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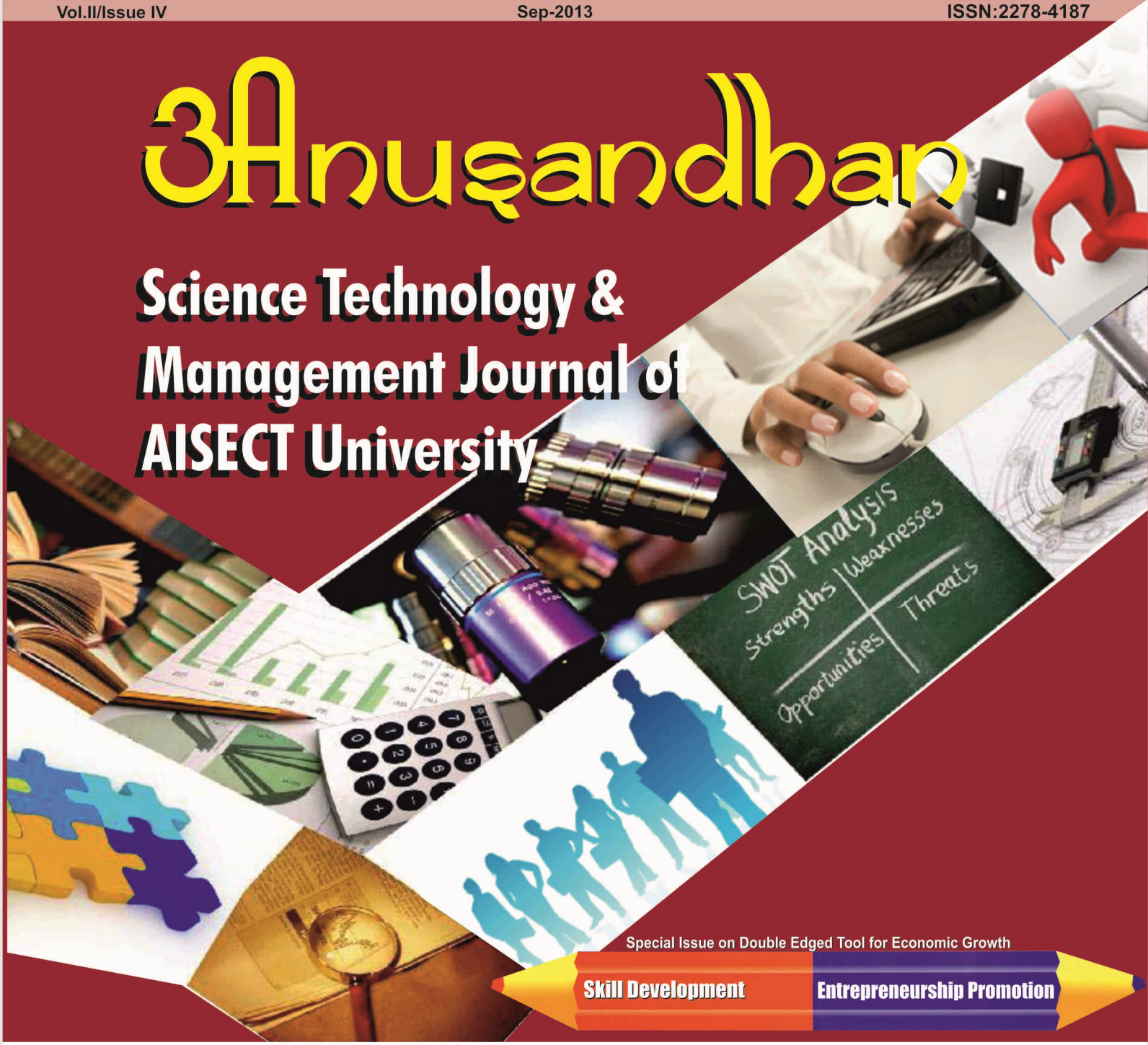

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Role of Government in Developing Entrepreneurs

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ABSTRACT
It's a known fact that India, today, is an emerging economy that is destined to achieve milestones, on various fronts, in the near future. However, for India, to acquire the status of a "developed" nation, it needs to create 100 million jobs, statistics point out! Experts confirm, in an endeavour to achieve this mark, tapping the potential of the unemployed and exploring opportunities in the employment market, so that each and every person plays a crucial role in contributing towards the growth of the Indian economy is necessary. However, how can one create 100 million jobs? And the million-dollar question is which industry will absorb people and bridge the employment gap? While experts are busy contemplating the possibilities of the army, the railways, the government and the private sector to recruit, speculations about the difficulty in employing in such huge numbers continue to persist.

I. INTRODUCTION

An Entrepreneur is an individual who efficiently and effectively combines the four factors of production. Those factors are land (natural resources), labor (human input into production using available resources), capital (any type of equipment used in production i.e. machinery) and Enterprise (intelligence, knowledge, and creativity.) Entrepreneurship is often difficult and tricky, as many new ventures fail. is often . Most commonly, the term entrepreneur applies to someone who creates value by offering a product or service. Entrepreneurs often have strong beliefs about a market opportunity and organize their resources effectively to accomplish an outcome that changes existing interactions. Business entrepreneurs are viewed as fundamentally important in the capitalistic society. Some distinguish business entrepreneurs as either "political entrepreneurs" or "market entrepreneurs," while Social entrepreneurs' principal objectives include the creation of a social and/or environmental benefit. The Enterprise can be set-up in a designated industrial area, where infrastructure facilities are available and are near to the market identified. It can also be set up in any other area depending upon nature of activity and local municipal rules. Entrepreneurship is the practice of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to identified opportunities. Entrepreneurship is often a difficult undertaking, as a vast majority of new businesses fail. Entrepreneurial activities are substantially different depending on the type of organization that is being started. Entrepreneurship ranges in scale from solo projects (even involving the entrepreneur only part-time) to major undertakings creating many job opportunities. Many "high-profile" entrepreneurial ventures seek venture capital or angel funding in order to raise capital to build the business. Angel investors generally seek returns of 20-30% and more extensive involvement in the business. Many kinds of organizations now exist to support would-be entrepreneurs, including specialized government agencies, business incubators, science parks, and some NGOs.

II. CHARACTERISTICS OF AN ENTREPRENEUR

Entrepreneurs have many of the same character traits as leaders, similar to the early great man theories of leadership; Entrepreneurs are often contrasted with managers and administrators who are said to be more methodical and less prone to risk-taking. Such person-centric models of entrepreneurship have shown to be of questionable validity, not least as many real-life entrepreneurs operate in teams rather than as single individuals

(a) The Entrepreneur has an enthusiastic vision.
(b) The Entrepreneur's vision is an interlocked collection of specific ideas.
(c) The overall blueprint to realize the vision is clear.
(d) The Entrepreneur promotes the vision with enthusiastic passion.
(e) The Entrepreneur develops strategies to change the vision into reality.
(f) The Entrepreneur takes the initial responsibility to cause a vision to become a success.
(g) Entrepreneurs take prudent risks.
(h) An Entrepreneur is usually a positive thinker and a decision maker.

III. ADVANTAGE OF ENTREPRENEURSHIP

Every successful entrepreneur brings about benefits not only for himself/ herself but for the municipality, region or country as a whole. The benefits that can be derived from entrepreneurial activities are as follows:

(a) Enormous personal financial gain.
(b) Self-employment, offering more job satisfaction and flexibility of the work force.

(c) Development of more industries, especially in rural areas or regions disadvantaged by economic changes, for example due to globalization effects.
(d) Encouragement of the processing of local materials into finished goods for domestic consumption as well as for export.
(e) Income generation and increased economic growth.
(f) Promotion of the use of modern technology in small-scale manufacturing to enhance higher productivity.
(g) Encouragement of more researches/ studies and development of modern machines and equipment for domestic consumption.
(h) Development of entrepreneurial qualities and attitudes among potential entrepreneurs to bring about significant changes in the rural areas.
(i) Freedom from the dependency on the jobs offered by others.
(j) The ability to have great accomplishments.

IV. CONTRIBUTIONS OF ENTREPRENEURS

(a) Develop new markets.

Under the modern concept of marketing, markets are people who are willing and able to satisfy their needs. In Economics, this is called effective demand. Entrepreneurs are resourceful and creative. They can create customers or buyers. This makes entrepreneurs different from ordinary businessmen who only perform traditional functions of management like planning, organization, and coordination.

(b) Discover New Sources Of Materials.

Entrepreneurs are never satisfied with traditional or existing sources of materials. Due to their innovative nature, they persist on discovering new sources of materials to improve their enterprises. In business, those who can develop new sources of materials enjoy a comparative advantage in terms of supply, cost and quality.

(c) Mobilize Capital Resources.

Entrepreneurs are the organizers and coordinators of the major factors of production, such as land labor and capital. They properly mix these factors of production to create goods and service. Capital resources, from a layman's view, refer to money. However, in economics, capital resources represent machines, buildings, and other physical productive resources. Entrepreneurs have initiative and self-confidence in accumulating and mobilizing capital resources for new business or business expansion.

(d) Introduce new technologies.

Aside from being innovators and reasonable risk-takers, entrepreneurs take advantage of business opportunities, and transform these into profits. So, they introduce something new or something different. Such entrepreneurial spirit has greatly contributed to the modernization of economies. Every year, there are new technologies and new products. All of these are intended to satisfy human needs in a more convenient and pleasant way.

(e) Create Employment.

The biggest employer is the private business sector. Millions of jobs are provided by the factories, service industries, agricultural enterprises, and the numerous small-scale businesses.

V. PROMOTION OF ENTREPRENEURSHIP

Entrepreneurship was potential to support economic growth and social cohesion; it is the policy goal of many governments to develop a culture of entrepreneurial thinking. This can be done in a number of ways: by integrating entrepreneurship into education systems, legislating to encourage risk-taking, and national campaigns

Many of these initiatives have been brought together under the umbrella of Global Entrepreneurship Week, a worldwide celebration and promotion of youth entrepreneurship, which started in 2008.

(a) Financial Assistance

Financial assistance is available from institutions such as Nationalized Banks, Small Industries Development Bank of India, Regional Rural Banks, National Small Industries Corporation, State Financial Corporations etc. depending upon the project requirement and promoters background. Financial assistance has two components. Loan for fixed capital is used to acquire Plant and Machinery, land and building. Working capital loan is used to meet day to day operational cost of the production. State Financial Corporation and National Small Industries Corporation generally provide working capital. However under package assistance, State Financial Corporations also provide a composite loan covering plant and machinery and working capital. The general conditions for getting financial assistance are:

(i) Eligibility criteria
(ii) Technical /Economic viability
(iii) Promoters contribution
(iv) Capacity to repay loan
(v) Collateral securities/guarantee

VI. THE ROLE OF GOVERNMENT IN SUPPORTING ENTREPRENEURSHIP

Small and Medium-sized Enterprises (SMEs) in market economies are the engine of economic development. Owing to their private ownership, entrepreneurial spirit, their flexibility and adaptability as well as their potential to react to challenges and changing environments, SMEs contribute to sustainable growth and employment generation in a significant manner.

SMEs have strategic importance for each national economy due a wide range of reasons. Logically, the government shows such an interest in supporting entrepreneurship and SMEs. There is no simpler way to create new job positions, increasing GDP and rising standard of population than supporting entrepreneurship and encouraging and supporting people who dare to start their own business. Every surviving and successful business means new jobs and growth of GDP.

Therefore, designing a comprehensive, coherent and consistent approach of Council of Ministers and entity governments to entrepreneurship and SMEs in the form of government support strategy to entrepreneurship and SMEs is an absolute priority. A comprehensive government approach to entrepreneurship and SMEs would provide for a full coordination of activities of numerous Governmental institutions (chambers of commerce, employment bureaus, etc.) and NGOs dealing with entrepreneurship and SMEs. With no pretension of defining the role of government in supporting entrepreneurship and SMEs, we believe that apart from designing a comprehensive entrepreneurship and SMEs strategy, the development of national SME support institutions and networks is one of key condition for success. There are no doubts that governments should create different types of support institutions:

(a) To provide information on regulations, standards, taxation, customs duties, marketing issues;

(b) To advise on business planning, marketing and accountancy, quality control and assurance;

(c) To create incubator units providing the space and infrastructure for business beginners and innovative companies, and helping them to solve technological problems, and to search for know-how and promote innovation; and

(d) To help in looking for partners, in order to stimulate entrepreneurship and improve the business environment for small enterprise.

(a) Training

Basic training differs from product to product but will necessary involve sharpening of entrepreneurial skills. Need based technical training is provided by the Govt. & State Govt. technical Institutions.

There are a number of Government organizations as well as NGOs who conduct EDPs and MDPs. These EDPs and MDPs and are conducted by MSME's, NIESBUD, NSIC, IIE, NISIET, Entrepreneurship Development Institutes and other state government developmental agencies.

(b) Marketing Assistance

There are Governmental and non-governmental specialized agencies which provide marketing assistance. Besides promotion of MSME products through exhibitions, NSIC directly market the MSME produce in the domestic and overseas market. NSIC also manages a single point registration scheme for manufacturers for Govt. purchase. Units registered under this scheme get the benefits of free tender documents and exemption from earnest money deposit and performance guarantee.

(c) Promotional Schemes

Government accords the highest preference to development of MSME by framing and implementing suitable policies and promotional schemes. Besides providing developed land and sheds to the entrepreneurs on actual cost basis with appropriate infrastructure, special schemes have been designed for specific purposes like quality upgradation, common facilities, entrepreneurship development and consultancy services at nominal charges.

Government of India has been executing the incentive scheme for providing reimbursement of charges for acquiring ISO 9000 certification to the extent of 75% of the cost subject to a maximum of Rs. 75,000/- in each case. ISO 9000 is a mechanism to facilitate adoption of consistent management practices and production technique as decided by the entrepreneur himself. This facilitates achievement of desired level of quality while keeping check on production process and management of the enterprise.

(d) Concession on Excise Duty

MSME units with a turnover of Rs. 1 crore or less per year have been exempted from payment of Excise Duty. Moreover there is a general scheme of excise exemption for MSME brought out by the Ministry of Finance which covers most of the items. Under this, units having turnover of less than Rs. 3 crore are eligible for concessional rate of Excise Duty. Moreover, there is an exemption from Excise Duty for MSME units producing branded goods in rural areas

(e) Credit Facility to MSME

Credit to micro, small and medium scale sector has been covered under priority sector lending by banks. Small Industries Development Bank of India (SIDBI) has been established as the apex institution for financing the MSME. Specific schemes have been designed for implementation through SIDBI, SFCs, Scheduled Banks, SIDCs and NSIC etc. Loans upto Rs. 5 lakhs are made available by the banks without insisting on collaterals. Further Credit Guarantee Fund for micro, small and medium enterprises has been set up to provide guarantee for loans to MSME up to Rs. 25 lakhs extended by Commercial Banks and some Regional Rural Bank.

(f) Policies and Schemes for Promotion of MSME Implemented by State Governments

All the State Governments provide technical and other support services to small units through their Directorates of Industries, and District Industries Centers. Although the details of the scheme vary from state to state, the following are the common areas of support.

(i) Development and management of industrial estates
(ii) Suspension/deferment of Sales Tax
(iii) Power subsidies
(iv) Capital investment subsidies for new units set up in a particular district
(v) Seed Capital/Margin Money Assistance Scheme
(vi) Priority in allotment of power connection, water connection.
(vii) Consultancy and technical support

Government of India runs a scheme for giving National Awards to micro, small and medium scale entrepreneurs providing quality products in 11 selected industry groups of consumer interest. The winners are given trophy, certificate and a cash price of Rs. 25000/- each.

VII. CONCLUSION

Government accords the highest preference to development of MSME by framing and implementing suitable policies and promotional schemes like policies and promotional schemes, providing incentives for quality upgradation, concession on excise duty and provides technical supportive services. Thus Government play supportive role in developing entrepreneurs.

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Present Scenario of Entrepreneurship in India

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ABSTRACT

Entrepreneurs are driven to achieve success in their business along with the qualities of a Leader, Manager, Dreamer, Innovator, risk taker, continues learner, decision maker & most important is to implement all these qualities into the work. There are a lot of examples of the entrepreneurs in India who are now called synonymous of 'Success'. They saw the bigger picture but wisely started their business as a very small unit. Entrepreneurs set the example of turning their dream into reality.

And the story behind to achieve the dreams into reality is to set massive goals for themselves and stay committed to achieving them regardless of the obstacles they get in the way, with the ambition and the unmatched passion towards achieving the goal. It looks fascinating, attractive and motivating after listening stories of the entrepreneurs, but success is not as easy as it looks always. There are some obstacles which we call the challenges to overcome by looking forward the prospects to be a successful entrepreneur.

This research paper focuses on the challenges available in the Indian market by en-cashing the possibilities and prospects of the same to be a successful entrepreneur.

I. INTRODUCTION

(a) Meaning of Entrepreneurship

An entrepreneur is a person who operates a new venture and also inherits some risks and is able to look at the environment, The great ones are ready to be laughed at and criticized in the beginning because they can see their path ahead and are too busy working towards their dream, True entrepreneurs are resourceful, passionate and driven to succeed and improve

The term "entrepreneurship" comes from the French verb "entreprendre" and the German word "unternehmen", both means to "undertake". By grave and Hofer in1891 defined the entrepreneurial process as „involving all the functions, activities, and actions associated with perceiving of opportunities and creation of organizations to pursue them .

(b) Significance of Entrepreneurship

Entrepreneurs play an important role in developing and contributing to the economy of a nation. It is all the more in a developing world where are ample opportunities for innovations to exploit the available resources and initiate entrepreneurial ventures.

Entrepreneurship has gained greater significance at global level under changing economic scenario. Global economy in general and Indian economy in particular is poised for accelerated growth driven by entrepreneurship. Admits environment of super mall culture we find plenty of scope for entrepreneurship in trading and manufacturing.

Entrepreneurship as a stabilizing force limits entrepreneurship to reading markets disequilibria, while entrepreneurship defined as owning and operating a business, denies the possibility of entrepreneurial behavior by non-owners, employees and managers who have no equity stake in the business. Therefore, the most appropriate definition of entrepreneurship that would fit into the rural development context, argued here, is the broader one, the one which defines entrepreneurship as: "a force that mobilizes other resources to meet unmet market demand", "the ability to create and build something from practically nothing", "the process of creating value by pulling together a unique package of resources to exploit an opportunity".

The entrepreneurship is very a old concept according to which any one who runs business is called an entrepreneur. The more precise meaning of entrepreneur is; one who perceives a need and then brings together manpower, material and capital required to meet that need. Entrepreneur is one who understands the market dynamics and searches for change respond to it and exploit it as an opportunity.

(c) The Nature of Entrepreneurship

In recent years the subject of entrepreneurship has become quite popular, though very few people thoroughly understand the concept. Most researchers agree that the term refers to entrepreneurial activities that receive organizational sanction and resource commitments for the purpose of innovative results. 36 The major thrust of intrapreneuring is to develop the entrepreneurial spirit within organizational boundaries, thus allowing an atmosphere of innovation to prosper.

II. CURRENT SCENARIO OF ENTREPRENEURSHIP IN INDIA

According to the Global Entrepreneurship Monitor report, India's High Growth Expectation Early-Stage Entrepreneurship (HEA) rate is only one-fifth of that of China. Further, among medium and low income countries, while China's nascent and new entrepreneurs appear to be the most growth-oriented, with more than 10 per cent of them anticipating high growth. Early-stage entrepreneurial activity in India is marked by low levels of growth expectation. This is despite the extremely high levels of potential entrepreneurial activity as perceived by the non-entrepreneurially active population in the country. While data on entrepreneurship is hard to come by, the following numbers are telling. According to the NSS 62nd round, in rural India, almost 50 per cent of all workers are self-employed – 57 per cent among males and nearly 62 per cent among females, while the corresponding figures in urban India are 42 for males and 44 for females. The NSSO defines a self- employed person as one who has worked in household enterprises as own-account worker; worked in household enterprises as an employer or worked in household enterprises as helper. The essential feature of the self-employed is that they have autonomy (decide how, where and when to produce) and economic independence (in respect of choice of market, scale of operation and finance) for carrying out their operation. According to the 5th Economic Census conducted by the Central Statistical Organization (CSO), there are 41.83 million establishments in the country engaged in different economic activities other than crop production and plantation. Five states viz. Tamil Nadu (10.60 per cent), Maharashtra (10.10 per cent),West Bengal (10.05 per cent), Uttar Pradesh (9.61 per cent) and Andhra Pradesh (9.56 per cent) together account for about 50 percent of the total establishments in the country. The same five states also have the combined share of about 50 per cent of total employment.

(a) Issues in the Current Framework

(i) **Finance:** Starting Business on credit is one of the key problems faced by the early stage entrepreneurs in India. Getting financed by the Banks is still tough, after a lot of practices of the governments. There are some more ways of funding like venture capital, angel funding, and private equity which are becoming popular these days, But still institutional finance is not able to meet the entrepreneurial demands.

(ii) **Regulation and governance:**

Government regulations are definitely established for a cause, but as far as setting up a business or becoming an entrepreneur is as tough as to deal with the government. An entrepreneur has to deal with regulatory & compliance issues, which includes, registering the business, obtaining government clearance and license of that particular business, high taxes, and complying the labor regulations. Difficult paper works, and a long delay on every issue, creates unnecessary burden to the entrepreneurs, which surely affect the ability & productivity of the business

(b) India specific entrepreneurship challenges

(i) **Family Challenges:** The topmost challenge for an entrepreneur is to convince his family for the risk of his choice of business. The Indian Family is still consider Jobs easy & Risk free, as it does not require funding , risks, & more time to get successful. Or either they have options of joining their own old business. Most of the family tries to choose the most easy & safest way for their child regarding earning money. The worst problem is the high involvement of the family in once decision-making, which affect a lot of people mind to think about starting a business.

(ii) **Social Challenges:** Social challenges come from the society and the social environment a person belongs to. Generally it involves a comparison between an entrepreneur and a nearby person friend or relative who is successfully doing job in an MNC or Govt. Job. A job holder person can easily obtain luxury of life like Car, Home, Air conditions and an urban lifestyle in a very short time. But for an entrepreneur it takes time to get successful and also has to compromise with the luxury because of funding and increasing his business and requires the patience as well. These type of social challenges sometimes demotivates the early stage entrepreneurs.

(iii) **Technological Challenges:** Indian educational system is convincingly not making aware of current technological revolution & its importance to the students. An entrepreneur equipped with the latest technology can grow multiple than an ordinary entrepreneur. These technological unawareness keeping far behind Indian entrepreneurs to the Other countries like China, Japan & US.

(iv) **Financial Challenges:** (Difficulty in borrowing fund): It is always a big issue for the entrepreneurs to finance a new business. It is because of the high poverty and middle class ratio in the country. Most of the people does not have financial support from the family. Also Very high interest rates of the non-banker firms make it more difficult to start a business.

The Government has some policies for SME's for funding through nationalized banks, but the ratio of passing the loan is very low almost 20%.

(v) **Policy Challenges:** Now and then there is lot of changes in the policies with change in the government. i.e.

- Problems of raising equity capital
- Problems of availing raw-materials.
- Problems of obsolescence of indigenous

technology
- Increased pollutions Ecological imbalanced.
- Exploitation of small and poor countries, etc.

III. OPPORTUNITIES FOR ENTREPRENEURSHIP IN PRESENT SCENARIO

(a) Tourism

Tourism is a booming industry in India. With the number of domestic and international tourists rising every year, this is one hot sector entrepreneurs must focus on. India with its diverse culture and rich heritage has a lot to offer to foreign tourists. Beaches, hill stations, heritage sites, wildlife and rural life, India has everything tourists are looking for.

But this sector is not well organized. India lacks trained professionals in the tourism and hospitality sectors. Any business in this sector will thrive in the long run as the demand contuses to grow every year. Foreign tourist arrivals during January-March were 15.63 lakh with a growth rate of 12.8 percent, compared to 13.86 lakh during the first three months last year.

(b) Automobile

India is now a hot spot for automobiles and auto-components. A cost-effective hub for auto components sourcing for global auto makers, the automotive sector is potential sector for entrepreneurs. The automobile industry recorded a 26 per cent growth in domestic sales in 2009-10.

The strong sales have made India the second fastest growing market after China. India being one of the world's largest manufacturers of small cars with a strong engineering base and expertise, there are many segments that entrepreneurs can focus on in India's automobile and auto components sector.

(c) Textiles

India is famous for its textiles. Each state has its unique style in terms of apparels. India can grow as a preferred location for manufacturing textiles taking into account the huge demand for garments. Places like Tirupur and Ludhiana are now export hubs for textiles. A better understanding of the markets and customers' needs can boost growth in this sector.

(d) Social ventures

Many entrepreneurs are taking up social entrepreneurship. Helping the less privileged get into employment and make a viable business is quite a challenge. There are many who have succeeded in setting up social ventures. With a growing young population in rural areas who have the drive and enthusiasm to work, entrepreneurs can focus on this segment.

(e) Software

India's software and services exports are likely to rise with export revenue growth projected at 13 to 15 percent to hit about $57 billion by March 2011.

With one of the largest pool of software engineers, Indian entrepreneurs can set higher targets in hardware and software development.

The information technology enabled services have contributed substantially to the economy. With more companies outsourcing contracts to India, business to business solutions and services would be required. Entrepreneurs can cash in on the rise in demand for these services with innovative and cost effective solutions.

(f) Engineering goods

India continues to be one of the fastest growing exporters of engineering goods, growing at a rate of 30.1 per cent. The government has set a target of $110 billion by 2014 for total engineering exports. Entrepreneurs must capitalise on the booming demand for products from the engineering industry.

(g) Franchising

India is well connected with the world. Hence, franchising with leading brands who wants to spread across the country could also offer ample opportunities for young entrepreneurs. With many small towns developing at a fast pace in India, the franchising model is bound to succeed.

(h) Education and Training

There is a good demand for education and online tutorial services. With good facilities at competitive rates, India can attract more students from abroad. Unique teaching methods, educational portals and tools can be used effectively to make the sector useful and interesting.

(i) Food Processing

India's mainstay is agriculture. Entrepreneurs can explore many options in the food grain cultivation and marketing segments. Inefficient management, lack of infrastructure, proper storage facilities leads to huge losses of food grains and fresh produce in India.

Entrepreneurs can add value with proper management and marketing initiatives. The processed food market opens a great potential for entrepreneurs be it fast food, packaged food or organic food. Fresh fruits and vegetables too have a good demand abroad. A good network of food processing units can help potential exporters build a good business.

(j) Corporate demands

There will be a good demand for formal attire with more companies opening their offices in India. People who can meet this demand in a cost effective way can make a good business. With corporate gifting getting very popular, this is also a unique business to explore.

(k) Ayurveda and traditional medicine

India is well known for its herbal and ayurvedic products. With increasing awareness about the ill-effects allopathic medicines, there will be a huge demand for cosmetics, natural medicines and remedies.

(l) Organic farming

Organic farming has been in India since a long time. The importance of organic farming will grow at a fast pace, especially with many foreigners preferring only organic products. Entrepreneurs can focus on business opportunities in this sector. There are many small-time farmers who have adopted organic farming but the demand is still unmet, offering many opportunities for those who can promote organic farming on a large scale.

