From the Chief Editor's Desk

I am delighted to place before all the new issue of Uttranchal Business Review.

The present issue provides a really exciting opportunity to consider the truly interdisciplinary nature of subjects and focus upon research-based articles and gives philosophical view about business in particular and concerns on dynamic world scenario in general. The principal objective of UBR is to publish updated, high-quality and original research papers alongside relevant and insightful reviews. As such, the journal aspires to be vibrant, engaging and accessible, and at the same time integrative and challenging.

The globalization of business has opened many opportunities and it has become a hot bed of research and investigation. Dr. L. S. Sharma and Vanlalhumi, studied the Adoption, Marketing and Problems of Turmeric Growers in Mizoram. Mr. Amit Kumar has analysed the Relationship between FDI Inflows and Economic Growth in Asian counties in his paper. The management of inventory has emerged a challenging issue in the present business environment. Sanjiv Mittal, MSS Raju, Dr. Sunil Kumar and Dr. Jasveen Kaur have analysed the Inventory Management Practices at IFFCO through a Case Study. The non-conventional sources of energy is an important issue these days. Dr. V. Sasirekha in her paper has analysed the Public Perception and Attitude towards Solar Energy Harnessing System. With the expansion of social group and rising incomes, beauty consciousness among consumers has increased. Cosmetics have become a daily-use item for women and men both. Ms. Ambica Prakash and Dr Ajay Sharma and V.M. Tripathi did analyse the consumer buying behaviour towards cosmetics. Richa Khugshal and Babita Rawat have analysed the "Quality of Work Life and its Relationship With Employees Performance in some Selected Educational Institutes of Dehradun and raised some pertinent issues and solutions thereto. Software piracy has increased manifold in the recent years. Dr. K. R. Jain and Neha Sharma have analysed the factors affecting software piracy in the Indian software industry. Dr. Vinay K. Srivastava in his research work focused on

Appraising Leaders using a Grid Managerial Approach. Dr. A. B. Singh and Ms. Piranha Tendon have highlighted the Risk Management Tools and Policies in Indian Banking Industry. Mr. VK Tangri analysed the issue related to 'Disaster Management' and raised certain problems associated with issues, Challenges and Policy Initiatives etc. for managing disasters at state and national levels. Md Muzaffar Hasan, ,Prof. M. Aslam, and Mr.Fahim Uddin assessed the pattern of Internet use among Teachers and Students to explore its importance in education.

Needless to say, any papers that you wish to submit - either individually or collaboratively, will be highly appreciated and these will make a substantial contribution towards early development and success of the journal. We do look forward to your reactions, suggestions and feedback. I whole-heartedly thank our advisory board members and our editorial board for their substantial help and guidance. My warm wishes and thanks towards your contribution in UBR.

I remain to be,

Sincerely,

Dr. D.S. Chaubey

(Professor & Editor-in-Chief)

AN ANALYSIS ON THE ADOPTION, MARKETING AND PROBLEMS OF TURMERIC GROWERS IN MIZORAM: A CASE STUDY OF REIEK TURMERIC FARMERS

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ABSTRACT

Horticulture has established its credibility in improving income through increased productivity, generating employment, enhancing exports and providing nutritional security to its growers. It has played a significant role in improving the economic status of our farmers and women empowerment. The North-Eastern Region of India has been blessed with agro-climatic conditions pre-eminently suited for a variety of horticultural crops. One of the major deficiencies is scientific exploitation of this potential with a sound marketing network.

Among the spice crops, turmeric being a short gestation crop, is an ideal crop for the poor farmers and is doing extremely well in Mizoram. A very good variety called 'RCT-I' procured from Indian Council of Agricultural Research, Barapani in 2004 has been successfully multiplied by the Department of Horticulture and a sizeable quantity of this variety has been produced in Mizoram today for processing along with other popular variety known as 'Lakadong'. Presently, the Multifarming Cooperative Society, Reiek is processing turmeric and packed turmeric powder is being marketed. The study is conducted through a sample of 74 turmeric farmers in Reiek area through a structured questionnaire. This paper tries to find the socio-economic profile of the farmers, reasons for producing as a sustainable income and problems faced by the farmers. It also divulges into the management of harvesting and marketing of the produce.

The study finds that Mizoram is still a long way to go in developing its horticulture sector. Skill development is necessary for increasing the productivity and success of this product. The short life of the turmeric produce makes the Mizo farmer vulnerable in absence of proper post harvest processing facilities and marketing infrastructure.

Keywords: Horticulture, with agro-climatic conditions, scientific exploitation, Multifarming, Cooperative Society, etc.

1. Introduction

Horticulture has established its credibility in improving income through increased productivity, generating employment, enhancing exports and providing nutritional security to its growers. It has played a significant role in improving the economic status of our farmers and women empowerment. The North-Eastern Region of India has been blessed with agro-climatic

conditions pre-eminently suited for a variety of horticultural crops. Among the producers of horticultural crops, India is famous for its spices (turmeric) which is widely used in industrial productions like pharmaceutical, fragrances and cosmetic industry. India is one of the major suppliers of turmeric to a number of countries for industrial productions.

Turmeric is a short gestation period crop. It can be readied for harvesting in about 8-9 months after sowing. This aspect makes it an ideal crop for the poor farmers and highly suitable for poor farmers in Mizoram. A high yield variety of rhizome called 'RCT-I' procured from Indian Council of Agricultural Research, Barapani, Meghalaya state in 2004 for multiplication in Mizoram, has been acquired by the Department of Horticulture and multiplied into sizeable quantity for plantation in Mizoram today. This variety has been planted in large scale all over Mizoram along with other local rhizome popularly known as 'Lakadong'.

Reiek is a small village about 25 kilometers west from Aizawl city. Turmeric farming has been adopted in this area about a decade ago. The turmeric produced in this region contains high oleoresin and curcumin content. The product is mostly marketed in the fresh form as well as in powder form. A society was established with 25 members called the Multifarming Cooperative Society. With assistance from the Department of Horticulture, Govt. of Mizoram and the Spice Board of India, the Multifarming Cooperative Society is presently producing turmeric and processed turmeric powder is being marketed. It has been estimated by the society that at least half of the total households in Reiek village have taken up turmeric farming, in varying capacities. The success of the Reiek farmers has triggered an incentive to other farmers in other villages across Mizoram to take up turmeric farming as well.

2. Present Status of Turmeric production in North East India

Turmeric grown in North East India covers around 17.27 thousands of ha with a total production of 32.36 thousand tonnes. The productivity of the crop is much lower (1.87 tonne/ha) compared to the national productivity of 3.47 tonnes/ha (Spices Statistics, Spices Board, 2004). The productivity of turmeric is the highest in Mizoram followed by Manipur, Meghalaya, Nagaland and Arunachal Pradesh. The most popular variety cultimated in the North East Region is Lakadong (7.5 per cent) and Megha Turmeric-1 (6.8 per cent) that possesses higher curcummin and is highly demanded. The projected productivity for the year 2010-11 is 5 tonne/ha which has become lower due to the area of production being reduced from 0.96 ('000 ha) in 2008-09 to 0.45 ('000 ha) in 2010-11.

Table 1. State-wise area, production and productivity of turmeric in the North East Region (2004-05)

State	**Area** ('000ha)	**Production** ('000tonne)	**Productivity** (tonne/ha)
Arunachal Pradesh	0.40	1.50	3.75
Assam	12.00	8.00	0.67
Manipur	0.37	2.09	5.69
Meghalaya	1.60	8.70	5.44
Mizoram	0.30	2.97	9.9
Nagaland	0.60	3.10	5.17
Sikkim	0.50	1.70	3.40
Tripura	1.50	4.30	2.87
N. E. Region	17.27	32.36	1.87
India	150.50	521.90	3.47

Source: Statistics of Indian Spices (http:|| www.indianspices.com)

Among the several cultivated types of turmeric grown in the region are named locally and found locally. Indigenous types of turmeric grown in the region are namely Manipur Local, Nagaland Local, Sikkim Local and Jorhat Local of Assam have been reported to the equally good rhizome yield. Dry matter recovery from these rhizome has been found to be equally good as improved variety of turmeric. In Mizoram and Meghalaya the main variety of crop grown is 'Lakodang' and more than 50 percent of area grown is covered under this variety.

3. Literature Review

Chadha (2006) opines that India has a favourable climate and soils for growing a larger number of horticultural crops. Horticulture has emerged as an integral part of food and nutritional security and an essential ingredient of economic security. Adoption of horticulture crops by the farmers has brought prosperity in many regions of India.

According to Sarswathy, Preethi, Balasubramanyan, Suresh, Revathy and Natarajan (2008), the three main objectives of applying post-harvest technology to the harvested fruits and vegetables are to maintain quality in terms of appearance, texture, flavour and nutritive value, to protect food safety and to reduce losses between harvest and consumption. They found the reasons for post-harvest losses as due to poor packaging, grading, transportation and marketing of the perishable produce.

Meena and Yadav (2001) have stressed on the need for adopting aggressive marketing strategy coupled with adequate export infrastructure. Farmers in India receive much lower prices for their produce and the consumer pay much higher prices for agricultural commodities as compared to the Unites States of America or United Kingdom, because of the existence of too many intermediaries between the farmer and the consumer

Peter (2009) studied about the economic developments taking place and its relationship with agriculture and market orientation. Prices of horticultural products fluctuate widely from year to year, season to season, and even day to day. He has opined that this variance makes horticultural production both profitable and very risky. He concludes that success depends on marketing skills and obtaining good prices rather than production expertise.

The FAO (Food and Agriculture Organization) Agricultural Services Bulletin 76 (2007) has mentioned that the production/marketing chain for horticulture produce is a two-way process. Produce flows from the rural areas into the cities and money and market information should flow back to the producers. In horticulture farming, where prices are rarely regulated, financial viability depends as much upon business and marketing skills as on the farmer's technical expertise.

India produces 63 varieties of spices on two million hectares with value exceeding Rs.42000 million (two million tonnes a year) say Sundaram (2000). However, only a small quantity is exported as the bulk of the produce is meant for domestic consumption our domestic market for spices is big total estimated production in 1997-98 was at 3.0 million tonnes with an annual growth rate of 10 percent and with limited scope for area expansion (2,359 million hectare). The world trade in spices by 2001 is projected to be 6,25,000 tonnes value at 83 billion. But, in terms of quantity this is merely 15.56 percent of the Indian production envisaged (4.018 million tonnes).

Goswami (2000) examines the problems and prospects of marketing horticultural crops in the hill regions of North East India. In the study the following aspects are examined: area and productivity of horticultural crops, market regulation and enactment of market legislation, market infrastructure, market intelligence and market performance. The discussion reveals that the north-eastern region of India has ample scope for increasing the horticultural sector. However, the main problems in the region are lack of adequate market infrastructure (such as transportation network, storage, and processing facilities), inadequate market intelligence and extension, and the lack of efficient market legislation and regulation.

4. Objectives of the Study

The objectives of the study are:

(i) To assess the socio-economic profile of the turmeric farmers
(ii) To review the generation of income of the turmeric farmers
(iii) To analyse the reasons for adoption of turmeric farming
(iv) To find out the problems faced by turmeric farmers.

5. Research Methodology

The study is conducted through a sample of 70 turmeric farmers in Reiek area through a structured questionnaire. It is estimated that there are approximately 200 turmeric farming families in Reiek village. Therefore, the sample size covers 35 percent of the total turmeric farmers in the area under study. Face to face interview was conducted among the Multifarming Cooperative Society members. This paper tries to find the socio-economic profile of the farmers, reasons for producing turmeric as a sustainable income and problems faced by the farmers. It also divulges into the role of harvesting and marketing of the produce.

6. Results and Discussion

Socio-economic profile of the farmers:

The following Table 2 shows the general profile of the turmeric farmers in Reiek village. Owing to the high literacy rate of Mizoram, it was found that all the farmers were literate and 17percent of the farmers were matriculate and above. The study showed that 64 percent of the farmers are in the category of 50 years and above. Out of the farmers surveyed, 47 percent solely depend on farming as a means of livelihood, whereas 14 percent were in government service, 4 percent manage their own business such as grocery store, 11 percent take up daily wage work from time to time, and 23 percent undertake "other" occupations such as carpentry and masonry. It can be seen that majority of the respondents are farmers as full occupation (47 percent) in the age group of 50 and above.

Table 2. Demographic Factors of the Respondents

Characteristics	Respondents	Percentage
1. Age		
Less than 40 years	9	13%
40 to 50 years	16	23%
50 and above	45	64%
2. Education		
Post-graduate	0	0%
Graduate	2	3%
Matriculate	10	14%
Below matriculate	47	67%
Literate	11	16%
Illiterate	0	0%
3. Other occupations of the farmers		
Farming only	33	47%
Govt service	10	14%
Business	3	4%
Daily labour	8	11%
Others	16	23%

Source: Primary Data

Table 3 shows the activities carried out by the farmers during the production and marketing of turmeric in Reiek village. The survey shows that 99 percent of the respondent farmers are involved in production and harvesting. The survey also indicates that 86 percent of the respondents are involved in processing of the turmeric while only 6 percent are involved in packing of the product. Nearly about 50 percent of the farmers are involve in the selling in the form wholesale or retail of their products as indicated by the survey. As the Multifarming Cooperative Society is involved in marketing the product, it is thus reflected in the survey. It is also revealed that the products are not exported to any other foreign country.

Table 3. Activities of Farming taken up by farmers

Characteristics	Respondents	Percentage
Production	69	99%
Harvesting	69	99%
Processing	60	86%
Packing	4	6%
Retailing/Wholesaling	34	49%
Exporting	0	0%

Source: Primary Data

7. Land holding pattern of the farmers

Land in the hilly regions of Mizoram is very difficult to be readied for farming and irrigation. Hills of Mizoram are steep in nature and finding slopes is difficult. Reiek situated in the western part of Aizawl is blessed with slope gradient hills and rainfed with monsoon during May to September. This condition has made it suitable for growing turmeric in the region. The survey also tried to find the landholding pattern of the farmers as well as the ownership pattern. In terms of land holding, it was found that 93 percent of the farmers are cultivating turmeric crop in their own land while 6 percent have leased or rented from private land owners. The survey indicated that most of the farmers have small land holdings. As shown in Table 4, two-third of the farmers cultivate turmeric in less than 1 hectare of land area. The table also shows that a minority viz., only 12 percent grows turmeric in areas above 1.5 hectares. As the area of production is lower the production per hectare tends to be low.

Table 4: Type of Land Holding and Ownership Pattern

Characteristics	Respondents	Percentage
1. Area under turmeric cultivation		
Less than 0.5 hectare	5	7%
0.5 - 1.0 hectare	43	61%
1.0 - 1.5 hectare	14	20%
1.5 - 2.0 hectare	4	6%
More than 2 hectare	4	6%
2. Ownership of cultivated land		

Owned land	65	93%
Private leasing	4	6%
Government leasing	0	0%
Leased from a relative	1	1%
Others	0	0%

Source: Primary Data

8. Production and Income Generation for the Turmeric Farmers of Reiek

The survey also enquired about the production of turmeric and income generated from the turmeric growers of Reiek village in Mizoram. Table 5 shows the number of years involved in turmeric production, annual production of turmeric and income generated from the sale of turmeric products. The table shows that maximum 73 percent of the respondent farmers have been practicing turmeric farming for more than 5 years. No new farmers have adopted the turmeric farming in the last two years. This is due to the unavailability of the suitable land for growing turmeric. The second part of the table shows the annual production of turmeric in quintals. It has been found that 53 percent of the farmers produce less than 20 quintals of turmeric while 27 percent produces about 20 – 40 quintals per annum. It also has been found that more than 60 quintals are produced by 17 percent of the respondents. The income generated from turmeric is shown in part 3 of the Table 5. The survey shows that 41 percent of the respondent farmers earns about less than Rs. 20000/- per annum while 23 percent earns about Rs. 20,000 - 40,000/- per annum. About 17 percent of the farmers earns about Rs. 40,000 to 1,00,000/- per annum. Around 19 percent of the farmers earn more than Rs. 1,00,000/- per annum. The low income is reflected due to the small area of land possessed by the farmers. Those farmers who are earning more than Rs. 1,00,000/- is due to the large holding of land for cultivation.

Table 5. Production and Income Generation in Reiek Village

Characteristics	Respondents	Percentage
1. No. of years of turmeric farming		
Less than 2 years	0	0%
2 - 4 years	11	16%
5 - 7 years	51	73%
More than 8 years	8	11%
2. Annual production in quintals*		
Less than 20 quintals	37	53%
20-40 quintals	19	27%
40-60 quintals	2	3%
60-80 quintals	8	11%
More than 80 quintals	4	6%
3. Annual income*		

Less than Rs. 20,000	29	41%
Rs. 20,000 - 40,000	16	23%
Rs. 40,000 - 60,000	8	11%
Rs. 60,000 - 80,000	2	3%
Rs. 80,000 - 1,00,000	2	3%
More than Rs.1,00,000	13	19%

'* Average of 2010, 2011 and 2012
Source: Primary Data

9. Reasons for adopting turmeric farming:

Many of the farmers at Reiek have converted their trade from traditional farming, i.e. rice cultivation using jhumming technique, to turmeric farming. Furthermore, persons engaged in other occupations other than farming have also taken up turmeric farming at Reiek. An attempt was made to find out the reasons for this trend. The biggest reason attributed to this preference for turmeric farming is the opportunity for higher income. Turmeric is a short gestation crop as compared to other crops. Because of this factor, farmers of Reiek switched to turmeric along with the availability of ready market for sale of produce. The Multifarming Cooperative Society purchases the produce of the farmers for processing, packing and marketing of the produce. The yield potential per hectare of turmeric is excellent. A good crop may yield around 200 quintals per hectare. Yet another motive for turmeric farming lies in the fact that it requires low financial and manpower investment as compared to other crops such as rice. Moreover, the Horticulture Department provides assistance to the farmers in terms of seeds, fertilizers and cash incentives.

10. Major Problems Faced by Turmeric Farmers

Turmeric farming was introduced at Reiek only a decade ago. The research threw light on the major problems faced by the farmers presently. These problems can be classified under the following points:

1. ***Scarcity of cultivable land*** – Majority of the farmers have very small land holdings. There is a dearth of land for expansion of their area for cultivation to increase their volume of production. Moreover, the terrain of land is often unsuitable for high yields of produce.
2. ***Financial constraint*** – It has been found that most of the turmeric farmers are poor and do not have the financial resources to invest in their trade. The farmers requires resources for purchase of tools and technology, manpower, fertilizer, irrigation, etc.
3. ***Lack of knowledge of proper farming techniques*** – The farmers do not have right skills for correct farming techniques for turmeric cultivation and do not take enough care in preparing their land for

cultivation. Techniques such as 'mulching' and 'weeding' are not properly practiced by the farmers. Out of the farmers surveyed, only 35 percent have attended the training programs organized by the Department of Horticulture. Using correct techniques, 200-300 quintals can be produced from one hectare of land area.

4. ***Absence of adequate post-harvest management facilities*** – Turmeric farmers do not have proper access to facilities for storage, drying and processing of their produce. Presently, the turmeric farmers at Reiek are employing crude and rudimentary methods of drying and processing their produce. There is only one processing and packing machine under the Multifarming Cooperative Society, which is inadequate.
5. ***Absence of proper sales and marketing network*** – Most of the turmeric farmers do not possess the business savvy experience to explore the market potential for their produce. There is heavy reliance on middlemen and agents to sell their produce.
6. ***Lack of government support*** – Many of the turmeric farmers feel that there is a lack of government support towards expanding their trade. For instance, government assistance is required for obtaining the appropriate certification for the produce so that it can marketed on a wider scale.

11. Conclusion

India's turmeric sector faces stiff challenges in increasing the efficiency in several of its sub-sectors: improving the technology in turmeric cultivation and processing, reforms in the marketing of turmeric products domestically and internationally.

The potential of turmeric farming is very good for the hilly region of Mizoram. However, as of now, the income generated from turmeric farming alone is not adequate to provide a satisfactory means of livelihood for most of the farmers. Nevertheless, it provides a good supplement to their income.

Most of the turmeric farmers of Mizoram are small scale farmers. There is a lack of systematic approach to their farming, and they do not maintain a proper book of accounts for their trade. Of the farmers surveyed, only 9 percent admitted of having maintaining accounting records pertaining to their trade. Moreover, majority of the farmers are yet unable to set aside their earnings to plough back into their trade. In spite of these facts, majority of the farmers see turmeric farming as a worthwhile occupation and 85 percent of the farmers said they would recommend turmeric farming to other farmers.

There is a dire need for investing in post harvest management, particularly facilities for storage, drying, processing and packing facilities.

Skill development activities specially in the field of production, harvesting, post harvesting, storage, processing and marketing skills are needed to be imparted. Lastly, proper branding and advertisement of the product and exploring markets for the variants of the product is required.

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RELATIONSHIP BETWEEN FDI INFLOWS AND ECONOMIC GROWTH: A STUDY OF SELECT ASIAN COUNTRIES

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ABSTRACT

FDI plays an important role in the development process of a country. It has potential for making a contribution to the development through the transfer of financial resources, technology and innovative and improved management techniques along with raising productivity. Although it may seem natural to argue that foreign direct investment (FDI) can convey great advantages to host countries, this paper shows that the benefits of FDI vary greatly across countries. An empirical analysis using cross-country data for the period 1980-2010 suggests that total FDI exerts an ambiguous effect on growth. In this paper we have employed Granger Causality Analysis to test the direction of causality between FDI and growth for four major FDI recipients in the developing world (top four in Asia), namely China, India, Singapore and Hong Kong, each with different macroeconomic episodes, policy regimes and growth patterns over the period 1980-2010. We found that there is a uni-directional causality from FDI to GDP for China, a uni-directional causality from GDP to FDI for India, a bi-directional causality between FDI and GDP for Singapore and an absence of causality between FDI and GDP for Hong Kong. Thus our results vastly differ across the countries despite the fact that they are developing countries and belong to the same geographical region. At the same time, our results clearly suggest the need for more individual country studies on the above relationship since causality between the two variables is also country specific.

Key words: Foreign Direct Investment, economic growth, primary sector, manufacturing sector, service sector, spillovers.

1. Introduction

During the 1960s and 1970s foreign direct investment was highly criticized as being responsible for inequalities between the developed and developing world. Much of this view was wrapped up in dependency theory. Dependency theorists argued that FDI holds negative political, social and economic costs. Moran (1978) highlights three main propositions implicit in dependency analysis in regard to the effect of MNEs and FDI on host countries:

(1) The benefits of foreign investment are poorly distributed between the multinationals and the host country. The foreign company siphons off an economic surplus that could have been used to finance internal development.

(2) Multinational corporations create distortions within the local economy by squeezing out local entrepreneurs; employing inappropriate capital-intensive technologies leading to unemployment; worsening the distribution of income; and altering consumer tastes and undermining the local culture.

(3) Foreign investors pervert or subvert host country political processes by co-opting the local elites and/or by using their influence in their home countries, tries to bring pressure to keep host governments in line and/or by structuring the international system to respond to their needs to the detriment of host authorities.

More recently a rosy view of the likely effect of foreign direct investment has prevailed. Much of this view can be seen in the vast amount of "spillover" literature where positive effects from FDI overflow to host countries like water spilling out of a glass. This change represents both theoretical developments in economic growth theory and actual economic events. In Latin America, many countries promoted FDI as a means to finance development after the debt crisis. Many countries followed the Washington Consensus and privatized state run enterprises in the hope they would be more efficient. In other circumstances FDI was just seen as an alternative to the debt instruments of the 70s and 80s. Theoretically, new growth models endogenized the technological progress in the older Neoclassical Solow type models (Romer 1986). This provided theoretical justification for FDI as a catalyst for economic growth and development. These new models highlighted the roles of human capital accumulation and technological externalities. Multinationals, who conduct the majority of FDI, were seen as a means of development because they possessed the most sophisticated production and organizational methods, and could transfer these to developing countries. In the older Neo-classical framework the impact of FDI on the growth rate of output was constrained by diminishing returns to capital and could only have a level effect on output per capita (Solow 1956, 1957). In new growth theory, FDI may affect the level of output per capita and also the rate of growth through a permanent knowledge transfer (Romer 1990; Lucas 1988).

The relationship between foreign direct investment (FDI) and economic growth has motivated a voluminous empirical literature focusing on both industrial and developing countries. A large number of empirical studies on the role of FDI in host countries suggest that FDI is an important source of capital, complements domestic private investment, is usually associated with new job opportunities and enhancement of technology transfer, and boosts overall economic growth in host countries. A number of firm-level

studies, on the other hand, do not lend support for the view that FDI promotes economic growth.

Regarding developing countries in particular, macro-empirical work on the FDI-growth relationship has shown that—subject to a number of crucial factors, such as the human capital base in the host country, the trade regime and the degree of openness in the economy—FDI has a positive impact on overall economic growth.

The effect of foreign direct investment (FDI) on growth has been debated extensively in the economic literature. The rising interest in this area of research also coincides with the shift in emphasis among policymakers towards attracting more FDI inflows in recent years. Since the early 1980s, many countries (including the developing ones) have lifted many of the restrictions imposed on foreign capital flows.

The existing empirical evidence also seems to be contradictory: firm-level studies of particular countries often conclude that FDI is not beneficial to growth and also fail to obtain positive spillover effects to domestic enterprises. On the other hand, country-wide studies examining the effect of FDI inflows in the growth process of countries usually provide positive results, especially in specific environments.

Rationale

The relationship between FDI and Economic Growth varies across different countries. We are conducting the study on the relationship between FDI and Economic Growth by taking a sample of top four recipients of FDI in the South, East and South - East Asia which are China, Hong Kong, Singapore and India. The total inflow of FDI in this region in 2010 was 300 billion USD out of which share of China, Hong Kong, Singapore and India are 35.33%, 23%, 13% and 8.33% respectively. These four countries make an interesting group for studying the above stated relationship as they lie in the same region. We have chosen these four countries because of the regional similarity as well as all of them fall in the category of developing countries thereby creating an interest in conducting a comparative analysis of the trends and causal relationship between and FDI and Economic Growth.

Objectives of The Study

The objectives of this term paper titled "FDI and Economic Growth: A Study of Select Asian Countries" are :

To Study the trends in FDI Inflows for the top four recipients of FDI in the East, South-East and South Asian region namely China, Hong Kong, Singapore and India for the period 1980-2010 and

To find if there exists a causal relationship between FDI Inflows and Economic Growth in case of the above mentioned countries.

Literature Review

There is a large body of literature on the relationship between FDI and economic growth. In this literature review, the focus is on reviewing some of the studies on the relationship of FDI and economic growth. This review is not meant to be exhaustive.

Hansen and Rand (2004) analysed the causal relationships between foreign direct investment (FDI) and GDP in a sample of 31 developing countries covering the period 1970-2000 by applying Granger causality test and using bi-variate vector autoregressive (VAR) models for the log of GDP and FDI as a percentage of GDP, and for the log of GDP and FDI as a percentage of gross capital formation (GCF). They found a strong causal link from FDI to GDP exist—also in the long run irrespectively of the level of development and a higher ratio of FDI in gross capital formation has positive effects on the level of GDP and hence on growth.

Chowdhury and Mavrotas (2005) examined the causal relationship between FDI and economic growth and studied the direction of causality between the two variables by adopting a different approach by using the Toda-Yamamoto test (1995) which allows to derive more robust conclusions. Using the data for Chile, Malaysia and Thailand from 1969-2000, thay found that it is GDP that causes FDI in Chile and not vice-versa, whereas there is a strong bi-directional causality between GDP and FDI in Malaysia and Thailand.

Johnson (2005) analysed whether FDI inflows have a positive effect on host country economic growth by using cross-sectional and panel data analysis for 90 (68 developing and 22 developed) countries from 1980-2002. He found that that FDI inflow have a positive effect on host country economic growth for developing but not for developed economies.

Roy and Berg (2006) examined whether FDI inflows have stimulated growth of the U.S. economy by applying time-series data for the period 1970-2001 to a simultaneous-equation model (SEM) that explicitly captures the bi-directional relationship between FDI and U.S. economic growth. They found that FDI is found to have a significant, positive, and economically important impact on U.S. growth and SEM estimates reveal that FDI growth is income inelastic.

Karimi and Yusop (2009) investigated the causal relationship between foreign direct investment and economic growth for Malaysia by using the Toda-Yamamoto test for causality relationship and the bounds testing

(ARDL) on time-series data covering the period 1970- 2005. They did not find strong evidence of a bi-directional causality and long-run relationship between FDI and economic growth for Malaysia.

Adeniyi and Bashir (2011) explored the causality between Foreign Direct Investment and economic growth in Nigeria for annual data covering the period 1970-1985, 1986-2007 and 1970-2007 by using Granger Causality analysis. They found that there is no reciprocal causality relationship between economic growth and FDI in Nigeria. The direction of causality relationship is only from GDP to FDI and there is no causality relationship from FDI to GDP.

Rabiaei and Masoudi (2012) examined relationship between the Foreign Direct Investment, and growth by using fixed-effects and random-effects models on panel data for the period 1980-2009 consisting (D-8) eight Islamic developing countries, including Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan and Turkey. They found that foreign direct investment has positive effect on GDP growth.

Trends in FDI Inflows of Select Asian Countries

Global foreign direct investment (FDI) inflows rose modestly in 2010, following the large declines of 2008 and 2009. At $1.24 trillion in 2010, they were 5 per cent higher than a year before. This moderate growth was mainly the result of higher flows to developing countries, which together with transition economies – for the first time – absorbed more than half of FDI flows. FDI flows in 2010 remained some 15 per cent below their pre-crisis average, and 37 per cent below their 2007 peak. They are expected to rise further to $1.7 trillion in 2012 and reach $1.9 trillion in 2013, the peak achieved in 2007.

China has been amongst the world's largest recipient countries of foreign direct investment (FDI) since the early 1980s. During the period from 1980 to 1990, the FDI inflows into China had increased from 0.06 billion US Dollars to 3.5 billion US Dollars. In the next decade, the value of FDI inflows increased to the highest level of 45.5 billions of US Dollars in 1998 and then it fell to 30.3 billion US Dollars in 1999. During the period from 2000 to 2008, the FDI inflows into China had reached 108 billion US Dollars. During the financial crisis of 2008 it declined to 95 billion US Dollars in 2009. Inflows to China, the largest recipient of FDI in the developing world, climbed by 11 percent in 2010 to $106 billion. Concerned analysts generally predict that further increases in FDI in China are most likely in the years to come, amid the increasing integration of the country into the world market. Thus, proper assessments of the role FDI has played

in China's economic development are clearly of widespread policy importance.

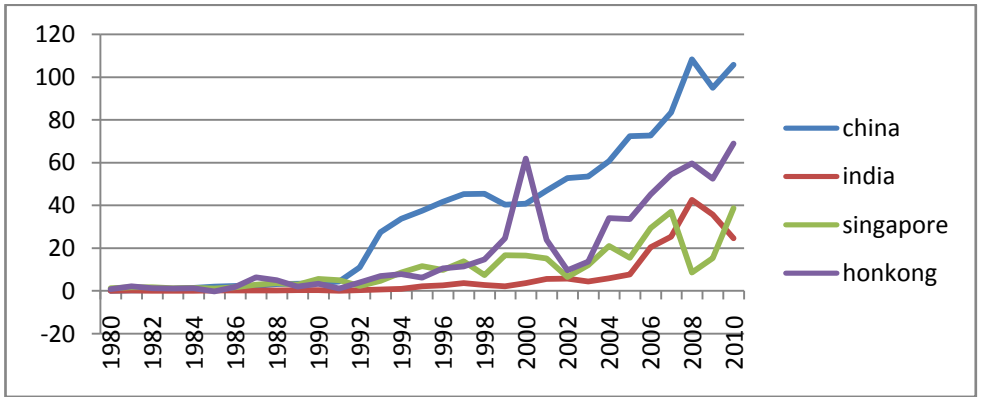
During the period from 1980 to 1989, the FDI inflows into India had grown considerably. The value of FDI Inflows has increased from 6 millions of US Dollars in 1983 to 252 millions of US Dollars in 1989. The average value of FDI inflows and annual growth rate in this decade works out to 104.7 millions of US Dollars and 24.33 per cent per year respectively. In the next decade, the value of FDI inflows increased to the highest level of 3.6 billions of US Dollars in 1997 from 75 millions of US Dollars in 1991 and then it started showing a declining trend, it has come down to 2.1 billions of US Dollars in 1999. The average value of FDI inflows and annual growth rate in this decade works out to 1.5 billions of US Dollars and 90.53 per cent per year respectively. During the period from 2000 to 2007, the FDI inflows into India had grown sizeably. The value of FDI inflows has rose from 3.9 billions of US Dollars in 2000 and touched the highest level of 35.65 billions US Dollars in 2009. It declined by 31 per cent to 24.64 billion US Dollars in 2010.

