**	**0.0%**	**3.0%**
Total		Count	46	34	17	3	100
		Expected Count	46.0	34.0	17.0	3.0	100.0
		% of Total	**46.0%**	**34.0%**	**17.0%**	**3.0%**	**100.0%**

Interpretation:

From the above table evident that 21% of the respondents are invest for their safety purpose. There is no respondents are invest in any other reasons except safety, future growth and high return.

Table: 02: Chi-Square Tests

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.587[a]	9	.680
Likelihood Ratio	7.373	9	.598
N of Valid Cases	100		

From the chi square table **the P value is greater than 0.05**.Therefore null hypothesis is accepted There is no association between Annual Income and reasons for Investment with regard to investment pattern.

Hypotheses: 03

HO: There is no association between Annual Income and Annual Investment with regard to investment pattern.

H1: There is association between Annual Income and Annual Investment with regard to investment pattern.

Table: 03: Annual Income with Annual Investment

Particulars			Annual Investment				Total
			Below 1 Lakh	1 L To 2 Lakh	2 L To 4 Lakh	4 L & Above	
Annual Income	Below 1 Lakh	Count	17	7	1	1	26
		Expected Count	9.4	11.7	4.7	.3	26.0
		% of Total	**17.0%**	**7.0%**	**1.0%**	**1.0%**	**26.0%**
	1 Lakh To 2.5 Lakh	Count	10	26	8	0	44
		Expected Count	15.8	19.8	7.9	.4	44.0
		% of Total	**10.0%**	**26.0%**	**8.0%**	**0.0%**	**44.0%**
	2.5 Lakh To 5 Lakh	Count	8	11	8	0	27
		Expected Count	9.7	12.2	4.9	.3	27.0
		% of Total	**8.0%**	**11.0%**	**8.0%**	**0.0%**	**27.0%**
	5 lakh To 10 Lakh	Count	1	1	1	0	3
		Expected Count	1.1	1.4	.5	.0	3.0
		% of Total	**1.0%**	**1.0%**	**1.0%**	**0.0%**	**3.0%**
Total		Count	36	45	18	1	100
		Expected Count	36.0	45.0	18.0	1.0	100.0
		% of Total	**36.0%**	**45.0%**	**18.0%**	**1.0%**	**100.0%**

Interpretation:

From the above table it is evident that 26% of respondent are have an annual investment between 2 lakh To 4 lakh with regard to investment pattern. Respondents with annual income 1lakh to 2.5 lakh will not invest in 4lakh and above range.

Table: 3: Chi-Square Tests

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.890[a]	9	.013
Likelihood Ratio	20.983	9	.013

Linear-by-Linear Association	6.328	1	.012
N of Valid Cases	100		

From the chi square table **the P value is less than 0.05**.Therefore null hypothesis is rejected. Therefore there is an association between annual Income and annual investment of investment pattern.

Hypotheses: 04

HO: There is no association between annual savings and annual Investment with regard to investment pattern.

H1: There is association between annual savings and annual Investment with regard to investment pattern.

Table: 04: Annual Savings with Annual Investment

Particulars			Annual Investment				Total
			Below 1 Lakh	1 L To 2 Lakh	2 L To 4 Lakh	4 L & Above	
Annual Savings	< 50 k To 1 L	Count	20	11	5	0	36
		Expected Count	13.0	16.2	6.5	.4	36.0
		% of Total	**20.0%**	**11.0%**	**5.0%**	**0.0%**	**36.0%**
	1 L To 3 Lakh	Count	13	28	9	1	51
		Expected Count	18.4	23.0	9.2	.5	51.0
		% of Total	**13.0%**	**28.0%**	**9.0%**	**1.0%**	**51.0%**
	3 L To 5 Lakh	Count	3	6	4	0	13
		Expected Count	4.7	5.9	2.3	.1	13.0
		% of Total	**3.0%**	**6.0%**	**4.0%**	**0.0%**	**13.0%**
Total		Count	36	45	18	1	100
		Expected Count	36.0	45.0	18.0	1.0	100.0
		% of Total	**36.0%**	**45.0%**	**18.0%**	**1.0%**	**100.0%**

Interpretation:

28% of respondents with annual income 1lakh to 3 lakh invest in 1 lakh to 2 lakh range whereas respondents with annual income 50000 to 1 lakh will not invest any money above 4 lakh.