(m) Media

The media industry has huge opportunities to offer young entrepreneurs. With the huge growth of this segment, any business in this field will help entrepreneurs reap huge benefits. Television, advertising, print and digital media have seen a boom in business.

Digitisation, regionalisation, competition, innovation, process, marketing and distribution will drive the growth of India's media and entertainment sector, according to Ficci.

(n) Packaging

With China invading the markets with cheap plastic goods and packaging materials, there is a good opportunity to develop good packaging materials to meet domestic and foreign demand. There is a huge demand various sectors like agriculture, automotive, consumer goods, healthcare infrastructure and packaging sectors for plastics.

(o) Floriculture

India's floriculture segment is small and unorganized. There is a lot to be done in this lucrative sector. The global trade in floriculture products is worth $9.4 billion. With a 8 per cent growth, it is expected to grow to $16 billion by 2010. India's share in world trade is just 0.18 per cent.

This is a huge market to be tapped considering the rising demand for fresh flowers. More awareness and better farming and infrastructure can boost exports.

(p) Toys

Another evergreen industry is toy manufacturing. India has potential to manufacture cost effective and safe toys for the world. With Chinese toys being pulled up for toxins, the market for safe and good quality toys beckons Indian entrepreneurs.

(q) Healthcare sector

India's healthcare sector is dismal. The private sector can play a vital role in developing this sector. With medical tourism also gaining momentum, the sector can attract foreigners who are looking for cost effective treatment in countries like India.

(r) Biotechnology

After the software sector, biotechnology opens a huge potential. Entrepreneurs can look at a plethora of options with the application of biotechnology in agriculture, horticulture, sericulture, poultry, dairy and production of fruits and vegetables.

(s) Energy solutions

In a power starved nation, the need to develop cost effective and power saving devices is gaining more significance. There is a huge demand for low-cost sustainable energy saving devices as well.

The government has already unveiled the National Solar Mission which has set a target of 20,000 MW of solar generating capacity by the end of the 13th Five Year Plan.

Prime Minister Manmohan Singh had urged the industry to see the huge business opportunity and set up 'Solar Valleys' on the lines of the Silicon Valleys. These solar valleys can become hubs for solar science, solar engineering and solar research, fabrication and manufacturing. So there is a big opportunity for entrepreneurs in this sector as well.

(t) Recycling business

E-waste will rise to alarming proportions in the developing world within a decade, with computer waste in India alone to grow by 500 per cent from 2007 levels by 2020, according to a UN study. This sector opens a viable business opportunity for entrepreneurs in terms of e-waste management and disposal.

IV. CONCLUSION

Entrepreneurship has been on the rise as a global phenomenon much before India began becoming sensitive to the development of entrepreneurship. However the awareness towards the path of entrepreneurship is now picking up a quick pace in our own country, and as a matter of fact is seen as one of the countries that is par excellence with the rest of the Asian countries as far as growing entrepreneurship is concerned. There are ample opportunities in small

businesses in India and such opportunities will transform India in the coming future. For such transformation to happen there needs to be support both at the governmental and societal level. For the government it is important to realize that the goal of small business owners will be to remain self-employed. Such people may not need financial assistance but they will need marketing and legal assistance in order to sustain themselves. Practical and cost effective programs need to be developed to address their needs because self-employed people will represent an important segment in economic revitalization.

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Driving Inclusive Growth through Employee Engagement

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ABSTRACT

Employee engagement is the level of commitment and involvement an employee has towards his organization and its values. An engaged employee is aware of business context, and works with colleagues to improve performance within the job for the benefit of the organization. It is a positive attitude of the employees towards the organization and its values.

Inclusive growth for business needs to be assessed from every perspective-personal, societal economical and cultural. While every business contributes economically, it is important that business leaders understand the importance of Employee engagement activities for the mutual growth of business & employees. It is crucial to make every employee involved in contributing to the sustainability agenda to make it inclusive and holistic as an organizational thrust. Organizations not only need to focus on building processes and capital, but equally on their employees for sustainable business growth.

I. INTRODUCTION

Employees' involvement in the organization is considered a source of development and innovation. Management practices transformational leadership style. The concept of employee involvement refers to the employee interest into the tasks and jobs assigned to him. This way when an employee is involved in his tasks he feels psychological ownership of his job. Psychological ownership is the feeling of employee that they have responsibility to make decisions in the interest of the company. (Avey et al., 2009) Psychological ownership is referred to as psychological empowerment. It is the sense of employee that he can create, mold and take decisions and mange his work his way. Empowerment of an employee can base on self-esteem, locus of control and the information available to employee (Spreitzer, 1995). Employees feel themselves that they can influence the organization by raising their voice; it is a job enrichment theory (Spreitzer, 1996). They feel themselves empowered to take decisions in executing tasks and feel themselves accountable for taking any risky steps associated with the tasks. When employees are secured to take any decision on their own responsibility with the support of the organization, the level of commitment in the organization will increase. Also employee is given opportunity to involve and he feels psychological ownership towards his actions and their consequences, employees develop the sense of belongingness. These feelings develop interest and responsibility in employees. This enables them to effectively perform their tasks. When employees is responsible towards his task he takes every decision with much attention and involvement this increases the chances of best outcomes. When employee is satisfied he develops the sense of security. Job satisfaction is defined as the state of mind that develops the feeling that employees all job related needs are being met (Evans, 2001). When employee performs all his tasks with responsibility and interest, he strives to go better and bring effective and efficient outcomes. Today's working environment employees have to face certain situations. These situations are related to their work tasks and ask for quick responses. Employees do not effectively perform any challenging tasks given to them because of the lack of association with work. Employees are selected after much consideration. They are trained extensively to bring best practices in the organization. Top management lacks to develop the psychological well being of employees. Physical performance depends on the psychological state of employees. Employees having blurred identity in terms of work and weak sense of belongingness are not motivated to improve their work. The feeling of dissatisfaction holds them back from performing right.

II. EMPLOYEE ENGAGEMENT

Employee engagement is based on organizational culture, communication style, managerial styles, leader-ship style, trust and respect factors, in order to develop engaging culture workplace must develop the environment that supports these factors (Lockwood, 2007). Leadership development of culture and employee engagement practices is associated in this way. Employee engagement is the psychological phenomena as defined in past literature it is based on two psychological components attention and absorption. Attention is the amount of time individual gives to his role and job to think over it while absorption is the focus of individual towards his role and his performance in that role (Rothbard, 2001). Engagement is the energy that individual puts into his work, involving himself to improve performance (Maslach, 2003) the degree to which employee is involved in his work roles, it is the active use of individuals thinking, emotions and behaviors (Saks, 2006) engagement is the willingness of employee to get

involved into his work tasks. It is appositive attitude developed in employee when he finds organizational and cultural support. Engagement is defined in the dimensions of vigor, dedication and absorption (Schaufeli et al., 2002). Employee engagement is discussed in terms of other close variables that support the human resource practices of employee engagement. Employee engagement can be defined in terms of empowerment. Psychological Empowerment is the perception of employees that they can adjust their work roles to accomplish their tasks and make important decisions regarding work tasks (Yulk and Becker, 2006) engagement is defined as the level of energy and decisions making that employees takes on his account to solve work related issues (Maslach, 2003).Saks (2006) Studied the consequences of employee engagement; it is an individual level phenomenon that indirectly affects the performance or success of organization by delivering positive individual level outcomes. Engagement brings outcomes like reduced burnout, satisfaction, commitment and higher performance (Maslach, 2003) employees feel belongingness to organization with lower intentions to leave (Schaufeli and Bakker, 2004) good health and its positive effects on the performance is also studied in the past (Sonnentag, 2003).

(a) Categories of Employee Engagement

According to the Gallup the Consulting organization there are there are different types of people:-

Engaged--"*Engaged*" employees are builders. They want to know the desired expectations for their role so they can meet and exceed them. They're naturally curious about their company and their place in it. They perform at consistently high levels. They want to use their talents and strengths at work every day. They work with passion and they drive innovation and move their organization forward.

(i) Not Engaged --- *Not-engaged* employees tend to concentrate on tasks rather than the goals and outcomes they are expected to accomplish. They want to be told what to do just so they can do it and say they have finished. They focus on accomplishing tasks vs. achieving an outcome. Employees who are *not-engaged* tend to feel their contributions are being overlooked, and their potential is not being tapped. They often feel this way because they don't have productive relationships with their managers or with their coworkers.

(ii) Actively Disengaged--The "*actively disengaged*" employees are the "cave dwellers." They're "Consistently against Virtually Everything." They're not just unhappy at work; they're busy acting out their unhappiness .They sow seeds of negativity at every opportunity. Every day, actively disengaged workers undermine what their engaged coworkers accomplish. As workers increasingly rely on each other to generate products and services, the problems and tensions that are fostered by *actively disengaged* workers can cause great damage to an organization's functioning.

(b) Importance of Engagement

Engagement is important for managers to cultivate given that disengagement or alienation is central to the problem of workers' lack of commitment and motivation (Aktouf). Meaningless work is often associated with apathy and detachment from ones works (Thomas and Velthouse). In such conditions, individuals are thought to be estranged from their selves (Seeman, 1972) .Other Research using a different resource of engagement (involvement and enthusiasm) has linked it to such variables as employee turnover, customer satisfaction – loyalty, safety and to a lesser degree, productivity and profitability criteria (Harter, Schnidt & Hayes, 2002).

An organization's capacity to manage employee engagement is closely related to its ability to achieve high performance levels and superior business results. Some of the advantages of Engaged employees are

(i) Engaged employees will stay with the company, be an advocate of the company, its products and services, and contribute to bottom line business success.
(ii) They will normally perform better and are more motivated.
(iii) There is a significant link between employee engagement and profitability.
(iv) They form an emotional connection with the company. This impacts their attitude towards the company's clients, and thereby improves customer satisfaction and service levels
(v) It builds passion, commitment and alignment with the organization's strategies and goals
(vi) Increases employees' trust in the organization
(vii) Creates a sense of loyalty in a competitive environment
(viii) Provides a high-energy working environment
(ix) Boosts business growth
(x) Makes the employees effective brand ambassadors for the company

A highly engaged employee will consistently deliver beyond expectations. In the workplace research on employee engagement (Harter, Schmidt & Hayes, 2002) have repeatedly asked employees 'whether they have the opportunity to do what they do best everyday'. While one in five employees strongly agree with this statement. Those work units scoring higher on this perception have substantially higher performance. Thus employee engagement is critical to any organization that seeks to retain valued employees. The Watson Wyatt consulting companies has been proved that there is an intrinsic link between employee engagement, customer loyalty, and profitability. As organizations globalize and become more dependent on technology in a virtual working environment, there is a greater need to connect and engage with employees to provide

them with an organizational 'identity.'

Employee engagement is considered to be a construct of involvement of employee in his work tasks (Saks, 2006) transformational leadership practicing engagement of employees is related to psychological state development that involves self-efficacy and attaining the targeted goal. In fast-changing environments, it becomes all the more difficult to precisely specify roles and responsibilities. To the extent that employees are likely to be faced more frequently with unanticipated and ambiguous decision-making situations, organizations must increasingly count on employees to act in ways that are consistent with organizational objectives. In addition, many employees are looking for environments where they can be engaged and feel that they are contributing in a positive way to something larger than themselves.

A review of the academic research on employee engagement shows the term is used at different times to refer to psychological states, traits, and behaviors. Macy and Schnedier show that engagement as a disposition (i.e. trait engagement) can be regarded as an inclination or orientation to experience the world from a particular vantage point (e.g., positive affectivity characterized by feelings of enthusiasm) and this trait gets reflected in psychological state engagement.11 Psychological state engagement is conceptualized as an antecedent of behavioral engagement, defined in terms of discretionary effort. Thus, they see engagement as a multidimensional construct.

If one does not know how to define and measure engagement, then an analysis of its drivers and outcomes will be suspect. For example, two attitudinal measures of employee engagement found in many consulting firms' surveys include employee job satisfaction and continuance commitment, which focus on employees' intentions to remain with the company. Yet, the research correlating job satisfaction and job performance has mixed results. And a number of studies have found a negative relationship between continuance commitment and job performance, making it quite possible to have very content employees who perform poorly. Research has shown that the type of commitment is critical; employees who want to belong to the organization (affective commitment) are more likely to perform well than those who need to belong (continuance commitment). Erickson argued that "engagement is above and beyond simple satisfaction with the employment arrangement or basic loyalty to the employer." Engagement is about passion, commitment, and the willingness to invest oneself and expend one's discretionary effort to help the employer succeed. Organizational effectiveness depends on more than simply maintaining a stable workforce; employees must perform assigned duties dependably and be willing to engage in activities that go beyond role requirements. Harter and Schmidt propose that employee engagement reflects a deeper level of involvement and enthusiasm from the employee than the terms "job satisfaction" or "organizational commitment" might imply. The newer emphasis on absorption, passion, and affect better reflects the reason work attitudes matter to organizations.

III. DRIVERS OF ENGAGEMENT

An organization's HR System is the primary driver of employee engagement. The HR system's staffing, training and development practices contribute to the development of employee competencies that enhance competitive advantage and help to ensure organization and employee fit. Rewards, benefits, and performance management practices help motivate employees to behave in ways that benefit the organization. Organizational and job designs help create a work environment that is conducive to employees' development and effective work systems. Lastly, effective management and leadership development helps to ensure a productive, fair, and supportive working environment in which employees feel motivated to achieve organizational objectives. A rich body of literature has identified key drivers of employee engagement that are the result of the proper alignment of HR practices, including: job characteristics, role clarity and fit, coworker and management relations, leadership, and perceptions of fairness. When employees are engaged in their work their commitment and comfort with work increases. Employee engagement is related to the commitment of employee and how hard they work. Involvement of employees in work develop loyalty factor in them. Loyal employees and staff leads to success of organization (Roehling, Roehling, and Moen, 2001)when employees strive for success of organization they improve their performance. Employee engagement is the deciding factor of success of organization; Engagement is positively related to higher satisfaction, loyalty of employees and performance (Lockwood, 2007) more engaged workforce brings better performance and results.

Employee engagement leads to individual level outcomes of loyalty and satisfaction. These outcomes ultimately lead to organizational results. Corporate results show strong bonding between concept of engagement and workers performance to business outcomes (Ferguson, 2009). Psychological ownership is the development of employee's mental state. Psychological it is considered a positive source of performance of individual; employees with feeling of ownership are more satisfied with their work and show more interest in organization (Avey, Avolio, Crossley, and Luthans, 2009) when employees show greater interest in their work they perform better. Psychological ownership is discussed in terms of citizenship behavior. This behavior develops sense of employee as family to organization. Psychological ownership provides base to

the development of competitive advantage and performance as citizenship behavior develops, also ownership is related to individual level outcomes like performance (Pierce, Kostova, and Dirks, 2003) competitive advantages of firm leads to high performance and success (Barney, 1995) while citizenship behavior develops social capital that leads to sustainable organizational advantages (Bolino, Turnley, and Bloodgood, 2002). Psychological ownership develops bonding in the hierarchal levels of organization. Development of ownership privileges creates psychological contracts between employees and organization; employees show more interest in the investment and performance of organization (Rousseau and Shperling, 2003) When employees are interested in the investment of the organization they desire best investment. Employee working in the mutual investment relationship is more committed to their employers and strives for better performance (Tsui, Pearce, and Porter, 1997). The desire of the betterment of organization encourages employees to give their best to the organization. Employees who feel close association with their job are more satisfied. Hence the sense of job responsibility is high in terms of these employees (Piccolo and Calquitt, 2006) when employees feel their responsibility- accountability towards their job they actually strive for development of self- self efficacy. Commitment is supported by the factors of satisfaction, belongingness and trust of employees when these two factors are satisfied the level of employee commitment increases. Literature shows significant relationship between job satisfaction and organizational commitment (Azeem, 2010). Previous studies findings support the positive impact of psychological ownership on organizational outcomes. Our study tested the relationship of employee engagement and transformational leadership with the mediation effect of psychological ownership. Findings of our study showed that psychological ownership mediate the relationship of both employee engagement and transformational leadership with employee performance.

(a) Factors Leading to Employee Engagement-

Studies have shown that there are some critical factors which lead to Employee engagement. Some of them identified are

(b) Career Development- Opportunities for Personal Development

Organizations with high levels of engagement provide employees with opportunities to develop their abilities, learn new skills, acquire new knowledge and realize their potential. When companies plan for the career paths of their employees and invest in them in this way their people invest in them.

(c) Career Development – Effective Management of Talent

Career development influences engagement for employees and retaining the most talented employees and providing opportunities for personal development.

(d) Leadership- Clarity of Company Values

Employees need to feel that the core values for which their companies stand are unambiguous and clear.

(e) Leadership – Respectful Treatment of Employees

Successful organizations show respect for each employee's qualities and contribution – regardless of their job level.

(f) Leadership – Company's Standards of Ethical Behaviour

A company's ethical standards also lead to engagement of an individual

(g) Empowerment

Employees want to be involved in decisions that affect their work. The leaders of high engagement workplaces create a trustful and challenging environment, in which employees are encouraged to dissent from the prevailing orthodoxy and to input and innovate to move the organization forward.

(h) Image

How much employees are prepared to endorse the products and services which their company provides its customers depends largely on their perceptions of the quality of those goods and services. High levels of employee engagement are inextricably linked with high levels of customer engagement.

(i) Other factors

(i) Equal Opportunities and Fair Treatment

The employee engagement levels would be high if their bosses (superiors) provide equal opportunities for growth and advancement to all the employees

(ii) Performance appraisal

Fair evaluation of an employee's performance is an important criterion for determining the level of employee engagement. The company which follows an appropriate performance appraisal technique (which is transparent and not biased) will have high levels of employee engagement.

(iii) Pay and Benefits

The company should have a proper pay system so that the employees are motivated to work in the organization. In order to boost his engagement levels the employees should also be provided with certain benefits and compensations.

(iv) Health and Safety

Research indicates that the engagement levels are low if the employee does not feel secure while working. Therefore every organization should adopt appropriate methods and systems for the health and safety of their employees.

(v) Job Satisfaction

Only a satisfied employee can become an engaged employee. Therefore it is very essential for an organization to see to it that the job given to the

employee matches his career goals which will make him enjoy his work and he would ultimately be satisfied with his job.

(vi) Communication

The company should follow the open door policy. There should be both upward and downward communication with the use of appropriate communication channels in the organization. If the employee is given a say in the decision making and has the right to be heard by his boss than the engagement levels are likely to be high.

(vii) Family Friendliness

A person's family life influences his wok life. When an employee realizes that the organization is considering his family's benefits also, he will have an emotional attachment with the organization which leads to engagement

(viii) Co-operation

If the entire organization works together by helping each other i.e. all the employees as well as the supervisors co-ordinate well than the employees will be engaged.

IV. CONCLUSION

Employee Engagement is the buzz word term for employee communication. It is a positive attitude held by the employees towards the organization and its values. It is rapidly gaining popularity, use and importance in the workplace and impacts organizations in many ways. Employee engagement emphasizes the importance of employee communication on the success of a business. An organization should thus recognize employees, more than any other variable, as powerful contributors to a company's competitive position. Therefore employee engagement should be a continuous process of learning, improvement, measurement and action. We would hence conclude that raising and maintaining employee engagement lies in the hands of an organization and requires a perfect blend of time, effort, commitment and investment to craft a successful endeavor.

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Design of Stilling Basin Models with Intermediate- Sill

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ABSTRACT

In this research paper performance of new stilling basin models for pipe outlet stilling basin were investigated experimentally by using different shape and size of intermediate sills along with impact wall and end sill .The experimental study was carried out for two Froude numbers namely 3.85 and 1.85 for rectangular pipe outlet of size 10.8 cm. x 6.3 cm. Performance index (PI) has been defined to evaluate the performance of stilling basin models tested using same sand base material and test run time. The scour pattern was measured for each test run. After 36 tests runs, it was found that scour process were reduced for a specific size and shape at a particular location of intermediate sill combined with end sill of particular size and shape. Newly developed model emerges more efficient as compared to other tested stilling basin models

Keywords: Performance index, end sill, stilling basin, pipe outlet, Scour pattern.

I. INTRODUCTION

Stilling basins with sills can be used effectively in dissipating the excessive energy downstream of hydraulic structure like over flow spillway, sluices, pipe outlets etc. Negm(2004) reported that the effect of sill on the flow depends upon the configuration of the sill, its geometry and the flow regime .Various types of recommended stilling basin designs for pipe outlets are by Bradely and Peterka (1957), Fiala and Albertson (1961), Keim (1962), Flammer et al. (1970), Vollmer and Khader (1971), Verma and Goel (200 & 2003) , Goel (2008), Tiwari et al. (2011, 2012 &2013), Tiwari and Gahlot (2012) and Tiwari (2013 & 2013). The present research paper concentrates on the effect of the position , shape & size of the central sill with end sill in stilling basin on scour characteristics downstream of the basin including the maximum depth of scour, the length to the maximum scour from end sill, the flow and scour patterns.

II. MATERIALS AND METHODS

(a) **Experimental Arrangement**

The experiments were conducted in a recirculating laboratory flume of 0.95 meter wide 1 meter deep and 25 meter long at MANIT Bhopal. The width of flume was reduced to 58.8 cm. by constructing a brick wall along the length for keeping ratio of width of basin to equivalent diameter of rectangular outlet equal to 6.3 as per Garde et al. (1986). A rectangular pipe was used to represent the outlet flow. This pipe was connected with delivery pipe in centrifugal pump. The exit of pipe was kept above stilling basin by one equivalent diameter (1d = 9.3cm). A wooden floor was provided downstream of the outlet for fixing the appurtenances in the basin.

Scheme of Experimentation

Table 1

S.No.	Model Name	Impact Wall with hood			Intermediate sill			
		Size	Bottom gap with basin floor	Location from outlet exit	Shape	Height	Width	Location from outlet exit
1	MSM-11	1d×2.2d	1d	3d	Triangular with vertical face U/S	2.5d	1d	4d
2	MSM-12	1d×2.2d	1d	3d	Triangular with vertical face U/S	2d	1d	4d
3	MSM-13	1d×2.2d	1d	3d	Triangular with vertical face U/S	1.5d	1d	4d
4	MSM-14	1d×2.2d	1d	3d	Triangular with vertical face U/S	1d	1d	4d

5	MSM-15	1d×2.2d	1d	3d	Triangular with vertical face U/S	d/2	1d	4d
6	MSM-16	1d×2.2d	1d	3d	Triangular with vertical face U/S	1d	d/2	4d
7	MSM-17	1d×2.2d	1d	3d	Triangular with vertical face U/S	d/2	d/2	4d
8	MSM-18	1d×2.2d	1d	3d	Triangular with vertical face D/S	2.5d	1d	4d
9	MSM-19	1d×2.2d	1d	3d	Triangular with vertical face D/S	2d	1d	4d
10	MSM-20	1d×2.2d	1d	3d	Triangular with vertical face D/S	1.5d	1d	4d
11	MSM-21	1d×2.2d	1d	3d	Triangular with vertical face D/S	1d	1d	4d
12	MSM-22	1d×2.2d	1d	3d	Triangular with vertical face D/S	d/2	1d	4d
13	MSM-23	1d×2.2d	1d	3d	Triangular with vertical face D/S	1d	d/2	4d
14	MSM-24	1d×2.2d	1d	3d	Triangular with vertical face D/S	d/2	d/2	4d
15	MSM-25	1d×2.2d	1d	3d	Rectangular	1d	0.2d	4d
16	MSM-26	1d×2.2d	1d	3d	Rectangular	d/2	0.2d	4d
17	MSM-27	1d×2.2d	1d	3d	Square	1d	1d	4d
18	MSM-28	1d×2.2d	1d	3d	Square	d/2	d/2	4d

To observe the scour after the end sill of stilling basin, a erodible bed was made of coarse sand passing through IS sieve opening 2.36 mm. and retained on IS sieve opening 1.18mm. The maximum depth of scour (dm) and its distance from end sill (ds) was measured for each test after one hour run time to evaluate the stiling basin performance. The depth of flow over the erodible bed was maintained equal to the normal depth of flow. The discharge was measured by a calibrated venturimeter installed in the feeding pipe. With the operation of tail gate the desired steady flow condition with normal depth was maintained. All the testing were performed for constant running time of one hour and with the same erodible material for two Froude numbers ie,3.85 and 1.85. Further scouring pattern was observed by using intermediate sill of different height and slopes, kept at the distance of 4d from the exit of the pipe with end sill. Thus total 36 test runs were performed to evaluate the performance of stilling basin. Scheme of experimentations are shown in Table1.

(b) **Performance Evaluation Criteria**

The performance of a stilling basin models were tested for different Froude number (Fr) which is a function of channel velocity (v), the maximum depth of scour (d_m) and its location from end sill (d_s). A non dimensional number, called as performance index (PI) has been used for comparison of performance of stilling basin models, Tiwari (2012 &2013). This is given as below:

$$PI = \frac{V \times d_s}{2 d_m \sqrt{g \frac{\rho_s - \rho_w}{\rho_w} d_{50}}}$$

Where, V - the mean velocity of channel, d_s - distance of maximum depth of scour from end sill, d_m- depth of maximum scour, g – gravitation acceleration, $\boldsymbol{\rho_s}$- density of sand, $\boldsymbol{\rho_w}$ density of water, d_{50}- the particle size such that 50% of the sand particle is finer than this size, A higher value of performance index indicates a better performance of the stilling basin model. The value of Performance index for various runs on each model for different Froude numbers are given in Table 2.

III.RESULTS AND ANALYSIS

To evolve the efficient and effective energy dissipator models for pipe outlet, 18 models, were tested for two Froude numbers, namely 1.85 and 3.85. The data pertaining to depth of scour and its location from end sill were collected for each model and reported in different tables to evaluate their performance. Performance of the basin models were tested with intermediate sill of different shapes like sloping, rectangular and square with varying height and slopes along with impact wall located at 3d and sloping end sill fixed at 8.4d. In model MSM-11, MSM-12, MSM-13, MSM-14 and MSM-15, height of sloping intermediate sill was varied from 2.5d, 2d, 1.5d, d and 0.5d respectively by keeping base width constant as 1d fixed at 4d with vertical face upstream. Values of performance index were computed and noted down in Table 2. Further by keeping base width 0.5d height was varied from 1d to 0.5d in model MSM-16 and MSM-17. Further, in model MSM-18, MSM-19, MSM-20, MSM-21, MSM-22, MSM-23 and MSM-24 vertical face of the sloping end sill was changed to downstream. After conducting the test and computing the values of performance index, variation of performance was shown in Table 2. After analysis it was found that by increasing the height of intermediate sill there is no improvement in the performance of the basin, as by increasing the height flow of water after intermediate sills flow a fall like structure by which scouring increases. It was also concluded that intermediate sill having vertical face stream performs better as compared to vertical face downstream. To improve the performance of basin further, models were tested with rectangular and square intermediate sill having height d and d/2 each. Tested models are MSM-25, MSM-26, MSM-27 and MSM-28. By looking the computed values of performance index (PI) as given in Table 2, It is found that model MSM-28 performs better as compared to other model tested so far in the basin length of 8.4d as its values of performance index (PI = 6.349 & 6.695) are higher side as compared to other models for both Froude numbers. Intermediate sill of suitable height promotes the dissipation of energy in the basin by lifting high velocity filaments from the bed.