During the period from 1980 to 1990, the FDI inflows into Singapore had more than quadrupled from 1.24 billion US Dollars to 5.58 billion US Dollars. In the next decade, the value of FDI inflows increased to the highest level of 13.75 billions of US Dollars in 1997 and then it fell to 7.3 billion US Dollars in 1998. During the period from 2000 to 2007, the FDI inflows into Singapore had reached 37 billion US Dollars. During the financial crisis of 2008 it declined to 8.59 billion US Dollars but reached 38.6 US Dollars in 2010.

During the period from 1980 to 1990, the FDI inflows into Hong Kong had more than tripled from 0.71 billion US Dollars to 3.3 billion US Dollars. In the next decade, the value of FDI inflows increased to the highest level of 62 billions of US Dollars in 2000 and then it fell to 9.7 billion US Dollars in 2002. During the period from 2002 to 2008, the FDI inflows into Hong Kong had reached 59.6 billion US Dollars. During the financial crisis of 2008 it declined slightly to reach 52.4 billion US Dollars but reached 69 billion US Dollars in 2010.

We have shown the trends in FDI in the chart given below. We have shown FDI (In illion USD) on the vertical axis and year on the horizontal axis.

Figure 3.1: Trend In FDI Inflows



Results in the Table1 give the yearly growth rates in FDI inflows.

Table 3.1: Yearly Growth Rate of FDI Inflows

Year	China	India	Singapore	Hong Kong
1981	364.91%	16.46%	34.30%	190.56%
1982	62.26%	-21.74%	-3.49%	-40.04%
1983	113.02%	-91.67%	-29.21%	-7.52%
1984	54.91%	216.67%	14.81%	12.59%
1985	37.84%	457.89%	-19.59%	-120.7%
1986	14.72%	11.32%	63.32%	807.12%
1987	3.12%	79.66%	65.85%	231.04%
1988	38.03%	-57.08%	28.88%	-20.34%
1989	6.23%	176.92%	-21.01%	-59.01%
1990	2.77%	-5.95%	93.11%	60.46%
1991	25.21%	-68.35%	-12.34%	-68.82%
1992	152.13%	236.00%	-54.90%	280.71%
1993	149.95%	111.11%	112.61%	78.29%
1994	22.72%	83.08%	82.46%	12.96%
1995	11.12%	120.84%	34.91%	-20.63%
1996	11.21%	17.39%	-16.06%	68.36%
1997	8.46%	43.33%	42.05%	8.68%
1998	0.46%	-27.25%	-46.82%	29.88%
1999	-11.31%	-17.66%	126.66%	66.48%
2000	0.98%	65.50%	-0.57%	151.98%
2001	15.14%	52.68%	-8.47%	-61.61%
2002	12.51%	2.77%	-57.57%	-59.28%
2003	1.44%	-23.25%	86.52%	41.01%
2004	13.32%	33.72%	76.08%	149.29%
2005	19.42%	31.91%	-26.47%	-1.21%

2006	0.43%	166.70%	89.83%	34.01%
2007	14.86%	24.70%	26.19%	20.60%
2008	29.68%	67.83%	-76.81%	9.72%
2009	-12.29%	-16.21%	77.91%	-12.12%
2010	11.30%	-30.88%	152.88%	31.51%

We have shown the trends in FDI growth rates for all the four countries in the charts given below. We have shown FDI Growth Rate (In %) on the vertical axis and year on the horizontal axis.

Figure 3.2: **Yearly Growth Rates Of FDI Inflows**

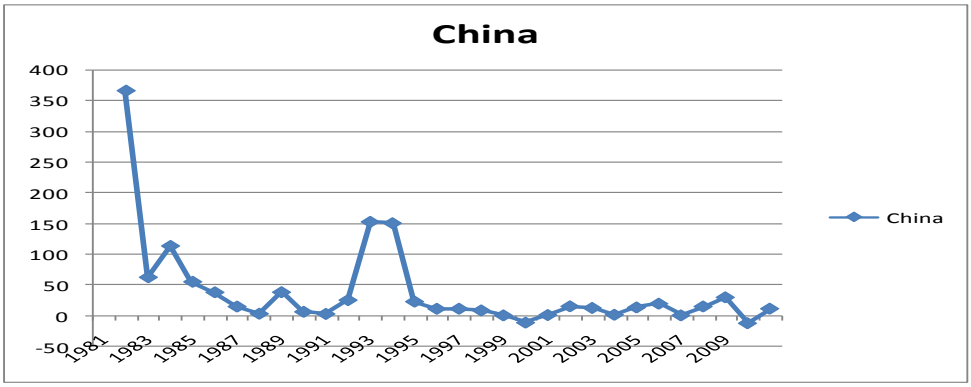


Figure 3.3: Yearly Growth Rates Of FDI Inflows

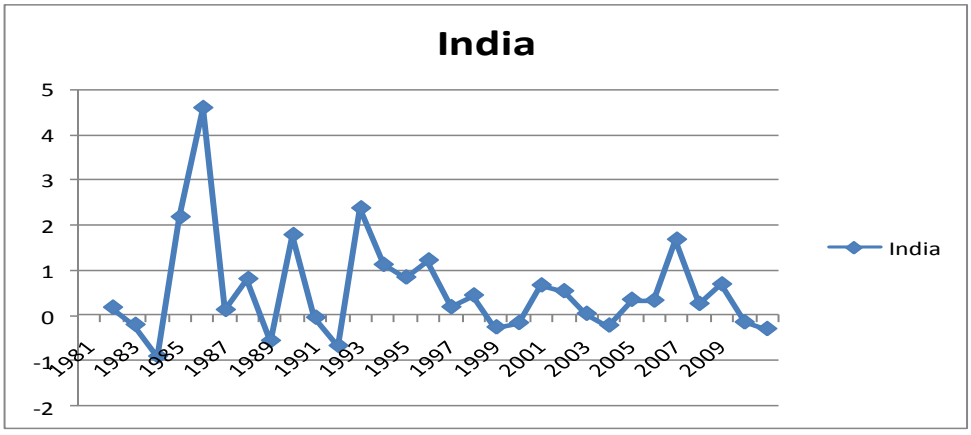


Figure 3.4 Yearly Growth Rates Of FDI Inflows

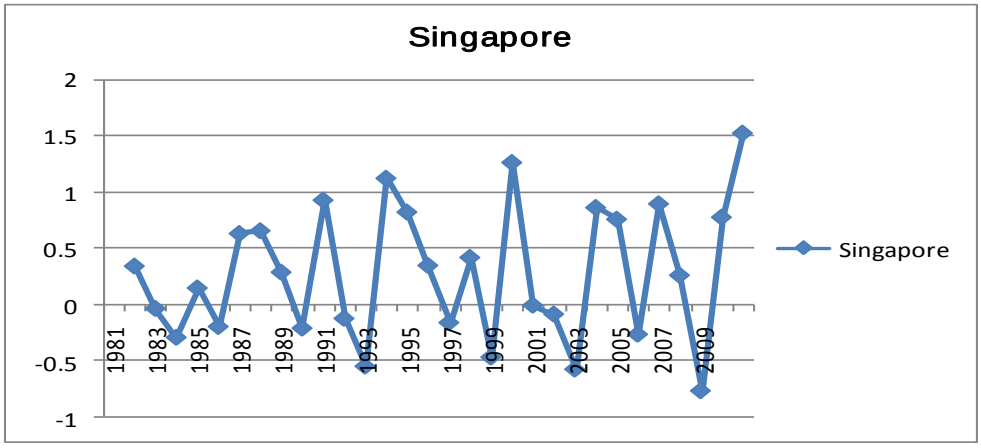
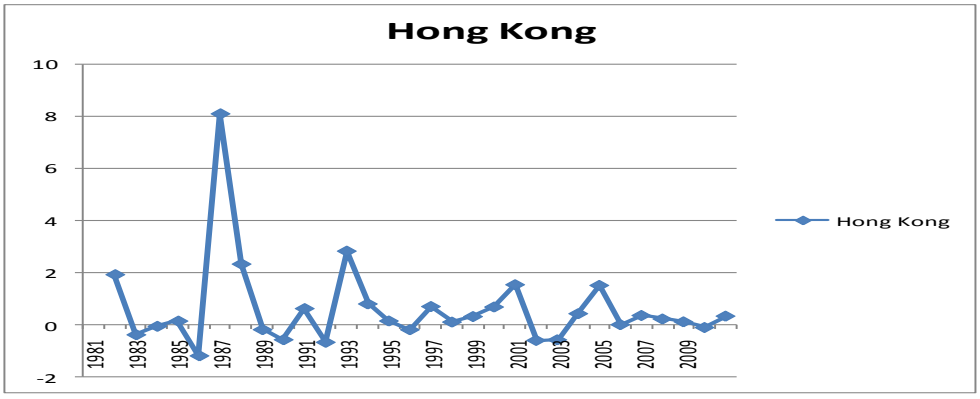


Figure 3.5: Yearly Growth Rates Of FDI Inflows



The decadal growth rates and the average growth rates for the sample period are shown in table 2 given below:

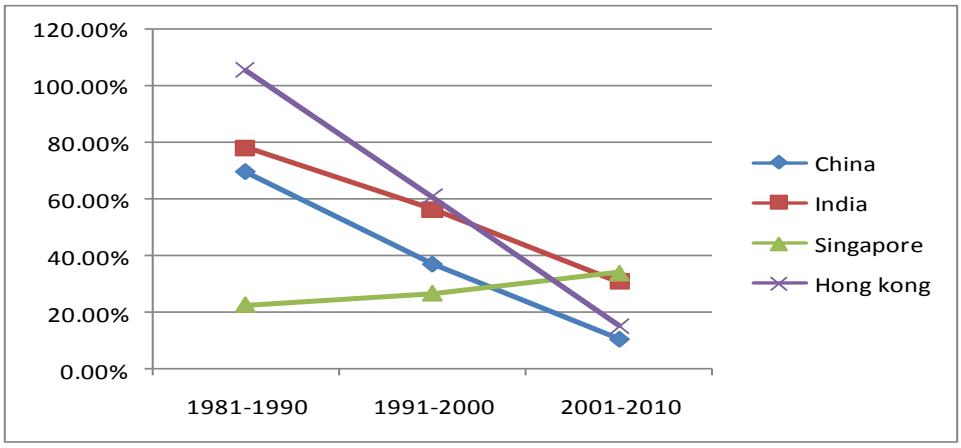
Table 3.2: Decadal Growth Rates Of FDI Inflows

Period	China	India	Singapore	Hong Kong
1981-1990	69.78%	78.25%	22.70%	105.41%
1991-2000	37.09%	56.40%	26.80%	60.79%
2001-2010	10.58%	31.00%	34.01%	15.19%
Average Growth Rate (1981-2010)	39.15%	55.22%	27.84%	60.46%

We can see from table 2 that growth in FDI from 1981-2010 is highest for Hong Kong and lowest for Singapore. Hong Kong remains the leader from 1991-2000 with Singapore remaining at the bottom. There is a change in the position for the period 2001-2010 with Singapore moving from the bottom to the top position and china moving to the bottom. The decadal

growth rate has declined for all the countries with the exception of Singapore, where it has increased from 22.7 percent to 34.01 percent. The average growth rate of FDI inflows for the sample period of 1980-2010 is highest for Hong Kong and lowest for Singapore. We have shown the decadal growth rate of FDI in the chart given in the next page. We have shown FDI Growth Rate (In %) on the vertical axis and decade on the horizontal axis.

Figure 3.6: Decadal Growth Rates Of FDI Inflows



An Empirical Analysis of the Relationship between FDI and Economic Growth

Sample Period

We use data covering the period 1980-2010 for four developing countries, namely China, India, Singapore and Hong Kong, all major FDI recipients for many years (among top 20 recipients of FDI in the world in 2010) because most of the above stated countries had liberalised their FDI policies by 1980.

Data Sources

Data on FDI was obtained from the UNCTAD Foreign Direct Investment database on the Internet. The data consists of inflows of FDI into these four countries with no restrictions on the source. The data on GDP was taken from the International Financial Statistics (IMF).

Research Methodology

To determine whether there is a causal relationship between FDI and economic growth, Granger causality tests on FDI and GDP were performed. This test, introduced in Granger (1969), has been widely utilized to examine the direction of causality between two time-series variables. However, to

proceed with the Granger causality test, the time series properties of the variables must be checked. In cases where the variables are not stationary, the usual asymptotic distribution of the test statistic may not be valid under the null hypothesis. Therefore, it is important to ensure that the variables are stationary before proceeding.

To check if the variables are stationary, Augmented Dick Fuller (ADF) unit root test has been employed. Lag lengths for the ADF tests are determined by the Schwartz Information Criterion (SIC). This test results suggest that all series contain unit root, which would require differencing to achieve stationarity.

Unit Roots Test

A common assumption in many time series techniques is that the data are stationary. A stationary process has the property that the mean, variance and autocorrelation structure do not change over time. Stationarity can be defined in precise mathematical terms, but for our purpose we mean a flat looking series, without trend, constant variance over time, a constant autocorrelation structure over time and no periodic fluctuations (seasonality).

Why do we need to test for Non-Stationarity?

The stationarity or otherwise of a series can strongly influence its behaviour and properties -e.g. persistence of shocks will be infinite for non-stationary series. If two variables are trending over time, a regression of one on the other could have a high R square even if the two are totally unrelated which exemplifies the case of spurious correlation. If the variables in the regression model are not stationary, then it can be proved that the standard assumptions for asymptotic analysis will not valid. In other words, the usual "t-ratios"will not follow a t-distribution, so we cannot validly undertake hypothesis tests about the regression parameters. Granger Causality test assumes that the time series involved in the analysis are stationary so tests of stationarity should precede test of causality.

The test of stationarity (non-stationarity) that has become widely popular over the past several years is the unit roots test. In conducting the Dickey Fuller test it was assumed that the error term u_t was uncorrelated. But in case u_t was correlated, Dickey and Fuller have developed a test, known as the augmented Dickey Fuller (ADF) test. This test is conducted by augmenting the Equations of Dickey Fuller Test by adding the lagged value of the dependent variable ΔYt. The ADF test consists of estimating the following regression:

$$\Delta Y_t = \beta_1 + \beta_2 + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_I \Delta Y_{t-i} + \varepsilon_t$$

Where ε_t is a pure white noise error term and where $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$, $Y_{t-2} = (Y_{t-2} - Y_{t-3})$ etc. The number of lagged difference terms to include is often determined empirically, the idea often being to include enough terms so that the error term in the above equation is serially uncorrelated. In ADF we still test whether δ = 0 and the ADF test follows the same asymptotic distribution as the DF statistic, so the same critical values can be used.

Granger Causality

Although regression analysis deals with the dependence of one variable on other variables it does not imply causation. In other words the existence of a relationship between the variables does not prove causality or the direction of influence. But in regressions involving time series data the situation can be somewhat different because time does not run backward, that is if event A happens before event B then it is possible that A is causing b. it means that events in the past can cause events to happen today. This is the idea behind Granger Causality test. Sometimes the term precedence is used in place of causality. The statement Y causes X means that Y contains useful information for predicting X over and above the past histories of the other variables in the system.

To consider the Granger test, we will consider the question: Is it GDP that causes the FDI Inflows (IFDI) or is it IFDI that causes the GDP. The Granger Causality test assumes that the information relevant to the prediction of the respective variables, GDP and IFDI are solely contained in the time series data on these variables. This test involves estimating the following pair of regressions:

$$IFDI_t = \sum_{i=1}^{n} \alpha_i GDP_{t-i} + \sum_{j=1}^{n} \beta_j IFDI_{t-j} + u_{1t}$$

$$GDP_t = \sum_{i=1}^{n} \lambda_i GDP_{t-i} + \sum_{j=1}^{n} \delta_j IFDI_{t-j} + u_{2t}$$

Where it is assumed that the disturbances u_{1t} and u_{2t} are uncorrelated. Since we have two variables, we are dealing with bi-lateral causality. The above two equations postulate that current IFDI is related to past values of itself as well as that of GDP and the same behaviour for GDP. Bilateral

causality is suggested when sets of IFDI and GDP coefficients are statistically significantly different from zero in both the regressions and independence is suggested when sets of IFDI and GDP coefficients are not statistically significant in both the regressions.

Results and Analysis

The results of unit root test are given below: Results obtained by applying ADF test showed **GDP(China)** series becomes stationary at the second difference.

Table Results of Unit Root Test for GDP(China)

Null Hypothesis: GDP(China) has a unit root Alternate Hypothesis: **GDP(China) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		10.26321	1.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	
At First Difference			
ADF Test Statistic		1.706780	0.9994
Test critical values	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	
At Second Difference			
ADF Test Statistic		-7.750956	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

It is clear from the above table that null hypothesis which states GDP(China) series is non stationary stands rejected. We will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -7.750956 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying GDP(China) series is stationary.

Results obtained by applying ADF test showed **FDI(China)** series becomes stationary at the first difference.

Table 4.4.2: Results of Unit Root Test for FDI(China)

Null Hypothesis: FDI(China) has a unit root Alternate Hypothesis: **FDI(China) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		1.057137	0.9961
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	
At First Difference			
ADF Test Statistic			
Test critical values:		-5.697797	0.0001
	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

It is clear from the above table that null hypothesis which states FDI(China) series is non stationary stands rejected. we will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -5.697797 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying FDI(China) series is stationary.

Results obtained by applying ADF test showed GDP(India) series becomes stationary at the first difference.

Table 4.4.3: Results of Unit Root Test for GDP(India)

Null Hypothesis: GDP(India) has a unit root Alternate Hypothesis: **GDP(India) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		1.534939	0.9990
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	
At First Difference			
ADF Test Statistic		-5.371817	0.0001
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

It is clear from the above table that null hypothesis which states GDP(India) series is non stationary stands rejected. We will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -5.371817 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying GDP(India) series is stationary.

Results obtained by applying ADF test showed FDI(India) series becomes stationary at the first difference.

Table 4.4.4: Results of Unit Root Test for FDI(India)

Null Hypothesis: FDI(India) has a unit root Alternate Hypothesis: **FDI(India) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		2.243151	0.9999
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	
At First Difference			
ADF Test Statistic		-5.403606	0.0002
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

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

It is clear from the above table that null hypothesis which states FDI(India) series is non stationary stands rejected. we will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -5.403606 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying FDI(India) series is stationary.

Results obtained by applying ADF test showed GDP(Singapore) series becomes stationary at the second difference.

Table 4.4.5: Results of Unit Root Test for GDP(Singapore)

Null Hypothesis: GDP(Singapore) has a unit root Alternate Hypothesis: **GDP(Singapore) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**

Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		2.153731	0.9999
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	
At First Difference			
ADF Test Statistic		-3.664746	0.0104
Test critical values	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	
At Second Difference			
ADF Teat Statistic		-6.586520	0.0000
Test critical values:	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	

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

It is clear from the above table that null hypothesis which states GDP(Singapore) series is non stationary stands rejected. we will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -6.586520 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying GDP(Singapore) series is stationary.

Results obtained by applying ADF test showed FDI(Singapore) series becomes stationary at the first difference.

Table 4.4.6: Results of Unit Root Test for FDI(Singapore)

Null Hypothesis: FDI(Singapore) has a unit root
Alternate Hypothesis: **FDI(Singapore) does not have a unit root**
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level		1.268201	0.9977
ADF Test Statistic		-3.724070	
Test critical values:	1% level	-2.986225	
	5% level	-2.632604	
	10% level		
At First Difference			
ADF Test Statistic		-5.175153	0.0003
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

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

It is clear from the above table that null hypothesis which states FDI(Singapore) series is non stationary stands rejected. We will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -5.175153 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying FDI(Singapore) series is stationary.

Results obtained by applying ADF test showed GDP(Hong Kong) series becomes stationary at the second difference.

Table 4.4.7: Results of Unit Root Test for GDP(Hong Kong)

Null Hypothesis: GDP(Hong Kong) has a unit root Alternate Hypothesis: **GDP(Hong Kong) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		-0.421014	0.8927
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	
At First Difference			
ADF Test Statistic		-2.955096	0.0513
Test critical values	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	
At Second Difference			
ADF Test Statistic		-7.717076	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

It is clear from the above table that null hypothesis which states GDP(Hong Kong) series is non stationary stands rejected. we will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -7.717076 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying GDP(Hong Kong) series is stationary.

Results obtained by applying ADF test showed **FDI (Hong Kong)** series becomes stationary at the first difference.

Table 4.4.8: Results of Unit Root Test for FDI(Hong Kong)

Null Hypothesis: FDI(Hong Kong) has a unit root Alternate Hypothesis: **FDI(Hong Kong) does not have a unit root** **Exogenous: Constant** **Lag Length: 0 (Automatic based on SIC, MAXLAG=7)**			
Augmented Dickey – Fuller test statistic		**t-statistic**	**Prob***
At Level			
ADF Test Statistic		-0.696355	0.8328
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	
At First Difference			
ADF Test Statistic		-5.907488	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

It is clear from the above table that null hypothesis which states FDI(Hong Kong) series is non stationary stands rejected. we will compare the calculated t-value (t-value obtained from ADF statistics) with the critical t-values. Calculated t-value which is -5.907488 is larger than the critical values in magnitude at all the significance levels. So null hypothesis is rejected at all the significance levels, thereby saying FDI(Hong Kong) series is stationary.

Table 4.4.9 provides the results of the long run relationship between FDI inflows, and GDP for China, India, Singapore and Hong Kong for the period 1980-2010. The results of Granger test done for 2 Time lags between the two variables for the above stated countries are displayed in the table below.

Table 4.4.9: Pair wise Granger Causality Tests.

Pairwise Granger Causality tests **Sample: 1980 – 2010** **Lags 2**			
Null Hypothesis	**Obs**	**F-statistic**	**Prob**
FDI(China) does not Granger cause GDP(China) GDP(China) does not Granger cause FDI(China)	27	6.49102 1.43883	0.0061 0.2587
FDI(India) does not Granger cause GDP(India) GDP(India) does not Granger cause FDI(India)	28	1.70047 5.61890	0.2048 0.0103
FDI(Singapore) does not Granger cause GDP(Singapore) GDP(Singapore) does not Granger cause FDI(Singapore)	27	6.38069 3.97727	0.0065 0.0335
FDI(Hong Kong) does not Granger cause GDP(Hong Kong) GDP(Hong Kong) does not Granger cause FDI(Hong Kong)	27	0.33845 0.01002	0.7165 0.9900

It is clear from the above table that null hypothesis which states FDI(China) does not granger cause GDP(China) stands rejected at 5% significance level but null hypothesis which states GDP(China) does not

granger cause FDI(China) cannot be rejected as its p-value is insignificant. Hence, there is a uni-directional causality from FDI to GDP only and not from GDP to FDI for China. Our empirical findings based on the Granger Causality test seem to suggest that it is FDI that causes GDP in China and not vice versa because China is being used as an export platform and hence growth is basically export led with the a large portion of GDP being exports. There is a general consensus that liberal policies related to FDI inflows spur growth, that FDI works as a catalyst for development and that it is a real force in integrating a developing economy into the global economy. FDI has been vitally important in China's contemporary reform and growth strategy, and China has been a categorical success in attracting it. FDI was instrumental in engendering thousands of foreign-invested enterprises (FIEs), which in turn played an exceedingly important role in China's growth and globalization endeavours.

Null hypothesis which states GDP(India) does not granger cause FDI(India) stands rejected at 5% significance level but null hypothesis which states FDI(India) does not granger cause GDP(India) cannot be rejected as its p-value is insignificant. The results show that FDI does not Granger cause GDP but interestingly GDP Granger causes on FDI in case of India. Hence, there is a uni-directional causality from GDP to FDI only and not from GDP to FDI for India. FDI in India has in a lot of ways enabled India to achieve a certain degree of financial stability, growth and development. This money has allowed India to focus on the areas that may have needed economic attention, and address the various problems that continue to challenge the country. India launched a series of progressive economic liberalization policies to overcome the structural defects that has caused the economic crisis in 1991. With these policy changes, foreign direct investment (FDI) into India has increased rapidly since 1992. Foreign direct investment to India increased from a mere $75 million in 1991 to $5,778 million in 2004 because of institutional restructuring. On the other hand India is the 2nd fastest growing economy among the emerging nations of the world. It has the third largest GDP in the continent of Asia. The study indicates the co-movement and converging behaviour between the two, the movement of FDI and GDP. FDI is not closely following the GDP in the initial period but after the year of 1992 it closely converges with movement in the GDP. The FDI inflows attained its peak in the mid of 2007 and the GDP also responded quickly to it and attained its all time hike. This result shows the inter-relationship between these two variables. An increased domestic economic activity will attract foreign investors to invest in India. India’s diverse economy attracts high FDI inflows mainly because of its enormous market size, low wage rate, large human capital (which has benefited immensely from outsourcing of work from developed countries),

huge population, increased domestic production in various industries, infrastructural facilities, demographics" with a young population there is a huge consumer base that is to be tapped, the growing middle class, increased urbanization and awareness, rising disposable incomes. Economic growth has a profound effect on the domestic market as countries with expanding domestic markets should attract higher levels of FDI inflows. There is a clear indication from the data that foreign investors showed keen interest in Indian economy because of liberalised regime pursued and followed by Indian economy. India is now considered a good investment centre which is evidenced from their infusion of investment in Indian economy. The government is finally taking steps to relax FDI norms for multi-brand retail. The Committee of Secretaries has recently recommended up to 51 percent foreign investment in the sector and a commitment of at least $100 million investments. If this relaxation in norms finally becomes policy, retailing giants like Wal-Mart and Carrefour will enter this market. When large investments pour in, the general climate for inflows improves".

Null hypothesis which states FDI(Singapore) does not granger cause GDP(Singapore) stands rejected at 5% significance level and null hypothesis which states GDP(Singapore) does not granger cause FDI(Singapore) stands rejected at 5% significance. Hence, there is a bi-directional causality between FDI to GDP for Singapore. There is a strong evidence of a bi-directional causality between GDP and FDI for Singapore as FDI inflows fill up the financial resource gap, lead to technology transfer and provide employment which result in expansion of production capacities and productivity gains, thus pushing up economic growth which lures or encourages the foreign investors to get high returns in a business friendly environment with well developed financial markets supported by properly regulated financial system.

Null hypothesis which states GDP(Hong Kong) does not granger cause FDI(Hong Kong) and the null hypothesis which states FDI(Hong Kong) does not granger cause GDP(Hong Kong) cannot be rejected as their p-value is insignificant. Hence, there is a no causality between GDP and FDI for Hong Kong. There is no causality in case of Hong Kong in either direction. Hong Kong and tax havens, such as the Cayman Islands and the British Virgin Islands, received 81 percent of total Chinese outbound investment (and perhaps explaining why these destinations in turn are some of the largest sources of "foreign" investment coming back into China). One of the concerns in interpreting FDI data for Hong Kong is that a significant portion of these inflows could potentially represent round-tripping to take advantage of preferential tax treatment of foreign investment relative to domestic investment, legal and institutional setting for property right protection,

financial service and political stability are the major reasons for South East Asia investors to use Hong Kong as a host for round tripping activities. Much of this round-tripping is believed to take place through Hong Kong, while it is difficult to estimate the extent of round-tripping. FDI inflows into Hong Kong containing a large portion of capital from China which are routed back to China and funds from other countries where the purpose is to avail better financial services available in Hong Kong (Listing) rather than adding to the production capabilities of Hong Kong, hence there is no relationship between FDI and the GDP.

2. Conclusion

Many recent studies analyzing foreign direct investment and growth have shown a positive association between FDI and GDP. But there seems to be less clarity about the direction of causality, which is crucial for the formulation of economic policy.

In this paper we have employed Granger Causality Analysis to test the direction of causality between FDI and growth for four major FDI recipients in the developing world (top four in Asia), namely China, India, Singapore and Hong Kong, each with different macroeconomic episodes, policy regimes and growth patterns over the period 1980-2010.

We found that there is a uni-directional causality from FDI to GDP for China, a uni-directional causality from GDP to FDI for India, a bi-directional causality between FDI and GDP for Singapore and an absence of causality between FDI and GDP for Hong Kong. Thus our results vastly differ across the countries despite the fact that they are developing countries and belong to the same geographical region.

The above findings have important policy implications. Understanding the direction of causality between the two variables is crucial for formulating policies that encourage private investors in developing countries, particularly in the aftermath of the Asian financial crisis of 1997-98, the recent Financial Crisis of 2008 and the ongoing Euro Zone Crisis. In view of our findings, the conventional view which seems to suggest that the direction of causality runs from FDI to economic growth is not confirmed in the case of India and Hong Kong, while in the case of both China it is uni-directional and for Singapore, the causality is bi-directional. Consequently, this casts some doubts on the validity of policy guidelines which emphasize the importance of FDI for growth and stability in developing countries under the assumption that 'FDI causes growth'. Increased attention needs also to be given to the overall role of growth (and the quality of growth) as a crucial determinant of FDI along with the quality of human capital, infrastructure, institutions, governance, legal framework, ICT and tax

systems in host countries. General policies aimed at altering the fundamentals are more important than specific policies aimed at attracting particular investments.

At the same time, our results clearly suggest the need for more individual country studies on the above relationship since causality between the two variables is also country specific. This remains an important challenge for future research.

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INVENTORY MANAGEMENT PRACTICES AT IFFCO – A CASE STUDY

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ABSTRACT

An Inventory Management has emerged as one of the important tools to improve operational efficiency over the last 30-40 years across the globe. The effective management of the inventory is crucial to the performance of many organisations. Inventory is one of the key determinants of the productivity of fertilizer industry. Inventory management plays an important role in the fertilizer industry both in production of new assets and operational maintenance of existing assets. Therefore, the continuous availability of inventory is a prime requirement for the uninterrupted working and better capacity utilization. This paper aims at examining the efficiency of inventory management in IFFCO. The study also highlights the correlation between the size of inventory and sales and output.

1. Introduction

Inventories generally constitute the second largest item after fixed assets in the financial statements particularly of manufacturing organisations. Para 23 of AS-2 on inventory valuation issued by the Institute of Chartered Accountants of India states that inventories are normally classified in the financial statements as (a) Raw materials, (b) Work-in-progress, (c) Finished goods and (d) Stores and spares. Proper management of each of the above components is necessary/important to maintain and improve the health of an organisation. Efficient management of inventories will improve the profitability of the organisation. The seminar organized by the Indian Association of Materials Management at Calcutta on the importance of inventory noted that 90 per cent of the working capital in Indian Industries is locked up in inventories as against not more than 30 to 40 per cent in industrially advanced countries. It further observed that 64 paise in a rupee are spent on materials by Indian industries, 16 paise on labour and the rest of one rupee is the cost spent on overheads. The importance can be guaged from the fact that purchases account for nearly 50 per cent of an

organisations' annual expenditure, that nearly 80 per cent of the working capital is tied up in inventory and the inventory carrying cost is almost 25 per cent per year, that materials represent 40 to 50 per cent sale price or 60 to 80 per cent of the production cost of a product and that even a saving of 5 per cent in material cost will substantially increase the profit margin of an enterprise. Effective Management of Inventory shall definitely improve return on investment - the primary motive of business enterprise.

$$\text{Return on Investment} = \frac{\text{Profit}}{\text{Capital Investment}}$$

Return on capital is product of two factors, profit margin (profit / sales) and, capital turnover rate (sales/capital). In other words:

$$\text{Return on Investment} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Investment}}$$

Normally, profit margin depends on external factors such as competition and Government restrictions which are beyond the control of management. For a given volume of business, the rate of return is maximum when the capital investment is minimum. Capital investment comprises two parts i.e. fixed assets and current assets. Investment of capital in fixed assets like land, building and plant and machinery is fixed and very little can be done to reduce it because of irreversible nature of decision. This leaves us with no choice except effective management of working capital, the major parts of which is invested in inventories.