Table: 4 : Chi-Square Tests

Particulars	Value	df	Asymp. Sig. (2-sided)

Pearson Chi-Square	11.256[a]	6	.081
Likelihood Ratio	11.322	6	.079
Linear-by-Linear Association	6.201	1	.013
N of Valid Cases	100		

From the chi square table **the P value is greater than 0.05**.Therefore null hypothesis is accepted Therefore there is no association between annual savings and annual investment of investment pattern.

Hypotheses: 05

HO: There is no association between Educational Qualification and annual investment with regard to investment pattern.

H1: There is association between Educational Qualification and annual investment with regard to investment pattern.

Table: 05 : Education with Annual Investment

Particulars			Annual Investment				Total
			Below 1 Lakh	1 L To 2 Lakh	2 L To 4 Lakh	4 L & Above	
Education	ITI/Diploma	Count	7	13	5	0	25
		Expected Count	9.0	11.3	4.5	.3	25.0
		% of Total	**7.0%**	**13.0%**	**5.0%**	**0.0%**	**25.0%**
	Under graduation	Count	4	19	5	1	29
		Expected Count	10.4	13.1	5.2	.3	29.0
		% of Total	**4.0%**	**19.0%**	**5.0%**	**1.0%**	**29.0%**
	Post Graduation	Count	6	5	7	0	18
		Expected Count	6.5	8.1	3.2	.2	18.0
		% of Total	**6.0%**	**5.0%**	**7.0%**	**0.0%**	**18.0%**
	Others	Count	19	8	1	0	28
		Expected Count	10.1	12.6	5.0	.3	28.0
		% of Total	**19.0%**	**8.0%**	**1.0%**	**0.0%**	**28.0%**
Total		Count	36	45	18	1	100
		Expected Count	36.0	45.0	18.0	1.0	100.0
		% of Total	**36.0%**	**45.0%**	**18.0%**	**1.0%**	**100.0%**

Interpretation:

Respondent who are undergraduates who are 28% in number invest in-between 1 lakh and 2 lakh whereas none of the diploma holders will not invest above 4 lakhs.

Table: 05 : Chi-Square Tests

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.312[a]	9	.001
Likelihood Ratio	28.561	9	.001
N of Valid Cases	100		

From the chi square table **the P value is less than 0.05**.Therefore null hypothesis is rejected Therefore there is an association between Educational Qualification and annual investment of investment pattern.

Hypotheses: 06

HO: There is no association between gender and satisfaction with regard to investment pattern.

H1: There is association between gender and satisfaction with regard to investment pattern.

Table: 06: Gender with Annual Investment

Particulars			Annual Investment				Total
			Below 1 Lakh	1 L To 2 Lakh	2 L To 4 Lakh	4 L & Above	
Gender	Male	Count	19	35	12	0	66
		Expected Count	23.8	29.7	11.9	.7	66.0
		% of Total	**19.0%**	**35.0%**	**12.0%**	**0.0%**	**66.0%**
	Female	Count	17	10	6	1	34
		Expected Count	12.2	15.3	6.1	.3	34.0
		% of Total	**17.0%**	**10.0%**	**6.0%**	**1.0%**	**34.0%**
Total		Count	36	45	18	1	100
		Expected Count	36.0	45.0	18.0	1.0	100.0
		% of Total	**36.0%**	**45.0%**	**18.0%**	**1.0%**	**100.0%**

Interpretation:

From the above table it is evident that 35% of male invest annually between 1lakh and 2 lakh whereas none of the males invest annually above 4 lakhs.

Table: 6 : Chi-Square Tests

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.531[a]	3	.057
Likelihood Ratio	7.824	3	.050
N of Valid Cases	100		

From the chi square table **the P value is greater than 0.05**.Therefore null hypothesis is accepted Therefore there is no association between gender and satisfaction of investment pattern.

Findings, Suggestions and Conclusions

Findings

Out of the total 100 respondents 66 respondents are Male and Remaining 34 Respondents are Female.