Performance index models tested

Table 2

S. No.	Model name	Fr =1.85	Fr = 3.85
		PI	PI
1	MSM-11	5.32	4.419
2	MSM-12	5.872	4.577
3	MSM-13	5.948	4.790
4	MSM-14	6.745	4.900
5	MSM-15	6.838	4.882
6	MSM-16	7.937	4.800
7	MSM-17	6.512	4.224
8	MSM-18	3.55	3.881
9	MSM-19	3.460	3.973
10	MSM-20	4.370	3.947
11	MSM-21	4.593	4.396
12	MSM-22	5.189	5.031
13	MSM-23	5.155	3.879
14	MSM-24	4.409	3.872
15	MSM-25	5.19	5.131
16	MSM-26	6.309	6.10
17	MSM-27	8.411	5.466
18	MSM-28	6.349	6.695

IV. CONCLUSION

An experimental study was conducted in the laboratory by fabricating physical models to study the evaluation of the stilling basin performance for rectangular pipe outlets by using different size and shape of intermediate sill. Based on experimental results it is concluded that the shape of intermediate sill in a basin affects the performance of stilling basin significantly due to change in the flow pattern in the basin. During the study it was observed that the shape of intermediate sill affects the flow conditions and ultimately scour pattern downstream of the stilling basin. This study also revealed that the higher values of performance index indicate that the square intermediate sill enhanced the energy dissipation of flowing water and found to perform better for all flow conditions as compared to other intermediate sills tested for rectangular pipe outlet basin. The variation of performance index is due to the variation in flow geometry. It can be concluded from this study that by way of experimentation a proper shaped intermediate sill improve the stilling basin performance.

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Rural Development through Entrepreneurship

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I. INTRODUCTION

As around three-fourth of the India's population is living in vast rural areas. The rural and urban categorization reveals wide disparities in various respects. The division of economic activities between rural and urban areas is one of them. Rural areas specialize more or less exclusively in agriculture while industries are exclusively located in urban areas. Given the weak rural urban or agriculture industry linkages, such a situation suffers from two serious shortcomings. First as agriculture by itself has a tendency to develop at a slower pace than industry, the division of economic activities leads to uneven development. Second since industry generally leads to higher level of output per worker than agriculture, the gap in income levels between those engaged in the two sectors tends to widen. Further, the relationship between traditional agriculture and modern industry generally has a dependency structure which puts the rural sector at a greater disadvantage in appropriating the gains of development and, in turn, increases the disparities between rural and urban income levels. As such, rural areas are ultimately marked be abject poverty and backwardness. In such situation, industrialization is viewed as an effective means of acceleration the process of rural development. Entrepreneurship precedes industrialization.

II. RURAL ENTREPRENEURSHIP

Like entrepreneurship, rural entrepreneurship also conjures different meanings to different people. Without going into semantics, rural entrepreneurship can simply be defined as entrepreneurship emerging in rural areas is rural entrepreneurship. In other words, establishing industrial units in the rural areas refers to rural entrepreneurship implies rural industrialization.

Rural industries are generally associated with agriculture. According to the Khadi and Village Industries Commission (KVIC), "any industry located in rural area, village or town with a population of 20,000 and below and an investment of Rs, 3 crores in plant and machinery is classified as a village industry'.

All the village industries have been grouped into seven major categories as follows:

(a) Mineral based industry
(b) Forest based industry
(c) Agro based industry
(d) Polymer based industry
(e) Textile industry

III. NEED OF RURAL ENTREPRENEURSHIP

The need for rural entrepreneurship for developing industries in the rural areas is in the multiplicity of justification as listed below:

(a) Rural industries being labour intensive have high potential in employment generation. Thus they serve as an catalyst to the widespread problems of disguised unemployment or under employment stalking the rural territory.
(b) By providing employment these industries have also high potential for income generation in the rural areas. These thus help in reducing disparities in income between rural and urban areas.
(c) These industries encourage dispersal of economic activities in the rural areas and thus promote balanced regional development.
(d) Development of industries in the rural areas also helps to build up village republics.
(e) It fosters economic development in rural areas, which reduces rural urban migration, lessens growth in slums etc.

IV. GROWTH & ANALYSIS OF RURAL INDUSTRIALIZATION IN INDIA

Prior to independence small scale industries had nominal place in Indian economy. Cottage and handicraft industry were located in this area. Then Govt. started development programs in rural sector. The industrial resolution emphasized the utilization of local resources and the achievement of local self sufficiency in essential consumer goods. This approach was followed in the first five year plan. But this did not help the attainment of goal. Then five year plan emphasized on the development of agriculture, industry, infrastructure and social services. The industrial resolution of 1956 emphasized on the creation of employment, equitable distribution of income and effective mobilization of capital, cottage, and small scale industries.

Finally the ninth five year plan the following steps were adopted:

(a) Credit facilities to small scale industries were increased. Financial institutions were encouraged to offer SSIs.
(b) The small scale and the village industries were provided the incentives, support to facilitate their growth and employment.
(c) The investment ceiling limit was extended to 3.5 crore.

(d) Technological development in case of SSIs, handicraft, handloom, power-looms etc. was in top priority.

(e) Special attention was paid to sericulture to improve the quality of raw silk by introducing better silk worm breeding practices.

Table 1
Indication of Growth in Rural Sector

Year	No of Units (in Lakhs)	Production (Rs. In Crores)	Employment (Lakhs)	Exports (Rs. In Crores)
2003-04	37.6	10,35,356	230.3	1,07,488
2004-05	39.2	11,16,592	239	1,25,057
2005-06	41.5	12,12,244	248.56	1,41,604
2006-07	42.7	12,87,480	265.92	1,58,202
2008-09	44.65	13,72,716	275.04	1,74,800

(f) Small Industries Development Organization 10th Five Year Plan. http://www.dcmsme.gov.in/

Fig 1

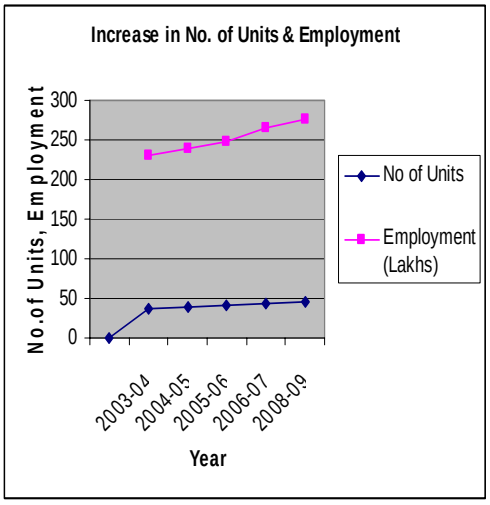
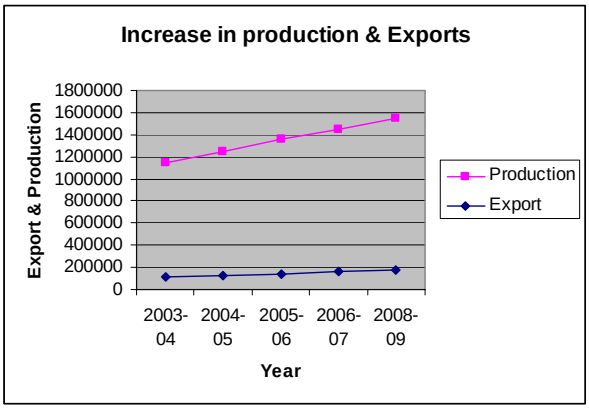


Fig 2



The rural sector has registered phenomenal growth in their number, production, employment and exports over the last five year. It is evident that the number of units engaged in production has increased by 15.78 percent. While production raised by 24.57 percent, employment by 16.26 percent and the exports railed up by 38.50 percent.

Correlation Analysis:
There is high positive correlation i.e. **098** in No. of units and employment.

Forecasting of expected number of units in the year 2015:
Time series analysis least square method it is evident that expected number of units engaged in production will grow by 48.8 Lakhs and the employment will increase upto 298.9 Lakhs in the year 2015.

Factors Affecting Entrepreneurial Growth:
Economic factors: From economic viewpoint it can be said that some there are some factors that play a vital role for emergence of entrepreneurship that are as follows:

(a) Capital: Capital is one of the most important prerequisites to establish an enterprise. Availability of capital facilitates the entrepreneur to bring together the land of one, machine of another and raw material of yet another to combine them to produce goods.

(b) Labour: Quality rather quantity of labour is another factor which influences the emergence of entrepreneurship.

(c) Raw Material: The necessity of raw materials hardly needs any emphasis for establishing any industrial activity and therefore its influence in the emergence of entrepreneurship. In the absence of raw materials, neither any enterprise can be established nor can an entrepreneur be emerged.

(d) Market: Potential of market constitutes the major determinant of probable rewards from entrepreneurial function. The size and composition of market both influence the entrepreneurship in their own ways. Monopoly in

a particular product in a market becomes more influential for entrepreneurship than a competitive market.

Challenges in Indian Rural Entrepreneurship:

(a) Problems of raising equity capital
(b) Difficulty in borrowing fund.
(c) Thought-cut completions endangered existence of small companies.
(d) Problems of availing raw-materials.
(e) Problems of obsolescence of technology
(f) Increased pollutions ecological imbalanced.
(g) Problems of TRIPS and TRIMS.
(h) Exploitation of small and poor countries, etc.

Opportunities for Entrepreneurs in India:

(a) Free entry into world trade.
(b) Improved risk taking ability.
(c) Governments of nations withdrawn some restrictions
(d) Technology and inventions spread into the world.
(e) Encouragement to innovations and inventions.
(f) Promotion of healthy completions among nations
(g) Increase in government assistance for international trade.
(h) Establishment of other national and international institutes to support business
(i) Benefits of specialization.
(j) Social and cultural development

IV. CONCLUSION

It is evident from the analysis that there is a positive correlation i.e. between number of units and employment (.98) and units engaged in production will grow by 48.8 Lakhs and the employment will increase up to 298.9 Lakhs in the year 2015. The government by its actions or failure to act also does influence both the economic and non economic factors for entrepreneurship. Any interested government in economic development can help, through its clearly expressed industrial policy. By creating basic facilitates, utilities and services and by providing incentives and concessions, the government can provide the prospective entrepreneurs a facilitative socio economic setting.

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Women Entrepreneurs in Micro Enterprises in Bhopal Region Challenges and Prospects

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I. INTRODUCTION

Entrepreneurship refers to setting up of a new business to take advantages from new opportunities. Entrepreneur is the key factor of entrepreneurship and now women in India are also successful in this as they have qualities desirable for entrepreneurship development. Entrepreneurship is a much suitable profession for women than regular employment.

A micro enterprise is an enterprise where investment in plant and machinery [original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No. S.O. 1722(E) dated October 5, 2006 does not exceed Rs. 25 lakh.

(a) **Characteristics of Entrepreneurs**

To be a successful entrepreneur one has to acquire and develop certain qualities, namely:

1) High motivation for achievement of goal,
2) Insatiable drive and persistent enthusiasm,
3) Ready to take risk and face challenge,
4) Technical expertise,
5) Spirit of innovation,
6) Hard working, dedication, commitment and self – confidence
7) Willingness to take advice/ learn from the failure and use of Feedback.
8) Effective management of time.

(b) **Women Enterprises In India: A Brief Overview**

The Government of India has defined women enterprise as " an enterprise owned and controlled by women having a minimum financial investment of 51 % of capital and giving at list 51 % of the employment generated in the enterprise to women." In India the following features have been found in respect of woman entrepreneurship.

1) Women account for only 5.2% of the total self-employed persons in the country.
2) There were more than 1, 53,260 woman entrepreneurs claiming 9.01% of the total entrepreneurs in India during 1998-99.

II. CHALLENGES FOR WOMEN ENTREPRENEURS

As family members are not in favour of supporting their ladies to take up the business in which they have skills, naturally they will be unwilling to support with the finance required for starting a business unit. The problems faced by woman entrepreneurs are briefly analyzed below:

(a) Start-up finance is a great problem
(b) Hesitation and lack of marketing skills
(c) Lack of Legal know-how
(d) Lack of Management Skills
(e) Limited Working Capital Management
(f) Limited Access to Technology
(g) Misbehavior and belittling treatment by their male-counterparts
(h) Lack of Confidence
(i) Decision relating to site selection for establishment of enterprise of for women is based on proximity to home

III. STUDY CARRIED OUT IN BHOPAL REGION

The study was conducted in four zones of Bhopal. Random technique was adopted for the selection of study area. A sample of 100 women respondents (25 from each zone) was taken at individual level not in the partnership. Business taken for the study was beauty parlors, Nursing homes, boutiques and general stores. The sample was selected using non random opportunity sampling techniques and case study techniques. In this study the data was collecting with the following tools

1. Economic, managerial profile
2. Socio-demographic profile.
3. Personality evaluation questions

IV. RESULT & ANALYSIS

(a) **Results:** Socio-economic and demography profile of women entrepreneurs are presented in table no. 1

Table 1

Socio-demographic-economic profile		
Socio-Demographic characteristics Respondent 100 Age in years n %		
18-25	21	21
26-35	26	26
<35	53	53

Education		
Illiterates	9	9
SSC	38	38
Intermediates	23	23
Degree	27	27
Post graduate	03	03
Marital status		
Unmarried	9	9
Married	71	71
Widow	15	15
Divorce	5	5
No. of children		
None	8	12
1	26	26
2	44	40
>2	22	22
Income		
Rs. 150000-350000	42	42
Rs. 350000-700000	38	38
<700000	20	20

(b) **Analysis:** Out of the women entrepreneurs surveyed under the study, 53% belong to the age group of 36 years and above followed by the age group of 26-35 (26%) and 18-25 (21%) in that order. Hirsch and brush (1986) described the typical women entrepreneur to be about 35 years of age when she start her business. It appears that women are inclined towards business ventures, in this age due to the economic pressure they face. The demands of the family as their children are growing and more leisure time they get. 42% of women interviewed belong to the low income level that is Rs. 150000 -350000. And only 20% women are above Rs. 700000.The data shows that economic needs are the essential factor for the women to enter into the entrepreneurship. On the other hand women with small families enter into this type of entrepreneurship. Educational status does not influence women in seeking this type of entrepreneurship (Rani, 1992) Majority in this was 38% which are belong to only SSC passed women. Only 9% women were illiterate which very low % in total is. 23% were only intermediate and 27% were only graduate. The data shows that only 3% women were post graduate, it means that higher education does not affect the interest of women in this field. The data shows that married women have more interest in the women entrepreneurship. Highest 71%women are involved in the business because they need more financial support than unmarried and others. Only 9% women interviewed that they are unmarried. Widow women also want to start their own business. But only 15% women interviewed that they are widow. This shows that married women take more risk in starting new business. No. of children also affect the women entrepreneurship. In the collection of data only 8% women interviewed that they have no children. 26% women interviewed that they have only one child. Most of the women interviewed that they have two children that is 44% women. Only 22% women interviewed that they have more than two children. This data shows that the single women have no interest in the entrepreneurship. The maximum interest was shown by those women who are married and have child.

Table: 2 Investments Invested By Women

Table 2

Investment	Respondent(n)
Rs. 1000000-1500000	22%
Rs. 1500001-2000000	65%
Rs. 2000000-250000	13%

Table No. 2 showing the investment by the women entrepreneur in the business. In the study there are only 22% women who invest Rs 1000000-1500000 in the business like small store. Nearly 65% of the women were those who invest in the field of beauty parlor and boutiques. They spend up to Rs 2500000 in the business .Only 13% women has interest in the others field who invest more than Rs 2500000 in the business. Some of the women are aware about the support system of the govt. from banks, but many more are not aware about the loan system. Only few % of women are taking support from the financial institution. Many of the women taking supports from the relative and money lenders not from the govt. support because they said about the delay from the banks and long procedures.47% women are said that they do not know the bank procedure and it is very long process.

Table No. 3: No. Of Hours Devoted For Their Business
Women entrepreneurship also affects the no. of hours devoted in the business.

Table 3

No. of hours	Respondent(n)	100(%)
2-4 hrs	19	19
5-7 hrs	51	51
8-9 hrs	27	27
>9 hrs	3	3

In the study of data we find that only 51% women are working for 5-7 hrs.19% women have only 2-4 hrs for their business. They have their house work and burden of the family work. They have less support from their family. May be they lives in a separate family. Only 27% women gave 8-9 hrs to their business and they have huge family support and husband support. In the study we find that there are only 3% women who are totally devoted to their business. For the women it is impossible to give more hrs to the business in the serrate family and unsupported family. Apart from these aspects others problems like

finance, marketing, health, family and location were some more areas where the women faced problems in the new ventures. They also need a training of managerial and technical skills.

(c) **Support from the Government**
Governments at the Centre as well at the State designed a number of schemes and programmes for the support of entrepreneurs in general and for women entrepreneurs in particular. The schemes of the Govt. of India include the Support for Training and Employment Programme (STEP) aims to raise the incomes of the women by updating their skills in the traditional sectors, such as dairy development, animal husbandry, handloom and social forestry. Since the inception of the programme in 1987 about 3.32 lakh women have been benefited through 61 projects as at the end of March 2000.

(d) **Association Promoting Women Entrepreneurs**
A brief analysis of various associations and agencies that are functioning at State and national levels to promote women entrepreneurs are discussed as follows:
(a) Self-Help Groups (SHGs
(b) Federation of Indian Women (FIWE)
(c) Women's India Trust (WIT)
(d) SIDBI Small Industries Development Bank of India (SIDBI)
(e) SIDO Small Industries Development Organisation (SIDO)
(f) Consortium of Women Entrepreneurs in India (CWEI)
(g) NABARD National Bank of Agriculture and Rural Development (NABARD)
(h) Development of Women and Children in Rural Areas (DWCRA)
(i) Self-employed Women's Association (SEWA)

The government also provides following Subsidies and incentives:-
(a) Subsidy for Technical know-how & Feasibility Reports
(b) Development Plots / Development Areas/ Mini Industrial Estates
(c) Incentives for quality Certification
(d) Margin Money Loan
(e) Margin Money loan for Nonresident Keralites
(f) National Equity Fund Scheme (NEF)
(g) State Investment Subsidy

V. SUGGESTIONS

There are some suggestions for promotion of the women entrepreneurship which emerge from the present study.
(a) The product must fit the need through bottom up approach.
(b) Some women need some technical training.
(c) Some women need the support from the financial institution.
(d) Gender specific training is must to the women entrepreneurs to suit socio –economic-demographic Condition.
(e) Public speaking scheme also provided by the govt. to the women entrepreneurs
(f) Need of Pre –entrepreneurial training to the women entrepreneur.
(g) Make a social culture relation.

VI. CONCLUSION

Women in India now have the potential to grab the opportunities. All they need now is the platforms to showcase their talent. Women entrepreneurs face so many problems in aspects of financial, marketing, health, family, and problems. Some more user friendly guidelines should be given by the govt. and the financial institutions to the women entrepreneur time to time. What women need for enterprises like training, some financial support and motivation at all levels-home, the society and the government. Creating awareness among the women regarding entrepreneurship and the sources of funds should be given higher priority by the Government.

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Manufacturing Cell Design for Changing Demands of the Automobile Industry

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ABSTRACT

Small job shops which were earlier catering as ancillaries to the larger factories, have emerged as real profit centers by earning their livelihood through "flexible production" in accordance with the variety of demand. This situation has suggested for an essential change in the design and operation of manufacturing set-ups. Managers have realized that running the large units as an optimized and effective combination of a number of smaller units will make the industry flexible, according to the demand changes. This concept is technically explained in the form of Cellular Manufacturing, and is therefore the right approach for such situation. This paper, while taking reference of an Automotive Manufacturing Unit in Pithampur (MP), presents a model for cell formation that allows for period-to-period demand variability and considers the size of the cell when determining the cost to process each part. The model also allows the composition of a cell to be changed from period to period. Five heuristic procedures are presented and tested. The best procedure is also compared with two other traditional approaches. The results show that considering demand variability and changing the cell composition during the planning horizon can result in better solutions.

I. INTRODUCTION

Cellular manufacturing (CM) is a manufacturing application of the group technology philosophy. Products or parts that have similar process requirements are grouped together to form part families, as described by Srinivasan *et.al* [16] and Taboun *et.al* [17]. The processes needed to produce a family are then dedicated and arranged in a way that facilitates efficient materials flow, as also depicted by Adil and Rajamani [1]. This enables the family to be manufactured with rapid throughput times and a low unit cost while maintaining a reasonable level of equipment utilization.

This research is motivated through several visits to factories in Pithampur (MP) region that have implemented or in process of implementing cellular layouts. A key finding of these visits is that companies that implement cellular manufacturing constantly adapt to long-term changes in demand. These changes in demand can occur for a variety of reasons including: growth and decline of demand for a product, new customers or lost customers, new products or the elimination of old products, new contracts or contracts that expire and are not renewed. A second key finding during these visits is that the cellular layouts contained some dedicated and ''small'' (in terms of number of machines) cells with other flexible and larger cells. This finding suggests that these companies were simultaneously striving to increase operational efficiency (through dedicated cells) while at the same time efficiently using capital equipment to provide customers with product variety.

Long-term changes in demand, as mentioned by Wicks & Reasor [22], can cause processes in some cells to be inadequate to meet demand and processes in other cells to be underutilized. There are several ways to solve these problems, however, each one of these has its own associated cost, as indicated below:-

Table 1

	Probable Solution	Associated Cost
1	The cell assignments of some parts can be changed.	Training and organization costs.
2	New equipment can be purchased and added to a cell to meet increased demand requirements.	Capital investment.
3	Equipment that is underutilized in a cell can be moved to a cell where demand requirements for the equipment are higher.	Costs to move equipment and reorganize the cells.
4	Equipment that is underutilized can be sold or scrapped.	Costs to remove the equipment and reorganize the cell.

Having a lot of research carried out in the past such as Askin, Selim & Vakharia [2], Schaller [12], Singh [15], Wemmerlo & Johnson [21], "flexible design as per demand changes" attracted lesser attention due to obvious reasons. The present study proposes an integer model that considers part reallocation or equipment reallocation between cells as alternatives for the redesign of a cellular manufacturing system to handle long-term demand changes. The model also considers the production cost within a cell based on the number of

machines assigned to the cell. In the next section this model is presented.

II.MODEL FOR CELL FORMATION

A model is proposed, in this section, to design a cell system that responds to long-term changes in demand. The model minimizes the total of the amortized machine costs, the cost of relocating equipment, and the cost of producing parts. A key attribute of this model is that the cost of producing a part within a given cell is based on a stepwise linear function. This function assumes that the cost of producing a part within a cell is linear as long as the number of machines in the cell is within a certain interval. As the size of the cell increases beyond a certain threshold there is a break in the function and a stepwise increase in the cost of production within the cell, as depicted by Sankaran and Kasilingam [11]. The reason for including this step function is that a small cell that only contains a few machines has a high degree of focus and will minimize production costs. As machines are added the size of the cell increases and the cell's focus is lost and production costs within the cell increases. Some of the factors that lead to increased costs are material handling cost, setup cost, work-in-process inventory cost, and scheduling and coordination costs.

These costs are assumed to be relatively constant for a range on the number of machines to be included in a cell so a series of break points, each represents an upper limit for a range, is associated with a production cost level. The following notation is used in the model:

(a) Indexes

p part index (p = 1,. . . ,P) where P is the number of parts
k cell index (k = 1,. . . ,K) where K is the number of cells
j machine type index (j = 1,. . . ,J) where J is the number of machine types
t period index (t = 1,. . . ,T) where T is the number of periods considered
n index for cell size bounds (n = 1,. . . ,N) where N is the number of cell size bounds

(b) Parameters

C_{pn} cost to produce one unit of part p in a cell of size n
UB_n upper bound in terms of number of machines for cell size n
S_j set of parts requiring machine type j
t_{pj} processing time of part p on machine type j
G_j time available for one machine of type j
A_j amortized cost per period of a machine of type j
D_{pt} demand for part p in period t
MT_j cost to move one machine of type j into a cell
MF_j cost to remove one machine of type j from a cell

(c) Variables

X_{pktn} = 1 if part p is assigned to cell k of size n in period t, 0 otherwise
F_{jkt} the number of machines of type j removed from cell k in period t
T_{jkt} the number of machines of type j moved to cell k in period t
Z_{ktn} = 1 if cell k is of size n in period t, 0 otherwise
Y_{jkt} number of machines of type j assigned to cell k in period t

(d) Proposed Model

$$\text{Minimize } Z= \sum_{t=1}^{T}\sum_{p=1}^{P}\sum_{k=1}^{K}\sum_{n=1}^{N} C_{pn} \times D_{pt} \times X_{pktn} + \sum_{j=1}^{J}\sum_{k=1}^{K}\sum_{t=1}^{T} A_j \times Y_{jkt}$$

$$+ \sum_{j=1}^{J}\sum_{k=1}^{K}\sum_{t=2}^{T} MT_j \times T_{jkt} \quad + \sum_{j=1}^{J}\sum_{k=1}^{K}\sum_{t=2}^{T} MF_j \times F_{jkt}$$

……(1)

Subject to

$$\sum_{n=1}^{N} Z_{ktn} \leq 1 \text{ for all k and t}$$

……(2)

$$Y_{jkt-1} + T_{jkt} - F_{jkt} - Y_{jkt} = 0 \text{ for all j, k and t=2,…,T}$$

……(3)

$$\sum_{k=1}^{K}\sum_{n=1}^{N} X_{pktn} = 1 \text{ for all p and t}$$

……(4)

$$\sum_{p \in S_j}\sum_{n=1}^{K}\sum_{n=1}^{N} t_{pj} \times D_{pt} \times X_{pktn} \leq G_j \times Y_{jkt} \text{ for all j,k and t}$$

……(5)

$$\sum_{j=1}^{J} Y_{jkt} \leq UB_n \times Z_{ktn} \text{ for all k and t}$$

……(6)

$$Z_{ktn} \in \{0,1\} \text{ for all k,t and n}$$

……(7)

$X_{pktn} \in \{0,1\}$ for all k,t and n

……(8)

Y_{jkt} is integer for all j,k and t

……(9)

Eq. (1) is the objective function for the model. The first term in (1) is the production cost of the parts. The second term in (1) is the total amortized cost of machines. The third and fourth terms are the cost of relocating machines into and out of cells each period. Constraint set (2) forces each cell to be of a single size during each period. Constraint set (3) determines how many machines of each type were relocated into or out of each cell during each period. Constraint set (4) ensures that the demand for each part is met in each period. Constraint set (5) is the capacity constraints for each machine type in each cell during each period. Constraint set (6) establishes the size of each cell during each period based on the number of machines assigned to the cell. Constraint set (7) requires the cell size variables to be 0 or 1 for each period. Constraint set (8) requires the part assignment variables to be 0 or 1, and constraint set (9) requires the number of machines of each type assigned to each cell during each period to be integer.