2. Profile of the company

Indian Farmers Fertiliser Cooperative Limited (IFFCO), one of the significant players of India's agriculture revolution and globally acclaimed largest fertilizer cooperative has always been striving for socio-economic upliftment of the rural population of India. To ensure timely availability of quality fertilizers to the farmers, IFFCO was registered as a multi-unit cooperative society on 3rd November, 1967. The Society has grown in strength and stature from a modest membership of 57 societies in 1967-68 to 37,337 as on March 31, 2006. The initial equity capital of Rs. 6 lakh contributed by the cooperatives in 1967-68 has grown to staggering Rs. 456.87 crores in 2011-12 As on 31.3.2012 IFFCO is the largest producer in the country.

It has contributed 19.5 per cent to country's total nitrogenous fertilizer production and 24.4 per cent to total phosphatic production during the year 2011-12. Apart from its own growth and service to farmers, IFFCO has contributed towards creation and development of other organizations like Krishak Bharati Cooperative Ltd. (KRIBHCO), Godavari Fertilizers and

Chemicals Ltd. (GFCL) and Industries Chemiques Du Senegal (ICS) that produces phosphoric acid in Senegal. It has also contributed to the equity of Indian Potash Limited (IPL), Maharashtra State Cooperative Ltd., Indian Tourism Cooperative Limited (COOPTOUR) and National Film and Arts Cooperative Limited (NAFFAC).

3. Objective of the study

Inventory is the largest asset among current assets in manufacturing concerns. So, the study of different components of inventory (raw materials, work-in progress and stores and spares) assumes `greater significance in cost management and enhancement of profitability. The following are main objectives of the study:

(i) To study the degree and significance of relationship between raw materials consumed & stock of raw material, works cost & stock of work-in-progress, sales & stock of finished goods and sales & total inventory.

(ii) To make component-wise analysis of inventory items in order to identify the component requiring more attention of management.

4. Limitations of the study

(i) The study is confined to a period of 10 years only i.e. from 2001-02 to 2011-12 and based on secondary data only.

(ii) The study focuses on inventory control practices to the extent of data available in annual reports only.

5. Research Methodology

The study is based on the published annual reports of the company. The period of study ranges from 2001-02 to 2011-12. The data compiled from annual reports are analysed by employing the following tools:

6. Correlation (r)

Correlation is a statistical tool with the help of which we study the extent, nature and significance of association between the given variables. Correlation between cost of raw materials consumed & stock of raw materials, works cost & stock of work in progress, cost of production & stock of finished goods and spares consumed & stock of spares has been computed in this study.

$$r = \frac{N\sum dx\,dy - (\sum dx)(\sum dy)}{\sqrt{N\sum dx^2 - (\sum dx)^2}\ \sqrt{N\sum dy^2 - (\sum dy)^2}}$$

Coefficient of Determination (r^2)

The coefficient of determination which explains the variation in dependent variable arisen out of independent variable is calculated for stocks of raw materials, work in progress, finished goods and stock of spares. The coefficient of determination is obtained by squaring the coefficient of correlation as .

$$r^2 = \frac{N\sum dx\,dy - (\sum dx)(\sum dy)}{\sqrt{N\sum dx^2 - (\sum dx)^2}\ \sqrt{N\sum dy^2 - (\sum dy)^2}}$$

Test of Significance of Correlation

The variables studied becomes more meaningful if they justify the test of significance. The correlation ascertained is tested for its significance by the following formula:

$$t = \frac{r}{\sqrt{1-r^2}}\sqrt{n-2}$$

The calculated values are compared to tubular values at different levels of confidence for n-2 degrees of freedom.

Coefficient of correlation and probable Error (P.Er)

The probable error helps to determine the reliability of the value of coefficient of correlation. The probable error of the coefficient of correlation is obtained as follows:

$$P.Er = \frac{0.6745\ 1 - r^2}{\sqrt{N}}$$

"If the value of r is more than six times of the probable error, the coefficient of correlation is practically certain i.e. the value of r is significant" If the value of r is less than the probable error, there is no evidence of correlation i.e. the value of r is not significant at all.

Geometric mean (G.M.)

The compound rates of growth of numerous variables are worked out by geometric mean as:

$$\textbf{G.M.} = \frac{\text{Antilog } [\sum \text{ Log X}]}{N}$$

Coefficient of Variation(CV)

Coefficient of variation developed by Karl Pearson is the most commonly used measure of relative variation. It is used in such problems where we want to compare the variability of two or more than two series

The formula for the coefficient of variation is as:

$$\textbf{C.V.} \quad \frac{\sigma}{\bar{X}} \textbf{ x 100}$$

7. Analysis and findings

Before the start of study, it is pertinent to verify that the variables are correlated and further correlation should be significant in order to prove the study useful. Table l depicts that all the variables under the study are positively correlated. The least correlation + 0.082 exists between cost of stores and spares consumed and stock of stores and spares. The extent of correlation is highest (i.e. 0.9308) in case of raw materials consumed and stock of raw materials, followed by correlation of 0.8975 in case of inventory and current assets.

The probable error depicts that the value of r exceeds the six times of probable error in case of inventory & current assets, raw material consumption & stock of raw materials, sales & stock of finished goods and sales & total inventory. The probable error establishes the relationship between these variables as significant. The t-values holds that the correlation between these variables is significant at 99.5% confidence level for 8 degrees of freedom. In case of stores and spares, the correlation value of 0.082 between consumption of stores & spares and stock of stores and spares is minor and probable error & t-test both prove it insignificant at 90% for 6 degrees of freedom. However, in case of works cost & stock of work-in-progress, it signifies that relationship between stock of work-in progress and works cost is significant at 95% for 8 degrees of freedom.

The square root(the growth rates of raw materials consumption, works cost, sales, consumption of spare parts and current assets are 4.011, 8.74, 7.66, 5.563 and 3.59, respectively a against the actual rates of 62.95, 57.45,

58.63, 11.21 and 12.86. This clearly portrays the scope for improvements in the area of inventory management of the company. The claim for improvements is further strengthened by the coefficient of determination (r^2). The unexplained variations are to the extent of 13 per cent in raw materials stock, 57 per cent in stock of work-in-progress, 36 per cent in stock of finished goods, 99 per cent in stock of stores and spares revealed by determination. On the average, 19 per cent unexplained variations exist in aggregate inventory. In the modern age of information technology and fast means of transport, the communication lead time and transport lead time can be drastically reduced which can further substantially reduce investment in inventories and such released funds can alternatively be exploited to ameliorate the position of the company**.**

8. Circular Ratios and Holding Period

In order to maximize the wealth of shareholders, all the components of inventory should be promptly circulated. Quick conversion of raw materials into sales improves the liquidity and profitability of the company which in turn reduces the future dependence on bank borrowings leading to reduction of interest charges.

Inventory turnover ratio is inversely related to holding of inventory in term of days raw material turnover. The Tandon Committee set-up by Reserve Bank of India recommended the holding standard for inventory in terms of months consumption.

As depicted by Table III, raw materials turnover ratio has risen from 5.76 in 2001 to 19.36 in 2007 and came down to 15.19 in 2012. The holding period has slid down from 63.32 days in 2001 to 24.03 in 2012. The work-in-progress stock as shown by Table really non-significant, and moreover control of work-in-progress depends upon the technological processes and efforts of production engineer rather than Materials Manager. The stock of finished goods has been in excess of standard over the entire period of study. Though it came down near to standard of 36.5 days in 2008 but again spurted to 62 days in 2010. As regards stores and spares turnover ratio, the position is highly unsatisfactory. This is the area where the company should promptly initiate action. The holding period of stores and spares ranged from 1921 days (5.26 years) to 1460 days (4 years). The committee on inventory control of Bureau of Public Enterprises suggested that the holding of stores and spares should not exceed 12 months consumption in any enterprise. The study of turnover ratios and holding period reveals that as regards raw material inventory, the company is required to make slight efforts. In case of finished goods major efforts are required to be undertaken as the holding is almost twice of the standard. In case of spare parts

inventory, drastic improvements must take place quickly. Either the stock of stores and spares is excessively procured in relation to anticipated usage or the stock of stores and spares has become obsolete which is not disposed off immediately.

9. Structure and Composition of Inventory

If investment in current assets is to be reduced, the components of inventory must be cracked down being the controllable assets as compared to receivables. The study (as revealed in Table IV) points out that Geometric mean of all the components of inventory is more as compared to the beginning year of the study. The increase in the stock of all the components has enhanced the proportion of inventory in current assets from 26.74 in 2001 to average of 43.05. The standard deviation 4.486 and 3.528 reveals that more variation exists in the management of finished goods stock-and stores and spares, respectively. The coefficient of variation is relative measure which depicts that though in absolute terms raw materials discloses less variation (as revealed by standard deviation of 1.55) but relatively it is most inconsistently managed, followed by stock of finished goods and stock of stores and spares.

10. Store and Spares - A Special focus

The proverbial saying "Many a little makes a mickle" highlights the importance of small savings. Economies in each area are pre-requisite for an efficient concern.

Table V shows that consumption of stores and spares as percentage of opening stock ranges maximum to 24.67 in 2010 In other words even in all the years amount of opening stock is too excessively high to meet the requirements of consumption still in all the years purchases were made of stores and spares. So, the management of the company is required to concentrate on the irrational purchases. The inventory control practices reveal that correlation ranges from very high to moderate among inventory items and the correlation is significant in case of all the components of inventory except stores and spares. The growth rates of stock of raw materials, work-in-progress, finished goods and total inventory is more than the ideal situation and provides clues for improvements. The stock of stores and spares requires the immediate attention of management in order to stop ruthless purchases. The amount of excess stock of stores and spares runs in crores whose carrying cost is borne unnecessarily. The company should be guided by "Pennywise pound foolish".

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Table 1 Correlation and Test of Significance of Correlation.

Variables of correlation	Coefficient of correlation (r)	Probable error	Probable error x 6	T Values	
				Calculated value	Tabular value
	1	2	3	4	5
Inventory and current assets	+0.8975	0.0415	0.2490	13.05	3.355
Raw material consumption and stock of raw materials	+0.9308	0.0285	0.1719	6.69	3.355*
Works cost and stock of work-in-progress	+0.6560	0.1358	0.8150	2.13	1.943**
Sales and stock of finished goods	+0.7972	0.0777	0.4664	3.73	3.355*
Stores and spares consumed and stock of stores and spares	+0.082	0.2369	1.4212	0.20	1.440***
Sales and total inventory	+0.8566	0.0568	0.3408	4.69	3.355"

t values at 99.5% or 8 degrees of freedom.
**t values at 95% for 6 degrees of freedom,
***t values at 90% for 6 degrees of freedom.

Table II Growth Rates of Variables and Coefficients of Determination

Variables	**Growth Rates**	**Coefficient of Determination (r^2)**	**Square root of growth rates**
Raw material consumption	16.087	0.8663	4.011
Stock of raw material	62.95		
Works cost	76.49	0.4303	8.74
Stock of work-in- progress	57.45		
Stock of finished goods	72.09	0.6355	7.66
Sales	58.63		
Consumption of stores and spares	30.948	0.0067	5.563
Stock of stores and spares	11.21		
Total inventory	79.13	0.8055	3.59
Current assets	12.86		

Table III Inventory Turnover Ratios and Inventory Holding.

Year ending March 31st	**Raw material**		**Work-in- progress***		**Finished goods**		**Stores and spares**	
	Turnover Ratio	In Days	Turnover Ratio	In Days	Turnover Ratio	in Days	Turnover Ratio	In Days
2001	5.76	63.32	NA**	NA**	7.00	52.00	NA**	NA**
2002	10.39	35.13	NA**	NA**	5.00	73.00	NA**	NA**
2003	10.24	35.64	10.23	0.36	4.78	76.36	0.19	1921
2004	15.69	23.26	879	0.42	6.77	53.91	0.20	1825
2005	14.64	24.93	955	0.38	6.06	60.23	0.20	1825
2006	18.20	20.05	874	0.42	4.72	77.33	0.20	1825
2007	19.36	18.85	934	0,39	5.26	69.39	0.16	2281
2008	17.08	21.37	1520	0.24	9.99	36.50	0.23	1586
2010	17.73	20.59	355	1.03	5.83	62.60	0.25	1460
2012	15.19	24.03	249	1.46	6.66	54.80	0.22	1659
Standard Recommended by Tandan Committee	0.75 months		- Negligible		1 month		12 months***	

*Ratio of W.I.P. turnovers ratio is calculated on the works cost which is computed from financial accounts by backward method

**NA refers to fingues Not Available

*** Standard given by Committee on Inventory control, Bureau of Public Enterprises, Govt. of India.

Table IV Components of Inventory as Percentage of Current Assets.

Year ending March 31st	Raw material	Works-in-progress	Finished goods	Stores and spares	Total
2001	6.04	-	14.00	6.69	26.74
2002	10.15	-	24.33	12.48	46.96
2003	10.12	0.09	23.42	18.87	52.50
2004	8.38	0.09	15.75	15.55	39.77
2005	9.78	0.07	19.49	14.23	43.57
2006	8.04	0.14	29.55	11.65	49.38
2007	8.97	0.08	22.48	11.37	42.92
2008	10.55	0.07	25.77	10.47	46.86
2010	9.56	0.47	23.99	8.26	42.28
2012	12.07	0.41	18.91	8.13	39.52
Total	99.66	1.42	217.69	117.7	430.5
Geometric mean(X)	9.37	0.1775	21.769	11.77	43.05
Standard deviation ()	1.55	0.1537	4.486	3.528	6.70
Coefficient of variation	6.045	1.15	4.852	3.336	6.42

Table V Unjustified Purchases of Stores And Spares

Amount in Rs. In lacs)

Year ending March 31	Opening stock	Purchases	Closing stock	Consumption	Consumption as % of opening stock
2003	18286.10	7787.63	22197.37	3876.36	21.19
2004	22197.37	12709.24	29692.45	5214.16	23.49
2005	29692.45	6128.33	29785.90	6034.88	20.32
2006	29785.90	1971.07	26013.37	5743.60	19.28
2007	26013.37	3441.69	25261.93	4193.13	16.12
2008	25261.93	3586.65	23240.74	5607.84	22.20
2010	23240.74 .	4586.84	22093.84	5733.74	24.67
2012	22093.84	3408.76	20833.29	4669.31	21.13

Though the schedules of annual reports do not`make ready reference to the consumption of stores and spares still the information is derived as:

Consumption = Purchases + Opening stock - Closing stock

After deriving the consumption of stores and spares, Table No. V is prepared.

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PUBLIC PERCEPTION AND ATTITUDE TOWARDS SOLAR ENERGY HARNESSING SYSTEM

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ABSTRACT

Research Background: About 70% of India's energy generation capacity is from fossil fuels, with coal accounting for 40% of India's total energy consumption followed by crude oil and natural gas at 24% and 6% respectively. Tamilnadu has been facing both peak and energy deficits over the last few years. Peak demand deficit in the state has increased from 1% in FY 2005-06 to 18% in 2011-12.

Aim: This study has been conducted to study the general public awareness, perception and attitude towards solar energy harnessing system and their willingness to adopt the same. Currently solar power is prohibitive due to high initial costs of deployment, lack of awareness and knowledge.

Objectives: The objectives of this study are to know the awareness, perception and attitude towards solar energy harnessing system among the general public.

Methodology: The study follows analytical research design; the primary data was collected using a structured questionnaire from 137 respondents residing in Chennai.

Findings & Conclusions: From the study it was found that the awareness about renewable energy resources and the solar harnessing system is not widespread. If awareness about the advantages of solar system, its benefits, and cost effectiveness are informed the public acceptance may be more. Hence through awareness campaigns, the public should be informed about the subsidies and other financial incentives provided by the government and may be encouraged and assisted to shift over to solar energy harnessing system.

Keywords: Solar Energy; Perception; Attitude;

1. Indian Solar Energy Sector

The Indian solar energy sector has been growing rapidly, in the past few years, majorly due to Government's initiatives such as tax exemptions and subsidies. Due to technical potential of 5,000 trillion kWh per year and minimum operating cost, Solar Power is considered the best suited energy

source for India. Today the Solar power, has an installed capacity of 9.84 MW which is about less than 0.1 percent of the total installed renewable energy of India's~ currently total installed renewable energy stands at 13,242.41 MW as per MNRE*.

India's power sector has a total installed capacity of approximately 1,46,753 Megawatt (MW) of which 54% is coal-based, 25% hydro, 8% is renewable and the balance is the gas and nuclear-based. Power shortages are estimated at about 11% of total energy and 15% of peak capacity requirements which is likely to increase in the coming years. The cost of production range is Rs 15 to Rs 20 per unit for the solar energy, which is very high when compared to, Rs 2 to Rs 5 per unit for other conventional sources in India*. (*Data Source from Ministry of New & Renewable Energy)

- The Emerging Market Trends in the industry of Solar Harnessing are
- Solar Heating Applications Finding its Way
- Thin Film PV Market Growing Rapidly
- Off-grid PV Applications Gaining Momentum
- Growing Concept of Solar Parks
- Increasing Domestic Manufacturing of Solar Products

2. Solar Energy Scenario – Tamilnadu

Tamilnadu has been facing both peak and energy deficits over the last few years. Peak demand deficit in the state has increased from 1% in FY 2005-06 to 18% in 2011-12. Between 2005-06 and 2011-12, peak electricity demand grew at a compound annual growth rate (CAGR) of 8%, while peak demand met at CAGR of 5%. Electricity deficit in the state has increased from 1% in 2005-06 to 11% in 2011-12. Between 2005-06 and 2011-12, electricity requirement grew at CAGR of 9%, while availability only grew at around 7% leading to increasing electricity deficits*.

bridge these yawning gaps between demand and supply of electricity, TN Government has come up with a new system concentrated on the renewable energy "The Solar Energy". With average solar incidence of 5.5-6 kWh/m2/day, Tamil Nadu is amongst the states with the highest solar insulation in India. Taking this advantage, the vision of the Tamil Nadu Government is to emerge as a world leader in Solar Energy by establishing 3000 MW by 2015. This Government intends to make Solar Energy a people's movement just as it did earlier in the case of Rain Water Harvesting. This policy is known as the "Tamil Nadu Solar Energy Policy – 2012" *. (*Central Electricity Authority (CEA), Tamil Nadu Transmission

Corporation Ltd (TANTRANSCO) and Tamil Nadu Generation and Distribution Corporation Ltd (TANGEDCO))

3. The objectives of the policy are:

- To achieve energy security
- To reduce carbon emissions
- To project Tamil Nadu as a Solar Hub
- To generate 3000 MW of Solar Energy by 2015
- To achieve grid parity by 2015
- To encourage indigenous solar manufacturing facilities in the State
- To promote Research and Development in the solar energy sector and hybrid systems
- To create skilled man power and employment in a new industry
- Target for promotion of Solar Energy in the State
- It is proposed to generate 3000 MW of Solar Energy by 2015

4. Need For the Study

India's theoretical solar potential is about 5000 T kWh per year (i.e. ~ 600 TW), far more than its current total consumption. Tamilnadu has been facing both peak and energy deficits over the last few years. Peak demand deficit in the state has increased from 1% in FY 2005-06 to 18% in 2011-12. With average solar incidence of 5.5-6 kWh/m2/day and around 300 clear sunny days a year, Tamil Nadu is amongst the states with the highest solar insulation in India. Moreover, between 2005-06 and 2011-12, electricity requirement grew at CAGR of 9%, while availability only grew at around 7% leading to increasing electricity deficits. With this growing deficit scenario, TN Government has come up with a new system concentrated on the renewable energy "The Solar Energy".

According to *Technical Report* (R. Margolis and J. Zuboy, 2006) Poor perception by public of renewable energy system aesthetics and Lack of information dissemination and consumer awareness about energy and Energy Efficiency (EE) / RE (Renewable Energy) were identified as important nontechnical barriers to solar energy use. Hence this study has been conducted to study the public awareness, perception and attitude towards solar energy harnessing system and their willingness to adopt the same. Currently solar power is prohibitive due to high initial costs of deployment, lack of awareness and knowledge. These factors have paved way for carrying out the study.

5. Objectives of the Study

- To know the level of awareness about solar products.

- To know the attitude of the customer towards solar energy.
- To identify the willingness of the respondents to change to solar energy.

6. Review of Literature

Roman, H. T. (2004), stated that Experimenting with Solar Energy has provided a vital difference in conserving the available energy resources. He has further stated that the study has revealed many extra ordinary dimensions in using solar energy. His study was supported by Tech Directions.

Devine-Wright, P, (2007), stated that public acceptance is recognized as an important issue shaping the widespread implementation of renewable energy technologies and the achievement of energy policy targets. Furthermore, it is commonly assumed that public attitudes need to change to make more radical scenarios about the implementation of renewable energy technologies feasible.

Drif, M., P. J. Pérez, J. Aguilera, G. Almonacid, P. Gomez, J. de la Casa, and J. D. Aguilar. (2007), In their University project have found A grid connected photovoltaic system of 200kWp at Jaen University. The Overview and Performance of the system has been closely watched. Solar Energy Materials & Solar Cells have been utilized to a greater effect to build the system.

Faiman, D., D. Raviv and R. Rosenstreich. (2007), In Their Research has found that Using solar energy to arrest the increasing rate of fossil-fuel consumption is possible. The southwestern states of the USA as case studies have elucidated the facts clearly.

A.N. Celik et al (2009), has made a review of installed solar photovoltaic and thermal collector capacities in relation to solar potential for the EU-15 (European Union). Has found that the energy from the sun can be transformed at a larger rate, to save the available resources and reduce the people from relying on Petroleum products.

Mehleri, E. D., P. L. Zervas, H. Sarimveis, J. A. Palyvos and N. C. Markatos. (2010), in their paper stated that the major trade-off is between cost and sunlight-to-electricity conversion efficiency—higher efficiency typically translates into higher cost. Program participants consistently achieve world-record efficiencies for different types of PV, but each effort has the same .ultimate goal: optimizing cost and efficiency to produce the least expensive end-use electricity

Phruksukarn, K. and J. Iantorno (2010), stated that, since the Industrial Revolution, fossil fuels—coal, oil, and natural gas—have powered immense technological progress. But supplies of fossil fuels are limited, and continued reliance on them may have significant environmental consequences. Fortunately, there are alternatives. The most powerful one is right over our heads – from the sun.

7. Research Methodology

Research Design

Nature of research: Analytical research is a type of research that utilizes critical thinking to find out facts about a given topic and from the answers obtained develop new and useful ways of doing things.

Data collection: The researcher has collected the data from two sources: Primary data and Secondary data

Research instrument: Questionnaire is the instrument used to collect the data.

Sampling Design

Sample size: the questionnaires were distributed to 175 samples in Chennai. Out of which 23 were not returned and 15 were unfilled. Hence the sample size is 137.

Sampling Technique: Convenience sampling, as the population is infinite.

Sampling Unit and Area: The sampling unit is selected from all the areas in and around Chennai and restricted to decision makers.

Results

Awareness, Knowledge and Usage of Renewable Energy

All the energy that comes from resources which are naturally replenished is classified as renewable energy. Major sources of renewable energy include sunlight, rain, wind, and tides. There are many sources of energy that are renewable and considered to be environmentally friendly and harness natural processes. There is serious concern that the world's limited energy resources will be exhausted in the near future. In order to preserve some of these limited energy resources for future generations, it is essential to use remaining energy reserves sparingly and to take up the important task of developing new energy resources and making sustainable use of renewable forms of energy. The study concentrates about the public awareness and perception towards the renewable energy with specific reference to solar energy. Data were collected from the respondents to

understand their awareness, knowledge and Usage of renewable energy. The findings are presented in the following tables.

Table 1 - Respondents Awareness towards Renewable Energies

Option	Frequency	Percentage
Yes	126	91.9
No	11	8.01
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 92% of the respondents are aware about renewable energies and around 8% of the respondents were not aware of renewable energies.

Table No. 2 – Energies Used by Respondents

Option	Frequency	Percentage
Only Electricity	125	91.2
Electricity & Kerosene	9	6.6
Electricity & Solar Energy	3	2.2
Total	**137**	**100**

(*Source: Primary Data)*

Interpretation: Among the respondents it was found that around 91% are using only Electricity, Around 7% are using kerosene along with electricity and around 2% are users of Solar energy and Electricity.

Table 3 – Awareness on Depletion of Present Energy Sources

Option	Frequency	Percentage
Yes	131	95.6
No	6	4.3
Total	**137**	**100**

(Source: Primary Data)

Interpretation: There are around 96% of the respondents who are aware that the energy available at present will get exhausted one day.

Table 4 – Awareness about Solar Devices

Option	Frequency	Percentage
Yes	128	93.4
No	9	6.5
Total	**137**	**100**

(Source: Primary Data)

Interpretation: About 93% of the respondents are aware of solar devices and 7% of the respondents are not aware of solar devices.

Table 5 – Prior usage of solar device

Option	Frequency	Percentage
Yes	65	47.4
No	72	52.8
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Half of the respondents 52.8% have never used a solar device and 47.4% of the respondents have used a solar device.

Table 6 – Replacement of Conventional Electricity by solar energy

Option	Frequency	Percentage
Yes	125	91.2
No	12	8.6
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 91% of the respondents are aware that solar energy can replace conventional energy and around 9% of the respondents are not aware of the same.

Table 7 – Awareness on Tamil Nadu Government's Initiative

Option	Frequency	Percentage
Yes	110	80.3
No	27	19.7
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 80% of the respondents are aware of the Governments initiative towards Renewable energy with emphasis on solar energy and around 20% are not aware of the same.

Public Acceptance and Perception towards Solar energy and Devices

Public acceptance is recognized as an important issue shaping the widespread implementation of renewable energy technologies and the achievement of energy policy targets. Furthermore, it is commonly assumed that 'public attitudes' need to change to make more radical scenarios about the implementation of renewable energy technologies feasible.

Table 8- Perception towards Solar energy

Option	Frequency	Percentage
It is harmful	33	24.9
It is not harmful	56	40.5
It is profitable	44	32.1
It is not profitable	4	2.5
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 41% and 32% of the respondents consider solar energy is safe and profitable.

Table 9 – Willingness to Switch over to Solar Energy System in the Future

Option	Frequency	Percentage
Yes, Anyway	59	43
Yes, only if profitable	77	54
Total	**137**	**100**

(Source: Primary Data)

Interpretation: About 54% of the respondents say they switch to solar energy only if it is profitable and 43% stated that they are willing to switch over to the system in the future.

Table 10 – Opinion towards Solar Energy Harnessing System

Option	Frequency	Percentage
It is a good system to the Public and Environment	119	86.8
It is a good system to the Public alone	3	2.2
It is a good system to the Environment alone	12	8.8
It is a good system to the Large scale Industries only	3	2.2
Total	**137**	**100**

(Source: Primary Data)

Interpretation: There are around 87% of the respondents who stated that the solar energy system is good to both the Public and Environment, around 9% stated that it is good for the Environment, and around 2% each stated that it is a good system for the public and to large scale industries.

Table 11 –Solar Energy and Global Climate Change

Option	Frequency	Percentage
Negative	6	4.4
No Effect	11	8
Positive	74	54
Very Positive	24	17.5
Don't Know	22	16.1
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 72% of the respondents stated that using solar energy will reduce the speed of global warming, 12% stated that it has no impact on the climate change and around 16% have no idea on the same.

Opinion on Cost effectiveness and efficiency of solar energy harnessing system

Solar power energy systems are not inexpensive. Home buyers and realtors view a solar system as a significant value-added improvement. Solar power systems often get an additional financial boost as well: many jurisdictions and utilities offered by the government drives down the upfront capital costs associated with a solar power system. Even though the start-up costs seem to look expensive the comparative cost efficiency of using solar energy against conventional energy increases over a period of time. The respondents stated their opinion towards cost effectiveness and efficiency of solar system. The data are presented in the following tables.

Table 12 – Opinion on the Cost Effectiveness of Solar Devices

Option	Frequency	Percentage
Costly	74	54
No idea	29	28.5
Cost is bearable	34	17.5
Total	**137**	**100**

(Source: Primary Data)

Interpretation: More than half of the respondents perceive that solar devices are costly and 29% of the respondents do not have any idea about the cost. Around 17% have stated that the costs of solar devices are bearable.

Table 13- Cost Efficiency of system

Option	Frequency	Percentage
Yes	71	51.8
No	24	17.5
Don't Know	42	30.6
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 52% of the respondents consider the system to be cost efficient and around 31% of the respondents do not know if the system to be cost efficient.

Table 14 - Cost efficiency and willingness to Change

Option	Frequency	Percentage
Yes	98	71.5
No	15	10.9
Don't know	24	17.5
Total	**137**	**100**

(Source: Primary Data)

Interpretation: Around 72% of the respondents stated that they are willing to adopt solar energy system if it is cost efficient and around 11% stated that they are not willing to change to solar system. However around 18% of the respondents stated that they are indecisive presently.

CHI-SQUARE TESTS

Chi square test was conducted to assess the evidence in favor of an association between two study variables.

Awareness and Usage of Solar energy system

H_O: There is no significant relationship between the awareness about solar energy and usage of solar devices

H_A: There is significant relationship between the awareness about solar energy and usage of solar devices

Table No. 15 – Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.696[a]	1	.003		
Continuity Correction[b]	6.779	1	.009		
Likelihood Ratio	12.150	1	.000		
Fisher's Exact Test				.003	.002

Linear-by-Linear Association	8.633	1	.003		

Interpretation: H_O is rejected since calculated value is lesser than 0.05. Hence, there is significant relationship between the awareness about solar energy and usage of solar devices.

Cost and Usage of Solar Energy System

Ho: There is no significant relationship between the cost and usage of solar energy.

H_A: There is significant relationship between the cost and usage of solar energy.

Table No. 16 - Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.388[a]	2	.025
Likelihood Ratio	7.808	2	.020
Linear-by-Linear Association	.016	1	.898

Interpretation: **Ho** is **rejected** since calculated value is lesser than 0.05. Hence, there is significant relationship between the cost and usage of solar energy.

Cost efficiency and Switching to Solar products

Ho: There is no significant relationship between the product being cost efficient and switching to solar products.

H_A: There is significant relationship between the product being cost efficient and switching to solar products.

Table 17 - Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.641[a]	4	.002
Likelihood Ratio	22.401	4	.000
Linear-by-Linear Association	.043	1	.836

Interpretation: H0 is rejected since calculated value is lesser than 0.05. Hence, there is significant relationship between the product being cost efficient and switching to solar products.

8. Conclusion

This study has been conducted to study the general public awareness, perception and attitude towards solar energy harnessing system and their willingness to adopt the same. From the study it has been found that the awareness about renewable energy resources and the solar harnessing system is not widespread. If awareness about the advantages of solar system, its benefits, and cost effectiveness are informed the public acceptance may be more. Hence huge awareness campaigns have to be carried for the same. The public should also be informed about the subsidies and other financial incentives provided by the government and may be encouraged and assisted to shift over to solar energy harnessing system.

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A REVIEW OF CONSUMER BUYING BEHAVIOR TOWARDS COSMETIC

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ABSTRACT

Cosmetic market is one of the fast growing markets in the world which highly depend on behavior of customer. Marketers are increasingly interested in understanding the factors which lead to consumer's buying of certain products. This study aims to understand the buying behavior and factors which play a role in the purchase of cosmetics. This is a key to success in highly competitive markets. This article also attempts to understand the various reasons adopted by shoppers all over for buying cosmetic products.