Out of the total Respondents 12 are aged below 20. For the age category 20 – 35, there are 24 respondents are falls respectively. There are 55 respondents are falls in the age category of 35 – 50 and there are 09 respondents comes under above 50 years.

Out of the Total of all the respondents 26 are ITI/Diploma, 27 are under Graduated, 21 are post Graduated and remaining are from other categories.

27 Respondents have an Annual Income of Below 01 Lakh, 43 Respondents have a Annual Income Between 01 to 2.5 Lakhs, 27 of the Respondents have A Annual Earnings Between 2.5 to 05 Lakhs, 03 Respondents Annual Income Between 05 to 10 Lakhs, No Respondents Have an Annual Profits Above 10 Lakhs.

37 Respondents Has a Savings Limit Between 50,000 to 1,00,000 Rupees, 50 is a major part and they have a savings between 100,000 To 300,000, 11 Respondents Saves Between 300,000 to 500,000 and only 02 of them saves Between 500,000 Rupees and Above.

In the overall Respondents 20 of the Respondents are get the Investment Information from T.V. and Radio, 18 Respondents will get from Organization Reports, Major part or 35 Respondents will get from Family Members and Colleagues, only 01 Respondent will get the Information for His Investment From Journals and Magazines, 09 of the Respondents are getting these Investment Information from Agents and magazines and 17 Respondents are get the investment Information from various Others Sources.

In the Whole 100 Respondents 38 members are Saves In a Regular Basis and Put Money Aside Each Month, 28 Respondents are Spending Regular Income and Saving other Income, Another 15 Respondents will Spend Income Of One Family Member and Save the Income Of Other family Members, 15 respondents will not Save In A Regular Basis, 04 Respondents are not Saving at all.

The above table shows that 35 Respondents has the Investment Below 1,00,000 Rupees, 45 Respondents Invests 1,00,000 To 2,00,000 and 18 Respondents Invests In Other Category Of 2,00,000 To 4,00,000 Rupees But Only 02 Respondents Has the Investment More Than 4,00,000 Rupees.

Above table saying that 13 Respondents are Invests In Shares, 12 Respondents Invests In Debentures/Bonds, 06 Respondents Invests In Stock Futures and Options, 13 Respondents Invests In Mutual Funds, Only 05 Respondents Invests In National Saving Certificate/Public Provident Fund/Employee Provident Fund, 11 Respondents Invests In Fixed Deposits, 23 Respondents Invests In Insurance Policies, 21 Respondents Invests In Real Estate, 35 Respondents Invests In Gold/Silver, 32 Respondents Invests In Chit Funds and 16 Respondents are from Other Different Avenues Of Investments.

In the 100 Respondents 46 Respondents gave the Reason of Safety, 34 Respondents went for Future Growth, 17 Respondents will go for High Return and Rest of the 03 Respondents Invests for Other Reasons.

28 of the Respondents Have an Expectation Between 0% To 25% Return, 58 Respondents Have An Expectation Between 25% to 50% Return, 14 Respondents Have An Expectation Between 50% To 75% Return And Respondents Have An Expectation Between 75% To 100%.

Out of The Total Respondents Which I Got, 15 Respondents are Highly Satisfied with the Investment, 31 and 46 of the Respondents are Respectively Moderately Satisfied and Satisfied. 08 Among the Total Respondents have not Satisfied Anything about the Investment?

This above table is saying that out of obtained Respondents 29 members are Extra Incentives, 40 Respondents are wants Additional Bonus, 18 Respondents are Required High Rate Of Interests, 06 Respondents are needs a concession in The Tax to Boost up their Investments and 07 Respondents are in requirements of High Retirement Benefits for Increase their Investment plans.

Out of the Respondents 78 of them are Suggesting Others to Invest and 22 Respondents are Not Suggesting Others to Invest.

Respondents are also facingfollowingProblems:

- Majority of the respondents are find that investment involve a High Risk
- Respondents are also facing a Saving Problem
- Some of the respondents are need to have a Direct Contact with whom they are Invest their Money or Income

- There are a respondents who are lack of Knowledge and on Time Information about the Investment Process
- Most of the respondents are fail in planning of Investment
- Respondents are in requirement of Extra Income
- Majority of the respondents are have a high expenditure but they are having a low Income level
- People are also don't have regular savings
- Respondents are in lack of personal problems like Variations in expenditure, Education, Health Issues Etc.,

Recommendations and Suggestions

I recommends the Respondents to focus on Investment along with the Savings. Because Investment makes the people to Increase the Standard of Living and Indirectly it will help the Economic evolution of the Nation also.