Since the model is a combinatorial optimization problem and is NP-complete it would be difficult to solve even relatively small problems. Therefore, in the next section heuristic procedures that generate solutions for the model are presented.

III. HEURISTIC PROCEDURES

Five heuristic procedures for the model are presented in this section. The first procedure starts with each part in its own cell and then attempts to combine cells to reduce costs. This procedure is referred to as CB.

The other four procedures use tabu searches, as mentioned by Glover [6], [7], to generate solutions for the problem.

(a) CB procedure

The CB procedure assigns each part to a single cell over the entire planning horizon. The procedure has two phases. A dedicated cell is created for each part in the first phase. By dedicating each cell to a single part production cost is minimized but the cost of machines needed to create the cells is relatively high.

Cells are combined in the procedure's second phase. Combining cells and processing multiple parts in a single cell reduces the cost of the machines required but increases cell size and hence production costs. During this phase several iterations are performed. An iteration of the procedure checks the cost of combining every possible pair of cells. If the cost of a solution cannot be reduced by combining a pair of cells then the procedure stops and the current solution is implemented. If the procedure is successful in finding one or more pair of cells that if combined would reduce the cost of the solution then the pair of cells that when combined would result in the largest cost reduction are combined. To combine a pair of cells the parts assigned to the old cells are reassigned to a new cell and the number of machines of each type required to process the parts are assigned to the new cell. This solution then becomes the current solution and another iteration is attempted.

This procedure attempts to balance the cost of machines used with the cost of producing the parts within the cells. A weakness of this procedure is that a part is never reassigned to another cell during the planning horizon. By allowing a part to be assigned to different cells in different periods it may be possible to reduce both the cost of production and the cost of the machines. The tabu search procedures described in the following section attempt to address this problem.

(b) Tabu search procedures

Four procedures that use a tabu search were developed for the problem. Key decisions needed to specify a tabu search for the problem described in this paper are:

(i) How is an initial starting solution developed?
(ii) What is the neighborhood of an existing solution?
(iii) How many moves are retained in the tabu list?
(iv) What are the criteria for stopping the procedure?

The first tabu search procedure is referred to as TSH1. This procedure starts with an initial solution that assigns each part to its own cell during each period (this is the same initial solution that was used in the CB procedure). The following paragraphs describe key aspects of this procedure.

(c) Solution defined.

In the context of the problem presented in this paper a feasible solution P consists of an assignment for each part to a cell for each period. Once a solution P has been defined it is easy to calculate the cost associated with the solution. First the number of machines of each type required in each cell during each period to satisfy constraint set (5) is calculated based on the parts assigned to the cell. This calculation also provides the size of each cell by adding up the total number of machines assigned to each cell so the cost of production can be calculated. After the number and types of machines for each cell have been calculated the total cost of machines and the cost of moving machines from one cell to another can be calculated.
Let Z(P) = the total cost of solution P.

(d) Move defined.

A move is defined as moving from solution P to solution P0. Solution P0 is created by assigning one part to a cell during one period that is different from its

assignment in P and retaining all of the other cell assignments for each of the parts that were used in P.

(e) Neighborhood of an existing solution defined.
Let N (P) = the neighborhood of a solution P. N (P) = {P0: where P0 is a solution obtained from P by changing the assignment in P of one part during one period from its existing cell to another cell}. If there are K cells, P parts, and T periods then there are T * P * (K _ 1) possible neighboring solutions for a given set of part-period assignments. Some of the potential solutions may be eliminated because they are on the tabu list.

(f) Tabu list.
The value of a move is defined as the difference in total costs of the solutions after and before a move. An improving move has a negative value. An iteration of the search is completed when the entire neighborhood of a current solution has been evaluated and the move with the smallest move value identified is implemented. In order to avoid returning to local optimums a tabu list is used to forbid a number of recent moves. Each time a move is implemented the part, period, and the new cell assignment is retained as an entry in the tabu list. The number of entries in the tabu list is referred to as the tabu list size. Each time an iteration is performed the move implemented is added to the tabu list as the newest entry and the oldest entry is discarded from the list. When evaluating the neighborhood of a solution a move will be discarded if it is on the tabu list with the following exception. If a move will result in an improved incumbent value then the move will be implemented if it is the best move within the neighborhood of the current solution even if it is on the tabu list.

(g) Tabu list sizes.
The tabu searches used in this research use variable sized tabu lists. When variable sized tabu lists are used the size of a tabu list remains the same until a number of iterations pass with no improvement in the incumbent value then the size of the tabu list changes and the process repeats itself. The purpose of dynamically changing the tabu list size is to intensify or diversify the search in the current search region, similar to the work done by Chen [3]. Decreasing the tabu list size intensifies the search and increasing the list size diversifies the search. Three list sizes were used in the tabu search. This allows for a relatively intense search, a diverse search, and a search that is not relatively intense or diverse. After some experimentation the following three sets of tabu list sizes and number of iterations without improvement parameters were chosen (P is the number of parts to be produced).

Set	Tabu list size	# of Iter. W/O Imp.
1	P/2	P * 2
2	P * 5	P * 3
3	P	P* 5

(h) Stopping criteria. The procedure tries each of the tabu list sizes. If any of the three attempts results in an improved solution then the process is started again. If the tabu list sizes each fail to produce an improved solution then the procedure stops.

(i) Tabu search procedure (TSH1). In the following procedure the variable ts indicates the tabu list size that is being used, iter is a count of the number of iterations that have passed without finding an improved solution, no_improvement is the number of iterations that are allowed without finding an improved solution before a switch to another tabu list size is performed, improved is an indicator of whether or not an improved solution was found during the current cycle of the procedure (a cycle of the procedure consists of steps 2 through 5), Z (P) is the total cost associated with solution P, Z* is the total cost of the best solution found, and P* is the best solution found.

Input: a solution P developed by initially dedicating a cell to each part for all time periods. Initially, P* is equal to P and Z* is set equal to Z (P).

Step 1. Set improved = 0. Enter step 2.
Step 2. Set ts = 1 and update the tabu list size; set iter = 0.
Step 3. While iter < no_improvement do neighborhood.
Step 4. Set ts = ts + 1; update the tabu list size.
Step 5. If ts < 4 then set iter = 0 and repeat step 3; otherwise enter step 6.
Step 6. If improved = 1 then repeat step 2; otherwise stop the search and accept the best solution.

In step 3 of the tabu search procedure the sub-procedure neighborhood is used to evaluate the neighborhood of the current solution. In the sub-procedure the variable move_part indicates the part that will have a cell assignment changed for one time period, move_per is the period that the part will have its cell assignment changed, new_cell_ass is the new cell assignment for the current move, and N_mincost is the minimum cost found in the neighborhood of the current solution. The variable Xpkt indicates whether or not part p is assigned to cell k during period t (Xpkt = 1, if it is and 0 otherwise). Also, K is the number of cells, P is the number of parts to be produced, and T is the number of periods.

(j) Neighborhood
Input: a current solution P that assigns each part to a cell during each period.

Step 1. Set iter = iter + 1, move_part = 0, move_per = 0, new_cell_ass = 0, N_mincost = M (M is a very large number), p = 1, t = 1, and k = 1. Enter step 2.

Step 2. If Xpkt 5 1 then create a solution P0 from P by changing the cell assignment of part p during period t to cell k and leaving all the other cell assignments the same as P; enter step 3; otherwise step 9.

Step 3. Set Z (P0) = the total cost of the solution P0; enter step 4.

Step 4. If Z (P0) < Z* then enter step 5; otherwise enter step 6.

Step 5. Set iter = 0; Set N_mincost = Z (P0), move_part = p, move_per = t, new_cell_ass = k, update the best total cost found (Z* = Z (P0)), update the best solution found (P* = P0). Enter step 8.

Step 6. If Z (P0) < N_mincost enter step 7; otherwise enter step 9.

Step 7. Check to see if the assignment is on the tabu list; if the assignment is not on the tabu list enter step 8; otherwise enter step 9.

Step 8. Set move_part = p, move_per = t, move_cell = k, N_mincost = Z (P0). Enter step 9.

Step 9. Set k = k + 1; if k 6 K then repeat step 2; otherwise enter step 10.

Step 10. Set t = t + 1; if t 6 T then repeat step 2; otherwise enter step 11.

Step 11. Set p = p + 1; if p 6 P then repeat step 2; otherwise enter step 12.

Step 12. Update the tabu list with the move that was found; Update solution P by implementing the move that was found; stop.

(k) Second tabu search procedure (TSH2). This procedure differs from TSH1 in that two phases of a tabu search are used. The same initial starting solution is used in TSH2 as was used in TSH1. In the first phase of TSH2 a part is assigned to the same cell for all periods. Therefore the definition of the neighborhood of a solution is to change the cell assignment of one part from its existing cell to another cell. The second phase of this procedure uses the best solution found in phase one as the starting solution and uses the tabu search defined in TSH1 in an attempt to improve upon the solution.

(l) Third tabu search procedure (TSH3). This procedure is the same as the TSH1 procedure with the exception of the initial solution that is used by the tabu search. In this procedure the CB procedure is first used to generate an initial solution for the tabu search.

(m) Fourth tabu search procedure (TSH4). This procedure is the same as the TSH2 procedure with the exception of the initial solution that is used by the tabu search. In this procedure the CB procedure is first used to generate an initial solution for the tabu search. The next section describes the data that were used to test the procedures as well as the results of the test.

IV. DESCRIPTION OF THE DATA AND RESULTS

(a) Description of data

The heuristic procedures were tested using the data sets described in this section. The data elements required for each problem are: the set of operations required to produce each part, the machine type and processing time required for each operation, the demand in units for each part during each period, the time one unit of each machine type is available during the year, the amortized cost per year of one unit of each machine type, the cost to move one unit of a machine type into a cell, the cost to move one unit of a machine type from a cell, the cost to process a part within a cell of a given cell size, and upper bounds in terms of number of machines for each cell size.

Sixteen problems were used in the test. The operations sequences and machine types for the set of parts used in each problem were obtained from problems previously used in the literature. Table 2 shows the reference for each problem, the number of parts in the problem, and the number of machine types included in the problem.
Number of parts and machines types for the data set

Table 2

Problem	Reference	Number of parts (I)	Number of machine types (J)
1	Mahdavi, Shirazi & Paydar (2008)	8	20
2	Yang and Jenn-Hwai (2008)	9	9
3	Kao and Fu (2006)	7	5
4	Sankaran and Kasilingam (1993)	8	6
5	Stanfel (1985)	9	4
6	Stanfel (1985)	11	6
7	Stanfel (1985)	12	7
8	Stanfel (1985)	18	13
9	Askin, Selim, and Vakharia (1997)	19	10
11	De Witte (1980)	19	12
12	Chandrasekharan and Rajagopalan (1986)	20	8
13	Srinivasan et al. (1990)	20	10
14	Seifoddini (1989)	22	11
15	Stanfel (1985)	24	7
16	Askin and Subramanian (1987)	24	14
17	Srinivasan et al. (1990)	30	12

Processing times and unit demands were randomly generated. For each machine type required by each part, a processing time was generated using a uniform distribution with parameters [1, 10] rounded to the nearest integer. The unit demand for the first period for each part was generated using a uniform distribution with parameters [100, 4000] rounded to the nearest integer. To obtain the demand for each of the remaining periods a percentage increase or decrease was randomly generated for each part and applied to the most recent period's demand for the part to obtain the next period's demand for the part. The percent increase or decrease for each part for each period was generated using a uniform distribution with parameters [_50, 50] rounded to the nearest 10%.

Each machine of a machine type is available for processing 35,000 time units per year. The annual amortization cost of a machine of each type was randomly generated. For each type the cost was generated using a uniform distribution with parameters [30,72] rounded to the nearest integer and then the result was multiplied by Rs. 50,000. The cost to move one machine of a type into a cell was set equal to 25% of the annual amortization cost of the type. The cost to move one machine of a type out of a cell was set equal 0.

The cost to process a part within a cell for each cell size and the ranges in terms of number of machines associated with each cell size were:

# of Machines	Cost of processing one unit (Rs.)
Wk ≤ 3	0
3 < Wk ≤ 5	250
5 < Wk ≤ 8	500
8 < Wk ≤ 12	750
12 < Wk ≤ 24	1250
24 < Wk	1500

(courtesy – Industrial Engg Deptt, An Automobile Industry in Pithampur)

where W k = ∑ PJ j¼1 Y jk for k = 1,. . . ,K.

(b) Performance measures

The procedures were used to generate solutions for each problem. An IBM Thinkpad (with Intel Centrino Processor) was used to perform the procedures. The cost of each procedure's solution and the time in seconds required by each procedure to generate the solution were recorded. The performance measures used to evaluate the procedures are the time in seconds required to generate a solution and the percent the cost of a solution exceeds the cost of the best solution generated for the problem. Let ZH = the cost of the solution generated by heuristic H for the problem, Zb = the best cost of any of the solutions generated by the heuristic procedures for the problem. Percent over best solution (% vs. Best) = (ZH - Zb)/Zb * 100.

Times required by each procedure to generate a solution (in sec.)

Table 3

Problem	Procedure				
	CB	TSH1	TSH2	TSH3	TSH4
1	0.00	0.55	0.49	0.17	0.22
2	0.00	0.16	0.66	0.16	0.28
3	0.00	2.37	1.58	0.45	0.76
4	0.07	2.08	2.16	0.77	1.10
5	0.16	17.44	7.90	1.06	1.70
6	0.23	12.81	8.08	0.99	1.70
7	0.23	15.71	9.77	2.47	3.03
8	0.23	12.14	10.05	4.89	5.99
9	0.17	10.61	11.04	3.25	3.57
10	0.13	6.32	12.75	3.35	8.24
11	0.32	15.66	14.00	2.96	4.67
12	0.28	3.67	24.50	3.68	6.66
13	0.45	17.23	23.77	7.35	7.09
14	0.66	34.60	33.84	6.38	14.07
15	0.94	58.88	62.34	13.95	16.59
16	1.37	98.43	102.71	29.82	18.74

(c) Summary of results

(i) CB procedure required the least amount of time to generate a solution for every problem. This procedure required less than 2 s to generate a solution for each problem.

(ii) All four of the tabu search procedures were less efficient than the CB procedure in terms of the processing time required for each problem. TSH1 and TSH2 required more time in general than TSH3 and TSH4 and either TSH1 or TSH2 required the most time for every problem.

(iii) Cell formation cannot be frequently performed and the layout chosen has a large impact on future costs therefore the time required by all of the procedures is acceptable.

(iv) For problems that are much larger than the problems used in this test the time required by

the tabu search procedures may become excessive especially when considering the need for sensitivity analysis (changing costs, demands, etc.).

(v) Each procedure requires significantly more time to solve the problems with 24 or more parts (problems 12 through 16) than is required for the problems with 12 or fewer parts (problems 1 through 4).

V. CONCLUSION

In this study, five heuristic procedures were presented for generating solutions to the model. These procedures were tested on 16 problems. Four of the procedures were tabu search based procedures and performed better than the CB procedure in terms of the cost of the solutions generated. The TSH2 procedure performed the best or was very close to the best on the test problems and was recommended for generating solutions to the model. Two other approaches were also performed on the 16 test problems. The first approach considered only the average demand over the planning horizon to generate a solution. This procedure performed poorly when compared to the TSH2 procedure. The second procedure considered demand variability over the planning horizon but did not allow for reassigning a part from one cell to another. This procedure performed better than the procedure that only considered the average demand but not as well as the TSH2 procedure.

VI. FUTURE SCOPE

Additional research on the problem consists of several avenues. Other approaches for generating solutions for the model can be developed. Methods for developing optimal solutions or for obtaining a lower bound on the cost of an optimal solution could be developed. These methods could then be used to evaluate the solutions generated by heuristic procedures. Other heuristic procedures could also be developed. Possibly a genetic algorithm based procedure would perform better than the tabu search procedures. Also additional procedures for quickly generating solutions as starting solutions for the search procedures could be developed and tested. The procedure developed in this research for this purpose (CB procedure) was not successful but other procedures might result in improved solutions.

Another area for possible investigation is the trend toward shorter product life cycles in many industries. The model could help evaluate how to form cells and change the composition of cells over time in the presence of shorter product life cycles.

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Foreign Direct Investment in Indian Retail Sector - A SWOT Analysis

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ABSTRACT
This paper traces the economic progress made by India's Retail Sector in the planning era, and the emerging issues under globalization. It examines the socio-economic magnitudes, problems and challenges of the country as well as the pitfalls in FDI planning in India. The paper also makes some policy suggestions to address the constraints in promoting sustainable FDI in India.

In view of some of short coming observed in the SWOT analysis, FDI in retailing is going to attract retail players by Indian Government, but India should welcome them with a talented pool of human resources by promoting institution imparting knowledge in retailing. protection must be given to Indian small and medium retailers as retailing is their source of live hood.

I. INTRODUCTION

India's retail sector has undergone a rapid transformation over the past decade and this process is expected to strengthen in coming years with the rise in population, per capita income and urbanization. Potential to be the real growth engine of a country's economy. Growing consumerism, changes in consumers' tastes and preferences, and heightened brand consciousness has been fast replacing traditional mom and pop stores with organized retail malls that house lifestyle and luxury brands from national and international retailers.

Indian retail industry is the biggest industry in comparison to other industries. It occupied 14% of India's Gross Development Product and near about 8% of the employment.

Foreign Direct Investment (FDI) as defined in Dictionary of Economics is investment in a foreign country through the acquisition of a local company or the establishment there of an operation on a new site. In short FDI refers to capital inflows from abroad that is invested in or to enhance the production capacity of the economy. In November 2011, India's central Government announced retail reforms for Multi Brand Stores and Single Brand Stores. The announcement sparked intense activism. In July 2011 the GOI has recommended FDI in retail sector as –

(a) 51% in Multi - Brand Retail.
(b) 100% in Single - Brand Retail.

II. FOREIGN DIRECT INVESTMENT IN INDIA'S SINGLE AND MULTI-BRAND RETAIL

(a) FDI in "single-brand" retail
Up to 100 percent FDI is permissible in single-brand retail conditions stipulate that:

(i) Only single-brand products are sold
(ii) Products are sold under the same brand internationally
(iii) Single-brand products include only those identified during manufacturing
(iv) Any additional product categories to be sold under single-brand retail must first receive additional government approval

FDI in single-brand retail implies that a retail store with foreign investment can only sell one brand.

(b) FDI in "multi-brand" retail
FDI in multi-brand retail generally refers to selling multiple brands under one roof. Currently, this sector is limited to a maximum of 49 percent foreign equity participation.

In July 2010, the Department of Industrial Policy and Promotion (DIPP) and the Ministry of Commerce circulated a discussion paper on allowing FDI in multi-brand retail. The Committee of Secretaries, led by Cabinet Secretary Ajit Seth, recommended opening the retail sector for FDI with a 51 percent cap on FDI, minimum investment of US$100 million and a mandatory 50 percent capital reinvestment into backend operations. Notably, the paper does not put forward any upper limit on FDI in multi-brand retail.

The long-awaited scheme has been sent to the Cabinet for approval, but no decision has yet been made. There appears to be a broad consensus within the Committee of Secretaries that a 51 percent cap on FDI in multi-brand retail is acceptable. Meanwhile the Department of Consumer Affairs has supported the case for a 49 percent cap and the Small and Medium Enterprises Ministry has said the government should limit FDI in multi-brand retail to 18 percent. In terms of location, the proposed scheme allows investment in towns with populations of at least 10 lakh (1 million), while retailers with large space requirements may also be allowed to open shop within a 10 kilometer radius of such cities.

(c) Multi-Brand Retail FDI Policy in other countries

Table 1

FDI Limit	Country
100%	Chaina
100%	Thailand
100%	Russia
100%	Indonesia

(Source: Times of India, 3rd December 2011.)

III. BENEFITS OF FDI IN RETAIL SECTOR

Benefits include moving away from an industry focus on intermediaries and job creation.

(a) Moving away from intermediary-only benefits

Today's intermediaries amid producers and customers add no value to the products, adding hugely to final costs instead. By the time products filter through various intermediaries and into the marketplace, they lose freshness and quality, and often go to waste. However, intermediaries garner huge profits by distributing these losses between producers and customers by buying products at low prices from producers, but selling at extremely marked-up prices to consumers. In an unbalanced system that incorporates multiple intermediaries simply for logistics, only intermediaries benefit.

With organized retail, every intermediate step – procurement, processing, transport and delivery – adds value to the product. This happens because it uses international best practices and modern technology, ensuring maximum efficiency and minimum waste. Organized retail enables on-site processing, scientific handling and quick transport through cold storage chains to the final consumer. Once modern retailers introduce an organized model, other vendors, including small retailers, would mechanically copy this model to improve efficiencies, boost margins and stay in business. Organized retail would thereby bring more stability to prices, unlike the present system where hoarding and artificial shortages by profiteering intermediaries push up product prices.

(b) Job creation

Despite predictions from some analysts that millions of jobs would be lost due to FDI in retail, it may in fact be the other way around. With the entry of branded retailers, the market will increase, creating additional employment in retail and other tertiary sectors. Given their professional approach, organized retailers will allot some quantity of resources towards the training and development of the resources they employ.

FDI Share of organized sector in selected countries.

Table 2

Country	Share of organized Sector (%)
U. S. A.	85
U. K.	80
Japan	66
Russia	36
India	04

(Source: Planel Retail & Technopak Adviser Pvt. Ltd.)

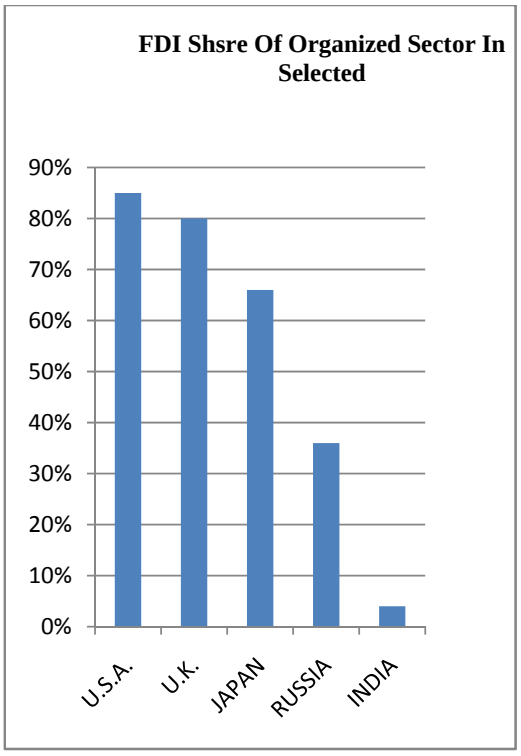

Fig 1 Source :- Planel Retail & Technopak Adviser Pvt. Ltd.

Projected Size of the Organized Retail Industry

Table 3

Year	Increase in size (in crores)
2008	965
2010	1728
2015	5610
2022	17368

(Source: www.nsdcindia.org/pdf/organised-retail.pdf)

Fig 2

Source :- www.nsdcindia.org/pdf/organised - retail.pdf

IV. SWOT ANALYSIS OF FOREIGN DIRECT INVESTMENT IN INDIAN RETAIL SECTOR.

SWOT analysis is one of the primary step in strategic management. It contains an analysis of strengths, weaknesses, opportunities and threats. The strength and weaknesses of the FDI shows the present

(a) Strengths of FDI Policy

(i) Fast growing economy.
(ii) Young and dynamic manpower. . A large young working population with median age of 25 years, nuclear families in urban areas, along with increasing working women population and emerging opportunities in the service sector are going to be the key growth drivers of the organized retail sector in India
(iii) Highest shop density in the world. Customers will have access to greater variety of international quality branded goods.
(iv) Employment opportunities both direct and indirect have been increased. Farmers get better prices for their products through improvement of value added food chain.
(v) Increase in disposal income and customer aspirations are important factors; increase too in expenditure for luxury items.
(vi) FDI has also contributed to large scale investments in the real estate sector.
(vii) Large domestic market with an increasing middle class and potential customers with purchasing power.
(viii) The consumer get a better product at cheaper price, so consumers get value for their money.
(ix) High growth rate in retail & wholesale trade.
(x) Presence of big industry houses which can absorb losses.

(b) Weaknesses of FDI Policy

(i) Low capital investment in retail sector.
(ii) Will mainly cater to high-end consumers placed in metros and will not deliver mass consumption goods for customers in villages and small towns.
(iii) Retail chain are yet to settled down with proper merchandise mix for the mall outlets.
(iv) Small size outlets are also one of the weaknesses in the Indian retailing, 96% of the outlets are lesser than 500 sq. ft.
(v) Lack of trained & educated force.
(vi) Lack of competition.
(vii) More prices as compared to specialized shops.
(viii) The volume of sales in Indian retailing is also very low.

(c) Opportunities of FDI Policy

(i) Global retail giant take India as key market. It's rated fifth most attractive retail market. The organized retail sector is expected to grow stronger than GDP growth in the next five years driven by changing lifestyle, increase in income and favourable demographic outline. Food and apparel retailing are key drivers of growth.
(ii) FDI can become one of the largest industries in terms of numbers of employees and establishments.
(iii) Rural retailing is still unexploited Indian market. It will enhance the financial condition of farmers.
(iv) Improve the competition.
(v) Result in increasing retailer's efficiency.
(vi) Foreign capital inflows.
(vii) Big market along with better technology and branding with latest managerial skills.
(viii) Quality improvement with cost reduction.
(ix) Increasing the export capacity.

(d) Threats of FDI Policy.

(i) Threat to the survival of small retailers like 'pan tapri', 'local kirana'.
(ii) Jobs in the manufacturing sector will be lost.
(iii) Started roadside bargains.
(iv) Work will be done by Indians and profits will go to foreigners.

(v) One of the greatest barriers to the growth of modern retail formats are the supply chain management issues. For perishables, the system is complex. Government regulations, lack of adequate infrastructure and inadequate investment are the bottlenecks for retail companies.
(vi) Difficult to target all segments of society.
(vii) Emerge of hyper and super markets trying to provide customer with value, variety ad volume.
(viii) Heavy initial investment is required to break even with other companies and compete with them.
(ix) Labour rules and regulation are also not followed in the organized retails.
(x) Lack of uniform tax system for organized retailing is also one of the obstacles.
(xi) Problem of car parking in urban areas is serious concern.
(xii) Sector is unable to employ retail staff on contract basis.
(xiii) The unorganized sector has dominance over the organized sector because of low investment needs.

V. CONCLUSION

FDI in retailing is going to attract retail players by Indian Government, but India should welcome them with a talented pool of human resources by promoting institution imparting knowledge in retailing. Protection must be given to Indian small and medium retailers as retailing is their source of livelihood.

The Government must properly discuss the pros and cons of allowing 51% FDI and have a law in place to control unfair competition. Then the FDI Bill will be given definitely a positive impact on the retail industry and the country by attracting more foreign investment. However now a Start Has Been Made and all stake holders have to work for its success.

FDI in retail would contain inflation by reducing wastage of farm output as 30% to 40% of the produce does not reach the end-consumer. “In India, there is an opportunity to work all the way up to farmers in the back-end chain. Part of inflation is due to the fact that produces do not reach the end-consumer.