Keywords: Buying Behavior, Cosmetics, Purchasing Power, Lifestyle, Buying Pattern, Shopping Orientation

1. Introduction

This study is an attempt to understand the buying behavior of consumers while shopping for cosmetics products and the factors which play role in decision making. Consumer Behavior is the study of how, what, when, where, when does a consumer buys. It is a complicated phenomenon. According Schiffman, Leslie Consumer Behaviour is mental, emotional process and observable behavior during searching, purchasing, using, evaluating and disposing of goods or services. Consumer Behaviour has borrowed heavily from psychology, sociology, social anthropology and economics. Process of buying behavior analysis is an attempts to understand individual decision making process. It involves understanding individual characteristics like demographic and behavioral which in turn helps to understand people's wants. In today's social milieu, where a lot of importance is placed on look and appearances, are considered very important. The consumer behavior is becoming more volatile. The role of group like family, friends, society, work group and their influence also

comes under the purview of consumer behavior, which also cast a dominant influence on buying behavior. This coupled with the economic growth has included complexity in purchase decision made while purchasing cosmetic products.

The markets have become buyer's market today. All marketers are focusing on understanding the customer which is a key to success in the highly competitive Indian market. India has a population of 1.2 billion, and is the ninth largest economy in the world by nominal GDP, according to a report by the International Monetary fund for 2012, facts that now show India as a dominant global presence rather than a nascent nation. The same can also be said of India's cosmetics and toiletries market.

2. Defining Cosmetics

Cosmetics include all those substances which are used to enhance the appearance and odour of human body. It includes skin care creams, lotions, powders, perfumes, color products like lips stick, finger nail, toe nail polish, eye and facial make-up ,hair care product like hair oil, gels, spray and gels, deodorants even hand sanitizer, baby care products like oils, bath, bubbles etc.

The history of cosmetics dates back to 3500 B.C where archaeological evidence of the usage of cosmetics is found in Egypt. Ancient Greeks, Romans used cosmetics containing natural substances and at times even poisonous substances like mercury and lead.

During the middle ages the usage of cosmetics was not looked upon. In fact religious leaders condemned the use of cosmetics. It was limited to stage artists and other performers.

In the early 19^{th} and 20^{th} century the trend was to look young which was achieved by using cosmetic products. Beauty salons increased in popularity, though patronage to these was not necessarily achieved. In 1920s possessing tanned skin came in style also products were created to achieve artificial odour.

The modern trend is reversed with an increased consumption of cosmetics including color products.

3. Justification of the Study

Studying consumer behavior helps to understand the behavior of the consumer and to understand the impact of various elements of the marketing mix, it also enables to accommodate the ever changing desires of the consumers so that new solutions could be offered.

It is one of the most fascinating concept of marketing to discover and understand the reasoning of buyers, what they like to do and what do they do not like to do. This is also important to gain this knowledge so **AS** to increase the sales and the market share. This enables the marketer to grab the attention of the consumers and then to successfully affect the buying decisions and end up in customer satisfaction.

Research Objectives

To understand the cosmetic industry and the factors which are contributing to the growth in this industry. To understand the buying behavior of consumers with the help of black box model.

4. Research Methodology

The research methodology adopted is based on secondary data. The research work of many authors and their empirical findings, both at the national and international scene are taken into account while writing this paper.

5. Literature Review

Stone's (1954) research into consumer attitudes towards shopping identified four basic shopping orientations: the **EC**onomic shopper whose prime consideration is price, the ethical shopper who claims to employ moral consideration in the choice of a retail output, the personalizing shopper who sees shopping as an opportunity for interaction and the apathetic shopper, who shops out of necessity. He claims that each shopping orientation represents a type of shopping behavior.

Robarts (1969) suggests that shoppers are influenced by employment, social, religious, educational and recreational activities. The broad thrust of research findings is that the shoppers can be categorized according to the benefit that they derive from shopping.

The literature review also suggests that buying behaviour is characterized by the time spent on shopping, the pleasure derived from shopping and the amount of information searched prior to shopping and exposure to promotional messages from media or in-store. (Groeppel and Bloch 1990)

Tauber (1972) argues that consumer behavior consist of three distinct activities viz. shopping, buying and consuming. He elaborates that shopping and shopping behavior is based on both social and personal motives and that consumer shops because they need attention, to be amongst peers or experience leisure time.

Ruso and France (1994) studied the nature of the choice process for commonly purchased non durables by tracking eye fixation in laboratory simulation of supermarket shelves. The findings are fully compatible with the general view that the choice process is constructed to adapt to the immediate purchase environment.

A study by Chernev (1997) analyzed the effect of common features on brand choice and the moderating role of attribute importance. It is argued that when brand attributes differ in importance, with the best value on the most important attribute, thus polarizing brand's choice. In contrast when attributes are similar in their importance, common features are likely to have an opposite effect, equalizing brands share.

Vigerson and Johnson (1999) reported that people's need for appearance and materialism were increasing i.e. human beings wanted to create to satisfy the need to look and feel good. This created a boom in the cosmetics and toiletries sector across the world.

A study by Voss and Parsuraman (2003) suggested that the purchase preference is primarily determined by price than quantity during pre-purchase evaluation. Given explicit quality information price had no effect on prepurchase or post purchase quality perception. Instead post purchase quality evaluation had a favorable impact on price evaluation.

While describing about shopping orientation, Sinha (2003) reports that Indian shoppers seek emotional value more than functional value of shopping. The orientation is based more on the entertainment value than the functional value. The orientation is found to be affected primarily by the type of store, the frequency of buying and to some extent by the socio-economic classification.

A correlation study that surveyed thirty English women revealed that anxiety, self presentation and conformity are significantly positively correlated with application of cosmetics and social confidence, emotional stability, and self esteem and physical attractiveness are significantly negatively correlated with cosmetic usage. (Fieldman, Robertson and Hurrey, 2008).The study suggests that anxious, insecure females are motivated to apply cosmetics more than females who are emotionally secure, socially confident and perceive themselves to be physically attractive.

According to De Pelsmacker et al (2010) catalogues are one of the best examples of direct marketing as a direct sales channel. International cosmetics company Oriflame has based its business on direct sales through

catalogues. The products are sold all over the world through "Direct Sales" people who use catalogues.

The literature review also explored the impact of religiosity and religious affiliation on consumer's buying behavior (Hirshman 1981, Sood and Nasir 1995).the extent to which shopping behavior differs between religious and non-religious consumers is also examined.

The buying behavior is undoubtedly affected by innumerable factors and all or some of these factors play a role in the choice made. Cosmetics being part of personal care products are subject to more changes in buying and also the rate at which change is happening is much faster than ever before. Newer and better versions of the current offerings with the innovative applications and relevant formulations are making it extremely difficult for the consumer to make a choice.

6. Changing Status of Women and Impact on Buying Behavior

With the change in the situation of women in the society, their behaviour is also getting modified and the same is reflected in their purchase decisions. The awakening of women's consciousness during the recent years influences women's conception for pursuing fashion and cosmetics application. The taste for cosmetics in women is becoming more diversified thanks to the influence of fashion and film industry. Cosmetics products are **IMPORTANT** products which play an essential role in everyone's life; apart from traditional cosmetics products like perfumes commonly known as Itras, make-up, it also includes products for personal hygiene like tooth-care products, shampoo and soaps. It is estimated that the world-wide annual expenditure on cosmetics is $ 19 billion.

7. Marketing of Cosmetics

Customers are the centre point of all activities. Kotler explains that the base for effective marketing and selling comes from understanding the target customers needs and wants, as well as the market, within which the company operates. According to (Noel,2009),one of the largest companies L'Oreal which was founded by Eugene Scheller in 1909 as the French harmless Hair coloring company has **REALIZED** the importance of tailoring products according to the consumers culture. L'Oreal has both global allure while still maintaining the products appeal to specific local trends around the world.

During the past few years, India has emerged as hot destination for global cosmetics players. Many national and international players are targeting the growing middle class with pocket friendly prices as well as

premium prices for unique formulations. The average age of cosmetics user is decreasing with the number of male users increasing.

The rising awareness among consumers, increasing consciousness to look good and improving purchasing power are the main drivers of the Indian cosmetic industry. Further the flourishing fashion and film industry is fuelling growth into cosmetic industry by making Indians realize the advantages of having good looks and appearances.

8. Indian Cosmetic Industry

Indian cosmetic industry has witnessed strong growth during the past few years and has emerged as one of the industries holding immense growth potential. The cosmetic industry registered impressive sales worth Rs.422.3 Billion (US $ 9.3 billion) in 2010. The beauty care market consisting of salons, cosmetic treatment centre's and cosmetic products which is currently estimated to be around 190-200 billion is expected to reach over 400 million by 2015 and hence likely to become the main contributor to the growth of Indian cosmetic industry. The Indian cosmetics Industry is estimated at Rs. 15,000 crores and is expected to grow at over 10% annually. The Associated Chambers of Commerce and Industry of India (ASSOCHAM) in its survey 2009-2012 had projected that the market size of Indian cosmetics industry which was estimated at Rs.10, 000 crores will double to be worth Rs. 20,000 crores by 2014.

The sector has mainly been driven by improving purchasing power and rising fashion consciousness of the urban population. Indian cosmetic industry is not only expanding but also becoming much more sophisticated and complex particularly due to influence of western culture. More over the players in the Indian cosmetic industry are readily spending on promotional activities to increase consumer awareness, thus media has also played a crucial role in industry's growth by presenting cosmetic products as an indispensable need through all existing means of communication.

Today's cosmetic market is driven by innovation including new color pallets, treatments targeted to specific skin types and unique formulas concentrating on different needs. Most cosmetic products have a lifespan of less than five years and manufacturers reformulate 25% of their products every year. They need to improve products constantly in order to stay ahead in highly competitive market where more choice and greater efficacy is expected by the consumers.

The Indian cosmetic industry which traditionally was a stronghold of few major Indian players like Lakme and Ponds have seen a lot of foreign entrants (MNCs), post liberalization in the last decade .India being a very

price sensitive market the entrants have to work out new innovative strategies to suit Indian preferences and budgets in order to establish a hold on the market and establish a niche market for themselves. Top leading companies are lakme, Revlon, Oriflame, Colorbar, Street wear, Loreal, Maybeline, and Avon.

Indian cosmetics industry is growing not only in terms of product range and marketing but is also catering to the ever increasing demand of the consumers for more advanced and specialized cosmetics items. With a host of players operating in the cosmetics market including local, national and international players in every segment, the selection of one option out of the many available alternatives has become an interplay of a number of factors. Depending upon the type, nature and price of the cosmetic product the same customer passes through extensive, limited and routinized decision.

9. Buying Behaviour in Cosmetics

Much of the behavior of individuals is different, yet a number of common features can be observed .These are features that people observe and copy, people get involved and adopt changes effectively and also people want to avoid losses. Consumers are likely to remember positive things about a product or brand they like and tend to forget all the good points about a competing product or brand. This retaining of information that support our attitudes and beliefs is called selective Retention. (Kotler& Keller 2009, 204)

Consumer buying behavior is complex and interplay of a number of external and internal factors which impact the buying decisions. Consumers do not spend much time in buying low involvement products which are mostly bought on impulse. Consumer behavior is the study of three distinct roles of User, Payer and buyer. As a user the consumer consumes the product or service, takes the experience, as a payer the consumer shells out money and as a Buyer the consumer possesses the product or avails the service.

Table : The buying behavior of cosmetic products is attempted to be explained with the help of Black Box model.

ENVIRONMENTAL FACTORS		**BUYER'S BLACK BOX**		**BUYER'S RESPONSE**
Marketing Stimuli	**Environmental Stimuli**	**Buyer Characteristics**	**Decision Process**	
Product Price Place Promotion	Economic Technological Political Cultural Demographic Natural	Attitudes Motivation Perceptions Personality Lifestyle Knowledge	Problem recognition Information search Alternative evaluation Purchase decision Post-purchase behavior	Product choice Brand choice Dealer choice Purchase timing Purchase amount

Source.www.wikipedia.com

The Black Box model considers the buyer's response as a result of conscious, rational decision process in which it is assumed that the buyer has recognized a problem or identified a need. The model shows the interaction of stimuli (marketing and environmental), consumer characteristics, and decision process and consumer response.

The marketing stimulus which affects a perspective buyer can be about a product, in cosmetics that product could be the one introduced for the first time in a particular market, it could be a new formulation designed for a particular segment. In the recent years the skin care segment of cosmetics has evolved tremendously with unique products being introduced .Let us take the example of Fair & Lovely for Men. Indian has never been able to resist the urge for a lighter skin but even after many years, no product has been made keeping the men's skin in mind. Thus this product is unique for a new segment i.e. for males. Earlier all the products for fairness have been for females.

The price of this product is Rs.90 for 50gms pack, which is attractive and is available over the counter. The product is promoted by Shah Rukh Khan and the commercial aired is very suggestive, which makes it all the more appealing for a normal shopper to buy the product. A strong marketing stimulus plays a very important part in molding customer's attitude in favor of the product. Environmental factors affect the overall buying and consuming at the macro level. Sales growth of over a dozen key consumer categories declined in June 2013, compared to March 2013, according to sources quoting research agency Nielsen. General personal care declined by 13%,Hair care by 11%,women personal care by 10% and men's grooming

by 6%.According to Nitin Paranjpe, CEO of Hindustan Unilever," there is a general slowdown across categories the company is witnessing a significant slowdown from early 2013 to the middle of 2013'.

The buyer's characteristics also vary due to personal, psychological, social and cultural factors. Every constituent is an individual in him and different from others in terms of demographic and psychographic background and in terms of age, income, personality, risk, attitude, culture etc. The buyer is also diverse in terms of buying intention and interests towards shopping in general.

An individual buyer passes through different stages of decision making which starts with problem recognition or need identification, as a result of which the alternatives would be generated. The perspective buyer would then set expectations and choose the most feasible alternative in consideration of their personal reasons and circumstances. This will lead to the buyer making a choice about the product and brand and ultimate purchase.

After the purchase and while using the product, the user evaluates the product in light of the expectations. The user may experience neutrality if the performance meets expectations, satisfaction if performance exceeds expectations and dissatisfaction if performance is not able to meet expectations. This would enable the user to have feedback and also determine the behavior in repeat purchase.

10. Challenges

Personal care products are increasing in range and complexity and with many players offering similar formulations it has become a difficult task for the consumers to make a choice. In many ways the task of marketers has become much more complicated and challenging to adopt effective strategies so as to hit the target consumers and ensure satisfaction. In fact it is the interplay of the traditional element of marketing mix viz product, price, place and promotion.

11. Analysis and Discussions

Cosmetic industry is offering unique, innovative formulations to cater to the volatile requirements of the consumers. Today's consumer is more demanding , sophisticated and aware and looks for wholesome as well as quick fix solutions to routine requirements . They are no more satisfied with age old cold creams for winter and vanishing creams for summers. They are looking for regular offerings as well as personalized solution to individual

need and wants be it ageing or wrinkles or as simple as sun protection. The decision making process is different yet has the basic inherent similarity which is observed, propagated and many times adopted by others. The basic thing is that no one wants to feel cheated on buying or rather using the product, after making an elaborate or calculative choice. As application of cosmetic items is on a daily basis, it even plays a role in individual's health. Many times these formulations are knowingly or unknowingly consumed, the simplest example is that of the lipsticks, hence the quality of ingredients used in making such formulations must be taken care of. Here comes trust the companies have generated for themselves over a period of time and is reckoned by the brand name.

The buying decision is an interplay of marketing stimuli generated by the elements of the marketing mix like product, price, availability and promotional mix adopted by the brand clubbed together with the economic, social , demographic, cultural element of the environment. Here the buyer's individual characteristics like attitudes, perception, personality, lifestyle and level of knowledge or motivation enables in decision making and ultimately the buyer's response.

12. Conclusion

The behavior of consumers while buying cosmetics products is an interplay of demographic, social and psychological factors. Undoubtedly the marketing stimuli creates a need for using the formulation ,the unique packaging ,celebrity endorsements and other point of purchase factors play a powerful role on the consumer's psyche and determines the ultimate buying decision in favour or against a particular product brand or product. The repeat purchase is the result of the expectations formed in the initial stages and resultant performance.

13. Scope for Future Research

With the cosmetic industry harboring immense growth potential, the researchers can undertake detailed study on the factors which affect the consumer's decision making towards particular cosmetic products, how, when, where to what extent these factors cast their influence buying a particular brand or formulation .The sector is very wide, varied and diverse thus making it very attractive for future studies

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THE "QUALITY OF WORK LIFE" (QWL) AND ITS RELATIONSHIP WITH EMPLOYEES PERFORMANCE: A STUDY ON SOME SELECTED EDUCATIONAL INSTITUTES OF DEHRADUN

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ABSTRACT

A number of researches have been carried out on Quality of Work of Employees in industries, Universities, Schools, Government and Non Government Organizations. This research topics has been taken up to highlight the Quality of Work Life of employees of educational institutes under various disciplines. This study helps the employees to know the level of perception towards Quality of Work Life and to enhance the same by the educational administrators. The significant factors contributing to the Quality of Work Life emerged as organisational facilitation, recognition of creativity and performance, meaningful work, fair salary and motivating work environment ,an equitable performance appraisal, role clarity, healthy and conducive work environment, well defined jobs and policies, leisure time and development opportunities , the challenging nature of assignments. For this study, the research design chosen is descriptive in nature and the sampling technique chosen is convenient sampling. The universe of the study includes 8 colleges located within Dehradun and 900 teachers are working currently. A sample of 173 respondents was collected from the universe. The collected data after being coded were analyzed using Statistical Package for Social sciences Research (SPSS) and various statistical tests were applied based on hypotheses and matching variables. It has been observed that there is a significant association between Quality of Work Life and employees performance.

Keywords: Quality of Work Life**,** job satisfaction, work environment, equitable performance appraisal, role clarity, etc.

1. Introduction

In the present fast changing work environment the human resource is considered as the most important asset for every organizations. In spite of technological advancement, the role of human resource can not be under-

estimated as success of any organization or work environment is directly dependent on efficient use of human resources. Maintaining the quality of such human inputs rises from maintaining the Quality of Work Life perfectly. Quality of Work Life is becoming an increasingly popular concept in recent times. It basically talks about the methods in which an organisation can ensure the holistic well-being of an employee instead of just focusing on work-related aspects. In general, **Quality of Work Life** has been defined as "The quality of relationship between the employees and the total working environment". Quality of Work Life can be said to be all the original inputs which aim at improving the employees' satisfaction and enhancing employees as well as organizational effectiveness. Quality of Work Life facilitates effective integration of work and personal life, create a positive attitude in the minds of the employees prevents high levels of employee stress and burnout etc. This, increase quality and productivity of the organization.

The quality of life is sociological and psychological phenomenon, but sociologists are not putting their interest in industrial sector, where the workers are the core potential resource for organizational performance. In the workplace, the term 'Quality of Work Life' is 'work in excellence' and 'working conditions' such as standards of living, life styles. Quality of Work Life is a concept of behavioral scientist, and the term was first introduced by Davis in 1972 (Mathur, 1989; Hian and Einstein, 1990). According to Robins (1990) Quality of Work Life is "a process by which an organization responds to employee needs by developing mechanisms to allow them to share fully in making the decisions that design their lives at work". The key elements of Quality of Work Life in the literature include job security, job satisfaction, better reward system, employee benefits, employee involvement and organizational performance (Havlovic, 1991; Scobel, 1975). For the purpose of this study, Quality of Work Life is defined as the favorable condition and environment of employees benefit, employees' welfare and management attitudes towards operational workers as well as employees in general. It is a fact that an individual's life can't be compartmentalized and any disturbance on the personal front will affect his/her professional life and vice-versa. Therefore, organisations have started to focus on the overall development and happiness of the employee and reducing his/her stress levels without jeopardising the economic health of the company.

2. Review of Literature

Researchers and practitioners found a significant correlation between measures of Quality of Work Life and business performance in terms of market performance, stakeholder value, and business sustainability as well as differentiating competitive capabilities in terms of service quality,

delivery, employee knowledge, flexibility, and technological leadership. Positive results of Quality of Work Life reduced absenteeism, lower turnover, and improved job satisfaction. A large body of prior research supports the service profit chain concept. **Lau (2000**) used an adhoc approach to study two key elements of the service profit chain model, namely Quality of Work Life and performance. The study showed that service organizations that emphasized Quality of Work Life for their employees tended to have better sales growth, asset growth, and return on asset growth (ROAG) over a five-year period when contrasted to other S&P 500 firms.

Najafi (2006) examined the relationship between Quality of Work Life and profiting of middle managers of Iranian Companies" using Casio's components and found a positive and significant correlation between them. According to him, about 20% of profiting is due to Quality of Work Life and the remaining 80% is the effect of other factors.

Fallah (2006) found a significant relationship between Quality of Work Life and performance Kosar Economical Organization Staff" using Walton's components in her study. Nayeri, et.al (2011), carried out a descriptive study to investigate the relationship between the Quality of Work Life and productivity among 360 clinical nurses working in the hospitals of Tehran University of Medical Sciences. Findings showed that the Quality of Work Life is at a moderate level among 61.4% of the participants. Only 3.6% of the nurses reported that they were satisfied with their work. None of those who reported the productivity as low reported their work life quality to be desirable.

Glasier(1976), in his literature review viewed Quality of Work Life as job security, good working conditions, adequate and fair compensation, more even than equal employment opportunity all together.

Bertrand and Scott (1992) in their study Designing Quality into Work Life found that improvements in the Quality of Work Life are achieved not only through external or structural modifications, but more importantly through improved relations between supervisors and subordinates.

Datta (1999) in his study Quality of Work Life: A Human Values Approach says that, Quality of Work Life refers to the quality of life of individuals in their working organizations commercial, educational, cultural, religious, philanthropic or whatever they are. Modern society is organizational society. Individuals spend much of their lives in organizations.

Walton (1980) divided Quality of Work Life main components into four categories. According to him, the affecting factors on Quality of Work Life include: work meaningfulness, work social and organizational equilibrium, work challenge and richness.

Klatt, Murdick and Schuster (1985) have identified eleven dimensions of Quality of Work Life in the year. They are: pay, occupational stress, organizational health programmes, alternative work schedule, participate management and control of work, recognition, superior-subordinate relations, grievance procedure, adequacy of resources, seniority and merit in promotion and development and employment on permanent basis.

Hackman and Oldhams (1980) highlight the constructs of Quality of Work Life in relation to the interaction between work environment and personal needs. The work environment that is able to fulfill employees' personal needs is considered to provide a positive interaction effect, which will lead to an excellent Quality of Work Life. They emphasized that the personal needs are satisfied when rewards from the organization, such as compensation, promotion, recognition and development meet their expectations.

According to **Guna Seelan Rethinam, Maimunah** Quality of Work Life is a multi-dimensional construct, made up of a number of interrelated factors that need careful consideration to conceptualize and measure. It is associated with job satisfaction, job involvement, motivation, productivity, health, safety and well-being, job security, competence development and balance between work and non work life.

Chan, C.H. and W.O. Einstein, (1990) pointed out Quality of Work Life reflects a concern for people's experience at work, their relationship with other people, their work setting and their effectiveness on the job .

Raduan Che Rose (2006) says Quality of Work Life programs will benefit both faculty and management, By mutually solving work-related problems, building cooperation, improving work environments, restructuring tasks carefully and fairly managing human resource outcomes and payoffs . The result indicates that three significant variables are: career satisfaction, career achievement and career balance in Quality of Work Life.

According to **Nadler and Lawler** the types of Quality of Work Life activities can be listed as (i) Participative problem solving, (ii) Work restructuring, (iii) Innovative rewards systems and (iv) Improving the work environment.

Bhanugopan and Fish (2008) suggested indicators like lack of job stress, lack of job burnout, lack of turnover intentions and job satisfaction.

They included measures like job satisfaction, earning money, membership in successful teams, job security and job growth.

However, from the literature we can conclude that Quality of Work Life may be is viewed as a wide ranging concept, which includes satisfaction towards work, safe and healthy work environment, participative management and improves employees performance.

3. Objectives and Methodology

Objective of The Study

This research has been taken up with following objectives:-

1. To analyse the determinants of Quality of Work Life among the employees of some selected academic institution at Dehradun.
2. To assess the relationship between Quality of Work Life and employees performance.
3. To draw suggestion on the basis of study.

To analyse the Quality of Work Life the major determinants were taken like organizational factors such as Training and development, motivating and appraising for the best performance of the employees as per organizational objectives. Working conditions, employee job satisfaction, employees' behavioral aspects, and employees' financial and non-financial benefits, growth and development opportunities, employees job satisfaction and its various factors, positive emotional state resulting from the appraisal of one's job or job experiences". Other ways of measuring employees satisfaction with Quality of Work Life are the combination of physiological, psychological and environmental circumstances. Some of the important determinants of Quality of Work Life were taken as organisational facilitation, recognition of creativity and performance, meaningful work, fair salary and motivating work environment, well defined job and policies, healthy and conducive work environment, role clarity, an equitable performance appraisal system, recommendation, challenging nature of assignment, and leisure time and development opportunities.

Research Methodology

Present research is based on primary as well as secondary data. The secondary data were collected through various books, magazines, research journals and other relevant academic and non- academic sources. Primary information was collected from various respondents of various academic institution using survey method. A structured questionnaire was designed covering various aspects of Quality of Work Life.

Research site: Dehradun is the largest academic hub of the state of Uttarakhand and it has achieved a unique position in the country in the field of imparting education. It has been selected as the site for this research as the researcher has an access to this educational institution. More than 10 universities, 35 professional institutions , government colleges are located in this area. This survey is the partial results of the full-scale survey of the academicians to collect data on Quality of Work Life and its impact on their performances.. The researcher had a full scale survey on academic level with 13 professional institutions among them few were government institutions. We conducted a structured questionnaire survey. Simple random sampling method was used for collecting data. The sample size was 173. The data were collected during the Oct-Nov 2013. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was carried out with SPSS software and found to be .737 which indicates that data is sufficient to go for factor analysis .

Reliability: Reliability reflects the consistency of a set of items variables scale by measuring the concept in a particular. It illustrates the individuals differences concerning the amount of agreement or disagreement of the concept studied. In this study, reliability measurement is important to verify the variables consistencies through employee job satisfaction, Quality of Work Life and organizational performance. Cronbach's alpha is computed using SPSS scale reliability programme for each set of constructs. The value of Cronbach's alpha is reported in Table 1.

Table 1 Chronbach alpha reliability

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.951	.958	39

Collected data were analyzed by using statistical tools and the software used was SPSS 20 windows version for regression analysis, other statistical test and testing of the research hypotheses.

Table 2 Demographic characteristics

	Categories	***Count***	***Percentage***
		361	100
Age	Upto 25 Years	3	1.7
	25-35 Years	145	83.8
	35-45 Years	18	10.4
	45 to 55 Years	7	4.0
Gender	Male	106	61.3
	Female	67	38.7
Marital Status	Married	135	78.0
	Unmarried	38	22.0
Education Level	Upto Matric	5	2.9
	Graduate	6	3.5
	Post Graduate	66	38.2
	Professional Qualification	96	55.5
Income Level	Upto Rs15000PM	1	.6
	From Rs15000to Rs25000PM	75	43.4
	Rs25000 to Rs40000PM	74	42.8
	Rs40000PM to Rs60000PM	18	10.4
	Rs60000 to Rs.150000PM	5	2.9
Designation	Teaching	147	85.0
	Administration	19	11.0
	Support Staff	7	4.0

Demography is the scientific study of the characteristics of human populations. It is also sometimes called population studies. Demography is considered to be a branch within the field of sociology. It relies heavily on statistical data, collecting, interpreting, and presenting the information to determine trends. The analysis presented in the above table reveals that sample is dominated by the young category respondent ranging in the age group of 25-35 years as it contributes 83.8% in the sample. Majority of the respondent are male and married category. Since the survey was focused on academic category respondent hence sample is composed of highly educated person earning monthly income of Rs15000 to Rs.40000 and majority of the respondents belong to teaching profession.

Table 3 Period of Association with Present Organisation

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	From 0-5 Years	121	69.9	69.9	69.9
	5-10 Years	43	24.9	24.9	94.8
	10-15 Years	3	1.7	1.7	96.5
	More than 15 Years	6	3.5	3.5	100.0
	Total	173	100.0	100.0	

"Quality of Work Life is everyone's responsibility". it is an integrated approach by management to focus all functions and levels of an organization on quality and continuous improvement in the Quality of Work Life of employee as human resource are the back bone of any organization. As the employees become senior in the organization his expectations change. It is seen that majority of the employees of the organization are associated from 0-5 years. Study also reveals that there are very few employees who are associated with their present organization for more than 10 years.

Table 4 workload Frequencies

		Responses		Percent of Cases
		N	Percent	
$workload	Work Load is very much and task are not finished on appropriate time	30	17.0%	17.3%
	Work Load is very much but due to participative environment employees are able to complete their task	51	29.0%	29.5%
	Work Load is evenly distributed and employees are able to complete their task on time	89	50.6%	51.4%
	Work Load is less as compared to other companies	6	3.4%	3.5%
Total		176	100.0%	101.7%
a. Group				

Workload can be described both objectively as well as subjectively The type of work load and employees perception toward different type of work load and their adjustment is an important dimension for assessing Quality of Work Life. the information presented in the above table indicates that more than half of the respondents (50.6%) are of the opinion that their Work Load is evenly distributed and employees are able to complete their task on time. On the similar pattern about one third (29%) employees are of the opinion that Work Load is very much but due to participative environment employees are able to complete their task. In comparison to this 17.0% employees feels that Work Load is very much and task are not finished on appropriate time and very few 3.4% feels that Work Load is less as compared to other companies. This indicates the availability of a conducive and cooperative work environment of the organization among the employees.

Table 5 work environment Frequencies

		Responses		**Percent of Cases**
		N	**Percent**	
$work environment[a]	Participative	115	66.5%	66.5%
	Autonomy	14	8.1%	8.1%
	Whimsical	34	19.7%	19.7%
	Red tapism	10	5.8%	5.8%
Total		173	100.0%	100.0%
a. Group				

Working environment of the organsiation is an important element for improving Quality of Work Life in the organization. In line with this Mirvis and Lawler (1984 suggested that quality of working life was associated with satisfaction with wages, hours and working conditions, describing the "basic elements of a good Quality of Work Life" as safe work environment, equitable wages,, equal employment opportunities and opportunities for advancement. The study reveals that almost two third of the employees are of the opinion that they have participative work environment in the organization. 8.1% employees indicated that they have autonomy to do work. 19.7% employees indicated that their work environment is of whimsical in nature. On the other hand 5.8% revealed the presence of redtapism in the organization.

Table 6 Most Important Motivating Factor

		Responses		Percent of Cases
		N	Percent	
$MO[a]	Salary Increase	128	46.0%	75.3%
	Promotion	39	14.0%	22.9%
	Leave	27	9.7%	15.9%
	Motivational talk	35	12.6%	20.6%
	Recognition	49	17.6%	28.8%
Total		278	100.0%	163.5%

Today, teachers are expected to work and socialise into diverse cultural, linguistic, and social contexts. The topic of motivation as an influential criterion for effective teaching began to be approached seriously in the 1990s. The researcher found many factors associated with the Quality of Work Life and employees motivation. Walton (1973) defined Quality of Work Life as employees' reactions toward their jobs, especially the conditions necessary for satisfying their vocational needs and mental health. Accordingly, Quality of Work Life emphasises personal growth, working experience, and the ways to improve work in order to fulfil personal needs. In line with the previous studies, it is found that employees are more inclined toward financial incentive and are motivated more by salary increase as it was indicated by 46% employee in the sample. In comparison to this promotion was indicated by 14% employees. Leave provision as a motivation was indicated by 9.7% employees. Motivational talk and recognition as a motivation was indicated by 12.6% and 17.6% employees in the sample.