Before Investing it will be better to know about the different avenues of investments so that along with the risk factor return on Investment will also be technologically advanced.

For the Female Respondents it is suggested that, they should also have to concentrate on an investment much. Since cost of Living increasing day by day and female respondents can endure better if they have an investment as a portfolio of revenue.

Respondents Should have a complete knowledge about on which they made Investment avenues before they made investment and should also have a Risk swallow attitude.

One of the main suggestion to the Respondents that they should have an equitable balance between their Expenditures as well as an Income.

Conclusion

Research concludes that along with the savings, an investment is an important financial activity to overcome present cost of living and to increase the standard of living.

As per the test applied and the research there are most of the respondents are facing a problem of savings, lack of knowledge, lack of Planning etc., are raising because of investors are not have sound Education and they are failing to balance their income and expenditure. It is one of the key factor to overcome of all such problems.

Risk can be minimized by undertaking various measures like...

- Cultivating saving habit is necessary

- Should accept the result of their investment a sportive manner and that will lead to reinvestment
- An investor must have a proper information and choose a proper portfolio of investment

These are the above three content is more important to each individual to adopt as a grass root of any kind of investment avenue to face any kind of risk in the investment process.

Annexure

QUESTIONNAIRE

Respected Sir/ Madam,

I am Pavan C, Final year M.Com student of '**SURANA COLLEGE**'. I am carrying out research study on **"Investment pattern of an employees of Hindustan Coca – Cola Beverages Pvt. Ltd.".** As a part of my curriculum, I am doing this research study and I request you to kindly express your views for the questionnaire, which will be kept confidential and used only for academic purpose.

a) NAME: ……..

b) CONTACT DETAILS: …….....

1. Gender …….

   a) Male b) Female

2. Age Group …….....

   a) Below 20 b) 20 – 35 c) 35 – 50 d) 50 and above

3. Educational Qualification ……..

   a) ITI/Diploma b) under graduation c) Graduate(PG) d) others

4. Annual Income ……

   a) Below 1L b) 1L to 2.5L c) 2.5L to 5L d) 5L to 10L e) 10L+

5. Annual savings ……

   a) <50 k to 1L b) 1L to 3L c) 3L to 5L d) 5L and above

6. Where do you get information for your investment ……

A) T.V. & Radio b) Organization Reports c) Family Members and Colleagues

d) Journals & Magazines e) Agents & Advisors f) Others

7. Please response for below which describes your usual saving behaviour for your Investment...

a) Save regularly, put money aside each month ……

b) Spend regular income and save other income ……..

c) Spend income of one family member and save the income of other family members …...

d) No regular savings plan ……

e) Don't save ……..

8. Annual Investment …….
[Considering total of all avenues]

a) Below 1L b) 1 L to 2L c) 2L to 4L d) 4L and above

9. Avenues of Investment..?

Sl. No.	Investments	✓ (Tick)
01	Shares	
02	Debentures/Bonds	
03	Stock futures and options	
04	Mutual Funds	
05	National saving certificate/ Public Provident Fund/Employee Provident Fund	
06	Fixed Deposits	
07	Insurance Polices	
08	Real Estate	
09	Gold /Silver	
10	Chit funds	
11	Others	

10. Reason for an Investment ……..

a) Safety b) Future growth c) High return d) others

11. Expected percentage of return …….

a) 0 to 25% b) 25 to 50% c) 50 to 75% d) 75 to 100%

12. Satisfaction from an investments ……..

a) Highly satisfied b) Moderately satisfied c) Satisfied d) No satisfaction

13. Which of these special provisions be you need to boost up your investments ……

a) Extra incentives b) Additional bonus c) High rate of interest

D) Tax concession e) High retirement benefits

14. State the problems you faced in investment:

(i)_____

(ii)_____

(iii)_____

(iv)_____

15. Do you suggests others to Invest ……..

a) Yes b) No