Many of the foreign brands would come to India if FDI If multi brand retail is permitted which can be a blessing in disguise for the economy.

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Personality Attributes of Self Employed and Managers: An Empirical Study

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I. INTRODUCTION

Recent level of research in entrepreneurs mainly focuses on external or internal environment forces. But now days it is required to understand the personal attributes as well. It is often say that the person cannot win who do not play. To play, people's willingness is a key to success and human motivation influences these decisions.

People with a high need for achievement seek to excel and thus tend to avoid both low-risk and high-risk situations. Achievers avoid low-risk situations because the easily attained success is not a genuine achievement. In high-risk projects, achievers see the outcome as one of chance rather than one's own effort. High individuals prefer work that has a moderate probability of success, ideally a 50% chance. Achievers need regular feedback in order to monitor the progress of their achievements. They prefer either to work alone or with other high achievers.

II. VARIABLES OF THE STUDY

(a) **Achievement Motivation**: Motivation is a kind of internal energy, which drives a person to do something in order to achieve something. It is a temporal or dynamic state within a person, which is not, concerned with his/her personality. There are different types of motivation such as achievement motivation, affiliation motivation, competence motivation, power motivation, and attitude motivation.

Motivation is based on three specific aspects such as the arousal of behavior, the direction of behavior, and persistence of behavior. Arousal of behavior involves what activates human behavior and direction of behavior is concerned with what directs behavior towards a specific goal. Persistence of behavior is concerned with how the behavior is sustained.

(b) **Risk taking propensity**: It can be defined as a tendency to take or avoid risk. it is a relatively stable characteristic but can be modified through experience. Although it is viewed as an individual characteristic, the positive association between risk propensity and risky decision-making by individuals is expected to translate to organizations through top management teams (Panzano and Billings 2005). Risk perception is perceived degree of risk inherent in a certain situation.

Risk taking is defined as one of the three dimensions of entrepreneurial orientation of a company and refers to the willingness of the management commit significant resources to opportunities that might be uncertain (Junehed and Davidsson 1998). Risk taking depends on risk propensity and risk perception. The higher the risk propensity and the lower risk perception, the more likely it is that risky decisions will be made. Hostile environments are most international markets in comparison to the domestic one; speak in favor of using the entrepreneurial strategy (involving higher risk-taking willingness). Therefore, risk-taking initiatives should be more necessary in order to achieve good results in hostile markets. Or, in other words managers who dare to take more risks take actions that are more suitable and perform better.

Abby and Salter (1989) found that management which has an international vision, favorable perception and attitudes toward exports, is willing to take risk and has the capacity to engage positively in export activities is likely to lead a company to export success.

In order to reduce risks, managers need to know which variables influence their export performance. If they have a higher risk-taking propensity, they positively affect export performance.

Risk taking propensities of entrepreneurs of new ventures were objectively obtained using the KoganWallach choice dilemmas questionnaire and were compared to those managers and to normative data developed for the measurement instrument. The findings suggest that risk-taking propensity may not be distinguishing characteristic of entrepreneurs. They refute assumptions based on research that has been subjective and no comparative and that used established entrepreneurs.

III. OBJECTIVES AND METHODOLOGY FOR THE STUDY

(a) **Objectives**

(i) To develop and standardize a measure for analyzing achievement motivation and risk taking propensity.
(ii) To check the reliability of Questionnaires.
(iii) To analyze the underlying factors of Questionnaires.
(iv) To compare the achievement motivation and risk taking propensity of Entrepreneur and Managers.
(v) To analysis the impact of achievement motivation on risk taking propensity.
(vi) To open new vistas for further research.

(b) **Research Methodology:** The study was exploratory in nature. The total population of the study was entrepreneur and managers of Gwalior region. The sample size was 100 which included 50 entrepreneur and 50 managers**.** Individual respondents were the sampling elements. Purposive (non-probability) sampling technique was used to select the sample for the study. Self-designed Questionnaire was used for taking the responses of the entrepreneurs and managers.

(c) **Tools Used For Data Analysis**

(i) Item to total Correlation was applied for checking the internal consistency.

(ii) Cron batch alpha was applied for checking the reliability of the Questionnaires.

(iii) Factor analysis was applied for analyzing the underlying factors.

(iv) Z-Test was applied for finding the significance difference between both the variables i.e. achievement motivation and risk taking propensity.

(v) To develop the relationship between achievement motivation and risk taking propensity regression test was applied.

IV. RESULT & ANALYSIS

(a) Item to Total Correlation: Consistency of all the factors in the questionnaires was checked through item to total correlation. Under this co-relation every item with total is measured and the computed value is compared with cut off value (0.193). If the computed value was found less, then whole factor/statement was dropped and termed as inconsistent.

In all 12 items were dropped from the achievement motivation questionnaire and 4 items were dropped from the questionnaire of risk taking propensity as their value was less than the cutoff value (Table 1 & 2).

(b) Reliability tests: For checking the reliability of questionnaire

Cronbach Alpha method was applied in both the questionnaires. The reliability value for Achievement Motivation through Cronbach Alpha is equal to 0.811 and the reliability value for Risk Taking Propensity through Cronbach Alpha is 0.886. So the questionnaires were found highly reliable (Table 3 & 4).

(c) **Factor Analysis:** Factor Analysis using principal component

Varimax rotation Kiser normalization was applied on the raw scores of 100 items to find out the factors that contribute towards **"Achievement Motivation of Entrepreneurs and Managers".** After factor analysis factor were identified:

(d) **Factors of Achievement Motivation:**

(i) **Vigorous:** This factor has emerged as the most important determinant of research with a total variance of 4.749. Major element consisting this factor include unruffled (0.877), enthusiastic (0.820), boorish (0.669), Daring (0.549), Intelligence (.526). During this research we found that being vigorous plays an important role in achievement motivation of entrepreneurs and mangers.

(ii) **Influence:** This factor has emerged as the most important determinant of research with a total variance of 1.701. Major items consisting this factors are influence of Dominance (0.796), Target-Oriented (0.745), Concern (.623), Managing (0.463). We found that during this research influence plays a vital role.

(iii) **Contestant**: This factor has emerged as one of the most important factor of research with total variance of 1.471. Major items consisting these factors are influence of Headship (0.719), Leadership (0.520), and Tolerance (0.509) .During the research we found that contestant is very important for achievement motivation.

(iv) **Valiant:** This factor has emerged as one of the most important factor of research with total variance of 1.277. Major items consisting these factors are influence of Achievement (0.902), Venturesome (0.653) .During this research we found that valiant is very important for achievement motivation.

(v) **Engross:** This factor has emerged as one of the most important factor of research with total variance of 1.208. A major item consisting this factor is influence of Hard work (0.924). We found that engrossment is an essential for this research.

(vi) **Tranquil:** This factor has emerged as one of the most important factor of research with total variance of 1.007. A major item consisting this factor is influence of Hassle free (0.837). So it can be said that tranquility of entrepreneurs and managers plays an important role in their achievement motivation.

(e) **Factors of Risk Taking Propensity**

(i) **Imperial:** This factor has emerged as the most important determinant of research with a total variance of 7.868. Major elements consisting this factor include Risk Taking (0.840), Loner in Decisions (0.837), Opportunist (0.797), Security (0.768), Adventures (0.759), Scrutinize (0.756), Careless (0.754), Exploratory (0.737), Self-confident (0.734), arrogant (0.659), Time Management (0.623), Risk Taking (0.527), Innovative (0.505). During the research we found that imperialness plays the most important role in risk taking propensity of entrepreneurs and managers.

(ii) **Conviction:** This factor has emerged as an important factor with total variance of 1.926**.** Major items consisting this factor are influence of Confident (0.798), Risk Taking (0.746), and

Boredom (0.745). We found it during my research that while risk taking propensity it plays an important role for entrepreneurs and managers.

(iii) **Fidelity:** This factor has emerged as an important factor with total variance of 1.829. Major items which are include in that factor are Dedication (0.757), Ambitious (0.560). We found that ambitious manager or entrepreneur has more risk taking propensity.

(iv) **Outcome:** This factor is one of the most important factors with total variance of 1.304. A major item consist this factor is Result-oriented (0.775).So it can be said that result oriented manager or entrepreneur have more risk taking propensity.

(v) **Firmness:** This factor is one of the most important factors with 1.171 of total variance. A major item which consist the factor is Independent Decision (0.649). So it can be said that the manager or entrepreneur who is independent in their decision have more risk taking propensity.

(vi) Z-TEST: Z-test was applied to see whether there is significant difference between the achievement motivation and risk taking propensity of entrepreneurs and managers. If value of Z is less than standard value, (1.96) at 5% level of significance, the null hypothesis is accepted.

Z < 1.96, Ho is accepted.

Table 1 : values of mean and S.D.

	Achievement Motivation		**Risk Taking Propensity**	
	Entrepreneurs	**Managers**	**Entrepreneurs**	**Managers**
Mean	7.8	10.07	9.20	16.22
S.D.	62.56	63	81.36	80.54

Ho1: There is no significant difference between achievement motivation of entrepreneurs and managers.

Ho2: There is no significant difference between risk taking propensity of entrepreneurs and managers.

Table 2: Z Value

	Achievement Motivation	**Risk Taking Propensity**
SE	1.801	2.637
Z	0.2443	0.31095

(Table 5). The beta value (0.592) indicates significant positive relationship between achievement motivation and risk taking propensity. Results of the regression clearly show that risk taking propensity of entrepreneurs affects their achievement motivation.

Ho4**:** There is no effect of risk taking propensity on achievement motivation of managers.

Achievement Motivation = 52.965 + 0.272 (Risk taking propensity)

ANOVA table summary indicates that the value of F (0.3832) is significant at 0.056 level of significance and the F value is significant almost at 5% level of significance (t = 1.958) significant at 0.056 (Table 6). The beta value (0.272) indicates significant positive relationship between achievement motivation and risk taking propensity. Results of the regression clearly show that risk taking propensity of the manager affects their achievement motivation too but the degree is less as compared to the entrepreneurs.

Ho5**:** There is no overall impact of risk taking propensity on achievement motivation.

Achievement Motivation = 47.446 + 0.365 (Risk taking propensity)

ANOVA table summary indicates that the value of F (15.036) is significant at 0% level of significance and the F value is significant at 5% level of significance (t = 3.878) significant at 0% (Table 7). The beta value (0.365) indicates significant positive relationship between achievement motivation and risk taking propensity. Results of the regression clearly show that risk taking propensity affects achievement motivation.

Implications of the Study: This study is a useful contribution towards the managers to evaluate the achievement motivation and risk taking propensity which would help them to increase their efficiency. It is also helpful for the entrepreneurs to find out factors affecting achievement motivation and risk taking propensity and guide them towards increase in efficiency and profitability. The study will also be helpful in taking innovative decisions.

This study is also a useful contribution for the students to evaluate the achievement motivation and risk taking propensity of entrepreneurs and managers. Further the students can also use the questionnaires for related research work and references of the study can also be helpful for the students in their research.

Suggestions: The study was basically done to evaluate the impact of achievement motivation on risk taking propensity of entrepreneurs and managers. The study was conducted through filling of the questionnaires from 50 entrepreneurs and 50 managers of Gwalior region. Yet the scope of the study could be widened by taking large sample, so that the results could be generalized. It is suggested to replicate it by usingsome of the demographic variables, or the study could be conducted differently in public and private sector companies, so that the difference of the variables could be judged on grounds of ownership.

Showing consistency of items of Achievement Motivation

Table 3

S. NO	**ITEMS**	**CORRELA-TION VALUE**	**CONSISTENCE/ INCONSISTENCE**	**DROPPED/ ACCEPTED**
1	Headship	0.109445	Inconsistence	Dropped

2	Target-oriented	-0.03472	Inconsistence	Dropped
3	Dominance	0.084201	Inconsistence	Dropped
4	Concern	0.284603	Consistence	Accepted
5	Managing	0.075343	Inconsistence	Dropped
6	Leadership	0.177058	Consistence	Accepted
7	Daring	0.288738	Consistence	Accepted
8	Hard working	0.149861	Inconsistence	Dropped
9	Achievement	0.233159	Consistence	Accepted
10	Intelligence	0.267607	Consistence	Accepted
11	Unruffled	0.269176	Consistence	Accepted
12	Enthusiastic	0.268786	Consistence	Accepted
13	Hassle-Free	0.303434	Consistence	Accepted
14	Boorish	0.096276	Inconsistence	Dropped
15	Venturesome	0.225088	Consistence	Accepted
16	Tolerance	0.427468	Consistence	Accepted
17	Thrills seeking	0.113099	Inconsistence	Dropped
18	Superlative	0.286746	Inconsistence	Dropped
19	Expert	0.321437	Inconsistence	Dropped
20	Fulfillment	0.2841	Inconsistence	Dropped
21	Blamewortiness	-0.05369	Inconsistence	Dropped
22	People oriented	0.0086	Inconsistence	Dropped
23	Learner	0.479747	Consistence	Accepted
24	Satisfaction	0.507164	Consistence	Accepted
25	Zealous	0.416371	Consistence	Accepted
26	Acceptance	0.379033	Consistence	Accepted
27	Motivation	0.400335	Consistence	Accepted
28	Financial Planner	0.29672	Consistence	Accepted

Both the hypothesis were accepted because the Z test value (0.24443) and (0.31095) are below the cut off value (1.96 at 5% level of significance).Therefore we can say that there is no significant difference between achievement motivation of entrepreneurs and managers as well as the risk taking propensity of entrepreneurs and managers. The same results are objectively obtained using the Robert H. Braukhaus Sr (1980) choice dilemmas questionnaire and were compared to those managers for the measurement of risk taking, the findings suggested that risk taking propensity may not be distinguishing characteristic of entrepreneurs.

Regression Test

Regression Equations for Achievement Motivation and Risk Taking Propensity

Ho3**:** There is no effect of risk taking propensity on achievement motivation of entrepreneurs.

Achievement Motivation = 37.733 + 0.592 (Risk taking propensity)

ANOVA table summary indicates that the value of F (25.852) is significant at 0% level of significance and the F value is significant at 5% level of significance (t = 5.084) significant at 0%

Table 4consistency of items of Risk Taking Propensity

S. NO.	**ITEMS**	**CORRELA-TION VALUE**	**CONSISTENCE/ INCONSISTENCE**	**DROPPED/ ACCEPTED**
1	Risk taking	0.164607	Inconsistence	Dropped
2	Adventures	0.449094	Consistence	Accepted
3	Innovative	0.695291	Consistence	Accepted
4	Security	0.577778	Consistence	Accepted
5	Boredom	-0.35276	Inconsistence	Dropped
6	Independent decision	0.695654	Consistence	Accepted
7	Risk taking	0.401532	Consistence	Accepted
8	Self confident	0.287528	Consistence	Accepted
9	Result oriented	0.480245	Consistence	Accepted
10	Scrutinize	0.642825	Consistence	Accepted
11	Arrogant	0.307229	Consistence	Accepted
12	Careless	0.10222	Inconsistence	Dropped
13	Loner indecision	-0.03792	Inconsistence	Dropped
14	Opportunist	0.733597	Consistence	Accepted
15	Dedication	0.487323	Consistence	Accepted
16	Time management	0.689086	Consistence	Accepted
17	Confident	0.740943	Consistence	Accepted
18	Ambitious	0.699733	Consistence	Accepted
19	Stubborn	0.499437	Consistence	Accepted
20	exploratory	0.669285	Consistence	Accepted
21	Risk taking	0.448031	Consistence	Accepted
22	Systematic	0.519589	Consistence	Accepted
23	Sensitive	0.368699	Consistence	Accepted
24	Determined	0.606647	Consistence	Accepted
25	Initiator	0.713977	Consistence	Accepted

Reliability for Achievement Motivation

Table 5

Cronbach's Alpha	N of Items
.811	16

Reliability for Risk Taking Propensity

Table 6

Cronbach's Alpha	N of Items
.886	21

Regression of Entrepreneurs

Table7

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	VAR00002[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: VAR00001

Table 8

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.592[a]	.350	.337	7.49762

a. Predictors: (Constant), VAR00002

Table 9

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1453.232	1	1453.232	25.852	.000[a]
	Residual	2698.288	48	56.214		
	Total	4151.520	49			

a. Predictors: (Constant), VAR00002

b. Dependent Variable: VAR00001

Table10

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	37.733	8.646		4.364	.000
	VAR00002	.697	.137	.592	5.084	.000

a. Dependent Variable: VAR00001

Regression of Managers

Table 11

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	VAR00002[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: VAR00001

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.037[a]	.001	-.019	16.37854

a. Predictors: (Constant), VAR00002

Table12

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.098	1	18.098	.067	.796[a]
	Residual	12876.322	48	268.257		
	Total	12894.420	49			

a. Predictors: (Constant), VAR00002

b. Dependent Variable: VAR00001

Table13

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	76.748	14.784		5.191	.000
	VAR00002	.060	.232	.037	.260	.796

a. Dependent Variable: VAR00001

Regression of Entrepreneurs and Managers

Table 14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.365[a]	.133	.124	12.28617

a. Predictors: (Constant), VAR00002

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2269.644	1	2269.644	15.036	.000[a]
	Residual	14793.106	98	150.950		
	Total	17062.750	99			

a. Predictors: (Constant), VAR00002

b. Dependent Variable: VAR00001

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	47.446	8.727		5.437	.000
	VAR00002	.534	.138	.365	3.878	.000

a. Dependent Variable: VAR00001

V. CONCLUSION

Entrepreneurs play a key role in any economy. These are the people who have high degree of achievement motivation and make the right decisions to make the idea profitable. The reward for the risk taken is the potential economic profits the entrepreneur could earn. Managers, by definition, embody the same characteristics as the

entrepreneur like, conviction, passion and drive. The more the manager expresses himself, the more the company is forced to confront its own effectiveness. In our study, we concluded that there is no significant difference between risk taking propensity of entrepreneurs and managers.

The study also revealed that there is no relationship between overall achievement motivation and risk taking propensity, and the positive relationship of achievement motivation and risk taking

propensity of managers. This study has given a fruitful result in developing a questionnaire regarding achievement motivation and risk taking propensity.

To understand the factors contributing to achievement motivation and risk taking propensity, factor analysis was applied. The factors that contributed to achievement motivation are Vigrous, Influential, Contestant, Valiant, etc. and the factors

that emerged from the study regarding risk taking propensity are Imperial, Conviction, Fidelity, etc.

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Pile Geometry on Soil-Structure Interaction-An Analytical Survey

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ABSTRACT
In this paper, the concept of pile geometry on Soil-Structure Interaction is introduced, and the research methods on effect of pile shape are discussed. A systematic summary of the Soil-Structure Interaction research that takes into account adjacent structures is proposed. This study about the pile geometry on Soil-Structure Interaction reviews the growth of SSI and advantages, disadvantages, and uses of various methods are discussed.

***Key-word*:** Soil-Structure Interaction; pile geometry; finite element analysis.

I. INTRODUCTION

The process in which the response of soil influences the motion of the structure and the motion of the structure influences the response of the soil is termed as "soil – structure interaction (SSI). Neglecting SSI is reasonable for light structures in relatively stiff soil such as low rise buildings and simple rigid retaining walls. The effect of SSI becomes prominent for heavy structures resting on relatively soft soils for example nuclear power plants, high-rise buildings and elevated highways on soft soil.

Damages caused by recent earthquakes have pointed out that the seismic behaviour of a structure is highly influenced not only by the response of the super structure but also by the response of the foundation and ground as well. Hence modern seismic design codes such as Standard specifications for Concrete structures: seismic performance verification JSCE 2005 mention that the response structural system including super structure, foundation and ground.

Soil-structure interaction one of the most major subject of earthquake engineering has been paid attention in recent decades. It concerns the wave propagation in a coupled system, buildings erected on soil surface. The development in this field has been expedited by the needs of nuclear power and offshore industries. It has been helped by powerful computers and simulation tools such as finite element and by the needs for improvement in seismic safety.

II. SSI & ITS DETRIMENTAL EFFECTS

(a) Effect Of Soil -Structure Interaction On Structural Response

It has been conventionally been considered that soil structure interaction has beneficial effect on the seismic response of a structure. Many design codes have indicated that the effect of SSI can be neglected for seismic analysis of structures. This myth about SSI stems from the false perception that SSI reduces the overall seismic response of a structure and hence leads to improved safety margins. Most of the design codes use oversimplified design spectrums which attain constant acceleration to a certain period and thereafter decreases monotonically with period. Considering SSI makes a structure more flexible and thus increasing the natural period of the structure compared to the corresponding rigidly supported structure. Moreover considering the SSI effect increases the effective damping ratio of the system. The smooth idealization of design spectrum suggests smaller seismic response with the increased natural periods and effective damping ratio due to SSI.

(b) Detrimental Effects of SSI.

Using rigorous numerical analysis Mylonakis and Gazetas have shown that increase in natural period of structure due to SSI is not always beneficial as suggested by the simplified design spectrum. Soft soil sediments can elongate the period of seismic waves and the increase in natural period of structure may lead to the resonance with the long period ground vibration. The study also indicated that ductility demand can significantly increase with the increase in the natural period of the structure due to SSI effect. The permanent deformation and failure of soil may further aggravate the seismic response of the structure.

When a structure is subjected to an earthquake excitation, it interacts with the foundation and the soil and thus changes the motion of the ground. Soil-structure interaction broadly can be divided into two phenomena a kinematic interaction and b inertial interaction.

Earthquake ground motion causes soil displacement known as free-field motion. However the foundation embedded in to the soil will not follow the free field motion. This inability of the foundation to match the

free field motion causes the kinematic interaction. On the other hand, the mass of the super structure transmits the inertial force to the soil causing further deformation in the soil which is termed as inertial interaction.

Owing to rapid development of metro cities all over the world, the building structures are built close to each over the soft soil deposit.. Dynamic interaction among building structures will occur through the radiation energy emitted from a vibrating structure to other structures. Hence dynamical characteristics as well as the earthquake response characteristics of a structures are unable to be independent of those of the adjacent structures.

SSI investigations have indicated that dynamic response of a structure supported on flexible soil may differ significantly from the response of the same structure when supported on a rigid base. The reason for this difference is that part of the vibrational energy of the flexibly mounted structure is dissipated by radiation of stress waves in the supporting medium and by hysteretic action in the medium itself.

Analytical methods to calculate the dynamic soil structure interaction effects are well established. When there is more than one structure in the medium, because of interferences of the structural responses through the soil, the soil structure problem evolves to a cross – interaction problems between multiple structures.

III. DEVELOPMENT OF SSI – A CHRONOLOGICAL REVIEW

The theory proposed by **Reissaner (1936)** about vibrational foundation marked the beginning of the SSI study whereas the study of Warburton el al between 1969 and 1972 initiated the start of SSSI study. Taking advantage of the soil structure model proposed by Parmelee the authors derived some equations for the response of two geometrically identical cylindrical bodies attached to the surface of an elastic half space. The result shows that when one of the bodies is excited by an external harmonic force, the presence of the second mass modified the vertical components of displacements of the excited mass by relatively small perturbations. The perturbations occur at resonant frequencies of the second mass and introduce relatively small rocking and horizontal translational displacements of the first mass. This is the first publication that expounded the significance of SSSI.

Whiteman (1969) first introduced the through-the soil coupling of foundations as an important problem that requires further study. The 1970s was the initial phase of SSSI study. The soil structure system model can be a multi mass or multi spring mass system in several system or several geometries on an elastic visco-elastic stratum over rigid bed rock. Structures-soil-structure interaction (SSSI) put forward in recent decades means the dynamic interaction problem among the multi structure system through soil ground. **Luco and Contese (1973)** came up with structure-soil-structure interaction designation for this area of study. SSSI also calls for foundation-soil-foundation interaction FSFI.

Soon after **MacCalden and mathhisen (1973)** extended the work of **Bycoft (1956)** which determined an analytical model for the motion of a single rigid circular foundation on an elastic half–space and developed a matrix formulation for the solution of the induced dynamic displacements of a foundation near a harmonically loaded foundation attached to an elastic half space.

An earthquake is a widely known stochastic process. In nature two completely identical earthquakes do not exist. Thus more and more scientists resort to the random method to study seismic motion. **Kobori el al (1973)** studies the cases of identical two and seen-mass system and those of identical and different two spring mass system which are along a line on the surface of Voigt type visco-elastic stratum over rigid bed rock.

Luco and Contese (1973) in 1973 followed by **Wong and Trifunac (1975)** and **Murakarmi and Luco (1977)** addressed the two dimensional anti-plane problem of the interaction between two or more infinite shear walls placed on rigid circular foundation and subjected to vertically adjacent harmonic SH waves. They actually solved a 2D wave diffraction problem and through parametric studies showed that groups of closely spaced buildings could result in interaction effects near the fundamental frequencies of the buildings and at very low frequencies.

Seed (1975) deemed it was not suitable for the analysis of dynamic interaction of structure with a deep foundation for the exclusion of material damping and radiation damping. Due to the difficulty of the solution for the analysis method and the excessive simplification of the model for soil and structure, it was far from the real solution for problem of SSSI. When super structure foundation, and topographic and geological conditions become complicated producing a mathematical solution can be difficult.

Kobori and Kusakabe (1980) investigated a cross interaction systems between two structures. Soil is a multi phase system with high variability and strong randomness of material properties and space distribution. The random heterogeneities in the soil medium seem to have a tremendous effect on the dynamic soil-structure interaction. This explains why deterministic parameters for the properties of soil is not reasonable. In this field **Hryniewica (1993)** considered the randomness in the soil medium for the first time. The authors investigated two 2D strip foundation based on a semi infinite medium.

The lumped parameter method is a common method used for the analysis of SSI and SSSI where soil is simulated by spring mass and damper or an equivalent impedance function.

Ervin Hegedus and Khosla Vijay K (1984) determined experimentally the pull out capacities of H piles under axial tension loads in stiff clay, dense sands, silts and stratified soils. The test results were interpreted by 3 different procedures. Measured pull out capacities were compared to predicted pull out capacities based on semi-empirical approaches. Predicted capacities vary greatly with subsurface condition at site, effective failure surfaces of piles, pile lengths and soil shear strength parameters. Earth pressure parameters and adhesion values obtained from the tension load tests are generally found to be consistent with the previously published data.

Muliken and Karabalis (1994,1998) presented efficient discrete models with frequency-independent masses, springs and dampers. Each model has modes of vibration considered independent degree of freedom (DOF) for predicting the dynamic interaction .

Wave passage effect known as special variability of ground motion including deterministic and stochastic components, deterministic component is actually the solution of the wave equation in a medium consisting of homogenous layers.

Yenumula V. S. N. Prasad and S. Narasimha Rao(1996), examined the behavior of helical piles under lateral loads in clayey soils through an experimental investigation on model piles. Tests were conducted on rigid helical piles with different numbers of plates. Model anchors were made of 13.8 mm diameter mild steel shafts to which mild steel plates of 33 mm diameter were welded. For comparison, a single straight shaft with a diameter of 13.8 mm was also tested. Test results revealed that the lateral capacity of helical piles is greater than that of straight shaft piles. A simple theoretical model is suggested to estimate the lateral capacity of rigid helical piles. The theoretical model suggested incorporates lateral resistance of the soil on the shaft, bearing resistance on the bottom of the helical plate, uplift resistance on the top of the helical plate, and frictional resistance on the surface of the helical plate. The validity of this model is examined.