Table 7 Factor Analysis

	Component								Communalities
	1	2	3	4	5	6	7	8	
Employees have Recognition and appreciation of the work inside and outside the organization.	.851								.854
My organization creates opportunities to learn for enhancing , growth in the professionalism path, job growth and career progress	.799								.869
Possibility of learning and using new skills are promoted in this organsiation	.786								.877
Organisation facilitates training to improve job skills,	.767								.818
There is an increased autonomy for action and decision making at worker level,	.760								.828
My organization promotes Participatory supervision,	.758								.833
Employees in this organization have access to relevant information and participative problem solving,	.725								.828
Employee involvement, participation and power are promoted in this organization	.710								.890
My organization has got flexible Working hours and alternative work schedule.	.685								.824
My organization promote creativity at the workplace and focus more on developing personal creativity.	.671								.809
My organization provide much emphasis on employee skill development,	.666								.613
Grievance procedure of the organization is good. .	.625								.835
Management focus more on creating work and organizational commitment,	.605								.802
Employees in this organization have desire and motivation to work,	.602								.721
Organisation provides Innovative rewards systems ,	.482								.788
I get fair and proper payment for good performance,		.781							.873
My salary in this organization is adequate		.778							.721
My organization focus more on Improving the work environment,		.718							.850
Communication in this organization is good and acquate		.667							.889
I perform meaning full work in this organization		.613							.886
I do not intent to leave my present organization.		.611							.900
Social and welfare facilities, in this organization is good.		.602							.804
My employment in this organization is on permanent basis.		.597							.855
I have got sufficient resources from organization to accomplish my objective.			.699						.613
Job contents are well described in this organsiation,			.665						.695
We have a good Cooperation between colleagues			.647						.798
The circumstances and procedures relating to promotion policies are proper in this organsaition			.503						.812
I feel proud of the job,			.493						.787
Health and safety of working conditions is good,				.826					.781
I feel less occupational stress in his organization				.720					.821
physical working condition in the organization is good				.465					.509
Work are restructured time to time in tis organization .					.790				.661
There is role / job clarity in this organisation.					-.599				.793
Orgamnisation facilitates protection against disease and injury within and outside the workplace;						.824			.726
I feel very less job stress in this organsiation						-.454			.835
My work is challenging in this organisation,							.786		.792
Organizational health programmes are organized time to time							-.619		.796
We have got enough free time in the workplaces,								.699	.821
Organisation follows the seniority and merit in promotion and development.								.527	.427
Initial Eigen values	16.835	3.56	2.306	2.116	1.913	1.673	1.409	1.215	
% of Variance	43.165	9.127	5.913	5.426	4.906	4.289	3.612	3.116	
Cumulative %	43.165	52.292	58.206	63.632	68.538	72.826	76.438	79.554	

4. Factor Analysis

Our perception is an approximation of reality. Our brain attempts to make sense out of the stimuli to which we are exposed. Several sequential factors influence our motivation. Quality of Work Life and its different dimension stimulates employee to give their best to the organization. *Employees*, when they have a choice, are also more likely to attend to *pleasant* stimuli. The perception forms their attitudes that are a composite of their (1) beliefs about, (2) feelings about, (3) and behavioural intentions toward some object--within the context of organizational environment. These components are viewed together since they are highly interdependent and together represent forces that enhance quality of work life. Keeping these into consideration, an attempt was made to identify the **determinants of Quality of Work Life**. For these respondents were asked to rate their views on the statements such as: Employees have Recognition and appreciation of the work inside and outside the organization. My organization creates opportunities to learn for enhancing , growth in the professionalism path, job growth and career progress Possibility of learning and using new skills are promoted in this organisation Organisation facilitates training to improve job skills, There is an increased autonomy for action and decision making at worker level, My organization promotes Participatory supervision, Employees in this organization have access to relevant information and participative problem solving, Employee involvement, participation and power are promoted in this organization My organization has got flexible Working hours and alternative work schedule. My organization promotes creativity at the workplace and focus more on developing personal creativity. My organization provide much emphasis on employee skill development, Grievance procedure of the organization is good. Management focus more on creating work and organizational commitment, Employees in this organization have desire and motivation to work, Organisation

provides Innovative rewards systems, I get fair and proper payment for good performance, My salary in this organization is adequate, My organization focuses more on improving the work environment, Communication in this organization is good and accurate, I perform meaning full work in this organisation, I do not intent to leave my present organization, Social and welfare facilities in this organization are good, My employment in this organization is on permanent basis, I have got sufficient resources from organization to accomplish my objective, Job contents are well described in this organsiation, We have a good Cooperation between colleagues. The circumstances and procedures relating to promotion policies are proper in this organsaition I feel proud of

the job, Health and safety of working conditions is good, I feel less occupational stress in his organization, Physical working condition in the organization is good, Work are restructured time to time in this organization. There is role/job clarity in this organisation, Orgamnisation facilitates protection against disease and injury within and outside the workplace; I feel very less job stress in this organisation, My work is challenging in this organisation, Organizational health programmes are organized time to time, We have got enough free time in the workplaces, and Organisation follows the seniority and merit in promotion and development. Respondents were asked to rate the various statement on a scale of 1 to 5 in order of their preference. The exploratory factor analysis was used in order to identify the various motivational factors of Quality of Work Life. Principal Component analysis was employed for extracting factors and orthogonal rotation with Varimax was applied. As latent root criterion was used for extraction of factors, only the factors having latent roots or Eigen values greater than one were considered significant; all other factors with latent roots less than one were considered insignificant and disregarded. The extracted factors along with their Eigen values are shown in **table 7.** The factors have been given appropriate names on the basis of variables represented in each case. The names of the factors, the statements, the labels and factor loading have been summarized in **Tables 7.**

There are 8 factor each having Eigen value exceeding one for motivational factors. Eigen values for eight factors are 16.835,3.56, 2.306, 2.116, 1.913, 1.673, 1.409, and 1.215 respectively. The index for the present solution accounts for 79.5542 % of the total variations for the factors of brand equity. It is a pretty good extraction because we are able to economise on the number of choice factors (from 39 to8 underlying factors), we lost 21.45% of information content for choice of variables. The percentages of variance explained by factors one to eight are 43.165%, 9.127%, 5.913%, 5.426%, .906%, 4.289%, 3.612%, and 3.116% respectively. Large communalities indicate that a large number of

variance has been accounted for by the factor solutions. Varimax rotated factor analysis results for factors are shown in **table 7** which indicates that after 8 factors are extracted and retained the communality is 0.854 for variable1, 0.869 for variable 2 and so on. It means that approximately 85.4 % of the variance of variable1 is being captured by 8 extracted factors together. The proportion of the variance in any one of the original variable which is being captured by the extracted factors is known as communality (Nargundkar, 2002).

Table 8 Factor loading and associated variable

Factor	Name of Dimension	Statement	Factor Loading
F1	Organisational Facilitation, Recognition of Creativity And Performance	Employees have Recognition and appreciation of the work inside and outside the organization.	.851
		My organization creates opportunities to learn for enhancing , growth in the professionalism path, job growth and career	.799
		Possibility of learning and using new skills are promoted in this organsiation	.786
		Organisation facilitates training to improve job skills,	.767
		There is an increased autonomy for action and decision making at worker level,	.760
		My organization promotes Participatory supervision,	.758
		Employees in this organization have access to relevant information and participative problem solving,	.725
		Employee involvement, participation and power are promoted in this organization	.710
		My organization has got flexible Working hours and alternative work schedule.	.685
		My organization promote creativity at the workplace and focus more on developing personal creativity.	.671
		My organization provide much emphasis on employee skill development,	.666
		Grievance procedure of the organization is good. .	.625
		Management focus more on creating work and organizational commitment,	.605
		Employees in this organization have desire and motivation to work	.602
		Organisation provides Innovative rewards systems ,	.482
F2	Meaningful Work, Fair Salary And Motivating Work Environment	I get fair and proper payment for good performance,	.781
		My salary in this organization is adequate	.778
		My organization focus more on Improving the work environment,	.718
		Communication in this organization is good and accurate	.667
		I perform meaning full work in this organisation	.613
		I do not intent to leave my present organization.	.611
		Social and welfare facilities, in this organization is good.	.602
		My employment in this organization is on permanent basis.	.597
F3	Well Defined Job And Policies	I have got sufficient resources from organization to accomplish my objective.	.699
		Job contents are well described in this organsiation,	.665
		We have a good Cooperation between colleagues	.647
		The circumstances and procedures relating to promotion policies are proper in this organsaition	.503
		I feel proud of the job,	.493
F4	Healthy And	Health and safety of working conditions is good,	.826

	Conducive Work Environment	I feel less occupational stress in his organization	.720
		physical working condition in the organization is good	.465
F5	Role Clarity	Work are restructured time to time in tis organization .	.790
		There is role / job clarity in this organisation.	-.599
F6	An Equitable Performance Appraisal System Recommendation	Performance appraisal is carried out in the organization on the basis of evidence gathered throughout the year.	.824
		All the responsibility seems to lie with the manager and Ratings are sometimes seen as based on subjective judgments.	-.454
F7	Challenging Nature of ASSIGNMENT	My work is challenging in this organisation,	.786
		Organizational health programmes are organized time to time	-.619
F8	Leisure Time And Development Opportunities	We have got enough free time in the workplaces,	.699
		Organisation follows the seniority and merit in promotion and development.	.527

Solemnized Principal components & associated Variables indicate that first factor (**F1) is the** Organisational Facilitation, Recognition of Creativity And Performance factor indicating that organizational facilities and recognition of creativity is one of the important factors of Quality of Work Life in the academic institution. This factors accounts for 43.165% variance of the total variances. The second Factor (**F2**) is the Meaningful Work, Fair Salary And Motivating Work Environment and accounts 9.127% variance of total variance. Third factor(**F3**) is the Well Defined Job And Policies That account 5.91 % variance of the total variances. Fourth factor (**F4**) is the Healthy And Conducive Work Environment account for 5.426%%. fifth factor (**F5**) is the Role Clarity And account for4.906 %of variance. Sixth factor (**F6**) is the An Equitable Performance Appraisal System which account for 4.289% of variance. Seventh factor (**F7**) is the Challenging Nature of ASSIGNMENT account for 3.612% of total variance. Eighth factor (**F8**) is the **Leisure Time And Development Opportunities which** account for 3.116 % of total variance.

Table -9 Effect of Work Environment on Work Performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To a great extent	81	46.8	46.8	46.8
	To a Considerable extent	55	31.8	31.8	78.6
	To some extent	24	13.9	13.9	92.5
	To a little extent	9	5.2	5.2	97.7
	Not at all	4	2.3	2.3	100.0
	Total	173	100.0	100.0	

The workplace environment plays a crucial role for the employees. Nowadays employees may have a large number working alternatives, then the environment in workplace becomes a critical factor for accepting and/or

keeping the jobs. The quality of environment in workplace may simply determine the level of employee's motivation, subsequent performance and productivity. With this in mind, an attempt was directed to know how far work environment affect their performance. Study revealed that 46% employees are of the opinion that it affect to a great extent. 31.8% employees feels that work environment affect their performance to a considerable extent. 13.9% indicated to some extent. 5.2% employees are of the opinion that it affect to a little extent. Very few 2.3% employees indicated that their work environment does not affect their performance at all.

Table 10 Mean of various factors of Quality of Work Life across employees of different job profile

Job Profile	Organisational Facilitation, Recognition of Creativity And Performance	Meaningful Work, Fair Salary And Motivating Work Environment	Well Defined Job And Policies	Healthy And Conducive Work Environment	Role Clarity	An Equitable Performance Appraisal System	Recommendation	Challenging Nature of ASSIGNMENT
Teaching	2.9909	3.3750	3.3973	3.6757	3.4252	2.9762	3.2109	2.7959
Administration	3.6491	4.0263	3.4526	3.3684	3.7632	3.0000	3.3421	3.0789
Support Staff	3.5524	3.7679	4.3143	2.1905	3.8571	2.5000	3.3571	5.7857
Total	3.0859	3.4624	3.4405	3.5819	3.4798	2.9595	3.2312	2.9480

Mean of different variable constructed for identifying the factors of Quality of Work Life with the different job profile of respondents like teaching, administration and support staff **was calculated with the help of SPSS software. The information presented in the table10 indicates that the** mean of different factors Healthy And Conducive Work Environment across the different level of job profile scored highest mean across however the factor like Meaningful Work, Fair Salary And Motivating Work has scored highest mean among all. The factor like Well Defined Job And Policies has scored highest mean among all variable.

5. Conclusions and Suggestions

The study found that there is a positive and significant relationship between Quality of Work Life and employees performance. The factors which are considered valuable to enhance employees performance are organisational facilitation, recognition of reativity and performance, meaningful work, fair salary and motivating work environment ,an equitable performance appraisal, role clarity, healthy and conducive work

environment, well defined job and policies, leisure time and development opportunities , challenging nature of assignment. So by improving these factors, Quality of Work Life in an organisation can be enhanced. Therefore, it is highly recommended for the managers, to focus on these factors of Quality of Work Life to improve the employees performance and achieve organisational goals.

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AN EMPIRICAL STUDY ON FACTORS AFFECTING SOFTWARE PIRACY IN THE INDIAN SOFTWARE INDUSTRY

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ABSTRACT

Indian software companies like Infosys, Wipro, and Tata Consultancy Services propelled the Indian software industry and the economy into global view. As the industry grew, software piracy also grew, at a greater rate in a developing country like India. This resulted in huge losses to software development companies as they were denied revenues they well deserved. Software pirates evade tax and the economy altogether suffers due to software piracy. This paper aims to find out the key factors that affect the software copyright infringement in the Indian software industry by reviewing various research studies undertaken on software piracy happening world-wide and in India. On the basis of concept development based on the literature review, 40 variables found relevant for the current study form the basis of the questionnaire. Multi-variate factor analysis is employed to find the concealed factors by looking for underlying unobservable variables that are reflected in the observed variables. It is concluded that market dynamics play the biggest role in software piracy in India. The final section discusses the limitations as well as the possibilities of conducting a similar study, discussing the IPR issues in other industries too, like the music and the automobile industry.

Keywords: Software piracy, copyright infringement, intellectual property rights, software industry

1. Introduction

Software industry includes all the activities and businesses involved with development, maintenance and distribution of computer software on one hand and software servicing, training and consultancy on the other. The US is estimated to control more or less 50% share of the world software market and the US software companies are the leading companies in the world in respect of development and production of

software.[*](www.economywatch.com, 2010). However, the global software industry today is no longer dominated by the developed countries like the United States and the rest. The developing countries are also finding it a profitable sector which can create growth for their economies and provide employment for their educated workforce.

India's software industry is one of the world's most successful information technology industries. It consists of a large and growing number of firms: Using NASSCOM membership as a measure, the number of Indian software firms had grown from around 430 in 1996-97 to over 620 in 1997-98. Many of these firms entered the industry during or just before the economic liberalization in 1991. Once Indian software companies started investing in R&D to develop products, they also developed awareness for a need to protect their IPR. According to Rao[†], earlier the developers lost any intellectual rights to the developed code once it was delivered to the customer but now they are demanding rights from their customers to retain the intellectual property to reduce duplicating, save time and generate more revenue. This is very true as the economy of the leading companies is mostly dependent on the development of proprietary software products. According to Srivastava, Co-founder of such companies as software major IIS Infotech and venture capital fund Infinity Ventures (in Rawat A., 2012), India will grow from the current $50 billion to about $200 billion by 2020. However, companies will need to shift their stance and become more focused on intellectual property and have an increased global presence. Indian educational institutions will also have to produce quality graduates to fuel this growth rather than creating thousands of engineers whose knowledge and skill levels are, at best, mediocre.[‡] (Rawat A., 2009).

With growth strategies led by innovation and intellectual property becoming more mainstream, we believe the Indian software product industry is well placed for the next phase of growth, says Rajagopalachari H., 2010.[§] The Indian software industry body, NASSCOM, expects revenues from this industry to be between US$9.5 and $12 billion by 2015.

Since most of the companies invest a lot of money in creating software and bringing it to the markets, they look forward to generating huge

[*] Software Industry (2010, June 30). Retrieved from http://www.economywatch.com/worldindustries/software/ at 1940 hrs on October 9,12

[†] Rao, S.S. (2001). IPR in the ensuing global digital economy. *Library Hi Tech*, 19(2), p.181 Retrieved from http://www.emeraldinsight.com/journals.htm?articleid=861272 at 1203 hrs on Aug 30,12

[‡] Rawat, A. (Nov 15, 09). Indian Software Industry will hold out against competition. Retrieved from http://www.topnews.in/indian-software-industry-will-hold-out-against-competition-2236368 at 1225 hrs on Sept 7, 10

[§] Rajagopalachari, H. (Dec,2010) India Top 100. *Global 100 software leaders.* p45. Retrieved from http://www.pwc.com/en_US/us/technology/assets/Global-100-software-leaders-report-2011.pdf at 1837hrs on Oct 18, 11

revenues through it by protecting it through various protection laws. The revenues thus generated would help them in further research and development. There have been people against this thought who feel that instead of encouraging innovation, protecting one's software results in discouraging it. Whether for, or against, the software piracy happening all around the world cannot be ignored. Software piracy is an act of unauthorized copying, loading or distribution of copyrighted software in violation of the end-user license agreement also known as 'copyright infringement of software'. Although most computer users today are aware that unauthorized use and duplication of software invites legal actions, they still show a general disregard for the importance of treating software as valuable intellectual property.

For the purpose of research, the Indian software products, as a group have been studied from a market perspective in terms of revenue and growth. However, there has been no focused study on the magnitude of piracy of Indian software products and the financial or business impact of piracy on Indian software companies themselves.

2. Problem Statement

It is important to protect software from software piracy which is very harmful for the software industry. It not only affects the profits of the developing firm, but also affects the government as there are no taxes paid on pirated software. Even the end user suffers as he gets no technical support or advanced features and gets viruses in the form of pirated software. Not much of the research work has been done and there are not enough empirical evidences in the Indian context that point out the important factors clearly driving the copyright and piracy issues in the Indian software industry.

3. Literature Review

A report by SIIA and KPMG[**], 2001 mentions that most people in both the consumer and business user base have at least a moderate belief in the sanctity of copyright laws as they apply to Internet content and software. They say that they would not knowingly violate copyright laws. However, there is a shared belief, dominant in some segments, that everyone who uses the Internet eventually violates copyright laws.

[**] SIIA and KPMG. (2001). *Doesn't everybody do it? Internet Piracy, Attitudes and Behaviours.* pp.1-32. Retrieved from http://www.siia.net/estore/ius-01.pdf at 1344 hrs on May 5, 10.

Bora and Sahay[††] (2008) are also of the opinion that software piracy results in huge revenue losses to companies like Microsoft and Adobe who as a result, lose millions annually. They further say that for a country like India, it is extremely important to have a strong local software industry. After explaining the types of software piracy, they lay special emphasis on 'Counterfeiting', which involves making exact copies of the CDs of the original software along with holograms and trade mark so that they look genuine. The Trade marks Act 1999, the Copyright Act 1957 and the Customs Act 1962 are the only three Acts according to them that deal with counterfeiting in India.

A study by Davis R., Samuelson, P., Kapor M., & Reichman J.[‡‡], 1996 says that the existing intellectual property laws do not suit the needs of the software industry. Software falls outside the purview of the present laws as it is 'innovative' not 'inventive'. The study proposes a law focused on 'innovative behavior' because most of the software is innovative in nature.

Seadle M.[§§], 2008 says software copyright infringement is very closely related to technology. It also talks on the same lines that the existing IPR laws are unsuitable as they were written with 'pre-digital technology in mind'. He also suggests that laws should be modernized keeping technology in mind.

Rao, S.S., 2001[***] is also of the same opinion. He says that intellectual property has evolved with the development of technology. The new economy is the digital economy and it has changed the way products are produced and distributed. IPR becomes all the more important in the digital economy for this reason. He further goes on to explain the evolution and the importance of intellectual property rights as the economy changed with time. James, T.C., 2001[†††] also has brought out a very interesting comparison between copyright in the pre-digital and the present digital era. He says all works can now be digitalized, whether it is text, sounds or images, and once digitalized, they can be merged and transformed in a variety of ways, to make them completely new works. Physical reproduction is replaced by digital reproduction. He also talks about how computer

[††] Bora, N., & Sahay S. (2008). Software counterfeiting in India: issues and implementation. *World Trade mark Review*. pp62.Retrieved from http://www.worldtrademarkreview.com/issues/article.ashx?g=208223b1-e484-43ff-acea-513077f1d662 at 1037 hrs on Sept 17,09

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[†††] James, T.C. (Nov-Dec, 2001). Indian copyright law and digital technologies. *Invention Intelligence,* pp.263-272

programs made their way to be protected under the TRIPS agreement in 1994 and the re-iteration in the WCT. India had much earlier protected computer programs in their Act after the Berne convention.

Rodney, D.R. 2002[‡‡‡] says that the concept of intellectual properties is very old and that of the Internet too young. He focuses on the opportunities and challenges Internet has brought in the field of intellectual properties and their protection. He says, business method patents are the genesis of the Internet. He further says that many companies have filed software patents, but some have not. This opens the door for less deserving 'inventors' to obtain patents on previously filed inventions.

Abu-Arafah, A.A.[§§§]states the views both in favour of and against software piracy. He says people usually defend software piracy on economical grounds that the software is too expensive and by pirating it and re-selling it at a lower price, they are protecting the consumers. He also gives the opinions of people against software piracy that it is ethically wrong to do so and it results in decreased revenues which means less resources in hand to pump into R&D and innovation activities.

McLaughlin, L.[****], 2005 talks about the fears of open source developers of exposing themselves to intellectual property suits. Even if they inadvertently use a piece of open source code protected by a third party patent, they open themselves to the risk of being sued. James Harvey, (as cited in the study) a lawyer at Alston & Bird, says to protect themselves the developers have to learn about intellectual property law, even if they dislike the notation of software patents.

4. Objectives and Methodology

Following were the objectives of the study:

- To arrive at factors driving the IPR infringement in India with reference to copyright and piracy issues in the Indian software industry.
- To study those factors and give recommendations on how to fight software piracy in the Indian software industry.

[‡‡‡] Rodney, D.R. (Sept-Oct, 2002). Role of internet in the development, management andcommercialization of intellectual property. *Invention Intelligence*. pp.236-247.

[§§§] Abu-Arafah, A.A. (n.d.) The ethical and economical arguments against software piracy. pp.1-2. Retrieved from http://faculty.kfupm.edu.sa/COE/aimane/COE390/Software_Piracy_072.pdf at 1342hrs on Oct 21, 12

[****] McLaughlin, L. (May/June, 2005). Inside the software patents debate. Some good news for open source developers. *IEEE Software*.22(3), pp.102-104.

For this purpose, a structured questionnaire was designed and piloted on a predetermined sample of 300 respondents. Convenience sampling, under the non-probability sampling was used, wherein a few cities were selected for intensive study on the principle that they can be representative of the entire country. These were Delhi, Gurgaon, Mumbai, Pune and Bangalore (where the software industry is concentrated) and also Dehradun (where there are a number of software users). A total number of 300 respondents (Software Users-100, Software Developers-50, Institutional Software Buyers-100 and Legal Experts-50) were approached to fill up the questionnaire. However, only 248 respondents filled up the questionnaires correctly and these were included in the sample for final data analysis. After the collection of data, it was analysed and some important findings and appropriate conclusions were drawn.

Table 1 – Demographic characteristics of respondents

	Categories	**Count**	**Percentage**
		248	100
Gender	Male	206	83%
	Female	42	17%
Age	Less than 25 years	79	32%
	26-40 years	140	56%
	41-50 years	17	7%
	Over 50 years	12	5%
Education Level	Graduate	81	33%
	Post Graduate in Computer Science	30	12%
	Post Graduate in other fields	119	48%
	Doctorate and above	18	7%
User Category	Software users	159	64%
	Software developers	49	20%
	Institutional Software buyers	22	9%
	Legal experts	18	7%
Monthly Income	Less than Rs. 25000	76	31%
	Rs. 25001-Rs. 50000	91	37%
	Rs. 50001-Rs. 100000	50	20%
	More than Rs. 100000	31	12%

The table above shows that out of 248 respondents, 83% are males and only 17% are females. Also, 32% respondents are less than 25 years of age, 56% are between 26-40 years, 7% are between 41-50 years and only 5% are over 50 years. 33% of respondents are graduates, 48% are post graduate in other fields, 12% are post graduate in computer science and 7% are doctorates. In the user category, 64% of the respondents are software users, 20% are software developers, 9% are institutional software buyers and 7% are legal experts. 68% of the respondents belong to the middle income group and 32% belong to the higher income group.

5. Analysis and Discussion

Factor analysis was done with respect to the varying degree of agreeability to disagreeability on as many as forty variables about software piracy. Using SPSS 16.0, the factors underlying software piracy were identified. The factors were given appropriate names on the basis of variables represented in each case. The names of the factors, the statements, the labels and factor loadings have been summarized in **Tables 5, 6, 7, 8, 9, 10** and **11** respectively**.**

After obtaining the R- Matrix which is the correlation matrix obtained as the first table in the SPSS output after factor analysis, the data was tested for sampling adequacy by applying KMO which indicated the validity of factor analysis.

Table 2 – Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.638	16.596	16.596	6.638	16.596	16.596	4.136	10.341	10.341
2	3.730	9.324	25.920	3.730	9.324	25.920	3.322	8.304	18.645
3	2.003	5.007	30.927	2.003	5.007	30.927	2.854	7.134	25.780
4	1.655	4.138	35.066	1.655	4.138	35.066	2.332	5.830	31.610
5	1.516	3.791	38.857	1.516	3.791	38.857	2.098	5.244	36.854
6	1.425	3.562	42.418	1.425	3.562	42.418	1.895	4.737	41.591
7	1.396	3.490	45.908	1.396	3.490	45.908	1.727	4.317	45.908
8	1.235	3.087	48.995						
9	1.179	2.948	51.943						
10	1.150	2.874	54.817						
11	1.108	2.770	57.587						
12	1.051	2.627	60.214						
13	.955	2.387	62.601						
14	.952	2.381	64.982						
15	.926	2.315	67.297						
16	.900	2.251	69.549						
17	.842	2.104	71.653						
18	.808	2.020	73.673						
19	.764	1.910	75.583						
20	.739	1.848	77.431						
21	.714	1.786	79.217						

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
22	.661	1.652	80.869						
23	.646	1.615	82.484						
24	.620	1.549	84.033						
25	.556	1.390	85.422						
26	.517	1.291	86.714						
27	.513	1.282	87.996						
28	.507	1.269	89.264						
29	.489	1.221	90.486						
30	.464	1.160	91.646						
31	.444	1.110	92.755						
32	.422	1.056	93.811						
33	.410	1.025	94.836						
34	.359	.897	95.732						
35	.330	.825	96.557						
36	.323	.808	97.365						
37	.299	.747	98.112						
38	.273	.682	98.794						
39	.251	.627	99.421						
40	.232	.579	100.000						

Extraction Method: Principal Component Analysis

The table above lists the Eigen values associated with each linear component (factor) before extraction, after extraction and after rotation. Before extraction, SPSS had identified 40 linear components within the data set. The Eigen values associated with each factor represent the variance explained by that particular linear component and the table also displays the Eigen values in terms of the percentage of variance explained. In the last column headed with Rotation Sum of Squared Loadings shows Eigen values of the factors after rotation. Rotation has the effect of optimizing the factor structure and on consequence for these data is that the relative importance of the seven factors is equalized.

Table 3 – Communalities

	Initial	Extraction
Geographic location of a person plays an important role in his decision whether to use pirated software or not.	1.000	.321
Income level of the buyer plays a role in his decision whether to use pirated software or not.	1.000	.510
Use of pirated software is independent of the gender.	1.000	.296
Age of a person plays a role in his decision to use pirated software or not.	1.000	.346
People who are ambitious, careless, least social are more prone to software copyright infringement.	1.000	.579
Orientation of people towards their life take them on the path of software copyright infringement.	1.000	.482
Software copyright infringement & use of pirated software depend upon the use rate of buyer.	1.000	.256
Individual users are the major contributors towards the use of pirated software.	1.000	.374
Institutional buyers are next to individual consumers in contributing towards the use of pirated software.	1.000	.388
Type of business ownership (whether sole proprietorship or partnership) is an important driving force behind software copyright infringement.	1.000	.308
The demographic profile of the user (age, income, race, gender etc.) plays a role in his decision whether to infringe software copyright or not.	1.000	.604
Increase in the number of computer users can be seen as a potential cause for software copyright infringement and software piracy.	1.000	.488
Higher the commercial potential of software, higher are the chances of its copyright infringement & piracy taking place.	1.000	.520
Ubiquitous internet connectivity has increased the software copyright infringement & its piracy.	1.000	.439
High profitability makes the software copyright infringement & software piracy an illegal but lucrative business.	1.000	.495
Low prices of pirated software have popularized their use.	1.000	.575
Level of awareness about intellectual property rights is quite low across India.	1.000	.425
Moderate technology requirement is yet another reason for why people infringe software copyrights.	1.000	.375
Inability to compete against genuine brands of a software pushes new entrants in the software industry into software piracy.	1.000	.448
In India, the market size of pirated software is large enough to make it a potential grey market.	1.000	.565
Development of pirated software requires only a moderate level of investment.	1.000	.395
High cost of genuine software and personal budget constraints of users are driving forces behind use of pirated software and its copyright infringement.	1.000	.605
It is easy to convince any user to buy pirated software.	1.000	.549
In India, the sale and distribution of pirated software is virtually risk-free.	1.000	.484
Ability of the makers of pirated software to conceal their operations is low.	1.000	.409
Buyers of pirated software & the people involved in software copyright infringement are	1.000	.408

	Initial	Extraction
under high risk of detection.		
The legal and regulatory framework against software copyright infringement and piracy is strong in India.	1.000	.555
Legal enforcement against software copyright infringement and piracy is quite satisfactory in India.	1.000	.651
Internet has increased the flexibility of location for the person involved in software infringement.	1.000	.421
The penalties against people involved in infringement are not a big enough deterrent.	1.000	.491
In India, people have high regards for intellectual property rights.	1.000	.576
There is almost no difference between the quality of genuine and pirated software.	1.000	.462
People violating intellectual property rights feel strong threat of prosecution.	1.000	.599
Government of India conducts surveys on pirated software on a regular basis.	1.000	.376
In India, every state must maintain a common database for intellectual property rights.	1.000	.417
Government of India, software Industry, software buyers and users should create bodies to fight against IPR violations.	1.000	.424
Now-a-days, purchase of illegal software is under serious observation of government agencies and the industry watchdogs.	1.000	.375
Indian firms are good at software implementation but are poor at R&D in software.	1.000	.498
Sometimes software companies deliberately promote piracy in a controlled manner.	1.000	.410
Infringement of software copyright does not affect the profitability of firms owning the copyright.	1.000	.464

Extraction Method: Principal Component Analysis

For explaining the results of factor analysis further, a table representing the Communalities was used. Communality is the proportion of variance of a variable explicated by common factors. The communalities in the column with a heading Extraction reflect the common variance in the data structure. The extracted communalities of the variables were found in between 0.603 and 0.787. These values suggested mediocre communalities.

Table 4 – Rotated Component Matrix

	Component						
	1	2	3	4	5	6	7
It is easy to convince any user to buy pirated software.	.685						
High cost of genuine software and personal budget constraints of users are driving forces behind use of pirated software and its copyright infringement.	.654						
Low prices of pirated software have popularized their use.	.603						
In India, the market size of pirated software is large enough to make it a potential grey market.	.586						
In India, the sale and distribution of pirated software is virtually risk-free.	.561						
Moderate technology requirement is yet another reason for why people infringe software copyrights.	.527						

Internet has increased the flexibility of location for the person involved in software infringement.	.527						
Individual users are the major contributors towards the use of pirated software.	.511						
High profitability makes the software copyright infringement & software piracy an illegal but lucrative business.	.474						
Development of pirated software requires only a moderate level of investment.	.462		.403				
Legal enforcement against software copyright infringement and piracy is quite satisfactory in India.		.760					
People violating intellectual property rights feel strong threat of prosecution.		.722					
In India, people have high regards for intellectual property rights.		.696					
The legal and regulatory framework against software copyright infringement and piracy is strong in India.		.664					
Government of India conducts surveys on pirated software on a regular basis.		.546					
Buyers of pirated software & the people involved in software copyright infringement are under high risk of detection.		.512					
Now-a-days, purchase of illegal software is under serious observation of government agencies and the industry watchdogs.		.421					
Government of India, software Industry, software buyers and users should create bodies to fight against IPR violations.			.624				
In India, every state must maintain a common database for intellectual property rights.			.561				
Ubiquitous internet connectivity has increased the software copyright infringement & its piracy.			.506				
There is almost no difference between the quality of genuine and pirated software.			-.450				.415
Level of awareness about intellectual property rights is quite low across India.							
Type of business ownership (whether sole proprietorship or partnership) is an important driving force behind software copyright infringement.							
The demographic profile of the user (age, income, race, gender etc.) plays a role in his decision whether to infringe software copyright or not.				.719			
Income level of the buyer plays a role in his decision whether to use pirated software or not.				.654			
Increase in the number of computer users can be seen as a potential cause for software copyright infringement and software piracy.				.558			
Inability to compete against genuine brands of a software pushes new entrants in the software industry into software piracy.				.451			
Higher the commercial potential of software, higher are the chances of its copyright infringement & piracy taking place.				.433			
People who are ambitious, careless, least social are more					.673		

prone to software copyright infringement.							
Orientation of people towards their life take them on the path of software copyright infringement.					.633		
Institutional buyers are next to individual consumers in contributing towards the use of pirated software.					.511		
Age of a person plays a role in his decision to use pirated software or not.							
Ability of the makers of pirated software to conceal their operations is low.							
Software copyright infringement & use of pirated software depend upon the use rate of buyer.							
Indian firms are good at software implementation but are poor at R&D in software.						.618	
Sometimes software companies deliberately promote piracy in a controlled manner.						.551	
Infringement of software copyright does not affect the profitability of firms owning the copyright.						.545	
The penalties against people involved in infringement are not a big enough deterrent.			.406			.476	
Geographic location of a person plays an important role in his decision whether to use pirated software or not.							.528
Use of pirated software is independent of the gender.							.481

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations

In the table above is seen, the content of questions that load onto the same factor to try to identify common themes, to name the factors thereon.

Table 5 – Factor 1 (Market Dynamics)

It is easy to convince any user to buy pirated software.	.685
High cost of genuine software and personal budget constraints of users are driving forces behind use of pirated software and its copyright infringement.	.654
Low prices of pirated software have popularized their use.	.603
In India, the market size of pirated software is large enough to make it a potential grey market.	.586
In India, the sale and distribution of pirated software is virtually risk-free.	.561
Moderate technology requirement is yet another reason for why people infringe software copyrights.	.527
Internet has increased the flexibility of location for the person involved in software infringement.	.527
Individual users are the major contributors towards the use of pirated software.	.511
High profitability makes the software copyright infringement & software piracy an illegal but lucrative business.	.474
Development of pirated software requires only a moderate level of investment.	.462

This factor accounts for 16.5% of the total common variance and is a major factor. There are ten variables in this factor and all are positive and have substantial loadings varying from 0.462 to 0.685.

Table 6 – Factor 2 (Legal and Law enforcement environment)

Legal enforcement against software copyright infringement and piracy is quite satisfactory in India.	.760
People violating intellectual property rights feel strong threat of prosecution.	.722
In India, people have high regards for intellectual property rights.	.696
The legal and regulatory framework against software copyright infringement and piracy is strong in India.	.664
Government of India conducts surveys on pirated software on a regular basis.	.546
Buyers of pirated software & the people involved in software copyright infringement are under high risk of detection.	.512
Now-a-days, purchase of illegal software is under serious observation of government agencies and the industry watchdogs.	.421

This factor accounts for 9.3% of the total common variance and is the second major factor. The seven variables of this factor are all positive and have substantial loadings varying from 0.421 to 0.760

Table 7 – Factor 3 (Implementation of anti-piracy measures)

Government of India, software Industry, software buyers and users should create bodies to fight against IPR violations.	.624
In India, every state must maintain a common database for intellectual property rights.	.561
Ubiquitous internet connectivity has increased the software copyright infringement & its piracy.	.506
The penalties against people involved in infringement are not a big enough deterrent.	.406

This factor accounts for 5% of the total common variance and is the third major factor. The four variables of this factor are all positive and have substantial loadings varying from 0.406 to 0.624.

Table 8 – Factor 4 (Economic factors in the Software Industry)

The demographic profile of the user (age, income, race, gender etc.) plays a role in his decision whether to infringe software copyright or not.	.719
Income level of the buyer plays a role in his decision whether to use pirated software or not.	.654
Increase in the number of computer users can be seen as a potential cause for software copyright infringement and software piracy.	.558
Inability to compete against genuine brands of software pushes new entrants in the software industry into software piracy.	.451
Higher the commercial potential of software, higher are the chances of its copyright infringement & piracy taking place.	.433

This factor accounts for 4.1% of the total common variance. The five variables of this factor are all positive and have substantial loadings varying from 0.433 to 0.719.

Table 9 – Factor 5 (User personality profile)

People who are ambitious, careless, least social are more prone to software copyright infringement.	.673
Orientation of people towards their life take them on the path of software copyright infringement.	.633
Institutional buyers are next to individual consumers in contributing towards the use of pirated software.	.511

This factor accounts for 3.7% of the total common variance. The three variables of this factor are all positive and have substantial loadings varying from 0.511 to 0.673

Table 10 – Factor 6 (Profile of software development companies)

Indian firms are good at software implementation but are poor at R&D in software.	.618
Sometimes software companies deliberately promote piracy in a controlled manner.	.551
Infringement of software copyright does not affect the profitability of firms owning the copyright.	.545
The penalties against people involved in infringement are not a big enough deterrent.	.476

This factor accounts for 3.5% of the total common variance. The three variables of this factor are all positive and have substantial loadings varying from 0.476 to 0.618

Table 11 – Factor 7 (User demographics and perception)

There is almost no difference between the quality of genuine and pirated software.	.415
Geographic location of a person plays an important role in his decision whether to use pirated software or not.	.528
Use of pirated software is independent of the gender.	.481

This factor accounts for 3.49% of the total common variance. The three variables of this factor are all positive and have substantial loadings varying from 0.415 to 0.528

These seven factors may suggest the kind of efforts and intentions that are prevailing in the market.

6. Conclusion

The paper aims at finding the key factors responsible for the growing software copyright infringement in the Indian software industry. Knowing the factors helps to arrive at the solution to the problem. Various factors like the high cost of genuine software, the leniency of the law enforcement agencies towards penalizing the infringers, lack of IPR awareness in the computer users, lack of general regard in the computer users for IPR are some of the factors that has helped software copyright infringement to grow in India.

The most important factor driving the IPR infringement in India is 'Market Dynamics', which includes the high cost of a genuine software, the sales and distribution of pirated software being risk-free, growing use of internet, moderate technology and investment requirements, and high profitability in software piracy. The software development companies

should price their product reasonably. High cost is one of reasons which push users to buy pirated software. If the genuine software is reasonably priced, people may prefer buying it rather the pirated one.

Secondly, the law enforcement agencies have to be very strict when they come across any case of copyright infringement. They should arrest and prosecute people involved in the sale and distribution of pirated software. The growing use of internet is another reason which leads to increase in software piracy. There are certain technological measures that can be taken to reduce piracy taking place through internet. Banks, insurance and other multinational companies should use encryption to prevent unauthorized downloading of their data. In another technique, the software application runs on a computer only if it recognizes a specific serial number hard coded in the memory of the computer it is loaded upon.

Software piracy is also affected by 'Legal and law enforcement environment' and 'Implementation of anti-piracy measures'. The legal and regulatory framework regarding IPR in India has great impact on the growth of software piracy. The existing IPR laws in India are comprehensive enough, but the problem lies in their enforcement. In India, the use of pirated software by the end user is both a civil as well as a criminal wrong. More and more actions should be taken under the criminal procedures to create a fear among software pirates.

'User personality profile' and 'User demographics and perception' are two other important factors that affect software infringement. Both are interrelated. At times, users are not aware that they are using pirated software and at other, they end up taking IPR for granted. The state governments should conduct IPR awareness programs like workshops and seminars in their respective states to educate the users about IPR in general and software piracy, in particular. he users should be educated about what infringement exactly is and the consequences of infringing upon IPR.

Thus, it can be concluded that software copyright infringement in the Indian software industry is an issue that can be addressed, if paid proper attention to.

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APPRAISING LEADERS: A GRID MANAGERIAL APPROACH

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ABSTRACT

Leadership is different from management in several aspects. A leader is a servant as much as a commander. A good leader cares about others. A leader must lead others to success. If a leader's goal was to achieve success only for one's own self, then I'd call him or her a climber, for one who climbs to success, but not a leader. A leader who does not benefit others serves no purpose in an organization or in society.

Keywords: Leader, Leadership, Grid, Style

1. Introduction

Leadership is the ability to influence people towards the attainment of organizational goals. It is a process by which a person influences others to accomplish an objective and directs the organization in a way that makes it more cohesive and coherent. Leadership is a process whereby an individual influences a group of individuals to achieve a common goal (Northouse, 2007). Leaders carry out this process by applying their leadership knowledge and skills. This is called *Process Leadership* (Jago, 1982). However, we know that we have traits that can influence our actions. This is called *Trait Leadership* (Jago, 1982), in that it was once common to believe that leaders were born rather than made. To inspire the workers into higher levels of teamwork, there are certain things leader must be, know, and, do. These do not come naturally, but are acquired through continued work and study. Good leaders are continually working and studying to improve their leadership skills; they are NOT resting on their laurels. There are three natures of leaders. First nature of leaders is very task-oriented and they simply want to get things done. Second nature of leaders is very people-oriented, they want people to be happy and third nature of leaders is a combination of the previous two. If you prefer to lead by setting and enforcing tight schedules, you tend to be more production-oriented (or task-oriented). If you make people your priority and try to accommodate employee needs, then you're more people-oriented. As different leaders who work under different work environmental will face different forms of constraints, it will result in different levels of contributions and these should

be appraised differently. There are following **Five Tools of Leadership Excellence:**

Intelligence – Intelligence accounts for 25 percent of the variance between those that excel at their job and those that do not. It is especially crucial to consider when an executive must be brought up to speed and begin delivering quickly. Further, intelligence helps mask the appearance of other developmental weaknesses.

Emotional Intelligence (EQ) – It was shown in a Harvard study to be twice as predictive of excellent performance as expertise. EQ is also positively correlated with participative management, putting others at ease, relationship building, doing whatever it takes to win, and managing change effectively. Those rated as having high EQ are more likely to lead profitable organizations.

Technical Skill – I commonly ask those that I'm interviewing what they value in a leader, and hear "technical skill" almost without exception. Having deep subject matter expertise helps leaders get buy-in from those with boots on the ground and decreases the problem of management being out of touch with the goings on of those they lead.

Leadership – Leadership is defined as the ability to influence people to work towards a common goal. Therefore, leaders are those with a well-defined vision of where they are going and the skills necessary to persuade others to come along. Forget the myriad definitions of leadership you have heard over the years and strip leadership down to its bones – vision and influence.

Fit – The idea of one prototypical leader is as dead as the people who thought it up. Examine the needs of your organization and your team and determine how good a fit someone is against your actual needs, not some romanticized vision of what a leader looks like.

2. Review of Literature

The wide variety of literatures is available on the different aspects of the topic discussed in the paper. However, only few major literatures have been covered here to provide a comprehensive idea about the research trends on the different dimensions of current research.

Warren Bennis - Leadership is a function of knowing yourself, having a vision that is well communicated, building trust among colleagues, and taking effective action to realize your own leadership potential.

Robert Blake and Jane Mouton **(1964) -** The **Managerial Grid Model** is a behavioural leadership model identifies five different leadership styles based on the *concern for people* and the *concern for production*.

French & Saward (1984) a good style of leading is knowing the destination and persuading others to join and get there by being "out front leading, rather than staying behind pushing."

In this research, a leadership style means ways of guiding others to achieve organizational objectives and goals.

Everard & Morris (1985) that a team is a group that effectively operates tasks that are assigned to it. The expectation is that all members of the group should contribute so that decisions should be of high quality because all talents of the members are harnessed. In the context of this study, team building meant a spirit of working together as a team in an organization - members avoiding to work as individuals.

Stoner & Freeman (1987) state, a leader has to appraise the workers' performance in order to assess whether or not the organizational and workers' goals and objectives are achieved. If used appropriately, performance appraisal systems show concern for people and production.

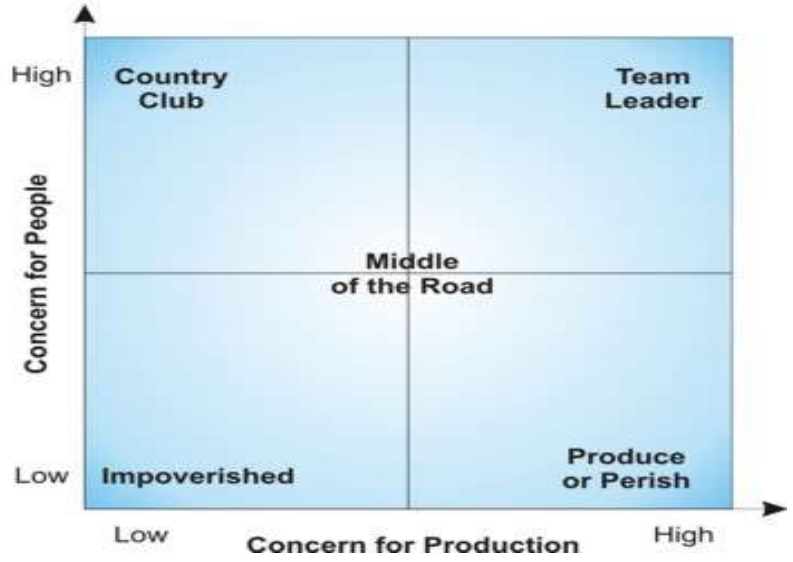
3. Leadership Style Appraisal

Leadership occurs among people, involves the use of influence, and is used to attain goals (Garry Yukl, 1989). There are several theories to appraise leadership styles. Leaders are seen as applying three basic styles. The autocratic leader commends and expects compliance, is dogmatic and positive, and leads by ability to withhold or give rewards and punishment. The democratic leader consults subordinates on proposed actions and decisions and encourages participation from them. The free-rein leader uses power very little, if at all, giving subordinates a high degree of independence. A well-known approach to appraise leadership styles is the managerial grid. Robert Blake and Jane Mouton of the University of Texas proposed a two-dimensional leadership theory called Leadership Grid; it plots the degree of task-centeredness versus person-centeredness and identifies five combinations as distinct leadership styles. The Leadership Grid is based on two behavioural dimensions, **Concern for People,** This is the degree to which a leader considers the needs of team members, their interests, and areas of personal development when deciding how best to accomplish a task and **Concern for Production,** This is the degree to which a leader emphasizes concrete objectives, organizational efficiency and high productivity when deciding how best to accomplish a task. The Blake Mouton Managerial Grid is a practical and useful framework that helps us to

think about our leadership style. By plotting 'concern for production' against 'concern for people', the grid highlights how placing too much emphasis in one area at the expense of the other leads to low overall productivity. The model proposes that when both people and production concerns are high, employee engagement and productivity increases accordingly. This is often true, and it follows the ideas of Theories X and Y, and other participative management theories. It certainly provides an excellent starting place to critically analyze your own performance and improve your general leadership skills.

The leadership styles performance is manifested through a graphical approach identified by co-ordinates (1,1), (1,9), (9,1), (5,5) and (9,9) as in Figure 1. Using the axis to plot leadership 'concerns for production' versus 'concerns for people', Blake and Mouton defined the following five leadership styles:

Figure 1: The Blake Mouton Grid



Leadership with a 1, 9 rating – High People/Low Production

Country club Leadership occurs when primary emphasis is given to people rather than to work outputs. The leaders in this style are most concerned about the needs and feelings of members of his/her team. These people operate under the assumption that as long as team members are happy and secure then they will work hard. What tends to result is a work environment that is very relaxed and fun but where production suffers due to lack of direction and control.

Leadership with a 9, 1rating – High Production/Low People

Perish or Authority-compliance Leadership occurs when efficiency in operations is the dominant orientation. This leadership style is also known as Authoritarian or Compliance Leaders. Leaders in this category believe that employees are simply a means to an end. Employee needs are always secondary to the need for efficient and productive workplaces. This type of leader is very autocratic, has strict work rules, policies, and procedures, and views punishment as the most effective means to motivate employees.

Leadership with a 1, 1 rating – Low Production/Low People

Impoverished means the absence of a management philosophy, managers exert little effort toward interpersonal relationships or work accomplishment. This leader is mostly ineffective. The leaders in this style contribute minimum effort to get the required job done. He/she has neither a high regard for creating systems for getting the job done, nor for creating a work environment that is satisfying and motivating. The result is a place of disorganization, dissatisfaction and disharmony.

Leadership with a 5, 5 rating – Medium Production/Medium People

Middle-of-the-Road reflects a moderate amount of concern for both people and production. This style is a balance of the two competing concerns. It may at first appear to be an ideal compromise. Leaders in this style try to play safe in all situations. Therein lies the problem, though: When you compromise, you necessarily give away a bit of each concern so that neither production nor people needs are fully met. Leaders who use this style settle for average performance and often believe that this is the most anyone can expect.

Team Leadership with a 9, 9 rating – High Production/High People

Team management leadership is often considered the most effective style and is recommended for leaders because organization members work together to accomplish tasks. This is the pinnacle of managerial style. These leaders stress production needs and the needs of the people equally highly. The premise here is that employees are involved in understanding organizational purpose and determining production needs. When employees are committed to, and have a stake in the organization's success, their needs and production needs coincide. This creates a team environment based on trust and respect, which leads to high satisfaction and motivation and, as a result, high production.

4. Application of Managerial Grid

Being aware of the various approaches is the first step in understanding and improving how well you perform as a manager. It is important to understand how you currently operate, so that you can then identify ways of becoming competent in both realms.

Step 1: In the 1st step leaders are advised to identify their leadership style. He should think of some recent situations where he is the leader and for each of these situations, place himself in the grid according to where he believes that he is fit.

Step 2: In the second step a leader should identify areas of improvement and develop his leadership skills. Leaders should look at his current leadership style and critically analyze its effectiveness. He should identify ways to get the skills he needs to reach the Team Leadership position. These may include involving others in problem solving or improving how you communicate with them, if you feel you are too task-oriented. Or it may mean becoming clearer about scheduling or monitoring project progress if you tend to focus too much on people. He should continually monitor his performance and watch for situations when you slip back into bad old habits.

Step 3: The third step is concerned to put the Grid in Context. The Team Leadership style is not always the most effective approach in every situation. While the benefits of democratic and participative management are universally accepted, there are times that call for more attention in one area than another. If your company is in the midst of a merger or some other significant change, it is often acceptable to place a higher emphasis on people than on production. Likewise, when faced with an economic hardship or physical risk, people concerns may be placed on the back burner, for the short-term at least, to achieve high productivity and efficiency.

5. Conclusion

It is important to recognize that the Team Leadership style is not always the most effective approach in every situation. While the benefits of democratic and participative management are universally accepted, there are times that call for more attention in one area than another. If your company is in the midst of a merger or some other significant change, it is often acceptable to place a higher emphasis on people than on production. Likewise, when faced with an economic hardship or physical risk, people concerns may be placed on the back burner, for the short-term at least, to achieve high productivity and efficiency. The Blake Mouton Managerial

Grid is a practical and useful framework that helps to think about your leadership style. Neither preference is right or wrong, just as no one type of leadership style is best for all situations. However, it's useful to understand what your natural leadership tendencies are, so that you can then begin working on developing skills that you may be missing. This is a well-known grid that uses the Task vs. Person preference that appears in many other studies, such as the Michigan Leadership Studies and the Ohio State Leadership Studies. Many other task-people models and variants have appeared since then. These are important dimension, but as other models point out, they are not all about their leadership and management. The Managerial Grid was the original name. It later changed to the Leadership Grid.

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RISK MANAGEMENT TOOLS AND POLICIES IN INDIAN BANKING INDUSTRY

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ABSTRACT

Indian Banking industry is the backbone of every economy. Its primary function is deposits and loans. In Indian economy the Reserve bank of Indian is the regulator of the banking industry which comprises of nationalized banks, private banks scheduled banks, RRBs, foreign Banks. Apar form the smooth functioning banks face various types of risks. In this paper, the various banks risk have been discussed. The risk management process adopted by the nationalized banks and policies framed for the risk management. The research is completely descriptive in nature. The data has been collected from the secondary sources. It has been concluded that majority of risk faced by banks is form the side of customers which is known as credit risk for RBI has taken framed policies and measures so as to minimize it. One of the important policy followed by banks is BASEL norms which emphasises on transparency, capital adequacy etc, Asset liability management and capital adequacy norms.

Keywords: RBI, Credit Risk, Capital Adequacy, BASEL Accord

1. Introduction

Banks in the process of financial intermediation are confronted with various kinds of financial and non-financial risks viz., credit, interest rate, foreign exchange rate, liquidity, equity price, commodity price, legal, regulatory, reputational, operational, etc. These risks are highly interdependent and events that affect one area of risk can have ramifications for a range of other risk categories. Thus, top management of banks should attach considerable importance to improve the ability to identify measure, monitor and control the overall level of risks undertaken.

The broad parameters of risk management function should encompass:

- Organizational structure;
- Comprehensive risk measurement approach;

- Risk management policies approved by the Board which should be consistent with the broader business strategies, capital strength, management expertise and overall willingness to assume risk;
- Guidelines and other parameters used to govern risk taking including detailed structure of prudential limits;
- Strong MIS for reporting, monitoring and controlling risks;
- Well laid out procedures, effective control and comprehensive risk reporting framework;
- Separate risk management framework independent of operational Departments and with clear delineation of levels of responsibility for management of risk; and viii) periodical review and evaluation.

2. Concept of Risk

Risk means different things to different people. For some it is "financial (exchange rate, interest-call money rates), mergers of competitors globally to form more powerful entities and not leveraging IT optimally" and for someone else "an event or commitment which has the potential to generate commercial liability or damage to the brand image". Since risk is accepted in business as a tradeoff between reward and threat, it does mean that taking risk bring forth benefits as well. In other words, danger that a certain unpredictable contingency can occur, which generates randomness in cash flow.

Risk in its pragmatic definition, therefore, includes both threats that can materialize and opportunities which can be exploited. This definition of risk is very pertinent today as the current business environment offers both challenges and opportunities to organizations, and it is up to an organization to manage these to their competitive advantage. The objectives of a Risk Management Policy are to be defined taking into view the pragmatic definition of "Risk".

Risk and uncertainty – risks may be described using probability analysis (business cycle, company failures), while events subject to uncertainty cannot (financial crises, wars etc.) Risk and variability – variability alone may not entail risk as long as known for sure ex ante

3. Bank’s Risk- An Overview

Bank Risk is the situation of uncertainty or loss faced by the bank. Banks are the institutions whose primary functions are deposit and advances. Bank gives loans or advances to individual as well institutional customers. Individual customer includes individuals, working people, household etc while institutional includes big industries and corporate. Loan

is granted for stipulated period of time under which it has to be paid unless it will be regarded as Non- Performing Assets (NPA). Banks can face credit risk when their customer fails to pay the loan. Similarly other types of risk which banks face are market risk, reputational risk etc.

4. Risk Management-Structure

Risk Management is the process of measuring or assessing the actual or potential dangers of a particular situation**.** It is a systematic approach to minimizing an organization's exposure to risk. A risk management system includes various policies, procedures and practices that work in unison to identify, analyze, evaluate, address and monitor risk. Risk management information is used along with other corporate information, such as feasibility, to arrive at a risk management decision. Transferring risk to another party, lessening the negative effect of risk and avoiding risk altogether are considered risk management strategies. One of the example risk management is diversification. Traditional risk management works to reduce vulnerabilities that are associated with accidents, deaths and lawsuits, among others. Financial risk management focuses on minimizing risks through the use of financial tools and instruments including various trading techniques and financial analysis. Many large corporations employ teams of risk management personnel.

Some of the issues in implementing risk management structure are:

1) Establishing an appropriate risk management organization structure is choosing between a centralized and decentralized structure. The primary responsibility of understanding the risks run by the bank and ensuring that the risks are appropriately managed should clearly be vested with the Board of Directors.

2) A prerequisite for establishment of an effective risk management system is the existence of a robust MIS, consistent in quality which requires substantial up gradation and strengthening of the data collection machinery to ensure the integrity and reliability of data.

3) The risk management is a complex function and it requires specialized skills and expertise. Banks are using sophisticated models for measuring and managing risks. Large banks and those operating in international markets should develop internal risk management models to be able to compete effectively with their competitors. As the domestic market integrates with the international markets, the banks should have necessary expertise and skill in managing various types of risks in a scientific manner. At a more sophisticated level, the core staff at Head Offices should be trained in risk modeling and analytical tools.

It should, therefore, be the endeavor of all banks to upgrade the skills of staff.

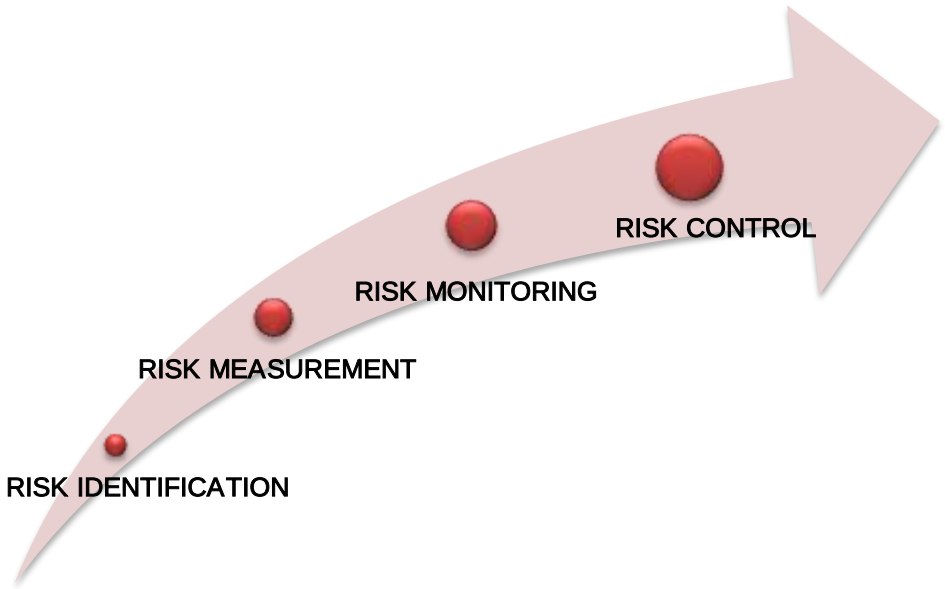
3) Risk management functions should be bank specific, dictated by the size, complexity of functions, the level of technical expertise and the quality of MIS. The proposed guidelines only provide broad parameters and each bank may evolve their own systems compatible to their risk management architecture and expertise.

4) At international level different committees have been formed for managing the risk such as:

- Asset - Liability Management Committee **(ALCO)** deal with different types of market risk.
- Credit Policy Committee **(CPC)** oversees the credit /counterparty risk and country risk Thus, market and credit risks are managed simultaneously in banks. Banks could also set-up a individual Committee for integrated management of credit and market risks. Generally, the policies and procedures for market risk are articulated in the ALM policies and credit risk is addressed in Loan Policies and Procedures.

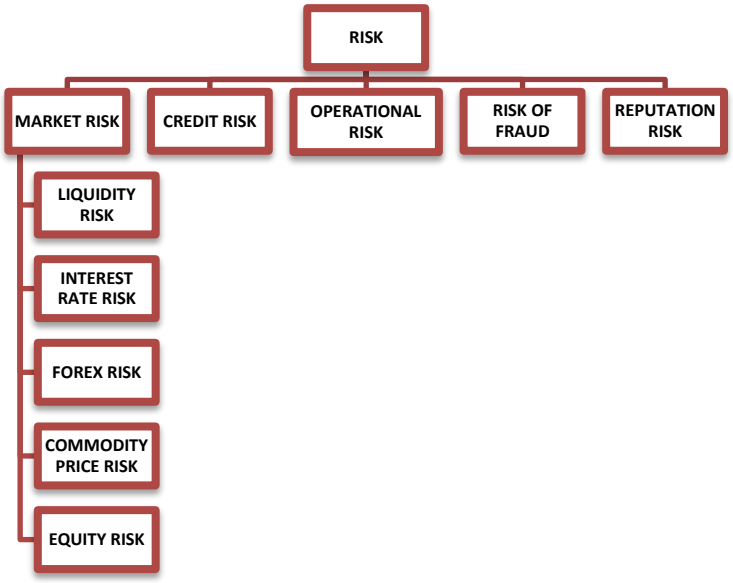
5) The economic crises in some of the countries have revealed a strong correlation between unhedged market risk and credit risk. The volatility in the prices of collateral also significantly affects the quality of the loan book. So, there is a need for integration of the activities of both the ALCO and the CPC.[1]

5. Risk Management-Process[2]



Classification Of Risk

The risk in banking industry can be classified as:



Credit Risk

Lending involves a number of risks. Credit risk can be defined as the risk of losses caused by the default of borrowers. Credit risk or Default risk involves inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, hedging, settlement and other financial transactions. Default occurs when a borrower cannot meet his key financial obligations to pay principal and interest. Credit risk can be:

- Unsystematic
- Systematic

Unsystematic credit risk covers the probability of a borrower's default caused by circumstances that are essentially unique to the individual, whereas systematic credit risk can be defined as the probability of a borrower's default caused by more general economic fundamentals. The credit risk of a bank's portfolio depends on:

- External factors
- Internal factors

The external factors are the state of the economy, wide swings in commodity/equity prices, foreign exchange rates and interest rates, trade restrictions, economic sanctions, Government policies, etc. while internal factors are deficiencies in loan policies/administration, absence of prudential credit concentration limits, deficiencies in appraisal of borrowers' financial position, excessive dependence on collaterals and inadequate risk pricing, absence of loan review mechanism and post sanction surveillance, etc.

Banks increasingly recognize the need to measure and manage the credit risk of the loans they have originated not only on a loan-by-loan basis but also on a portfolio basis. This is due to the fact that only the aggregate credit exposure is the relevant factor for the future solvency of banks.[1]

Another variant of credit risk is ***counterparty risk***. The counterparty risk arises from non performance of the trading partners. The non-performance may arise from counterparty's refusal/inability to perform due to adverse price movements or from external constraints that were not anticipated by the principal. The counterparty risk is generally viewed as a transient financial risk associated with trading rather than standard credit risk.

The management of credit risk should receive the top management's attention and the process should encompass:

- Measurement of risk through credit rating/scoring;
- Quantifying the risk through estimating expected loan losses
- Risk pricing on a scientific basis; and

- Controlling the risk through effective Loan Review Mechanism and portfolio management.

The credit risk management process should be articulated in the bank's ***Loan Policy,*** duly approved by the Board. Each bank should constitute a high level ***Credit Policy Committee***, also called Credit Risk Management Committee or Credit Control Committee etc. to deal with issues relating to credit policy and procedures and to analyze, manage and control credit risk on a bank wide basis. The Committee should be headed by the Chairman/CEO/ED, and should comprise heads of Credit Department, Treasury, Credit Risk Management Department (CRMD) and the Chief Economist.

Each bank should also set up **Credit Risk Management Department (CRMD),** independent of the Credit Administration Department.

The CRMD should:

- Enforce and monitor compliance of the risk parameters and prudential limits set by the CPC.
- Lay down risk assessment systems, monitor quality of loan portfolio, identify problems and correct deficiencies, develop MIS and undertake loan review/audit. Large banks may consider separate set up for loan review/audit.
- The CRMD should also be made accountable for protecting the quality of the entire loan portfolio.

Market Risk

There are two approaches Scenario Analysis and VaR analysis.

Scenario Analysis: The analyst postulates the underlying determinants of portfolio value (e.g: interest rates, exchange rates etc) and revalues the portfolio given those changes. The resulting change in the value is the loss estimate. Proceedure called stress testing, to use a scenario based on historical based market move. It is subjective. Given the earlier discussion , it should be clear that stress testing can provide regulators with desired lower tailed estimates.