As per study done by Jiang and Yan (1998) those two buildings with distance less than 2.5 times of width of foundation are interacting with each other and when the distance was less than one time of width of foundation the response of the structure may increase or decrease tens of percent. Thus the interaction between neighbouring buildings have to be investigated.

Considering primarily the spatial variability of ground motion **Behnamfar and Sugimura (1999)** investigated an idealized 2D system made up of two structural systems each consisting of a rigid roof at the top held by mass-less and elastic columns. The column are connected to the rigid foundation which are bonded to the surface of a medium consisting of a homogenous visco-elastic layers resting over a half-space and considering PSV and Rayleigh waves through deterministic and random approaches.

All those discussions have laid a solid theoretical and practical foundation for the subsequent research on SSSI. However most of the those studies are based on the elastic half space theory which make analyzing the structure with a shallow foundation attached to a homogenous and thick soil layer simple and practicable for engineers.

Scott A Ashford and Teerawut Juirnarongrit(2003) presented the results of a study on the effect of pile diameter on the initial modulus of sub grade reaction. A series of ambient and impact vibrations tests were performed on four different diameters of cast-in-drilled-hole piles to determine the natural frequencies and damping of the soil-pile systems. The measured natural frequencies were then compared with those estimated from a numerical model. The soil springs in the numerical model were established by implementing two different concepts on initial modulus of sub-grade reaction. One is based on Terzaghi's concept in which the modulus of sub-grade reaction may be linearly proportional to pile diameter. It was found that the measured natural frequencies were in good agreement with the computed ones when the diameter-independent modulus of sub-grade reaction was employed. In additional, the test results show that the damping ratio of the system varied with pile diameter from 3% to 0.4 m pile to 25% for 1.2 m pile. Refer figure 1,2,3,4,5,6 in this regard.

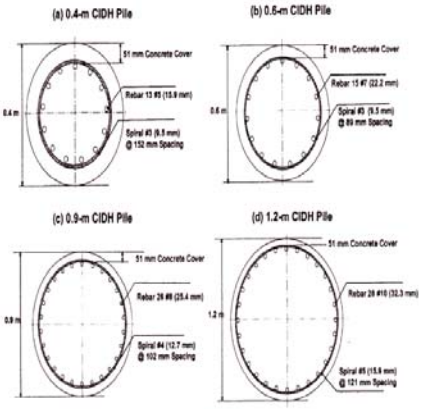


Fig. 1 Pile cross sections

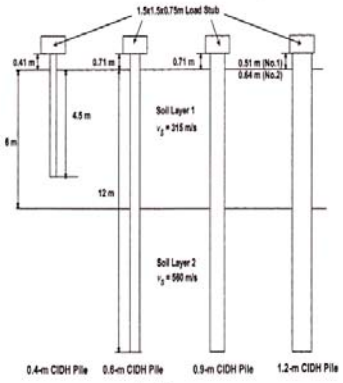


Fig. 2 Pile geometry

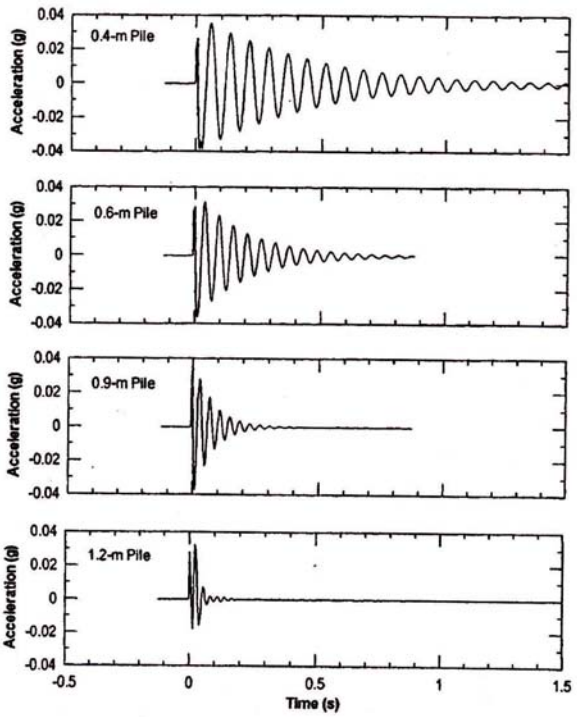


Fig. 3 Acceleration versus time for each CIDH pile in E-W direction from impact vibration tests

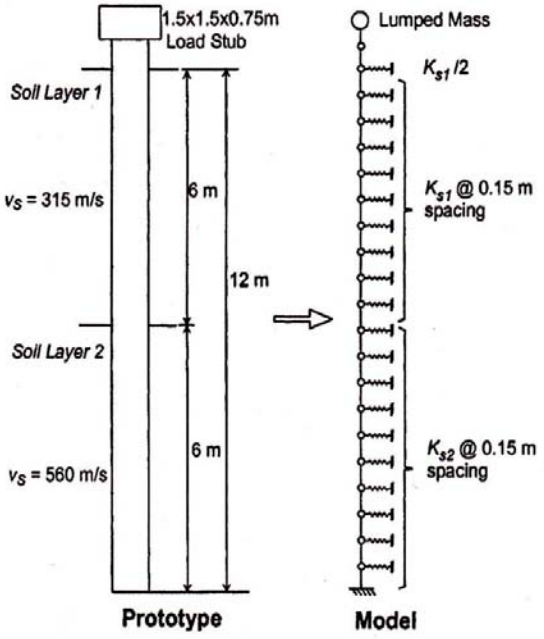


Fig. 4 Numerical soil-pile system model

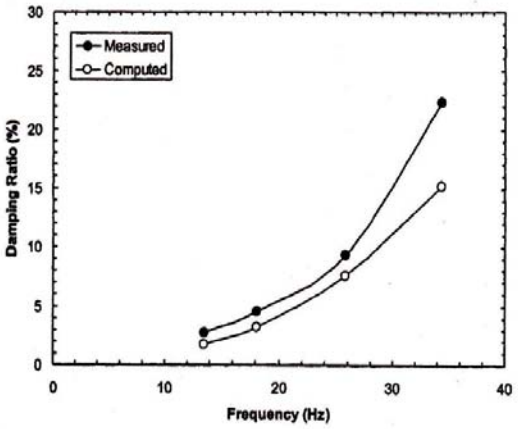


Fig. 5 Damping ratio versus frequency

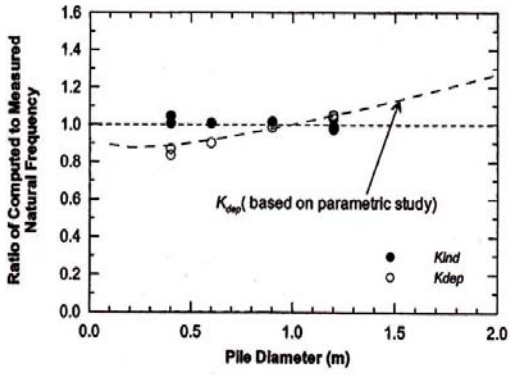


Fig. 6 Ratio of computed to measured natural frequency versus pile diameter

Harry G . Poulos (2006) examines some of the characteristics of behaviour of pile groups containing raked piles via a simplified and hypothetical example. Three cases are examined(1) a group subjected to vertical and lateral loadings with no ground movement(2) a group subjected to vertical and lateral loadings but with vertical ground movement acting on the group.(3) a group subjected to vertical and horizontal loadings but with horizontal ground movements acting on the group. In each case, the effect of pile rake on typical behavioural characteristics are examined. It is found that while the presence of raked piles can provide some advantages when the group is subjected to applied vertical and lateral loadings especially in relation to a reduction in lateral deflection, some aspects of group behaviour may be adversely affected when either vertical or horizontal ground movements act on the group. Thus caution may be exercised in employing raked pile when such ground movements are expected to occur.

D. Basu, M. Prezzi, R. Salgado, T Chakraborty(2007) presented a method of settlement analysis for axially loaded piles with rectangular cross section embedded in a multi-layered soil medium. The differential equation governing the displacements of the pile-soil system are obtained using variational principles. Closed –form solutions for pile deflection and axial force along the pile shaft are then produced by using the method of initial parameters. Suggest that rectangular piles deflect less than circular piles with the same cross-sectional area. See figure 07 and 08 in this regard.

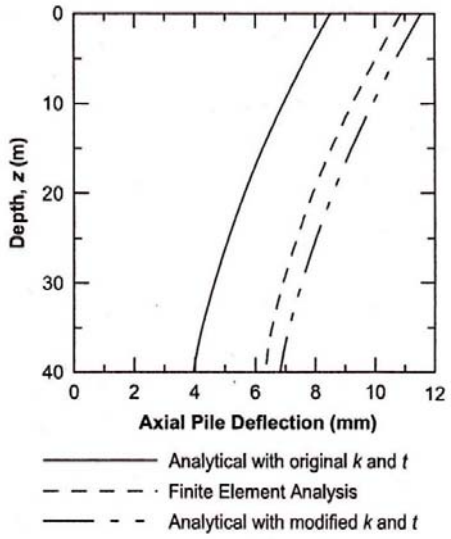


Fig. 7 A comparison between deflections obtained using the analytical method and 3D FEA for a 40-m long barrette.

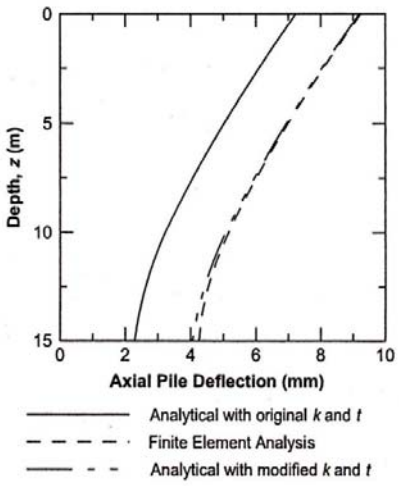


Fig. 8 A comparison between deflections obtained using the analytical method and 3D FEA for a 15-m long square pile.

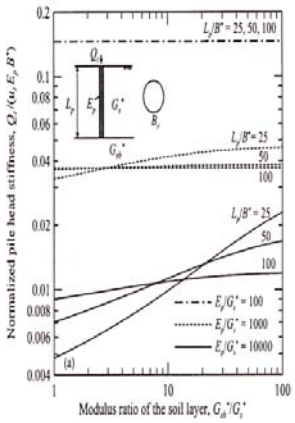
Denton A Kart P. E. (2007) used sonar callipering technology to reveal the shape of the bored pile excavation in wet conditions. Case studies and numerical analyses using the software program FLAC illustrate the role of the sonar calliper in evaluating capacity of pies with anomalous shapes.

Jasin M. Abbas, Shafiqu, Mohd. R. Taha (2008) subjected piles to lateral loading, the failure mechanism of short pile under lateral loads are different from that of long pile. They presented 3D finite element analysis for the problem of a single pile under lateral loadings. The effect of pile shape for both circular and square cross-section on pile response was investigated. Also the influence of slenderness ratio L/B on the pile deformation was discussed. It was found that pile response is affected by the amount of loading, the pile cross-sectional shape and pile slenderness ratio. The lateral resisting of pile increase in proportional to the square shape of the pile. In both pile shape a short pile (L/B)=8.3 gave a small amount of lateral tip deflection than the long pile with a slenderness ratio more than 8.3 for the same amount of loading. Also the negative base deflection is high for short pile and reduces to zero for long pile.

Kenneth Bell (2009) has published the use of H piles selected for New Power Plant based on Pre-award testing program and cost comparison. Here during the installation all piles were reviewed tested using dynamic testing which was then followed by static load testing. The results of the testing were then compared to August Cast piles that would be drilled to the top of rock. Based on evaluation of various H sections and ACP the project selected to go with driven H piles. Design proceeded with two pile loading capacities 1070 KN using an HP 10 x 42 and 1780 KN capacity pile using an HP 12 x 74. The project is now completed.

Wang X, Li H.L. and Chen YH (2009) studied Y shape cross section configuration on flexural behaviour of piles. Here they considered flexural factor of section and area ratio according to actual load on Y shaped vibro-pile under three conditions i.e. sharp angled location of cross section, concave arc position and typical tension point. Flexural behaviour under above three conditions is quite different and it changes with variation law of four independent variables of the cross section. The same template radian exists while the other three independent variables are defined so that flexural behaviour under conditions sharp-angled position and typical tension point reaches the minimum value. Solution of corresponding template radian of the minimum value of flexural behaviour has been introduced by utilizing the mathematical analysis software Mathematica.

H. Seo, D. Basu, M. Prezzi, and R Salgado (2009) studied the load-settlement response of rectangular and circular piles in multi-layered soil. The authors presented a settlement analysis that applies to piles with either rectangular or circular cross section installed in multilayered soil deposits. A user-friendly spreadsheet program(ALPAXL) was developed to facilitate the use of analysis. Refer figure 9,,10,11 and 12 .



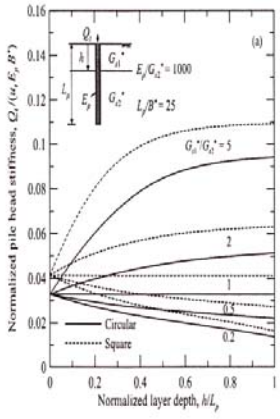


Fig. 9 Normalized pile head stiffness versus modulus ratio of base soil to shaft soil G_{sb}^*/G_s^* for: (a) circular pile; (b) square pile

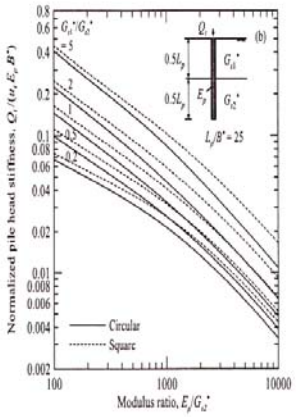


Fig. 10 Normalized pile head stiffness in two-layer soil versus: (a) h/L_p; (b) E_p/G_{s2}^* with $h=0.5L_p$

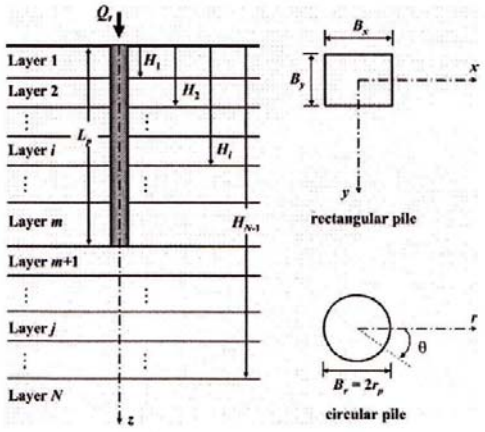


Fig. 11 Axially loaded pile with rectangular or circular cross section in multilayered soil

Christoph Knellwort, Herve Peton and Lyesse Laloui (2011) discusses several issues pertaining to heat exchanger piles. This paper presents a geotechnical numerical analysis method based on the load-transfer approach that assesses the main effects of temperature change on pile behaviour.

Mohmoud Ghazavi, Omid Tavasoli (2012) presented numerical analysis of pile driving for tapered piles. A three-dimensional finite difference analysis for tapered angle and geometry effects has been used on pile driving response of tapered piles. Generally speaking tapered and partially tapered piles offer better drivability performance than cylindrical piles of the same volume and length. A soil-pile system has been simulated for pile driving phenomenon using a three-dimensional model for non-uniform cross section piles using FLAC3D.

Y. Xiao, L Chen(2012) discussed steel H shaped piles which are widely used in bridge foundation. The paper reports experimental results from monotonically loaded static tests on
on model steel H pile to pile-cap connections, in which the piles were subjected to tensile loading or horizontal loading with the bending in the strong or weak bending directions of the H pile. The tests indicate that H pile footing connections were effective in transferring vertical and lateral loads. The study also show that FEM analyses can capture the load and deformation relationship and load carrying capacity of the steel H pile to pile-cap connections satisfactorily.

Yaru Lv, Hanlong Liu, Xuanming Ding and Ganpolang Kong F(2012) investigated the behaviour of X-section cast-in-situ concrete piles. A series of static load tests for piles foundations are conducted on the basis of a soft soil reinforcement engineering for a sewage treatment plant in the north of Nanjing. China. Comparative analysis between an XCC pile and a circular section concrete pile with the same cross sectional area indicates that XCC pile shows increasing pile-soil stress ratio and reduce settlement. It has been found that pile spacing is an important factor in XCC piles and the XCC pile should be considered as special friction file owing to high skin friction sharing. Above all, XCC can significantly increase ground-bearing capacity.

IV. NUMERICAL METHODS FOR EFFICIENT COMPUTATION

(a) **Finite Element Method**-FEM is an efficient common computing method widely used in civil engineering, discretizes a continuum into a series of elements with limited sizes to compute for the mechanics of continuum. FEM can simulate the mechanics of soil and structure better than other methods, deal with complicated geometry and applied loaded and determine non-linear phenomena. FEM is used frequently in the study of SSI and has produced some notable achievements in the field of SSSI.
The development level of hardware and software has restricted the application of FEM in SSSI.

(b) **Boundary Element Method**
A new numerical method developed after FEM only discretizes the boundary of the definition domain. It is different from the discretization of total continuum and uses functions satisfying the governing equation to approximate boundary conditions. The BEM is more advantageous compared to FEM because it requires only a surface discretization and satisfies automatically the radiation condition without any need for using special complicated non-reflecting boundaries as required by FEM by **Wang S (1992).**

One disadvantage of BEM is its difficulty of application in the case of a heterogeneous medium.
(c) **Finite Element Method Boundary Element Method**
Owing to respective disadvantages of FEM and BEM the coupling method of FEM and BEM was developed in the field of SSSI in 1990s. this method shows the advantages of both FEM and BEM. FEM is used for simulation of super-structures, foundations and near field soils whereas BEM is used for far field soil.
(d) **General Finite Element Program**
At present there are a large number of available commercial finite element programs which have friendly interface and powerful nonlinear solver. They process well and are easy to master for users with great generality and therefore are very popular among SSI studies. When we are applying them to study SSSI, the biggest problem lies in how to solve huge calculations among brought by the large range of soil. Some common programs are ANSYS, ABAQUES, MSCMARC.

V. CONCLUSION

In this paper concept of pile geometry on Soil-Structure Interaction is presented which is significant. This leads to significant conceptual changes, especially concerning dynamic studies, structural analysis and land-use planning. The development of pile geometry on Soil-Structure Interaction is based upon the research results of SSI and the progress of the analysis of soil and structure.

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Visionary Entrepreneur

(A Case Study Presentation on Mr. Amit Bhall - MD Biogen Biocare Pvt. Ltd made in Entrepreneurship National Seminar organised by AISECT University on 11th May 2013

Dr. Satyendra Singh Chouhan
AISECT University, Bhopal, (M.P.) India

Dr. Ranjana Mishra
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I. INTRODUCTION

Risk taking ability, Self-confidence, Decision making ability, Knowledge of communication, Ability to harvesting technology, Economic motivation, Market orientation, Risk factors are some of the characters of successful entrepreneur. An entrepreneur is a person who is able to look at the environment, identify opportunities to improve the environmental resources and implement action to maximize those opportunities (Robert E. Nelson). It is important to bear in mind that the entrepreneurial skills that will be needed to improve the quality of life for individuals, families and communities and to sustain a healthy economy and environment.

The present study is focused on Mr. Amit Bhalla MD Biogen Biocare Pvt. Ltd. Gwalior and how he made his company a success and created a name for his company in pharma industry in a short span of time, by overcoming all the hurdles and difficulties. For the purpose of research case study method is being used. The data is collected from secondary sources. The main objective of the study is to how an idea and risk taking ability of an individual can lead to success.

II. HISTORICAL BACKDROP

Today Mr. Amit Bhalla MD Biogen Biocare Pvt. Ltd. is a happy man. He just received a call from Prestige Institute of Management regarding the invitation as chief guest in the case writing workshop to be held on 26 April 2013. Sitting in his office at 1st floor, Golden Estate, Jayendraganj, Lashkar Gwalior he can look back with content and satisfaction the way his company has progressed from 2004 to 2013.

He became nostalgic and started to think, how an idea which came to his mind in 2003 to start a marketing company for pharma product occurred. As he had some 2 years experience in this stream, he discussed it with his friend Mr Vineet Agarwal and both of them immediately started to working on it. First they formed a list of product which they wanted to market; eventually they took the list to Baddhi in Himachal Pradesh which is famous as heaven for pharma companies in India. They had a lengthy discussion on the price and other factors of importance, through which they will be doing the business with different manufacturing companies. With a complete knowledge they came back to Gwalior to arrange for funds which was around 20 lakhs, definitely it was not a small amount by any means. They were looking at all the options like asking family members, friends, and from banks. After going through all the possible option Mr. Amit Bhalla made a detailed project report, then he thought instead of starting a marketing firm, why not start a manufacturing unit in Gwalior. In this way he can save on the transportation cost and make some extra profits also. The idea struck in Amit's mind, the more he gave a thought to it more he liked it. The best part was with investing a little extra amount in the initial investment they can actually become an entrepreneur. He liked the idea much that he started working on it.

Becoming an entrepreneur is not an easy task, Risk taking ability, Self-confidence, Decision making ability, Knowledge of communication, Ability to harvesting technology, Economic motivation, Market orientation, Risk factors are some of the characters of successful entrepreneur. An entrepreneur is a person who is able to look at the environment, identify opportunities to improve the environmental resources and implement action to maximize those opportunities (Robert E. Nelson). It is important to bear in mind the entrepreneurial skills that will be needed to improve the quality of life for individuals, families and communities and to sustain a healthy economy and environment. It requires a lot hard work and dedication.

Initially problem was to find a place to start the factory, which after a long search Mr. Amit found a plot in the industrial area in Malanpur at an affordable cost. Then next hurdle was to get the machine which they solved by purchasing some second hand at the initial level and latter they upgrade it with new ones. The biggest problem which they faced was arranging the working capital and to manage the skilled and unskilled labour, how to schedule their raw material arrival and how to utilize their machineries at their full capacity and a total output from their workers. It's a very hard task to manage the labour as its very difficult o satisfy them. Procuring skilled labour was one of the most difficult task and retain them was another problem. As the work progressed and they gained experience in the manufacturing field they were able to get a control over it. Mr. Amit looked after the Marketing and finance and production in the initial stages as the company grew so he hired specialists of the related fields and he himself

looked after the marketing and finance of Biogen Biocare.

III. CURRENT OPERATION

Today Biogen Biocare Pvt Ltd is a well established company in the pharma market in MP and nearby regions with a clear cut vision "We Strives to serve unmet medical needs by developing and constantly seeking break through that will touch the new horizons of healthcare for next generation".

(a) **Services and Products:**

(i) Third party manufacturing in-
(ii) Tablet section (betalactum, non betalactum, blister and alu-alu pack with latest packing size.
(iii) Oral liquids (syrup suspension and drops) Capsules
(iv) Powder (protein, energy)
(v) Micronutrients products.
(vi) Herbal preparations.

(b) **Franchisee divisions-**

This is a unique marketing model which Biogen Biocare started in M.P. and was very successful Mr. Amit was fiddling with the thought of improving the sales of his company. He knew that to create a name in the pharmaceutical market he has to come with a new marketing plan which was not tested in the market till now. He came up with the concept of franchisee in the pharma field. They offer franchisee for their marketing division nationwide with sole marketing right under the following banner:

(i) Glipeis parlet pharmaceuticals
(ii) Medicis life care
(iii) Oyx pharmaceuticals
(iv) Global pharmaceuticals

IV. FRANCHISEE MODEL OF THE COMPANY

(a) The model worked because of the following reasons –

(i) Lack of information and awareness in people about opening and running a 3rd party establishment.
(ii) Franchisee fear of losing a large amount of money.
(iii) Branding of the product was done in a positive way.
(iv) Biogen Biocare doesn't have to keep a large number of staff on its payroll for promoting their brand and products in the market.
(v) Less competition due to precise territory rules.

(b) The tool which were provided by Biogen Biocare to franchisee are-

(i) Bag.
(ii) Product list.
(iii) Training in presentation and meeting Doctor's.
(iv) Samples of the product.
(v) Product reminder cards.
(vi) About company's profile.

V. THE TURNING POINT

When the model was ready Mr. Amit asked Mr. Vineet director (production) to do a presentation in the board meeting. All the senior managers of different department were present at the meeting.

Mr. Vineet presented the model and described all the content of the model.

Mr. Vineet "Good morning everyone today we will be going through a new strategy which we have devised under the able guidance of our MD Mr. Amit Bhalla. I will be briefing you about all the details of this model, and I am looking forward for any doubt and queries so that we can improve on the proposed model.

Mr. Vineet took around 25 mints to describe all the details of the model to the listener.

The first person to support was the marketing manager Mr. Akash Sharma. He said "it's a very good model as it gives the company an identity and the brand which will be formed will be helpful in pushing the company's product with other 3rd parties as well".

Mr. Vineet "Akash it will be very helpful for the company, as all the promotional activity will be performed by the franchisee so the marketing division doesn't have to worry about it".

Mr. Akash was very happy with the information.

HR manager Miss Nidhi also supported the model.

She said "it's a wonderful proposition as it does not require a large men power on company's payroll. Only a few observers were required to push the product with franchisee". She further added "we have to decide on

the number of franchisee we will be making".

Mr. Akash "Before this we have to decide on many things like type of product range we will be pushing in the franchisee, number of territory we will make, area included in each territory, where the training of the franchisee will take place, who will be in-charge of the total module".

Mr. Vineet "This presentation is a format or blueprint of the future course of action which the company might take, still we have to do the refinement in the whole process and have to figure out a implementation strategy for this model and definitely we will address all these issues before implementation".

Nidhi "but we have to decide on the deadline for finalization of the strategy as even we at HR level have to prepare our self for the training methods and printed material"

Vineet "we will be deciding on all the queries and each department who will be involved in the implementation will be informed about their role well in advance"

Finance manager Mr. Sumit was also very happy, as he doesn't have to bother about additional funds which would have been required for large manpower. He said "it's a brilliant idea but one thing has to be added to it, if we can charge a fee for the franchisee then it will be a complete model"

Mr. Akash "no way this will a kind of repellent to the franchisee as they will not buy the idea if they have to pay a yearly fee for it, and it will be very hard to sell the franchisee model to the potential client".

Mr. vineet " but we have kept a minimum quota system which they have to purchase and the profit margins are also 30 to 35% higher than the 3rd party deal".

The only person who was shaking his head very violently from side to side was the Production manager Mr. Bajaj, he said "it was not at all feasible to do a limited product order as it will increase the company's cost of production". He said further "if the franchisee doesn't order for one whole batch of medicine and orders just two boxes then how that order will be fulfilled".

Mr. Vineet tried to reason with the production manager that this is the reason they have kept a minimum quantity quota.