Value at Risk Analysis (VAR): use asset return distributions and predicted return parameters to estimate potential portfolio losses.

There are two priciple methods for estimating Various analytical method and Monte Carlo simulation method.

Operational Risk

The risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.

Operational risk includes:

- Internal Fraud.
- External Fraud.
- Employment Practices and Workplace Safety.
- Clients, Products and Business Practices.
- Damage to Physical Assets.
- Business Disruption and System Failures.

INTERNAL FRAUD

1. **Unauthorized Activity**
   - ➔ Transactions not reported.
   - ➔ Transaction type unauthorized.
   - ➔ Mismarking of position.
2. **Theft and Fraud**
   - ➔ Fraud/credit fraud/worthless deposits.
   - ➔ Theft/extortion/embezzlement/robbery.
   - ➔ Misappropriation of assets.
   - ➔ Forgery.
   - ➔ Account take-over/impersonation.
   - ➔ Bribes/kickbacks.
   - ➔ Insider trading.
   - ➔ Money laundering.
   - ➔ Willful blindness

External Fraud

Theft and Fraud

- ➔ Theft/robbery.
- ➔ Forgery.
- ➔ Check kiting.
- ➔ Identity theft.
- ➔ Elder financial abuse.

Systems Security

- ➔ Hacking damage.
- ➔ Theft of information (with monetary loss).

Employment Practices and Workplace Safety

Employee Relations

- ➔ Compensation, benefit, termination issues.
- ➔ Organized labor issues.

Safe Environment

- ➔ General liability (slips and falls).
- ➔ Employee health and safety rules.
- ➔ Workers' compensation.

Diversity and Discrimination

- ➔ All discrimination types.
- ➔ Harassment.
- ➔ Equal Employment Opportunity (EEO).

Clients, Products and Business Practices

Suitability, Disclosure and Fiduciary

- ➔ Fiduciary breaches/guideline violations.
- ➔ Suitability/disclosure issues.
- ➔ Retail consumer disclosure violations.
- ➔ Breach of privacy.
- ➔ Aggressive sales.
- ➔ Inadequate product offerings.
- ➔ Account churning.
- ➔ Misuse of confidential information.

Improper Business or Market Practices

- ➔ Antitrust
- ➔ Improper trade/market practice.
- ➔ Market manipulation.
- ➔ Insider trading (on firm's account).
- ➔ Unlicensed activity.
- ➔ Money laundering.

Damage to Physical Assets

Disasters and Other Events

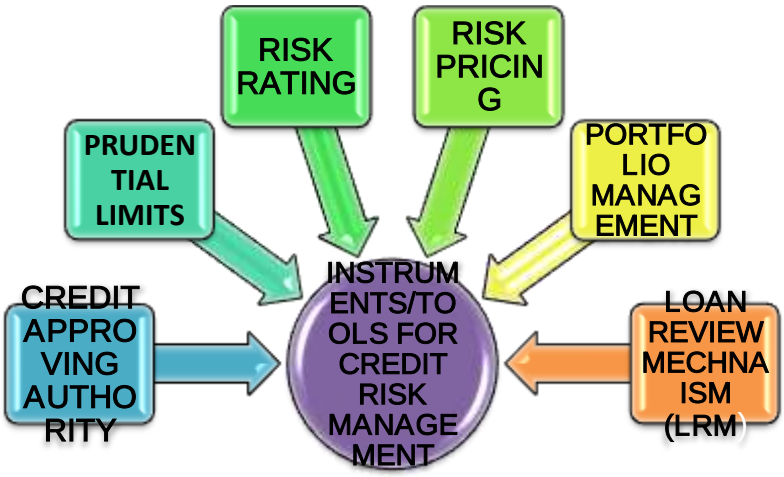
- ➔ Natural disaster losses
- ➔ Human losses from external sources (terrorism, vandalism

Business Disruption and System Failures

Reputational Risk

Reputational risk is the potential that negative publicity, whether true or not, will result in loss of customers, severing of corporate affiliations, and decrease in revenues and increase in costs.

Instruments/ Tools for Various Risk Management



Credit Approving Authority

- Each bank should have a carefully formulated scheme of delegation of powers. The banks should also evolve multi-tier credit approving system where the loan proposals are approved by an "Approval Grid' or a 'Committee'.
- The credit facilities above a specified limit may be approved by the 'Grid' or 'Committee', comprising at least 3 or 4 officers and invariably one officer should represent the CRMD, who has no volume and profit targets.
- Banks can also consider credit approving committees at various operating levels i.e. large branches (where considered necessary), Regional Offices, Zonal Offices, Head Offices, etc. Banks could consider delegating powers for sanction of higher limits to the 'Approval Grid' or the 'Committee' for better rated / quality customers.
- The spirit of the credit approving system may be that no credit proposals should be approved or recommended to higher authorities, if majority members of the 'Approval Grid' or 'Committee' do not agree on the creditworthiness of the borrower. In case of disagreement, the specific views of the dissenting member/s should be recorded.
- The banks should also evolve suitable framework for reporting and evaluating the quality of credit decisions taken by various functional

groups. The quality of credit decisions should be evaluated within a reasonable time, say 3 – 6 months, through a well-defined Loan Review Mechanism.

Prudential Limits

In order to avoid magnitude of credit risk, prudential limits should be established on various aspects of credit:

- Stipulate benchmark current/debt equity and profitability ratios, debt service coverage ratio or other ratios, with flexibility for deviations.
- Single/group borrower limits, which may be lower than the limits prescribed by Reserve Bank to provide a filtering mechanism;
- Substantial exposure limit i.e. sum total of exposures assumed in respect of those single borrowers enjoying credit facilities in excess of a threshold limit, say 10% or 15% of capital funds. The substantial exposure limit may be fixed at **600% or 800%** of capital funds, depending upon the degree of concentration risk the bank is exposed;
- Maximum exposure limits to industry, sector, etc. should be set up. The exposure limits to sensitive sectors, such as, advances against equity shares, real estate, etc., which are subject to a high degree of asset price volatility and to specific industries, which are subject to frequent business cycles, may necessarily be restricted. Similarly, high-risk industries, as perceived by the banks should also be placed under lower portfolio limit. Any excess exposure should be fully backed by adequate collaterals or strategic considerations;
- Banks may consider maturity profile of the loan book, keeping in view the market risks inherent in the balance sheet, risk evaluation capability, liquidity, etc.

Risk Rating

- Banks should have a comprehensive risk scoring / rating system that serves as a single point indicator of diverse risk factors of counterparty
- To facilitate this, a substantial degree of standardization is required in ratings across borrowers.
- The risk rating system should be drawn up in a structured manner, incorporating financial analysis, projections and sensitivity, industrial and management risks.
- The banks may use any number of financial ratios and operational parameters and collaterals as also qualitative aspects of management and industry characteristics that have bearings on the creditworthiness of borrowers.

- Banks may also consider separate rating framework for large corporate / small borrowers, traders, etc. that exhibit varying nature and degree of risk.
- The credit risk assessment exercise should be repeated biannually (or even at shorter intervals for low quality customers)
- The updating of the credit ratings should be undertaken normally at quarterly intervals or at least at half-yearly intervals, so as to get the quality of the portfolio at periodic intervals. Variations in the ratings of borrowers indicate changes in credit quality and expected loan losses from the credit portfolio.

Risk Pricing

- In a risk-return setting, borrowers with weak financial position and hence placed in high credit risk category should be priced high.
- The probability of default could be derived from the past behavior of the loan portfolio.
- Banks should build historical database on the portfolio quality and provisioning / charge off to equip themselves to price the risk.
- Large sized banks across the world have already put in place Risk Adjusted Return on Capital (RAROC) framework for pricing of loans, which calls for data on portfolio behavior and allocation of capital commensurate with credit risk inherent in loan proposals. Under RAROC framework, lender begins by charging an interest mark-up to cover the expected loss – expected default rate of the rating category of the borrower. The lender then allocates enough capital to the prospective loan to cover some amount of unexpected loss- variability of default rates. Generally, international banks allocate enough capital so that the expected loan loss reserve or provision plus allocated capital Cover 99% of the loan loss outcomes.
- There is, however, a need for comparing the prices quoted by competitors for borrowers perched on the same rating /quality. Thus, any attempt at price-cutting for market share would result in pricing of risk and ‘Adverse Selection

Portfolio Management

Banks should evolve proper systems for identification of credit weaknesses well in advance. The CRMD, set up at Head Office should be assigned the responsibility of periodic monitoring of the portfolio. The portfolio quality could be evaluated by tracking the migration (upward or downward) of borrowers from one rating scale to another.

The banks could also consider the following measures to maintain the portfolio quality:

a) Stipulate quantitative ceiling on aggregate exposure in specified rating categories, i.e. certain percentage of total advances should be in the rating category of 1 to 2 or 1 to 3, 2 to 4 or 4 to 5, etc.;
b) Evaluate the rating-wise distribution of borrowers in various industry, business segments, etc.;
c) Exposure to one industry/sector should be evaluated on the basis of overall rating distribution of borrowers in the sector/group.
d) Undertake rapid portfolio reviews, stress tests and scenario analysis when external environment undergoes rapid changes
e) Introduce discriminatory time schedules for renewal of borrower limits. Lower rated borrowers whose financials show signs of problems should be subjected to renewal control twice/thrice an year.

Banks should evolve suitable framework for monitoring the market risks especially forex risk exposure of corporate who have no natural hedges on a regular basis. Banks should also appoint Portfolio Managers to watch the loan portfolio's degree of concentrations and exposure to counterparties.

banks may consider appointing Relationship Managers to ensure that overall exposure to a single borrower is monitored, captured and controlled. The Relationship Managers may service mainly high value loans so that a substantial share of the loan portfolio.

Many of the international banks have adopted credit risk models for evaluation of credit portfolio.

Some of the models are:

- The ***Altman's Z score*** forecasts the probability of a company entering bankruptcy within a 12-month period. The model combines five financial ratios using reported accounting information and equity values to produce an objective measure of borrower's financial health.
- ***J. P. Morgan*** has developed a portfolio model '***CreditMetrics'*** for evaluating credit risk. The model basically focuses on estimating the volatility in the value of assets caused by variations in the quality of assets. The volatility is computed by tracking the probability that the borrower might migrate from one rating category to another (downgrade or upgrade).
- ***Credit Suisse*** developed a statistical method for measuring and accounting for credit risk which is known as **CreditRisk+.** The

model is based on actuarial calculation of expected default rates and unexpected losses from default.

The banks may evaluate the utility of these models with suitable modifications to Indian environment for fine-tuning the credit risk management.

Loan Review Mechanism

LRM is an effective tool for constantly evaluating the quality of loan book and to bring about qualitative improvements in credit administration. Banks should, therefore, put in place proper Loan Review Mechanism for large value accounts with responsibilities assigned in various areas such as, evaluating the effectiveness of loan administration, maintaining the integrity of credit grading process, assessing the loan loss provision, portfolio quality, etc. The complexity and scope of LRM normally vary based on banks' size, type of operations and management practices. It may be independent of the CRMD or even separate Department in large banks.

Tools For Effective Operational Risk Management

- ➔ Employee training.
- ➔ Close management oversight.
- ➔ Segregation of duties.
- ➔ Employee background checks.
- ➔ Procedures and process.
- ➔ Purchase of insurance.
- ➔ Exiting certain businesses.
- ➔ Capitalization of risks

Tools for Effective Reputational Risk Management

- ➔ Improving relations with shareholders and stakeholders.
- ➔ Training to employees for customer relationship management.
- ➔ Recruiting/retaining the best employees.
- ➔ Reducing barriers to development in new markets.
- ➔ Securing premium prices for products.
- ➔ Minimizing threats of litigation.

Policies for Risk Management In Banks

The Basel Norms

The setting up of the Basel Committee on Banking Supervision (BCBS) in 1975, following the

failure of Bankhus I. D. Herstatt in Cologne, Germany, was a significant contribution of the BIS towards international harmonisation of supervisory

standards. they have made substantial impact on banking supervision, in general, and bank capital regulation, in particular. Robust risk management and strong capital position have come to be recognised to be crucial to ensuring safety and soundness of individual banking organisations as also for fostering stability in the financial system. Though capital regulation in banking existed even before the Basel Accord of 1988, there were vast variations in the method and timing of its adoption in different countries. In the pre-Basel phase, the use of capital ratios to establish minimum regulatory requirements was being tested for more than a century. The Basel Core Principles2, as a framework of minimum standards for sound supervisory practices considered universally applicable, emphasise capital adequacy and risk management process as one of the significant prudential regulation and requirements.

The Basel I Framework

The Basel Capital Accord, 1988

Capital Accord of 1988, market risk amendment of January 1996, New Capital Adequacy framework of June 2004. The two fundamental objectives of the Committee's work on regulatory convergence are:

the framework should serve to strengthen the soundness and stability of the international banking system; and

the framework should be fair and have a high degree of consistency in its application to banks in different countries with a view to diminishing an existing source of competitive inequality among international banks.

The framework provides a framework for fair and reasonable degree of consistency in the application of capital standards in different countries, on a shared definition of capital. The central focus of this framework is credit risk and, as a further aspect of credit risk, country transfer risk.

Capital as per Basel Accord, better known as regulatory capital, is sum of Tier I and Tier II capital which a bank is required to maintain in relation to its risk-weighted assets. Under both Basel I and Basel II, the regulatory definition of capital is comprised of three levels (or 'tiers') of capital.

Tier 1 Capital (or 'core capital') comprises only those elements which have the highest capacity for absorbing losses on an ongoing basis.

Tier 2 Capital (or 'supplementary capital') is made up of a broad mix of near equity components and hybrid capital/debt instruments, the total of which is limited to 100 per cent of Tier 1 Capital.

It is subdivided into two categories:

- ***Upper Tier 2*** comprises items closer to common equity, like perpetual subordinated debt;
- ***Lower Tier 2*** comprises items closer to debt than of equity. It also includes various types of reserves whose values and/or availability are more uncertain than disclosed reserves

Tier 3 Capital (or 'additional supplementary capital') was added in 1996 and can only be used to meet capital requirements for market risk.

The Committee recommended a weighted risk ratio in which capital is related to different categories of asset or off-balance-sheet exposure, weighted according to broad categories of relative riskiness, as the preferred method for assessing the capital adequacy of banks - other methods of capital measurement are considered to be supplementary to the risk-weighted approach. The risk weighted approach has been preferred over a simple gearing ratio approach

because:

- It provides a fairer basis for making international comparisons between banking systems whose structures may differ;
- It allows off-balance-sheet exposures to be incorporated more easily into the measure;
- It does not deter banks from holding liquid or other assets which carry low risk.

The initial standards required internationally active banks to meet two minimum capital ratios, both computed as a percentage of the risk-weighted (both on- and off-balance sheet) assets. The minimum Tier 1 ratio was 4 per cent of risk-weighted assets, while total capital (tiers 1 and 2) had to exceed 8 per cent of risk-weighted assets. The three major principles of the Basel Accord are as follows:

- A bank must hold equity capital to at least a fixed per cent (8 per cent) of its risk-weighted credit exposures as well as capital to cover market risks in the bank's trading account.
- When capital falls below this minimum requirement, shareholders may be permitted to retain control, provided that they recapitalize the bank to meet the minimum capital ratio.
- If the shareholders fail to do so, the bank's regulatory agency is empowered to sell or liquidate the bank.

The Revised Framework: Basel II

The Basel II framework entails a more comprehensive measure and minimum standard for capital adequacy that national supervisory authorities are working to implement through domestic rule-making and adoption

procedures. It seeks to improve on the existing rules by aligning regulatory capital requirements more closely to the underlying risks that banks face, *i.e.*, trend towards convergence of the regulatory and economic capital, which is especially evident in

the advanced approaches.The Basel II framework is intended to promote a more forward-looking approach to capital supervision, one that encourages banks to identify the risks they may face, today and in the future, and to develop or improve their ability to manage those risks.

Basel II consists of three mutually reinforcing pillars:

- Minimum Capital Requirements,
- Supervisory Review Process and
- Market Discipline

The First Pillar – Minimum Capital Requirements

With regard to minimum capital requirements for credit risk, a modified version of the existing Accord has come to be known as the 'standardised' approach. The alternative methodology, which is subject to the explicit approval of the bank's supervisor, would allow banks to use their internal rating systems for credit risk.

Under the standardised approach, one of the main innovations relative to the 1988 Accord is the use of external ratings agencies to set the risk weights for corporate, bank and sovereign claims.

Under the internal rating approach banks may employ their own opinions regarding borrowers in setting capital requirements.

The Second Pillar – Supervisory Review Process

Pillar 2 (Supervisory Review Process) requires banks to implement an internal process for assessing their capital adequacy in relation to their risk profiles. Pillar 2 also requires the supervisory authorities to subject all banks to an evaluation process and to impose any necessary supervisory measures based on the evaluations.

There are three main areas that might be particularly suited to treatment under Pillar 2:

- Risks considered under Pillar 1 that are not fully captured by the Pillar 1 process;
- Those factors not taken into account by the Pillar 1 process;
- Factors external to the bank.

The Third Pillar – Market Discipline

The third pillar is a set of disclosure requirements included in the Basel II framework to allow market participants assess the capital adequacy of the institution based on information on the scope of application, capital, risk exposures, risk assessment processes, *etc.*

Basel III- Framework

Basel III or Basel 3 released in December, 2010 is the third in the series of Basel Accords. These accords deal with risk management aspects for the banking sector. In a nut shell we can say that Basel iii is the global regulatory standard (agreed upon by the members of the Basel Committee on Banking Supervision) on bank capital adequacy, stress testing and market liquidity risk. (Basel I and Basel II are the earlier versions of the same, and were less stringent**.**

According to Basel Committee on Banking Supervision "Basel III is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulation, supervision and risk management of the banking sector". This latest Accord now seeks to improve the banking sector's ability to deal with financial and economic stress, improve risk management and strengthen the banks' transparency.

Basel 3 measures aim to:

- Improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source
- Improve risk management and governance
- Strengthen banks' transparency and disclosures.

The Basel III which is to be implemented by banks in India as per the guidelines issued by RBI from time to time, will be challenging task not only for the banks but also for GOI. It is estimated that Indian banks will be required to rais Rs 6,00,000 crores in external capital in next nine years or so i.e. by 2020 (The estimates vary from organisation to organisation). Expansion of capital to this extent will affect the returns on the equity of these banks specially public sector banks. However, only consolation for Indian banks is the fact that historically they have maintained their core and overall capital well in excess of the regulatory minimum.[3]

6. Conclusion

Risk management is one of the crucial task to be performed by the Indian Banking Industry. The Central Bank , Reserve Bank of India has formulated strict rules and regualtions which every bank need to follow.

Nevertheless, minor flaws are still present but overall banks have improved which is clearly visible by figures of negative growth of NPA. Basell accord , capital adequacy, asset liablity management are some of the policies to be followed by the banks so a sto manage their risk.

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DISASTER MANAGEMENT: ISSUES, CHALLENGES AND POLICY INITIATIVES - A CASE STUDY OF UTTRAKHAND

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ABSTRACT

India is known to be one of the most disaster prone countries in the world. A whole range of geophysical as well as hydro-meteorological hazards impact millions across the country at regular intervals leaving behind a trail of heavy loss of lives, property and livelihood. Our disaster losses tend to outweigh the developmental gains. The economic and social costs on account of losses caused by natural disasters continue to mount year after year as disasters occur with unfailing regularity encompassing every segment of national life. Management of disasters requires a multidisciplinary approach and building requisite skills and capabilities adequate enough to effectively deal with the whole cycle of disaster management – prevention, mitigation, preparedness, response, relief and rehabilitation. The present research focuses on 'Disaster Management', the various related issues, challenges and it highlights the policy initiatives to manage the crises emerging from massive disasters. The researcher has tried to put up various suggestions with some contemporary examples to manage it effectively and save precious lives and property. The study further elaborates that there is an urgent need to raise general awareness level of the people as also to impart meaningful training for professionals who can play a pro-active role in disaster management.

Keywords: Disaster Management, Flash floods, Landslides, Ecosystem, Rescue Operations, National Disaster Relief Force, Uttarakhand Reconstruction Authority, etc.

1. Introduction

God has created this universe which includes earth, water, sky, nature and deep down the earth surface. There are men and nature, the two most vital components of this universe. Man can do wonders. Nature has everything already done. Man creates the things which are said to be artificial. They are not permanent. But nature has created the things which are permanent. No one can alter in the design of nature. Man has no control over it. Nature has its own way. Sometimes it is soothing, sometimes it is ferocious. Whenever it turns to be in its bad temper it can bring devastation. It is known as disaster.

Man has always been threatened by the fury of nature from the very beginning of his existence on this earth. Sometimes disasters like earthquakes occur repeatedly with serious impact on all spheres of life. Be it earthquake in Gujarat in 2001 and Lattur in 1993 or cyclone of Orissa in 1999 or Tsunami in 2004, or cloudburst in Kedarnath in 2013, or cyclone in Orisa in 2013 they cause immense loss of human life and leave a trail of human tragedy that the society is yet to recover from.

Natural disasters are the manifestation of nature and they can take place anywhere, anytime. Most of the natural events are cyclic and predictable, such as the coming of yearly floods. In such a case people adapt themselves to the changing conditions. People living in a river-flood plain usually leave it when the water level is high and they come back to their homes when the flood water recedes. But if there is any change in the normal patterns either in the timing of the flood or the fury of flood we see devastating effect on the life and property of the people. Similarly earthquakes, cyclones, Tsunamis, are dramatic and very damaging in their results. Although natural calamities cannot be averted but many suitable measures can be taken to lessen the impact of these disasters managers struggle to mitigate their effects on human lives and material losses.

Disaster Management refers to dealing with and avoiding both natural and manmade disasters. It involves preparedness, response and recovery in order to lessen the impact of disasters. It may also involve preparedness training by private citizens, as by FEMA in the United States. All aspects of emergency management deal with the processes used to protect people and property from the *consequences* of natural calamities or manmade disasters or say also the wars and acts of terrorism. Disaster or emergency management doesn't necessarily avert or eliminate the *threats* themselves, although the study and prediction of the threats is an important part of averting or managing such tragedies with minimal damage to life and property. The basic levels of emergency management are the various kinds of search and rescue operations. The Chernobyl disaster in Ukraine in 1986 and the earthquake and tsunami that hit one-after-another in 2011 in Japan are the most large scale and cost-intensive instances of emergency management in history.

The most vulnerable sections in these disasters are the poor. Hence it is necessary to mobilise them towards preparedness. Quick and timely response is the essence in providing immediate relief and rescue operations, to save human lives and mitigate miseries as soon as possible. The response mechanism envisages that on receiving signals of a disaster happening or

likely to happen, all activities related with the mitigation process are activated without loss of time.

An adverse event will not rise to the level of a disaster if it occurs in an area without vulnerable population. In a vulnerable area, however, such as San Fransisco, an earthquake can have disastrous consequences and leave behind lasting damage, requiring years time to repair and reconstruct.

In 2012, there were 905 natural catastrophes worldwide, 93% of which were weather-related disasters. Overall costs were US$170 billion and insured losses $70 billion. 2012 was a moderate year. 45% were meteorological (storms), 36% were hydrological (floods),12% were climatological (heat waves, cold waves, droughts, wildfires) and 7 % were geophysical events (earthquakes and volcanic eruptions). Between 1980 and 2011, the geophysical events accounted for 14% of all natural catastrophes.

2. Review of Related Literature

Disaster management and adaptation to climate change take an overlapping course. Both the processes address underlying vulnerabilities of natural and human systems that put these at risk from natural hazard and climate change. Therefore, both evaluate risks and vulnerabilities and look into possible measures to reduce them. (Sperling et.al., 2005 and Wisner et.al., 2006). Climate change takes into account future climate scenarios and future risks and vulnerability, while disaster management addresses the current risks and vulnerability to the immediate threats in for of extreme events. Climate change domain has extensive information on methodologies and tools for assessing risk, vulnerabilities and adaptation measures.

Integrating the knowledge on future scenarios and vulnerability with the current understanding of disaster risks and practical experiences of dealing with such risks will produce synergies for sustainable development. Making the key stakeholders identify that climate change and disasters both impede the process of sustainable development and that an integrated disaster risk management and planned and proactive adaptation will lead to the most effective modality for risk management (Sperling, 2005, Hay, 2002).

However, designing an integrated framework for adaptation to climate change and disaster management faces certain challenges. Firstly, climate change adaptation does not focus only on extreme events, but also addresses changes in average climatic conditions and climate variability, which may affect vulnerabilities to natural hazards. Thus, climate change response will also take into account longer periods of impact and response scenarios. Secondly, disaster management also includes hydro-meteorological and

geological hazards. Hence, disaster management would take a multi-hazard approach. Thirdly, there exists a marked institutional fragmentation and resulting communication barriers because of parallel but distinct developments in the two themes (Sperling, 2005). While the theoretical differences between the two themes can be addressed by an appropriate policy framework, there is a need to attend to the issue of the institutional gaps that exist in the two themes. It is within a coherent institutional structure that an integrated policy framework for action on climate change adaptation and disaster management can be developed.

3. Objectives of the Study

The present paper has been taken up with the following objectives:

a. To study the different types of disasters and issues related to it.

b. To examine the disaster management challenges in Uttarakhand and assess the implications of those challenges for the country's economic, political, and security environments.

c. To highlights the policy initiatives taken by state and at centtral government levels to manage the crises emerging from massive disasters

d. To draw some conclusions and put up suggestions with contemporary examples to manage these effectively.

4. Research Methodology

To achieve the above-stated objectives, the researcher has tried to collect data from different sources. Various newsmagazines, books, journals, newspapers and governmental reports and policies were reviewed, analysed and the conclusions were accordingly drawn.

5. Types of Major Natural Disasters

In contemporary academia, disasters are seen as the consequence of inappropriately managed risk. These risks are the product of a combination of both hazard/s and vulnerability. Hazards that strike in areas with low vulnerability will never become disasters, as is the case in uninhabited regions. A disaster is a natural or man-made (or technological) hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life, or drastic change to the environment. A disaster can be extensively defined as any tragic event stemming from events such as earthquakes, floods, catastrophic accidents, fires, or explosions. It is a phenomenon that can cause damage to life and property

and destroy the economic, social and cultural life of people. The different types of disaster can be briefly summarized as below:

Natural Disasters

A **natural disaster** is a major adverse event resulting from natural processes of the earth, which may include floods, volcanic eruptions, earthquakes, tsunamis, forest fires and so on or due to other geologic processes. A natural disaster can cause small to colossal loss of life and property, and may also typically leave small to substantial economic damage in its wake. Developing countries suffer the greatest costs when a disaster hits – more than 95 percent of all deaths caused by disasters occur in developing countries, and losses due to natural disasters are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries

- **Earthquakes:** An earthquake is the result of a sudden release of energy in the earth's crust that creates seismic waves. At the earth's surface, earthquakes manifest themselves by vibration, shaking and sometimes displacement of the ground. The vibrations may vary in magnitude. Earthquakes are caused mostly by slippage within geological faults, but also by other events such as volcanic activity, landslides, mine blasts, and nuclear tests. The underground point of origin of the earthquake is called the *focus*. The point directly above the focus on the surface is called the *epicenter*. Earthquakes by themselves rarely kill people or wildlife. It is usually the secondary events that they trigger, such as building collapse, fires, tsunamis (seismic sea waves) and volcanoes, that are actually the human disaster. The 2004 Indian Ocean earthquake, the third largest earthquake recorded in history, registering a moment magnitude of 9.1-9.3. The huge **tsunamis** triggered by this earthquake killed at least 229,000 people.
- **Volcanoes:** Volcanoes can cause widespread destruction and consequent disaster in several ways. The effects include the volcanic eruption itself that may cause harm following the explosion of the volcano or the fall of rock. Second, lava may be produced during the eruption of a volcano. As it leaves the volcano, the lava destroys many buildings and plants it encounters. Third, volcanic ash generally meaning the cooled ash - may form a cloud, and settle thickly in nearby locations. High volume of ash may cause roofs to collapse under its weight but even small quantities will harm humans if inhaled. The 1953 Tangiwai disaster was caused by a lahar, as was the 1985 Armero tragedy in which the town of Armero was buried and an estimated 2,30,000 people were killed.

- **Floods:** A **flood** is an overflow of an expanse of water that submerges land.The EU Floods directive defines a flood as a temporary covering by water of land not normally covered by water. In the sense of "flowing water", the word may also be applied to the inflow of the tide. Flooding may result from the volume of water within a body of water, such as a river or lake, which overflows or breaks levees, with the result that some of the water escapes its usual boundaries. While the size of a lake or other body of water will vary with seasonal changes in precipitation and snow melt, it is not a significant flood unless the water covers land used by man like a village, city or other inhabited area, roads, expanses of farmland, etc.
- **Tsunamis:** Tsunamis can be caused by undersea earthquakes as the one caused by the 2004 Indian Ocean Earthquake, or by landslides such as the one that took place in Japan in 2011.
- **Cyclones:** Extratropical cyclones, sometimes called mid-latitude cyclones, are a group of cyclones defined as synoptic scale low pressure weather systems that occur in the middle latitudes of the Earth (outside the tropics) not having tropical characteristics, and are connected with fronts and horizontal gradients in temperature and dew point otherwise known as "baroclinic zones". As with tropical cyclones, they are known by different names in different regions. The most intense extra-tropical cyclones cause widespread disruption and damage to the society, such as the storm surge of the North Sea flood of 1953, which killed 2251 people in the Netherlands and eastern England, the Great Storm of 1987, which devastated southern England and France and the Columbus Day Storm of 1962 that struck the Pacific northwest.
- **Droughts:** A drought is unusual dryness of soil, resulting in crop failure and shortage of water for other uses, caused by significantly lower rainfall than average over a prolonged period. Hot dry winds, high temperatures and consequent evaporation of moisture from the ground can contribute to conditions of drought. A severe drought in India in 1,900 killed around 3,25,000 people.
- **Tornadoes:** A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. It is also referred to as a **twister** or a cyclone, although the word cyclone is used in meteorology in a wider sense, to refer to any closed low pressure circulation. Tornadoes come in many shapes and sizes, but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust. Most tornadoes have wind speeds less than 110 miles per hour

(177 km/h), are approximately 250 feet (80 m) across, and travel a few miles (several kilometers) before dissipating. Most extreme tornadoes can attain wind speed of more than 300 mph (480 km/h), stretch more than two miles (3 km) across, and stay on the ground for dozens of miles (perhaps more than 100 kms).

- **Cloudburst:** A sudden, downpour over a limited area as if the entire clouds were to rain down in a matter of minutes. If it rains over a 100 mm in an hour concentrated in a area just a few square kilometres, one can call it a cloudburst. In Uttarkashi and Rudraprayag, it rained 479 mm in the intervening night of June 16-17. They are called cloudbursts because we earlier believed that clouds were a solid mass of water that burst over an area.

Man-made disasters

Man-made disasters are the consequence of technological or human hazards. Examples include stampedes, fires, transport accidents, industrial accidents, oil spills and nuclear explosions/radiation. War and deliberate attacks may also be put in this category. As with natural hazards, man-made hazards are events that have not happened, for instance terrorism. Man-made disasters are examples of specific cases where man-made hazards have become reality in an event.

6. Disaster Management in Uttarakhand

Uttarakhand has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, earthquakes and landslides have been a recurrent phenomena. The massive disaster due to cloud burst in jun2013 is one of the live examples where there was a great loss of lives and property. The Uttrakhand Disaster has been officially termed a natural one caused by an unprecedented heavy monsoon rainfall. However, the true causes of the epic tragedy is growth of tourism, , unchecked Rapid increase of roads, hotels, and multistory housing in ecologically fragile areas and unplanned construction in fragile areas are the reason for landslide are the reason for landslide However, the Uttarakhand disaster that followed heavy rains and cloudburst on June 16 and 17, 2013 was also of a very strong magnitude. Thousands of people and livestock perished and a much higher number of them were rendered homeless. More than 2,000 road links were snapped due to floods and landslides and over hundreds of bridges were destroyed in the tragedy that followed. The total damage is estimated to over and above thousands of crores of rupees. It all started on June 16-17, 2013, when a series of cloudbursts wreaked havoc in districts of Rudraprayag, Uttarkashi, Chamoli, Pithoragarh and Tehri,

there were nearly 12,000 people at Kedarnath and Gaurikund--the stretch that bore the brunt of the deluge. The cloudbursts led to flash floods that swept away mountainsides, villages, people, animals, houses, trucks, cars, roads... nothing escaped. Nothing survived, it had no hope of surviving. Those who survived it say they had never seen anything like this and hope that this was the first and last time they ever saw something like this. The trickle of water that was supposed to be the rain run-off had suddenly taken on immense proportions. It is India's biggest natural disaster since the 2004 Indian Ocean tsunami. So far, official estimates put the death toll at 1,000. The number is expected to rise to several thousands once rescue teams eventually begin to clear the debris of destruction. Time wasted is lives lost. Sadly, the systemic response to the crisis has been sluggish.According to Uttarakhand government report, a total of more than 1 lakh people had been rescued. As many as 2,375 villages were cut-off from the rest of the world. Unconfirmed reports put the number of dead at 10,000.

7. Present structure for disaster management in India

The Disaster Management Act, 2005 lays down institutional, legal financial and coordination mechanisms at the central, state, district and local levels. These institutions are not parallel structures and will work in close harmony. The new institutional framework is expected to ensure implementation of the national desire for a paradigm shift in DM from a relief-centric approach to a proactive regime that lays greater emphasis on preparedness, prevention and mitigation. With the enactment of Disaster Management Act 2005 the National Disaster Management Authority was established under the Chairmanship of the Prime Minister. The Act also provide for establishment of State Disaster Management Authorities and District Disaster Management Authorities. Therefore, the Disaster Management architecture for the country has now been provided with legal backing and with clear delineation with rules and responsibility. The Acts also provide for budget allocation for disaster risk reduction and for response. With this architecture in place it is now upto the Central and the State Governments to utilize these provisions effectively to reduce the impact of disasters on our people and the country. The institutional structure for disaster management in India is in a state of transition. The new setup, following the implementation of the Bill, is evolving; while the previous structure also continues. Thus, the two structures co-exist in the present phase. The National Disaster Management Authority has been established at the centre, and the state and district authorities are gradually being formalized. In addition to this, the National Crisis Management Committee, part of the earlier setup, also functions at the Centre. The nodal

ministries, as identified for different disaster types function under the overall guidance of the Ministry of Home Affairs (nodal ministry for disaster management). The stakeholders involved however, remain largely the same. This makes the stakeholders interact at different levels with the disaster management framework. Within this transitional and evolving setup two distinct features of the institutional structure for disaster management can be identified. Firstly, the structure is hierarchical and functions at four levels – Centre, State, District and Local. In both the setups – one that existed prior to the implementation of the bill, and other that is being formalised post-implementation of the bill, there have existed institutionalised structures at the Centre, State, District and local levels. Each preceding level guides the activities and decision making at the next level in hierarchy. Secondly, it is a multi-stakeholder setup, i.e., the structure draws involvement of various relevant ministries, government departments and administrative bodies (Refer figures 3&4).

Disaster management is a collective and co-ordinated effort. A number of activities need to be undertaken in the event of disaster. These include co-ordination, command and control, rapid assessment of damage, restoration of power, tele communication and surface transport, deployment of search and rescue teams, medicals and Para-medical teams, arrangements for drinking water and food material, setting up of temporary shelters, sanitation and hygiene identification and earmarking of resources, last but not the least, maintenance of law and order is equally important.

It is the primary responsibility of the State Governments to be in a state of preparedness and provide relief to the people affected in a disaster. But in case of severe calamity the Central Government supplements their efforts by providing logistic and financial support. The Central Government has set up a National Centre for Disaster Management, Community participation in rescue and relief operations and reconstruction after a disaster is always essential. And it is a good sign that everyone starts feeling the gravity of the situation and comes forward with a helping hand.

8. Issues and Challenges of Disaster Management in Uttarakhand

While substantial scientific and material progress has been made, the loss of lives and property due to disasters has not decreased. Government of India has now brought about a paradigm shift in its approach to disaster management, from being relief centric to one with greater emphasis on preparedness, prevention and mitigation. This approach proceeds from the conviction that development cannot be sustained unless disaster mitigation is built into the development process. Another cornerstone of the approach is that mitigation has to be inter- disciplinary spanning across all sectors of

development. Disaster Management occupies an important place in the policy framework as it is the poor and underprivileged who are worst affected on account of calamities and disasters. Disaster Management is a multi-disciplinary area in which a wide range of issues that range from forecasting, warning, search and rescue, relief, reconstruction and rehabilitation are included. It is multi-sectoral as it involves administrators, scientists, planners, volunteers and communities. Their roles and activities span the pre-disaster, during disaster and post-disaster plans. All these activities are complementary and supplementary to each other and here is a critical need for coordinating these activities. Even as the rescue and relief operations got underway, the state government, opposition and experts from various agencies began pointing fingers and giving explanations and theories of how the disaster could have been avoided. The locals believe that it was the moving of the statue of Dhari Devi-an avatar of Kali-that led to the destruction. For centuries it has been believed that angering Dhari Devi will lead to destruction. Call it blind faith or superstition, their belief was avenged on June 16 soon after the idol of the goddess was uprooted from its ancient temple near Srinagar (Garhwal) for a hydel power project. Barely hours after the idol was moved, the first cloudburst took place.

Environmentalists say indiscriminate construction in the ecologically sensitive region is to be blamed for the widespread devastation that the state has witnessed. More than 500 dams have been cleared for construction on the Ganga and its tributaries--the Bhagirathi, the Mandakini and the Alaknanda. With around 95 per cent of the dams being built after the formation of the state in 2000.

Environmentalists say the construction of dams, tunnels and roads which require blasting of hills is taking its toll on the local ecology as well. Due to the ensuing deforestation, trees are unable to absorb rainfall. With the state receiving high intensity rainfall, being prone to landslides and the state falling in a high seismic activity zone, the risk of disaster is increased manifold. However, this argument died quietly a couple of days later, giving way to another argument: that the government was not prepared for something like this.

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought.

Over the past couple of years, the Government of India has brought about a paradigm shift in approach to disaster management. The new approach proceeds from the conviction that develop cannot be sustainable unless disaster mitigation is built into the development process. Another stone of the approach is that mitigation has to be multi-disciplinary spanning across all sectors. The new policy also emanates from the belief that investments in mitigation are much cost effective than expenditure on relief and rehabilitation.

Disaster management occupies an important place in this country's policy framework as it is poor and the under-privileged who are worst affected on account of calamities/disasters. The steps being taken by the Government emanate from the approach outlined above. The app: has been translated into a National Disaster Framework [a roadmap] covering institutional mechanic; disaster prevention strategy, early warning system, disaster mitigation, preparedness and response human resource development.

The expected inputs, areas of intervention and agencies to be in at the National, State and district levels have been identified and listed in the roadmap. This road has been shared with all the State Governments and Union Territory Administrations. Ministries Departments of Government of India, and the State Governments/UT Administrations have been ad* to develop their respective roadmaps taking the national roadmap as a broad guideline. There is, therefore: now a common strategy underpinning the action being taken by the entire participating organisation' stakeholders.

The approach is being put into effect through:
(a) Institutional changes
(b) Enunciation of policy
(c) Legal and techno-legal framework
(d) Mainstreaming Mitigation into Development process
(e) Funding mechanism
(f) Specific schemes addressing mitigation
(g) Preparedness measures
(h) Capacity building
(i) Human Resource Development and, above all, community participation.

In India, the role of emergency management falls to National Disaster Management of India, a government agency subordinate to the Ministry of Home Affairs. In recent years, there has been a shift in emphasis, from response and recovery to strategic risk management and reduction, and from a government-centered approach to decentralized community participation. Survey of India, an agency within the Ministry of Science and Technology,

is also playing a role in this field, through bringing the academic knowledge and research expertise of earth scientists to the emergency management process.

9. Disaster Management : Government Initiatives

The NDMA was set up Dec 23, 2005, in recognition of the importance of disaster management as a national priority. It is headed by India's prime minister. Its formation was first recommended following the Gujarat earthquake of January 26, 2001. After the tsumani of Dec 26, 2004, calls for a national body equipped to act in times of disaster became more strident. The National Disaster Management Authority (NDMA), which was set up in the aftermath of the tsunami so that the government could respond decisively to the next natural disaster, has failed miserably in its first major challenge. The authority, which is headed by an official with Cabinet minister status and has members who enjoy the perks of a Union minister of state, seemed to be caught in a state of inertia, despite receiving advance warnings from the Met department on unusually heavy rainfall. The state government, led by Chief Minister Vijay Bahuguna, seemed to be as clueless. The rescue efforts only began in earnest once the Army and Air Force stepped in. It is courtesy the discipline and valour of our men in uniform that so many people have been saved. That politicians across party lines have scrambled, even scuffled, to score points for the rescue efforts is a discredit to the political class. The authorities also have a lot of questions to answer on how they allowed this hilly region to be left so vulnerable to a phenomenon of nature. The influx of tourists, religious and otherwise, has grown massively in the last few years.

Needless to say, high quality infrastructure to support such an influx is completely lacking. Hotels and resorts have been constructed on an ad hoc basis with little concern for the terrain and environment. Other infrastructure necessary for times of emergency, like small airstrips and helipads, has been given a miss. The Government also seems to have inadequately assessed the potential damage caused to nature (and to the normal course of rivers) by the construction of several hydropower projects in the state. We have devoted a major part of this special issue to chronicle this enormous disaster that ought to have been anticipated. At the very least, the aftermath should have been better managed. Instead, what we have are stories of human suffering and tales of extraordinary courage, which provide some redemption in an otherwise grim scenario.

It saddens me that our worst fears about our institutions always come true. The NDMA set up for this very purpose is a classic example. It is

criminal that senior officers who enjoy the perks and pelf of high office have done nothing since it was set up eight years ago. When such institutions fail, other organisations not designed for this purpose have to put in extraordinary efforts to cover up the lapses of others. No country can avoid natural disasters but their impact can be minimised by preparedness, proper planning and decisive leadership. This is a time when the mettle of a nation is tested. We have fallen woefully short.

If the ecology of the hills had not been damaged ruthlessly and had NDMA worked with total commitment, the calamity could have been less harsher. Hence DM policy is needed to protect the river bank to minimize the disaster like what has happened in Uttarakhand. NDMA has issued detailed guidelines to the states on river plains and how these environmentally fragile areas should not be tampered with, adding that the authority had only limited jurisdiction. "NDMA can only give guidelines and alerts. Ultimately, the state government is in charge. Hence better coordination is needed among the government department so as to minimise the disaster risk.

The effective policy and its implementation is needed for developing a viable warning system. "What happened in Uttarakhand....was like an earthquake without any warning. The IMD (India Meteorological Department) had only talked about heavy rain, but no one anticipated such huge flash floods. We are now looking at implementing a precise weather forecasting system for the region."

NDMA has asked the IMD and the Central Water Commission to evolve an advanced weather monitoring and alarm system to monitor excessive rain that could lead to flooding. "We are looking into an advanced weather analysing system that would help us get precise forecasts, with details of place, time and intensity (of rain). Instead of forecasting, we will need now casting or a real-time monitoring system which gives specific information from a particular location," Reddy said.

He added that attempts were being made to integrate available scientific tools to build a proper advanced weather forecasting system."To construct a tsunami early warning alert system it took us 30 months. So we cannot give a time-frame for these things...it will take time. It is not possible to install a doppler weather radar system because of the terrain. There are other advanced radars which can be installed," he said.

10. Managing aftermath

The result of years of cumulative research in dozens of communities that have experienced extreme events to determine what it takes for a community to truly recover. An extreme event can result from a natural hazard event; an intentional or mindless act of destruction; a large accident; a widespread virulent epidemic; or even an economic crisis brought on by the closure or relocation of a principal employer in the community. Years after experiencing an extreme event, many communities still struggle to recover. Some survivors have become psychological patients. Some have lost memory while others are inconsolable. A lot many are going through high trauma and are under psychiatric treatment. They are horrified by what they went through and need lot of medical care, love and attention. They ought to be supported in every possible humane way. We need to really help these hapless people live again peacefully. This can be achieved by an coordinated effort of government and non governmental agencies in building thir confidence, providing them psychological support, training them emotionally, adding them financially, and providing infractructural support.

11. Lesson from the tragedy

Underlining the need to learn "right lessons" from the Uttarakhand tragedy, country has to equip itself in a better way to prevent disasters and check their fall out.The tragedy in Uttarakhand in June2013, which caused large- scale loss of life, property and public infrastructure, points not only to India's vulnerability to disasters but also to the need to take effective measures to prevent them and contain their fall-out when they occur."It is indeed very important that we learn the right lessons from the Uttarakhand tragedy," Such disasters have serious implications for the sustained growth and development of the economy as scarce resources are required to be deployed to address their negative consequences."It is also very important that we integrate and mainstream disaster risk reduction strategies into our mainstream development initiatives," "Our common endeavour should be to ensure that adequate capacities are built across our institutions and communities to reduce the adverse impact of disasters. While doing so, we also need to pay particular attention to the weaker sections of our society who are impacted by disasters in a disproportionately large manner.

"Our forecasting and early warning capabilities need to be strengthened and upgraded. Our communication systems need to be improved to ensure that disaster alerts and warnings reach the last person in the village without delay."The capacities of our Panchayati Raj institutions and local

communities, which are the first responders in any disaster situation, need to be enhanced further. In fact, disaster risk reduction strategies should be made an integral part of our development processes.

12. Conclusion

Traditionally, disasters in India have been compounded by climatic factors. Being under the monsoon regime, the country has faced frequent floods, drought and consequent famines. However, the recent developments in the fields of disaster management have raised need of institutional structures to be evolved for better services and disasters. Disaster management structure receive greater political priority and command immediate attention among policy makers and users as they are associated with immediate and well known risks. Consequently, the disaster management structure in India has a more evolved setup. The former structure, with strong legislative base, can be an effective entry point for the disaster management initiatives. Further, the presence of common stakeholders in the interfaces with the frameworks for disaster management . Robust policy measures to enhance the capacity of institutions and also individuals who will be "gateway" and carriers of knowledge from one framework to the other will be required. It is the bounden duty of the Government and the people of India and the state to share the woes of the disaster struck people, and the families of those who lost their lives and also who were rendered homeless by the holocaust. We all must help them financially, emotionally and in every possible way to overcome the massive tragedy of their life and make them live their life with dignity all over again. This is least one must do for their ill-fated brethren. Some of the policy implications are summarized as;

- While significant achievements have been made in post-disaster response and reconstruction, there are still formidable challenges to reducing the risk of future disasters.
- Disaster management policies must incorporate programs to protect the most vulnerable segments of society-the poor, marginalized, women, children, disabled, and elderly.
- Mechanisms must be designed and adopted for transferring lessons learned for pre- and post-disaster management between communities.
- Given that natural disasters do not always follow national boundaries, cross-boundary issues of disaster management should be addressed through enhanced regional cooperation. Furthermore, an effective regional response system should be developed to pool capacity for mutual benefit.
- Left extremism is likely to be one of the most serious challenges to Indian security in the forthcoming decade if the government does not address basic issues of governance and accountability.

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A STUDY ON INTERNET USES BY TEACHERS AND STUDENTS TO EXPLORE ITS EDUCATIONAL IMPORTANCE

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ABSRACT

The basic intention of this research article is to put emphasis & analyze the power of internet on educational community as well as in Commercial organization. Also to find out the major with the capability of global broadcasting, it acts as for information dissemination, and a medium for collaboration and interaction between individuals and their computers. In this study, we are getting the working of internet technology as well its usefulness across the different organization. The fast and relatively low-cost access is one of the major benefits of Internet to people and students all over the world as getting an Internet connection are easy. Communication and information are the two most important uses of the Internet. Secondly, information can be updated or modified at any time and for any number of times, which helps in learning and better understanding. The aim of this study is to analyze the use of the Internet and related issues among the teachers and the students of engineering colleges in India's three States viz. Punjab, Haryana and Himachal Pradesh. A well structured questionnaire was distributed among the 1603 teachers and students of all the engineering colleges of the three states of India under study. The response rate was 80.9 percent. The present study demonstrates and elaborates the various aspects of Internet use, such as frequency of Internet use, methods used for learning of Internet skill, most frequently used place for Internet use, purposes for which the Internet is used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the Internet facilities provided in the college.

Keyword: Internet Surfing, Surveying Educational Community

1. Introduction

An international computer network providing e-mail and information from computers in educational institutions, government agencies, also called the mother of all networks. A vast computer network linking smaller computer networks worldwide (usually preceded by the). The Internet includes commercial, educational, governmental, and other networks, all of which use the same set of communications protocols. The Internet is the largest set of computer networks that use the Internet Protocol. The Internet is a network of computers linking many computers all over the world .It is a Network of networks sharing common mechanism for addressing (identifying) computers and a common set of protocol for communication between two computers on the network. The Internet is also a meta network, i.e, a network of networks that covers the globe. It's impossible to give an exact count of the number of networks or users that comprise the Internet, but it is easily in the thousands and millions respectively. The result of the survey also provides information about the benefits of the Internet over conventional documents. The study was conducted particularly to find an answer to the question: Can the Internet replace library services? It was found that the Internet has become a vital instrument for teaching, research and learning process of these respondents. Some suggestions are set forth to make the service more beneficial for the academic community of the engineering colleges under study.

2. Valuable Features of Internet Use

(A) Easy Contact

(B) School / College Projects

(C) Encyclopedia

(D) News

(E) Online Learning

(F) E-Mail

(G) Chatting

(H) Video Conferencing

3. Educational ues of the Internet in the World

The Internet can be used as a supplement to traditional instructional methods. To complement a lecture, instructors may ask students to find

specified Web sites to gain more in-depth knowledge about a particular topic. An instructor may also ask students to search the Internet for information on services offered in a particular location. In preparation for a class topic such as diversity, students may be asked to search the Internet to learn about different ethnic groups or populations at risk. The Internet may also be used to replace the traditional classroom lecture. A number of courses are being developed in which portions of the course or the entire courseware offered via the Internet. The instructor may place course notes on Web pages, may create a video recording of a live lecture for viewing on the Internet, or use combinations of these ideas.

4. Characteristics

A) Powerful Search Engine:-.

B) Treasure Of Information:-

C) Better Communication Across The Globe:-

D) News:-,

E) E-Mails:-

F) Global Audience

G) Multimedia

H) Provide Technical Support

I) Obtain Customer Feedback

5. Literature Review

A review of literature reveals that the teachers and the students are the most frequent users of the Internet. They use the Internet mainly for educational purposes rather than for entertainment. Becker (1998) conducted a study on the Internet use by 2,500 teachers from public and private schools of U.S. The study revealed that 90% of the teachers had Internet access. A majority of the teachers with 59% response had Internet access at home. A majority of the teachers (68%) used the Internet to find information resources for preparing their lessons. A majority of the teachers with 62% response used Web search engines to find information resources. Bavakutty and Salih (1999) conducted a study at Calicut University which showed that students, research scholars, and teachers used the Internet for the purpose of study, research and teaching, respectively. Laite (2000)surveyed 406 graduate and undergraduate students from

Shippensburg University. The survey revealed that 57.6% of the undergraduate students used the Internet 1-2 times per week and another 37.1% used it 1-2 times daily. 54.7% of the graduate students used Internet 1-2 times per week and 37.7% used it 1-2 times daily. The survey showed that the most used Internet service was e-mail. 100% of the graduates and undergraduate students used e-mail services. Jagboro (2003) conducted a case study of Internet usage in Nigerian universities. The objective of this study was to evaluate the level of utilization of the Internet for academic research at the Obafemi Awolowo University, Ile-Ife, Nigeria. Questionnaires were administered to postgraduate students spanning art and science based programmes. The results from the analysis of the responses showed that the respondents ranked the use of research materials on the Internet fourth (17.3%). However, respondents who used the Internet ranked research materials second (53.4%) to e-mail (69.9%). The study concluded that the use of the Internet for academic research would significantly improve through the provision of more access points at departmental and faculty levels. Panda and Sahu (2003) conducted a study of the engineering colleges of Orissa. The study revealed that 50% of the engineering colleges used dial-up connection. A majority of the colleges used the Internet to provide on-line demonstrations. Hanauer (2004) surveyed a diverse community college to assess the use of the Internet by the students. The survey showed that although all the students surveyed had free Internet access through their community college, only 97% of the students reported having access to the Internet. The survey showed that 83% of Internet users had access to Internet at their home and 51% of the respondents accessed the Internet at their college or library. 81% of the students reported to access the Internet most for college work and 80% for e-mail/chat. Mishra, Yadav and Bisht (2005) conducted a research study to learn the Internet utilization patterns of undergraduate students at the G B Pant University of Agriculture and Technology, Pantnagar. The findings of the study indicate that a majority of the students (85.7%) used the Internet.

6. Aim & Objective

The specific Aim & objectives are

1. To study the present Internet services.
2. To find out the different purposes for which the Internet is used by the users
3. To know the favorite search engines used by users.
4. To identify the type of problems faced by users when using the Internet services.

5. To determine the satisfaction level of users regarding infrastructure facilities, membership fee, and location.
6. To find out the user satisfaction with the Internet services provided under study.
7. To aware about the power of internet among the people.

The another main objective of this study is to analyze the patterns of Internet use, the Internet skills of the engineering professionals, the perceived impact of the Internet on their academic efficiency and problems faced by them while using the Internet. This survey was particularly conducted to assess the benefits of the Internet over conventional resources of information and to find the answer to the question: Can Internet replace library services? Besides this the following information was sought about the teachers and the students: various purposes for which the Internet is used; various Internet services used for teaching, learning and research; impact of the Internet on the teaching, learning and research; satisfaction with the Internet facilities provided by the engineering colleges under study.

7. Methodology

Internet is one of the beneficial tools in this era of IT world not only for business but for academic point of view and enhances the skills and capabilities of students which assist them in studies and in professional life. Student with high CGPA use more internet for their studies and gain more knowledge and information across the world. The use of the Internet is an evolving phenomenon at this stage. Its use in the colleges under study still seems to be in a state of infancy or early maturation. We can very well visualize a situation when all the 100% users will have achieved a near perfection in the use of and full dependency on the Internet for their information needs. What kind of fulfillments they then achieve, what kind of problems they come to face and what kind of new demands the system generates in them, will be a matter of far greater interest than it seems today. So still there is a vast scope of future research in different types of users' behavior and comparison of users' behavior towards the Internet.

8. Respondent's Profile

Out of the 1603 respondents, 658 (41.0 percent) were teachers and 945 (59.0 percent) were students. Of the respondents 1,144 (71.4 percent) were male and 459 (28.6 per cent) were female. 622 of them (38.8 percent) were aged 15-20, 599 (37.4 per cent) were 21-25, 252 (15.7 percent) were 26-30, 67 (4.7 percent) were 31-35, 39 (2.4 percent) were 36-40, 18 (1.1 percent)

were 41-45, and 6 (0.4 per cent) were 46 years or over. There were 808 respondents (50.4 percent) from Punjab state, 720 (44.9 percent) were from Haryana state and 75 (4.7 percent) were from Himachal Pradesh respectively. 40 (2.5 percent) respondents were from Applied Sciences, 42 (2.6 percent) were from Chemical Engineering, 320 (19.9 percent) from Computer Science & Engineering, 331 (20.6 percent) were from Electronic Engineering, and 175 (10.9 percent) were from Electrical Engineering. In addition to above 10 (0.6 percent) respondents were from Industrial Engineering, 20 (1.2 percent) were from Production Engineering, 247 (15.4 percent) were from Mechanical Engineering, 235 (14.7 percent) were from Information Technology, 58 (3.6 percent) were from Architecture Engineering, 75 (4.7 percent) were from Instrumentation & Control Engineering, 20 (1.2 percent) were from Bio Technology, 10 (0.6 percent) were from Food Technology and 20 (1.2 percent) were from Textile Engineering.

Results

Table1. Experience of Internet Use

Duration	Frequency	Percentage
Less than six months	106	6.6
Six months-one year	157	9.8
One –to-Two years	449	28.0
Two-to Four years	502	31.3
More than four years	389	24.3

Note: n = 1603

The question was asked to find out the facts such as when did the users start using the Internet and how long they had been using the Internet. It was found that 502 (31.3 percent) of them had been using the Internet for 2-4 years. Another 449 (28.0 percent) respondents had used it for 1-2 years; 389 (24.3 percent) respondents indicated having used it for more than 4 years; 157 (9.8 percent) respondents had used it for 6 months – 1 year, and 106 (6.6 percent) respondents had been using it for six months or less. It is evident that the majority of respondents have been using Internet an average for more than 2 years (Table 1).

Table2. Frequency of Internet Use

Duration	Frequency	Percentage
Daily	699	43.6
2-3 times in a week	781	48.7
2-3 times a month	86	5.4
Once in a month	37	2.3

Note: n = 1603

Another question pertained to the frequency with which respondents use the Internet. A total of 781 (48.7 percent) of them reported that they used it 2-3 times in a week, 699 (43.6 percent) indicated that they used the Internet every day, 86 (5.4 percent) used it 2-3 times in a month, while 37 (2.3 percent) respondents reported that they used it once in a month. Again, this indicates that most of them use it 2-3 times in a week (Table 2).

Table3. Amount of Time Spent on the Internet

Interval	Frequency	Percentage
Less than one hour in a week	82	5.1
2-4 hours a week	541	33.7
5-6 hours a week	408	25.5
7-9 hours a week	302	18.8
10-20 hours a week	167	10.4
More than 20 hours a week	103	6.4

Note: n = 1603

Table 3 shows that the maximum number of respondents i.e. 541 (33.7 percent) use the Internet for 2-4 hours a week. 408 (25.5 per cent) use the Internet for 5-6 hours, 302 (18.8 percent) for 7-9 hours, 167 (10.4 percent) for 10-20 hours and 103 (6.4 percent) for more than 20 hours a week. Only 82 (5.1 percent) respondents have indicated that they use Internet for less than one hour a week.

Table 4. Most Frequently Used Location of Internet Use Place

Location	Frequency	Percentage
College or Work Place	1060	66.1
Home	310	19.3
Other places	233	14.6

Note: n = 1603

A total of 1,060 respondents (66.1 percent) indicated that they accessed the Internet from their college or work place, while only 310 (19.3 percent) accessed the Internet from home. Another 233 (14.5 per cent) also used other places such as cyber cafe, friend/ colleague's home etc. for accessing the Internet. It indicates that most of the respondents use the Internet from their respective colleges (Table 4).

Table 5. Methods of Learning Internet Skills Method

Methods	Frequency	Percentage
Trial and Error methods	1194	74.5
Guidance from colleagues and friends	1094	68.3
Training from college	110	6.9
Self instruction	882	55.0

External courses	133	8.3

Respondents were asked to indicate the methods used for acquiring the Internet skills. It was found that most popular method of acquiring the necessary skills to use Internet is via trial and error method (Table 5). A majority of the respondents used this method with 1,194 (74.5 percent) responses. A total of 1,094 of them (68.3 percent) indicated that they took guidance from their colleagues and friends, while more than half of the respondents with 882 (55.0 percent) responses also acquired skill by self instruction method. 110 (6.9 percent) of users learnt the Internet through formal training offered by the college and 133 (8.3 percent) participated in other training courses such as external courses and workshops.

Table 6. Purposes for Browsing Internet Purpose

Purpose	**Frequency**	**Percentage**
Research	814	50.8
Entertainment	484	30.2
Education	1157	72.2
Communication	794	49.5

One of the significant research questions was to explore the purpose for which they are using the Internet. 1157 (74.2 percent) respondents used the Internet for an educational purpose, 814 (50.8 percent) respondents for the research purpose, 794 (49.5 percent) for the communication purpose, while as 484 (30.2 percent) respondents admitted that they also use Internet for entertainment purpose. It indicates that majority of respondents mainly uses the Internet for educational purpose compared to others and least number of respondents uses the Internet for entertainment purpose (Table 6).

Table7. Uses of Internet Services

Service	**Frequency**	**Percentage**
E_Mail	1601	99.9
World Wide Web	1587	99.0
Search Engine	1584	98.8
Telnet	561	35.0
File Transfer Protocols	629	39.2
Archive	241	15.0
List serves/Discuss Groups	276	17.2
Bulletin Board Services	413	25.8
Frequently Asked Questions	814	50.8
Chatting	1187	74.0

9. Discussion

When we review the educational uses of the Internet in the World we see that this new educational and instructional technology is used effectively in the primary, secondary schools and universities by the developed countries. The Internet is an educational tool of enormous potential and can be used to replace the traditional classroom lecture and to revolutionize distance education. In addition, it can be used a supplement to traditional instructional methods

10. Benefits of Study

This study could be beneficial for students as well as for commercial organisation. The valuable feedback from internet user should help student to realize the benefits of internet in their education. Institutes can invest more in internet facilities to enhance the performance of their students and produce better results. Based on international experience, international readers may take advantage from this study. The information available on the Internet has proved to be a great asset for many of the respondents. They have been able to keep themselves abreast with the latest information and improve their professional competence. Table 11 depicts the influence of Internet on academic efficiency of the respondents. 832 (51.9 percent) respondents think that due to the availability of latest and instant access to information on the Internet, dependency on Internet has increased. 718 (44.8 percent) respondents feel that the Internet has improved their professional competence. 573 (35.7 percent) respondents think that dependency on conventional documents has decreased and 411 (25.6 percent) respondents admit that the Internet has expedited their research process

11. Conclusion

In conclusion, Today's society is in the middle of a technological boom. People can either choose to take advantage of this era, or simply let it pass them by. The Internet is a very powerful tool. It has many advantages; however, people need to be extremely aware of the disadvantages as well. The Internet has emerged as the single most powerful vehicle for providing access to unlimited information. The Internet is an inseparable part of today’s engineering educational system. The dependency on the Internet and its services is increasing day by day and the users of engineering colleges too are depending more and more on the Internet for their various educational purposes. The Internet facility has enabled the teachers and the

students to enhance their academic excellence by providing them the latest information and access to the worldwide information.

The information on the Internet is not usually available in an organized way and the users are unable to get pin- pointed information from the Internet. In order to make the Internet more beneficial, the library staff who have acquired a good deal of efficiency in the collection, organization and retrieval of information should feel duty-bound to see that the users are able to obtain right information at the right time. For this, they should organize and classify the information on a Website in such a way that the users are able to find easily the information they need for their studies and research purposes. The library services supplemented by Internet services can prove a great boon to the users in getting the right information at the right time.

Limitations

Future studies with more comprehensive samples may reveal various patterns of Internet use in different parts of the country, within differing institutional contexts (e.g., college vs. university vs. technical institutions), and for students with varying career aspirations (e.g., education vs. science students).

Directions for Future Research:- Suggestions

The present study puts forth the following suggestions to be implemented to improve Internet services:-

A. The libraries should have a high-speed Internet connection.
B. Internet facilities should be improved, and upgraded PCs may be installed.
C. CDROM/CD writers must be installed for data collections.
D. Internet service should be provided around the clock.
E. Broadband facilities should provide more journals online.

Based on the findings of the study, the following suggestions are put forward to improve the use of the Internet among the teachers and the students in all the engineering colleges of Punjab, Haryana and Himachal Pradesh states of India: The timings of the Internet service should be increased and if possible, the service should be made available round the clock so that the users can make maximum use of the Internet facility. More computers with the latest specifications and multimedia kit should be installed so that the users can use Internet telephony, video-conferencing, chatting and other useful services of the Internet.

More efficient technical staff should be appointed and they should always be present in the Internet section for expert advice. There should be

complete campus networking with the Internet browsing facility connecting the teachers' rooms as well as hostels.

The problem of slow connectivity should be overcome by increasing the bandwidth.

Sites providing only entertainment should be locked so that the students should not unnecessarily use computers.

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