Whole discussion was happening in front of Mr. Amit Bhalla who was sitting and listening to the views of all the managers. After a 3 hour meeting the matter came to Mr. Amit for the final decision. He doesn't know the actual outcome of the model. He also agree to a certain extent the production managers thought if the model fails then the loss will be a substantial one to the company. He also knows that the sales figures were not very supportive and a new line of approach is required to improve the profit margins of the company. Mr. Bhalla being an entrepreneur was not afraid of taking risk but was calculating the odds and the favourable points which are very necessary. Calculate risks are always fruitful. After some thought Mr. Amit finally decided to go ahead with the module and when the result started to pour in they were very promising.

VI. CONCLUSION

The company which made a profit of 25 lakhs in the first year 2004-05 is today a company worth 2.5 crores in 2013 with a total workforce of 70 at the factory and 100 at the head office in Gwalior.

Mr Amit dialled his secretary from his office intercom and asked her to call Mr. Vineet and ask him to come to the office as soon as possible, as he wanted to give this news about being invited as chief guest personally to him. It gives him a great pride in knowing that he is being recognized in the business world and in academic world too.

The Self Actualization of Entrepreneurs in Government Sector- a Select Study of Higher Level Employees of the Indian Government

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ABSTRACT

An entrepreneur is a person who organizes and operates a business or businesses taking on financial risk. Basic Concept of the entrepreneur is that it organizes, operates for a certain return the focus of the study is on the Government Sector higher level employees. The higher level employees are like Social Entrepreneurs as they work on organizing, operating taking risk and earnestly working on Social and Personal Rate of return. Social Rate of Return means that the return received by the society at large. Personal Rate of return is Self Actualization, Self Satisfaction, Prestige and Honour. They are the social entrepreneurs as they have the power to change the system to enhance the system and in return what they dream of Self Actualization. Hence the paper makes an attempt to understand the Social Entrepreneur Dynamics by evaluating their functioning and communication styles.

Keywords: Social Entrepreneurs, Self actualization, Entrepreneur Dynamics, Social Rate of Return.

I. INTRODUCTION

A social entrepreneur is an entrepreneur who works to increase the social capital. He or she often works on humanitarian ideas and therefore seek organizations working in this perspective. The definition illustrates that Social entrepreneurs unlike other normal entrepreneurs are guided by the idea of working for the masses for very nominal rate of return. The rate of return is actually the social progress index. Such Entrepreneurs are devoted to the cause for the up liftman of a particular cause or sect of the society.

India has made a lot of progress in promoting social entrepreneurship but there is more to be done, The right frameworks, regulatory systems, financial institutions, governing bodies, think tanks and policies should be in place from the said purpose also, large private enterprises and MNCs, should make social entrepreneurship part of overall business strategy. Various countries have employed different approaches to foster social entrepreneurship. The UK, for example has come forward with Social Impact bonds, which is the country's first Social Finance to keep ex prisoners from going back to jail, other areas where these bonds help are criminal justice, Vulnerable Children, health and Unemployment. The US is another country with a vibrant Social Entrepreneurship sector. The country has involved its academic institutions in nurturing the right talent. Looking at Asia, Singapore has been the first country to launch Impact Investment Exchange, a social stock exchange for enterprise to raise capital. In 2007 a report was published by their Government which came out with four broad models of Social Enterprises viz. work integration model, plough-back-profit model, the subsidized services model and the social need model. South Korea was the first country to introduce a law on the promotion of Social Enterprises in 2007 The South Korean government certifies social enterprises so that they can get tax breaks and other subsidies. Similarly countries all over the world are determined to enhance their social entrepreneurship.

As our civilization grows the need for such a type of entrepreneurs are felt more and more. For it is the effort of such experienced people that there is betterment in the society. The capitalist as Economics states that work on the market mechanism to yield a particular rate of return predetermined through the techniques of Capital Budgeting and the product and marketing techniques determined by the most efficient production and marketing managers which is again decided through a great deal of research in the concerned fields. We for the progress of the nation need the existence of all such entrepreneurs and each one of them have contributed to the progress of the country to which they belong.

The Research paper as per the topic concentrates on The self Actualization of Entrepreneurs in the Government Sector- A select study of higher level employees.

II. SELF ACTUALIZATION OF SOCIAL ENTREPRENEURS

As Maslow came forward with his theory of Motivation and he stated that the ultimate Motivational level or the feature which affects a person is his/her Self Actualization which comes later in life as your basic needs are fulfilled and for the immediate dependents in the family a human in his late fifties does not get motivated by anything less than imploring the self and understanding how he/she can do the maximum to the society from which we are coming. When own vision becomes so intense that it not only involves his own self but also the society which now for this person has become 'Self 'in its own way. Such a vision has a Halo effect and it results in the upliftment of the masses.

History has immense instances on such social entrepreneurs, and a lot of study has been done on them. Vinoba Bhave the founder leader of the Bhoodan Movement and a staunch friend of Mahatama Gandhi Ji, who described him as his mentor, redistributed 7,000,000 acres of land to the untouchable landless of India.

The US Environmentalist and conservationist David Browser developed a worldwide network for environmental issues and founded Friends of the Earth, The Earth Island Institute. Susan B. Anthony fought for women's rights for the control of Property in the USA. In Pakistan, Akhtar Hameed Khan founder of grassroots movement for rural communities and low cost sanitation programmes. Maria Montessori developed the world famous Montessori approach to early childhood education .Florence Nightingale the founder of modern nursing fought to improve hospital conditions.

Present day social entrepreneurs Ela Bhatt the founder of the self employed women's Association (SEWA) and the SEWA Cooperative Bank in Gujarat. Mr. Bunker Roy, founder of Barefoot College, which promotes rural development through innovative education programme. Amitabh Shah, founder of Yuva who works for 250,000 underprivileged children mobilizing 100,000 volunteers from different cities. Muhammad Yunus from Bangladesh founder of microcredit and the 'Grameen Bank' was awarded Nobel Peace Prize. Thinlas Chorol founder of Ladakhi women Travel Company worked to bring women into the male dominated society.

Thus, it is seen that all the above cited examples and the other innumerable example have the intense desire to do something for the cause and that actually is for the self for such a deep level of Motivation, the self actualization becomes the basic requirement for without that the urge to work for other which in fact is for self is just not possible.

III. ENTREPRENEURS IN GOVERNMENT SECTOR

In the Government sector the higher level employees and officers are dedicated to their work and they give their utmost to the cause of their work this ultimately leads to the development of a vision within self to work for a bigger cause. These employees are not seeking fame or publicity because by the virtue of their work they have already achieved that level. The intensity to work for the masses or for a cause is intense in them. It is essential that a study should be done on them and they may further be attached to various organization of such concerns to get the maximum social returns. Such Entrepreneurs are motivated only by Self actualization.

(a) Objectives:-

(i) To understand the communication process of the social entrepreneurs.
(ii) To understand Staff and subordinate relation of the social entrepreneurs.
(iii) To know the frequency of interaction within the society of the social entrepreneurs
(iv) To know the challenges facing the government sector.

(b) Research Methodology:-

(i) The study is based on Primary Data. The sample taken was 50 respondents. The approximate total population of higher level employees of Chief Secretary rank and Additional Director General rank is estimated to be 250 all over India, hence a sample of 50 respondents would mean a sample of 20% was taken for the study.
(ii) Questionnaire was mailed to them and was also sent to them along with this data was collected through telephonic interviews. Data was compiled by using the simple statistical tools and using the measures of central tendency.

(c) Analysis:-

A questionnaire was made to understand the Communication Process of the social entrepreneurs.

(d) Level Of Interaction:-

(i) The data revels that in order to achieve the objectives, for whatever cause the entrepreneur is working the communication of these officers is more with the lower level staff as 90% of the respondents indicated this option.
(ii) The subordinates are used for the purpose of carrying out the orders.

(e) Type of Communication:-

(i) 75% of the respondents said that they believe in group speaking with the lower staff, and that is on an average twice a week.
(ii) 75% of the respondents believe that for their own self they are somewhat social.
(iii) Social networking will not improve task completion 90% respondents believe in this.
(iv) Social networking as such is with friends 80% respondents asserted.

(f) Challenges faced by the Government

As per the social entrepreneurs the challenges basically faced by the Government presently are

(i) Unrealistic or conflicting expectations rank 1 given by 80% respondents.

(ii) Incompetency Ranked 2nd by 75% respondents
(iii) Lack of Planning and Implementation ranked 3rd by 85% respondents.

IV. INTERPRETATION

(a) The respondents often speak to the lower staff as the Management thinkers believe that the creation of Vision is not the only task of the leaders or the entrepreneurs but the most important task is to make every person feel and to make them believe that the vision is achievable provided the spirit behind the task is understood. This it can be said be the most difficult task of the social entrepreneurs. Their leadership skills are pronounced in this process. To generate the same spark in others is a challenging job and requires a great level of dedication and reasoning among them so as to ascertain their task in the most significant manner this will help them in sharing his vision with them and to make them understand that to work in for the social cause will yield benefits to them.
(b) The fact that the respondents believe that the group speaking is the most effective way of communicating things with the lower staff is due to the fact that when in group the effect of molding the thoughts and the concept clearance becomes easier as there is a two way interaction with ones superior and with the peer group.
(c) The respondents asserted in the personal interviews that with the subordinates their interaction is there for complying the work and getting the task done as the subordinates of these entrepreneurs are very well motivated and the vision mission of their respective organization is clear in their mind.
(d) The respondents by and large are less social this is because of the reason that when a person interacts with different groups in the society be it personal/family and others, one can construct an index like personal communication index, family communication index, friends communication index, subordinate communication index, acquaintance communication index. A rating scale of 1 to 10m given to them will lead us to think that as the indexes increases so do the time allotment to different categories decreases. Hence, the social entrepreneurs are less social as their cause does not allow them to be so.
(e) Social Networking sites are basically sites which are seen registered for short time and they actually do not help in active learning though passive learning may take place.
(f) The respondents have held and are in high positions in the Government sector and the challenges faced by the Indian Government can be ranked as per follows:

    (i) Unrealistic or Conflicting expectations
    (ii) Incompetency factor
    (iii) Lack of Planning and Implementation

(g) These, are the challenges faced by the government as per the social entrepreneurs as they result in stalling the work of such enterprises and the need is to face these challenges and to solve it as soon as possible.

V. SOCIAL ENTREPRENEURS COMMUNICATION MODEL

Looking at the different variables which were measured in the questionnaire which can be classified into four basic variables to ascertain the social entrepreneurs and their communication skill a communication grid is proposed where the different variables are grouped into four

- Cause commitment
- Subordinate interaction
- Lower Employee Interaction
- Social Interaction

The grid faced in the model show four windows. Analyses of the Windows are as follows:

(a) First Window:-

This window depicts that the entrepreneurs cause commitment is low; Subordinate interaction is Low; Social Interaction is high and lower employee interaction is high. Such a type of entrepreneurs would not yield much result as their commitment is not towards the cause hence they lack the basic purpose and naturally the motivation of self actualization will not be of much help to such entrepreneurs.

Table .1

Lower Employee Interaction (LEI)

Cause Commitment (CC)		H	L		Social Interaction (SOI)
	H (2)	CC - High LEI - High SI - Low SOI - Low	LEI – L SOI – L CC – High SI – High	L(3)	
	L (1)	CC - Low SI - Low LEI - High SOI - High	SOI – High SI – High CC - Low LEI – L	H (4)	
		L	H		

Subordinate Interaction (SI)

Social Entrepreneurship Communication Grid

(b) Second Window:-

This window depicts that the entrepreneurs cause commitment is high; Subordinate interaction is Low; Social Interaction is low and lower employee interaction is high. Such a type of entrepreneurs will give results as their commitment towards the cause compels them with the other attributes high lightened in this window. Such social entrepreneurs are successful in their work. All the various examples cited above would result in such a category. The objectives and the task in front of these entrepreneurs will be the prime concern and will make them progressive and proactive.

(c) Third Window:-

This window depicts that the entrepreneurs cause commitment is high; Subordinate interaction is High; Social Interaction is Low and lower employee interaction is Low. Such a type of entrepreneurs would also not yield good results as their interaction with the lower employee interaction is Low. No organization runs on one person. It's a team work and hence the vision must be made clear to each employee. Hence such a social entrepreneurs in spite of his best intention will not be able to yield result as he fails to mobilize his/her workforce.

(d) Fourth Window:-

This window depicts that the entrepreneurs cause commitment is low; Subordinate interaction is High; Social Interaction is high and lower employee interaction is Low. Such a type of entrepreneurs would also not yield good results as their style of functioning is more to show off with what they are doing. They are highly dependent on their subordinates, and would always want to throw their weight on them, without having any significant impact on task completion and cause attainment.

The Social Entrepreneurship Communication Grid model is suggestive of different communication methodologies adopted by the entrepreneurs who are basically guided by the principle of self actualization and based on their respective responses the model is proposed.

VI. CONCLUSION

At the end it is held that the social entrepreneurship are the people who are very much wanted in the society and looking at the functioning's of the high level employees working for the same cause the study was conducted and the second window of the model has been the most successful method for Social entrepreneurs.

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Leadership Skills and Teaching Competence for Prospective and in-Service Teachers to Transform the Power Within

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ABSTRACT
Competent teachers hold the position of leadership by natural disposition of their job in the classroom. S /he do not only have a deep content knowledge but also posses many other skills which are called soft skills. Leadership skills are one dimension of soft skills. Present study was intended to investigate the relationship between leadership skills and teacher competency of prospective and in service teachers. The sample consists of 90 prospective teachers and 60 in service teachers. Purposive sampling technique was used to select the data .Kumar and Mutha 'Teacher effectiveness scale was used to measure the teacher effectiveness and 'leadership Quality scale 'by Dr. Muthumanikum was used to measure the leadership skills .Product –moment coefficient correlation was used to analyze the data. The study revealed that there was significant relationship between teacher competency and leadership skills of prospective teachers and in service teachers.

Kew words: Leader, Leadership skills, Teacher, teaching competence, power.

I. INTRODUCTION

Education in the new century is characterized by a rapid and constant change .A changed world is demanding a new way of leadership skilled teacher in teaching and learning process.

Who is a true leader? How can a teacher become a competent leader?

5 c's for a competent leader teachers:

(a) **A leader is a cool and calm person: -** with leadership skills in her will not lose his/her temper instantaneously. Being a cool and calm personality she will not fall in confusion.

(b) **A leader possesses a clear vision: -** A teacher who has a clear vision has clear understanding, of what he is doing and why and how he is going to do it.

(c) **A leader is confident: -** A teacher with confident ability in her has a high level of commitment and while performing his/her task becomes highly creative in his own way.

(d) **A leader is source of inspiration**: - As William Arthur Ward says: "A mediocre teacher tells, a good teacher explains, a superior teacher demonstrates and a great teacher inspires." This is how teacher having good leadership skills becomes a source of inspiration **Charisma of contentment:-**A teacher when s/he is full of these qualities there is competency in her teaching and s/he experiences the charisma of contentment through his leadership quality or skills.

(e) **Leadership means**: The process of influencing the behavior of others towards the accomplishment of goals in a given situations. **According to George R. Terry,** "Leadership is the activity of influencing people to strive willingly for group activities. The emphasis is given on willingness on the part of people led.

II. LEADERSHIP PROCESS ATTITUDE & SKILLS

(a) Teacher as a leader: - "Leadership is the ability and readiness to inspire, guide, direct, or manage others." (Murnane& Levy 1996) .A leader is defined as the one who has the followers .Often teachers are not considered as one who has followers ,Often teachers not considered official leaders ;yet they perform superbly once they are asked ,Teachers have been expected to have the necessary skills to entry into leadership position ,or develop them on the job .

(i) Teachers should have the ability to engage with people to persuade, influence and be very versatile in doing that.

(ii) Teachers requires a whole set of skills for leading and

(iii) managing pupils, setting Objectives giving feedback

(iv) Sometimes saying hard thing budgeting, the available resources .

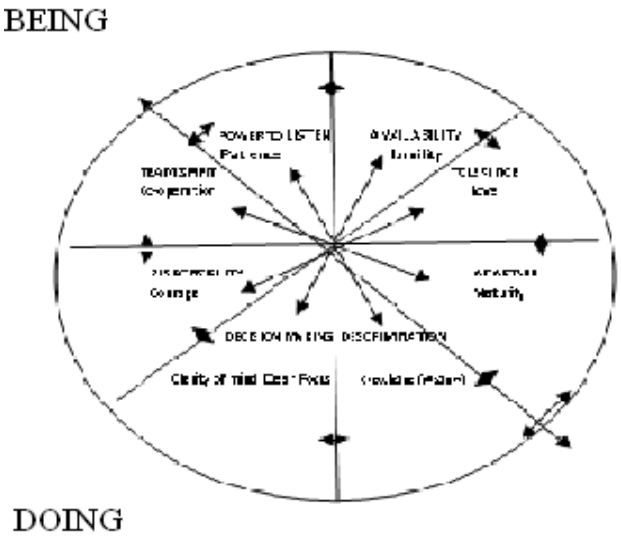
(v) Teachers must have the vision of his/her educational institution and know how to do the strategies and tactical planning to achieve it.

(vi) Teachers must own soft skills as leadership skills so that s/he may become an inspiration in the sight of the pupils.

(vii) Teacher must own knowledge of subject, take interest in every child.

(viii) Good attitude towards pupils and sense of adaptability in all situations

(b) The eight attitudes:- for teacher to enhance qualitative leadership skills to be competent in the classroom environment.



Fig

Leadership is a process where leaders create an inspiring vision of the future, motivate their followers to achieve it, manage implementation successfully and develop the members of their team to be even more effective in the future.

(c) Leadership Skills:-

(i) Physical: Sound health, Vitality, Appearance, Physical and nervous energy, forcefulness, Physique, Enthusiasm

(ii) Intellectual: High intelligence, Sound judgment, ability to teach, Scientific approach, decisiveness, self understanding.

(iii) Moral: Integrity, Moral Courage, Fairley, Willpower, Sense of purpose, Objectivity.

(iv) Social: Ability to inspire, Fact percussiveness, self confidence, empathy, initiative, knowledge of human nature, human relation, attitude.

In spite of difference in the personality of the secondary school teachers', practices of certain principles can help them function competently.

Tips on leadership skills for teachers to transform the power within

Interest in students--Teacher's first quality is to take interest in the students'. S/he needs to give total self to his ability for the students. S/he must touch the core of their heart to find out the stress and turmoil they are undergoing and find cure for that.

In this way students will be motivated. Effective communication –Teacher must have an excellent communication skill to succeed as a classroom leader .S/he must be able to explain his lesson in a clear way both verbal and written so that it can be understood by students of different age and abilities. He must be an effective team leader with the students.

High Morale--The teacher as a leader must brief overall picture of belongingness towards the students. S/he must build rappot among the students and with the teacher and students of constructive values and put an end to destructive criticism.

Awaken enthusiasm--The teacher can awaken enthusiasm in the students through various curricular and co curricular activities. This will help the student to come up with all round development with quality and pride.

Use Command sparingly--The teacher by virtue of his/her profession becomes a threat for the students. Therefore s/he must make genuine effort to inculcate in his personality softness and smartness. Sometimes teacher needs to overlook the wrong doings and weakness of their students. As a result students will be encouraged to reflect and act wisely.

Requests not demand--Teacher could /inculcate curtsy in his/her behavior and practice it in his behavior while being with the students. Teacher can always make request instead of demanding or commanding the students that will only add to his personality virtue of simplicity. The students will gladly accept suggestions and develop their personality with knowledge.

Respect towards associates--Teacher with his leadership skills can create a good favorable environment of equality and respect and increase brother-hood, unity, openness and friendship.

Trustworthy--Teacher having the ability to trust and be trusted can win the hearts of the students. This will strengthen the interpersonal relationship and team work spirit among them.

Encourage the students to speak up--Teacher can challenge student's creativity and take the lead to explore their innovative ideas and together build an atmosphere of talent- sharing and growing together.

Handle the grievance fairly--Teacher has the ability to know each student through and through by name which means his/her talents, capabilities and weakness too. Therefore it is his/her responsibility when they are under stress or upset with problems, misunderstandings. If at all teacher needs to correct or punish the students could be done in private. Since it is said –Praise in public. Reprimand in private.

Fair action--A great leader believes in equal importance of each individual. Therefore a teacher with leadership skills gives equal important to his/her students , gives ample opportunity to the weaker children of her class and takes good care of the talented ones.

III. COMPETENCE & LEADERSHIP

Dr.Karl Heimz Flechig (1962)When The word teacher is mentioned, they (people)think of a man or a women who stands or sits in a relatively modestly equipped room in front of the blackboard ,surrounded by thirty or forty children and who indulges in verbal communication with those children by using widely divers kind of language .It is far likely that they think of the various activities such as reading for the preparation for the lesson material ,correcting work ,preparing manuscripts etc. It is even less likely that when they think of the word 'Teacher' they would be thinking of those other people who also made them contribution so that teaching could take place…..We can be quite certain that nobody thinks of the architect who planned the building which made up the school…

J.N.Kapur (1991) said "I have been proud of my noble profession and if I were to be born again , would once again like to be a teacher ''.

Teacher acts as a leader in developing suitable climate and cohesion in class. Teacher's Leadership plays a vital role in career development. Often his/her technical skills can only take her far. To help them in the career development soft skills as leadership skills is the ability to be a good and successful leader. Few are born to be leaders and most of us need to inculcate the good leadership skills. "The key to successful leadership today is influence, not authority." That can help a teacher become best teacher with multi leadership skills.

National Council for Teacher Education (NCTE, 1998) says that every teacher requires acquisition of certain competencies and willingness to perform with sense of devotion and dedication for the benefit of the learners and to sustain commitments.

Teaching competence: Focus primarily on attitude, value, belief and relationship that are expected from prospective and in-service teachers so as to meet the emotional need of students to bring positive changes in them. Hence, teachers need to be highly competent with commitment, devotion, dedication and soft skills to their duty. They should not only provide services to the students but also create opportunities for them to grow all-round .It is quite important for teachers to have good leadership skills so that pupils may inculcate good leadership skills to be the good leaders in the society and for the nation.

Types of teaching competence

(i) Cognitive based teaching competencies:- aim to demonstrate intellectual abilities in the knowledge of subject matter and educational strategies.

(ii) Performance based teaching competencies:- requires prospective and in-service teachers to demonstrate an ability to perform some activities in actual.

(iii) Consequences based teaching competencies:- are expected what prospective and in-service teachers know or do through the achievement of the pupils under the directions of the teachers.

(iv) Explorative competencies:- expect prospective and in-service teachers to make their students to carry out innovative activities which have undefined student learning outcome.

(v) Managerial teaching competencies:- include a set of teacher behaviors and activities that are intended to foster students' cooperation and involvement in classrooms.

(vi) Soft skills competencies:- include skills which are required for personality development. They are leadership, team work, time management, problem solving, and interpersonal relation and communication skills. These socio-emotional competencies are called soft skills. They are essential for personal development, social participation, independent living and classroom teaching to be a best and successful teacher. Thus the problem undertaken is "Leadership skills and teaching competence for prospective and in-service teachers to transform the power within" in district Gumla, of Jharkhand state.

IV. SCOPE OF STUDY & OBJECTIVES

(a) Scope

The rational presented above shows the need for the study of "Leadership skill and teaching competence for teachers to be able to transform the power within them."

The scope of the study was confined to the different schools and B. Ed. Colleges of Gumla dist. prospective and in-service teachers**.**

(b) Objectives of the study

(i) To find out significant relationship between leadership skills and teaching competence of prospective and in-service teachers.

(ii) To find out significant difference between prospective and in-service teachers in their leadership skills and teaching competence.

Related studies A number of studies in this field have been reported by-

Leadership skills- Brungardt and Christie (2010), Frazier (2006), Gardnar and Sheiil (2006) ,Haris and Chatherine (2004), Thomson, Haward Collin (2006), Barth, Roland S. (2001) Bennet et.al. (2000).

Teaching competencie- Sabu(2010), Begam and Bhargava (2010), Amaladoss Xavier (2009) ,Anisha and Annaraja (2008) ,Julie Eben (2007), Dakshina-Murty (2006), Latha, Sangeetha and Ananthasayanam

(2004), Paul and Kumaravel (2003),Vijaylaxami (2002) ,Kaur (2000).

V. ANALYSIS & RESULT

The sample consisted of 55 Prospective and 70 in-service teachers selected from Gumla Dist. o f Jharkhand state.

(a) Sample Technique

Purposive sampling technique was used to select the sample.

Table -1

Table – 1: Correlation(r) between leadership skills and Teaching Competencies of Prospective and in service teachers.

Leadership skills ∑X	Teacher effectiveness ∑Y	∑X²	∑Y²	∑XY	N	r	Result
15574	17257	96812	2408105	2161241	125	0.418*	P<0.01

(i) There is no significant relationship between leadership skills and teaching competence of prospective and in-service teachers.

(ii) There is no significant difference between prospective and in-service teachers in their leadership skills and teaching competence.

Table -2

Table – 2: Correlation(r) between leadership skills and Teaching Competencies of in service teachers.

Leadership skills ∑X	Teacher effectiveness ∑Y	∑X²	∑Y²	∑XY	N	r	Result
8919	9843	115048	1397085	1259176	70	0.37*	P<0.01

(b) Tool used

Kumar and Mutha "Teacher effectivenesscale" was used to measure the teacher effectiveness' and 'Leadership Qualit scale'

Dr. Muthumanikum was used to measure the 'leadership'.

Statistical Techniques used Pearson Product moment correlation (r) and t-test were applied to analyze the data

Table -3

Table – 3: Correlation(r) between leadership skills and Teaching Competencies of Prospective teachers.

Leadership skills ∑X	Teacher effectiveness ∑Y	∑X²	∑Y²	∑XY	N	r	Result
6655	7414	817641	1011020	902085	55	0.42*	P<0.01

Table -4

Table – 4: Correlation(r) between leadership skills and Teaching Competencies of Prospective and in service male teachers.

Leadership skills ∑X	Teacher effectiveness ∑Y	∑X²	∑Y²	∑XY	N	r	Result
7862	8621	996032	192625	1083863	63	0.57*	P<0.01

Table -5

Table – 5: Correlation(r) between leadership skills and Teaching Competencies of Prospective and in service female teachers.

Leadership skills ∑X	Teacher effectiveness ∑Y	∑X²	∑Y²	∑XY	N	r	Result
7712	8636	9720	1215480	1077398	62	0.25*	P<0.01

VI. FINDINGS

From the result it can be concluded that –

(a) The (r) test shows that there is significant relationship between leadership skills and teaching competence of prospective teachers and in service teachers. It is because prospective and in service teachers both are trained to lead the group throughout the training period by curriculum and co- curriculum activities.

(b) The(r) test shows that there is significant relationship between leadership skills and teaching competence of prospective teachers .Micro teaching ,Practice teaching ,are the special moments of group or team work where the prospective teachers need to take initiative .Therefore they get enough time to boost up there leadership qualities.

(c) The (r) test shows that there is significant relationship between leadership skills and teaching competence of in service teachers. After a year's training prospective teachers become the full fledged teachers for their professional field. At this Venter they are energetic and ready to expose themselves as the leader of the small l groups.

There they can freely use the leadership skills in the classroom management.

(d) The (r) test shows that there is significant relationship between leadership skills and teaching competence of prospective and in service male teachers. Since prospective teachers male are already trained in leadership skills obviously they continue the same pattern in service period too.

(e) The (r) test shows that there is significant relationship between leadership skills and teaching competence of prospective and in service female teachers. During training Female teachers make much effort to inculcate within them techniques of leadership skills therefore it becomes easy for them to exercise and teach the leadership skills to the students.

VII. CONCLUSION

An effective teacher also has good leadership skills. To make the teaching effective a teacher must enhance good leadership skills. Therefore from time to time leadership program is an urgent need of the hour in teaching learning environment for teacher competency.

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Innovative Application of Nanotechnology

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ABSTRACT

The fundamental of nanotechnology is that the properties of substance drastically change when their size reduced to the nanometer range. Nanotechnology is emerging interdisciplinary technology that has been blooming in many area during the recent decade including, material science, mechanics, optics, medicine, plastic, electronics and aerospace. The textile industry has already impacted by this technology. This paper summarizes the application of nanotechnology in different areas of textiles like manufacturing nanofibres, nanotubes, finishing textiles, medical textiles, protective textiles and others scope of nanotechnology in textiles are analyzed.

Keywords: Textile ,Nanotechnology Nanofibers, Nanotubes.

I. INTRODUCTION

The "Nano" in nanotechnology comes from Greek world "Nanos" which means dwarf. Scientists use this prefix to indicate one billionth meter or nanometer (10^{-9}).Thus, nanotechnology according to National Nanotechnology Initiative (NNI) is defined as utilization of structures with at least one dimension of nanometer size. Nanotechnology is also known as "bottom up" technology in which bulk material can be made precisely from tiny blocks, apart from "top down" traditional technology. This results in material with less defects and better quality [20]. The nanotechnology was first discussed by Richard Feynman in his famous 1959 lecture "There's Plenty of Room at the Bottom" in which he proposed that the properties of materials and devices at the nanometer range would present future opportunities. Rarely has a technology attracted as much publicity in a short period of time as nanotechnology. It has been hailed as biggest innovation since computer chips. The fundamentals of nanotechnology lie in the fact that properties of material changes drastically when either of its dimensions is reduced to nanometer range e.g. gold changes its color to red and its melting point decreases whereas copper reduces its conductivity in the presence of magnetic field when reduces to nanometer size [19]. There is also an increase in reactivity due to increase in surface to volume ratio. Properties at this stage are described by quantum mechanics rather than classical mechanics. Nanotechnology is increasingly attracting worldwide attention, federal funding and research activity due to its wide range of uses. Moreover, a small amount of nanosize particle can interfere with matrix polymer, bringing up the resultant material to unprecedented level.

The textile industry has already impacted by nanotechnology. Research involving nanotechnology to improve performances is flourishing. There are two concepts in molecular nanotechnology:

(a) **Positional assembly:**
Positional assembly is a technique that has been suggested as a means to build objects, devices, and systems on a molecular scale using automated processes. It is frequently used in normal macroscopic manufacturing [21, 19].

(b) **Massive parallelism (self replication):**
Self-replication is a process in which devices whose diameters are of atomic scale, on the order of nanometers, create copies of themselves [21, 19].

II. NANOTECHNOLOGY IN MANUFACTURING TEXTILES

Large changes can be made in properties of fabric by making a small change in its constituent material. Here comes nanotechnology in manufacturing textiles. Fabric using nanofibres, nanocomposites etc. are getting appreciation from whole world. There demand has increased by many folds due to their unique properties.

(a) **Nanofibres**
Nanofibers are defined as fibers having diameter in range of nanometers. They can be produced by interfacial polymerization and electro spinning. Some nano fibers are given below:

(i) Electro spun cellulose- It is a high performance material obtained from reclaimed cellulose by using elctrospinning method.

(ii) Luminescent Polyester -The polyester core is covered with approximately 60 layers of nylon and polyester. This creates a mystical hue that changes according to (i) how light strikes the fabric and (ii) The angle from which the fabric is viewed. Only reflecting light of a specific wavelength, this structure effectively brings out color.

(b) **Carbon Nanofibres**
These are the ordered array of carbon atoms that have high tensile strength due to high aspect ratio. They also have high chemical resistance and electrical conductivity [19].

(c) **Composite fibers**

Fibers which are employed by filler materials such as nanoparticles to get desired properties are called composite fibers. Carbon nano particles are added to fiber to enhance their tensile strength, resistivity to chemicals and electrical conductivity. Composite fibers are also employed by clay nano particles for flame retardant, anti-UV and anti corrosive behavior e.g. nano particles of Montmorillonite have been applied as UV-blocker in nylon composite fibers. The mechanical properties with clay mass fraction of 5% exhibits a 40% higher tensile strength, 68% greater tensile modulus, 60% higher flexural strength and a 126% increased flexural modulus. Also heat distortion temperature raised from 65˚C to 152˚C. Clay nano particles are also used to introduce dye attracting sites and creating dye holding space in polyproprene fibers. Some metal oxide nanoparticles are also used to impart unique properties in fabric such as ZnO nanoparticles are used for UV shielding function and reduction in static electricity in synthetic fibers, TiO_2/MgO nanoparticle for self sterilizing property [20].

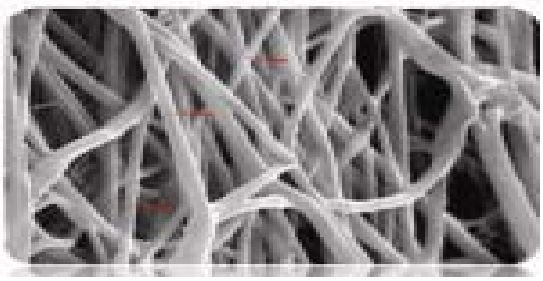

Fig. 1 Nano fibres

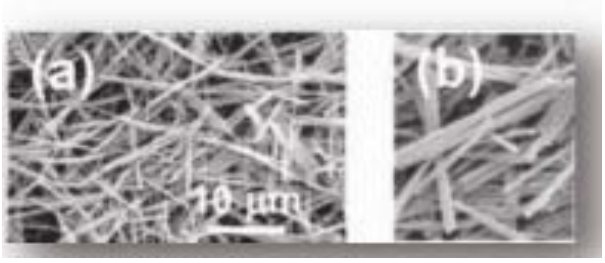

Fig. 2 Composite fibres

(d) **Carbon Nanotubes**

Carbon nanotubes are allotropes of carbon with a cylindrical nanostructure. Nanotubes are members of the fullerene structural family, which also nanotube may be capped with a hemisphere of the buckyball structure. CNT has tensile strength 100 times that of steel at $1/6^{th}$ weight. Generally, CNT are classified into single walled carbon nanotube (SWNTs) and multi walled carbon nanotube(MWNTs). One of the best examples of the CNT composite fiber is SWCT-polyvinyl alcohol fiber with fiber diameters in macro meter range produced by using a coagulation based spinning process. The fiber exhibits high stiffness and strength, moreover, toughness 20 times higher than steel wire of same length and mass. Therefore this type of fibers has potential applications in safety harnesses, explosion proof blankets and electromagnetic shielding [23, 25].

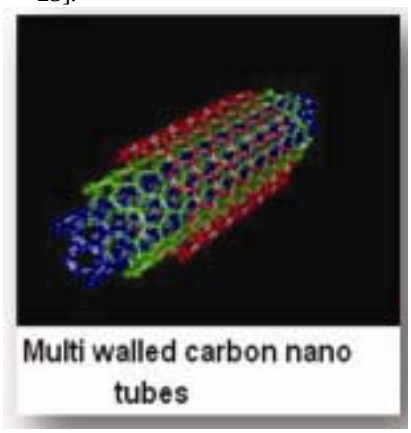

Fig.3 Carbon nanotubes

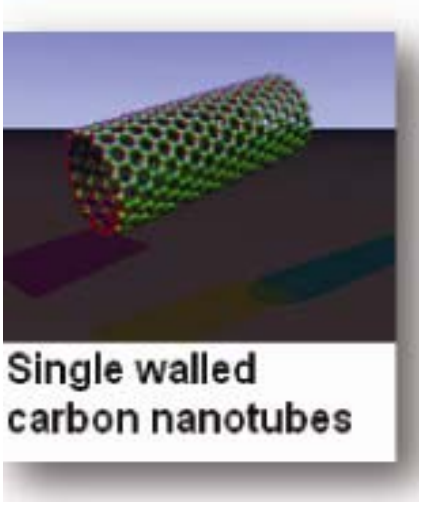

Fig.3 Carbon nanotubes

III. NANOTECHNOLOGY IN FINISHING TEXTILES

Nanoparticles when employed in a fabric impart their properties to the fabric. Here comes nanotechnology in finishing textiles. In this field particular attention has ben paid to make chemical finishing more controllable and thorough. Ideally discrete molecules or

nanoparticles of finishes can be brought individually to designated sites on textile materials in a specific orientation and trajectory through thermodynamic, electrostatic or other technical approaches. The nanotechnology finishes creates carefree fabrics that minimize stains, offer superior liquid repellency and provide additional wrinkle resistance.

(a) **Water Repellent Finish**

There is a great demand of water repellant garments in this new emerging world e.g. dresses for divers, swimmers, water proof coverings for tents, water proof bags, shoes, rain coats etc. Wetting of fabric depends upon difference in surface tension of solid fabric and liquid. If critical surface tension of solid fabric is greater or equal than surface tension of liquid then liquid will wet the fabric. Thus, water repellency can be attained when critical surface tension of solid is smaller than surface tension of liquid [8]. This is done by using fluorocarbons, which are organic compounds consisting per fluorinated carbon chain. Fluorocarbons generally lower the surface tensions by forming a thin film of coating around the fiber. Some useful fluorocarbons are perflouroalkyl acrylate polymers. Fluorocarbons can be added in number of ways like by spraying, foam or exhaust.Researchers at Clemson University developed a highly water repellent coating made of silver nanoparticles. The patented coating-a polymer film (polyglycidyl methacrylate) mixed with silver nano particles can be permanently integrated into any common fabric like cotton, polyester, silk etc.

Nano-tex enhances the water repellent property by creating nano-whiskers, which are made of hydrocarbons and are $1/1000^{th}$ size of typical cotton fiber. They are added to create peach fuzz effect without lowering the strength of cotton. They create a surface through which water molecules can pass while water droplets cannot, thus maintaining breathability. Schoeller improves water repellence by nanospheres. Nanosphere impregnation involves a 3-D surface structure with gel forming additives which repel water and prevent dirt particles from attaching themselves. The mechanism is similar to lotus effect occurring in nature [6, 8, 11].

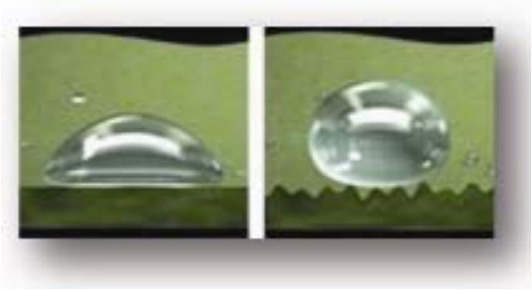

Fig.4. Water Repellent Finish.

(b) **Self Cleaning Effect**

With the help of nanotechnology self-cleaning fabric surface are produced by the following methods. In the first place, create extremely water repellent microscopically rough surfaces on which dirt particles can hardly get a hold and therefore, can be simply rinsed off water. The second example is given by photo-catalytic layers. When layer of nanocrystalline titanium oxide is exposed to sunlight, it can remove dust, dirt and bacteria by itself [6]. Coating of mixture of polyglycidyl methacrylate and silver nano particles is also used due to their resistance to dirt and water.

(c) **Anti-Microbial Finish**

Self Cleaning Effect Nano-sized silver coating is used to provide anti microbial properties. Metallic ions convert free oxygen into active oxygen, which destroys the organic substance to create the sterilizing effect. Nano silver is also very reactive with proteins. When contacting bacteria and fungi, it will adversely effect cellular metabolism and inhibit cell growth. Photo-catalytic effect of TiO_2 and ZnO are also used for anti microbial finish.

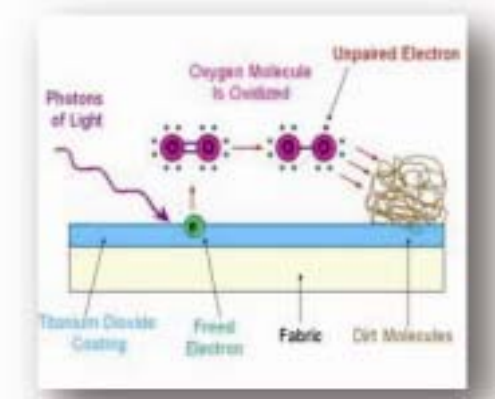

Fig.5.Self Cleaning

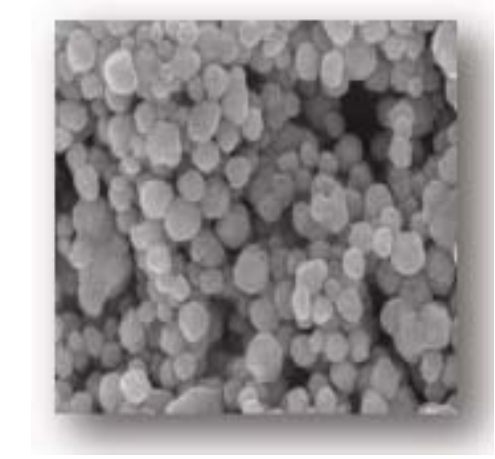

Fig.6.Silver nano particles.

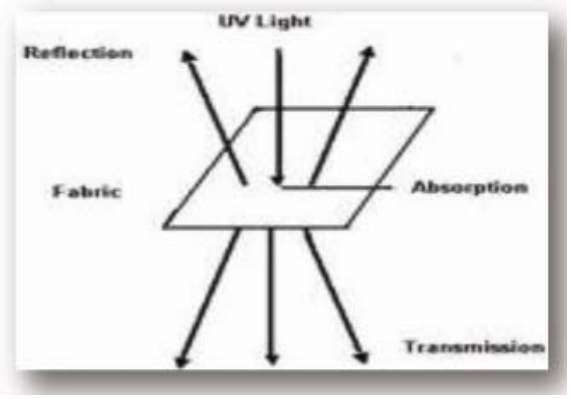

Fig.7.UV Protection.

(d) **Wrinkle Resistance**

To improve wrinkle resistance of cotton and silk, fabrics are employed with nano-titanium dioxide and nano silica. Nano-titanium dioxide was employed with carboxylic acid as a catalyst under UV radiation to catalyse the cross linking reaction between the cellulose molecules and the acid. On the other hand, nano-silica was applied with maleic anhydride as a catalyst. This process improved the wrinkle resistance of silk [6, 11].

(e) **Flame Retardant Finish**

For flame retardant finish in garments is achieved by using colloidal antimony pentoxide which is supplied by Nycol nano Technologies, Inc. Nano antimony pentaoxide used with Halogenated flame retardants for a flame retardant finishes. The ratio of halogen to antimony is 5:1 to 2:1.

(f) **Odour Fights Finish**

Odours are formed as a result of bacterial growth. Thus these can be prevented by antimicrobial finish. Cyclodextrins can be incorporated into a fabric finish to prevent odour. Greensheild, a nanotech firm in Taiwan, has applied nanotechnology to create underwear's that can fight odour [6]. The underwear fiber release undetectable negative ions and infrared rays that destroy odour causing bacteria. Similarly, microcapsules containing fragrances can also be implanted in fabric for slow release overtime to neutralisefoul order.

(g) **UV Protection**

For protecting material from UV radiation, we add semiconductor oxides of TiO_2, ZnO, SiO_2, and Al_2O_3. Among these TiO_2 and ZnO are commonly used. The nano particles have large surface area per unit mass and volume, thus more effective in scattering and absorbing UV radiation. Apart from TiO_2, ZnO nanorods of 10 to 50 nm length also show excellent results in blocking UV rays [6].

IV. NANOTECHNOLOGY IN PROTECTIVE TEXTILES

Protective textiles demand the balance of very different properties of drape, thermal resistance, barrier to liquids, water permeability, reduction in weight and cost, antistatic and stretch properties etc. with conflicting requirements against heat, cold, chemical and bacteria. Nanotechnology with its latest developments is helping in providing these properties to protective textiles. Electro-spun nanofibre-based membrane are used for making the material light weight. Nanomaterials such as nanotubes developed either from silicon or carbon would be very useful for producing highly functional protective clothing. Carbon nanotubes provides fibres of ultra high strength and performance. Further enhancement of fibre strength and conductivity is achieved by heat treatment. Electrospun polypropylene nanofibre and polyurethane nanofibres are used as barrier to liquid penetration in protective clothing. Polymer clay nanocomposites have emerged as a new class of materials that have superior properties

such as higher tensile strength, heat resistance, and less permeability to gas compared with traditional composites. Thus it is conceivable that nanotechnology developments in long term will play a key role in protective systems.

V. NANOTECHNOLOGY IN MEDICAL TEXTILES

Nanotechnology also have widespread applications in medical textiles such as imparting antimicrobial properties to clothing, development of wound closing nanofibre systems, in drug delivery systems, in blood filtration etc. A new medical technology to clean blood affected by radiological, chemical and biological attacks is being developed jointly by Argonne National Laboratory and The University of Chicago Hospitals. In addition to cleaning biological and radiological toxins from blood, the technology shows promise for delivering therapeutic drugs to targeted cells and organs. This technology uses a novel approach to magnetic filtration. The key is biodegradable polynanospheres 100 to 5000 nm in diameter, which are injected into the patients blood stream and are small enough to pass through the smallest blood vessels, yet too large to be filtered from the blood stream into the kidneys.

Textile fibers on the nano order level produced by ultrafine processing nanotechnology can be used to enhance drug delivery in biomedical applications. The objective of drug delivery system is to deliver a defined amount of drug efficiently, precisely and for a defined period of time. Drug delivery for polymer nanofibres is based on the principle that dissolution rate of a drug particulate increases with increased surface area of both the drug and corresponding carrier [7].

VI. CONCLUSION

Nanotechnology has an enormously promising future for textiles. The recent developments in finishing and manufacturing textiles based on nanotechnology have endless possibilities and at present the application of nanotechnology in textile merely reached a straight line. These nano finished textiles have a wider applications in protecting material, drug delivery in medicines, space suit designs etc. Our surrounded world is full of textile applications which can be innovated by using nanotechnology. It has also opened new opportunities for research and development work. Though there are some security concerns regarding use of nanotechnology but we hope that it will make our future better and bring hundreds of billion dollars to textile industry.

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Indian Entrepreneurs in Import Substitution – Need of the Hour for Indian Economy

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ABSTRACT

In the present era, where Multi National Companies are trying to capture the Indian market, Indian entrepreneurs play a motivational role to establish their own enterprise and make opportunities for Indians to solve the problem of unemployment and contribute in the economic growth of India .Entrepreneurs serve as the catalysts for the process of rapid Industrialization and economic growth. It is an entrepreneur who collects the natural, economic, human and technical resources of a country and uses them in the economic growth of a country.

According to Joseph Schumpeter, "The rate of economic progress of a nation depends upon its rate of innovation, which in turn depends upon distribution of entrepreneurial talent in the population."

India is facing a problem of Balance of Payment, so to solve this major problem, it is very essential to make policies for the benefit of the country. India must adopt a policy of self- reliance based on import substitution for economic as well as social growth.

Import Substitution meant protection for domestic industry behind high tariff walls. It implied a policy of high profits. Import substitution is the process of getting self- dependence by manufacturing those products which can be produced by internal resources of country. It is an inward – looking type of industrialization. Import substitution strategy leads to high levels of effective protection. The currency becomes over – valued and exports are discouraged. Under this strategy relatively capital intensive and intermediate input intensive techniques of production are encouraged.

The main objective of this paper is to represent the position of an entrepreneur in import substitution, actually it is 'Need of the Hour' and a great challenge for Indian economy to compete with other countries.

Key Words – Entrepreneur, import substitution, economic growth.

I. INTRODUCTION

Economic development essentially means a process of upward change whereby the real per capital income of a country increased over a long period of time through growth and development of business enterprises. It involves initiating and constituting change in the structure of business and society. This change is accompanied by growth and increased output, which allows more wealth to be divided by the various participants. Innovations play vital or key role in economic development. The developing countries like India, tends to support the fact that the economy is the effect and the entrepreneurs are its cause. It is only the active and enthusiastic entrepreneurs who fully explore the potential opportunities existing in the country's available resources- capital, labour and technology.

This is an era of entrepreneurship. Entrepreneurs have played a significance role in the growth and development of small scale enterprises which help in economic growth of a country. Economic growth is a process by which the per capita income and total income of a country increases during a given period. Entrepreneurs serve as the catalysts in the process of rapid industrialization and economic growth. It is the entrepreneur who collects the natural, economic, human and technical resources of a country and exploits them in the economic growth of a country. They have increased the pace of economic development in countries all over the world. It has facilitated employment generation, regional balance rural development and import substitution in many countries.

Import Substitution meant protection for domestic industry behind high tariff walls. It implied a policy of high profits. Import substitution is the process of getting self- dependence by manufacturing those products which can be produced by internal resources of country. It is an inward – looking type of industrialization. Import substitution strategy leads to high levels of effective protection. The currency becomes over – valued and exports are discouraged. Under this strategy relatively capital intensive and intermediate input intensive techniques of production are encouraged.

II.ENTREPRENEURS IN IMPORT SUBSTITUTION

Every developing country is facing the problem of adverse balance of payment. Entrepreneurs are able to solve this problem through import substitution. Entrepreneurs can take up production of such goods and services which can be used as import substitution. In simple words they can produce such goods and services which can be used in place of similar goods imported from outside.

Government is making all out efforts in the direction of import substitution. It is encouraging entrepreneurs to undertake production of goods and services which can be used as substitutes for imported goods to reduce imports. Needless to emphasis that reducing import by producing goods is as good as increasing exports. The purpose of increasing export and reducing import is to conserve scare and valuable foreign exchange reserves.

Import substitution means production of those goods which are imported from foreign countries. Import substitution is essential for achieving self- sufficiency. Import substitution is regarded by many developing nations as an important means to reduce trade gap and to develop the economy. It may be defined, as the substitution from domestic source of supply to a foreign source of supply.

It is clear from this definition that import substitution implies:-

(a) The development or creation of new source of supply or productive capacity, if there is no domestic supply.
(b) The expansion of the domestic production / supply if the domestic supply is insufficient.
(c) The production of domestic industries against foreign competition is the competitive disadvantage of the domestic industries, especially the infant ones, is encouraging the foreign source of supply. Import substitution is one of the important planks of the commercial economic policy of developing countries. The foreign exchange scarcity created by the import-export gap has prompted these countries to lay emphasis on import substitution in a bid to reduce their import requirements and thereby to narrow or remove the trade deficit.

III. CONSIDERATIONS FOR EFFECTIVE IMPORT SUBSTITUTION

Import substitution cannot be followed indiscriminately in future plans. Following considerations would have to be given weight in any effective judicious choice of import substitution:-

(a) The guiding principle, which should out weight all others, is whether import substituting industries will make a contribution to India's economic development through efficient utilization of local resources and also realize foreign exchange for more essential uses.
(b) Those industries should be included in the program of import substitution where a clear cut cost advantage could be established.
(c) Only those industries should be included in the program of import substitution whose products have adequate domestic or international demand existing or potential.
(d) Import substitution program should be chalked out in totality rather than in terms of fragments and the growth of selected industries should be assisted through appropriate investment policy and promotional measures.
(e) Cost and quality control should be the keynote of future policy.

IV. IMPORTANCE OF IMPORT SUBSTITUTION

By and large the import substitution was undertaken for very important reasons. Some important objects of this strategy are as follows:-

(a) Promotion of Domestic Industry: - The most important aim of import substitution is to promote domestic industry at the expense of foreign industry. It aims to protect the domestic manufacturing sector. The effect of this is to transfer domestic income distribution in favour of entrepreneurs and workers within industry at the expenditure of farmers.
(b) Employment Generation: - The basic objective of import substitution is to create employment in the setting up of industries. Unemployment is one of the basic problems. An entrepreneur is a person who helps to solve this problem.
(c) Promotion of Industrialization:- The basic reason for import substitution is to industrialize the country. This promotes industrial development. Domestic producers take over markets which are already established in the country. Thus by shutting off imports, domestic producers can get a flying start in certain, already established lines of production.
(d) Production of consumer's goods: - In the present era it is very important that a manufacturer must produce those goods which are consumers oriented. Import substitution is effective in producing consumers' goods. Here technology is often rather simple and the demand for the product is easily identifiable.
(e) Improvement in Balance of Payment:- Replacing imports can bring better term of trade effects than expansion of export industries. This strategy aims at saving foreign exchange. The reduction in import of industrial goods meant less expenditure on the imports. This condition helps to reduce deficit in Balance of Payment which improves economic condition of a country.
(f) Benefits from industrialization: - There can be large economic and social benefits from industrialization. These benefits are – gains in

technological knowledge and worker skills, new attitudes more conductive to growth, national pride and perhaps self- sufficiency.

(g) Convenient market information:- Replacing imports of manufactures is a way of using cheap and convenient information. A developing country may lack the expertise to judge just which of the thousands of heterogeneous industrial goods it could best market abroad. But central planners have an easy way to find which modern manufactures would sell in their own markets.

V. MEASURES FOR IMPORT SUBSTITUTION

For import substitution the entrepreneur can use the following measures and devices:-

(a) Import Licenses: - an Import license is an important instrument. There can be a large variety of licenses- for users or for wholesalers they can be obtained by direct permission from some ministry or the central bank, or they can be sold at official auctions, they can be combined with specific import programs and they might be combined with lists of prohibited import products.

(b) Guarantee Deposits: - other means are guarantee deposits which have to be made by the importer for the right to import an item. Foreign firms can be restricted in their right to repatriate dividends and profits. Domestic exporters, on the other hand may be allowed to resell part of their foreign earnings at advantageous exchange rates.

(c) Tariff Walls: - tariffs are at the heat of import substitution. There exist many types of restrictive measures. They differ between countries. They usually also vary over time. It is, however important to get some grasp over the means used. It is also convenient to characterize a country's control over foreign trade according to the policy instruments used. Thus tariffs and surcharges are common protection devices.

(d) Physical Restrictions:- The method of physical restriction on import or even outright banning of import is used in cutting out imports. Reduction in imports is brought out by such devices as quotas, licensing, ban on certain imports etc. It is a sure way of protecting the domestic producers from the foreign competition.

VI. ROLE OF ENTERPRENEURS IN IMPORT SUBSTITUTION IN INDIA

India opted for a strongly inward oriented strategy in the early decades of economic planning. The basic rationale for adopting this strategy was that it would help rapid industrialization through import substitution and at the same time save valuable foreign exchange. The policy succeeded in achieving both these objectives to a considerable degree. The large imports necessitated by the development requirements of the nation gave rise to what may be called development disequilibrium in the balance of payments. Export promotion and import substitution are the two important measures for narrowing down and ultimately wiping out the balance of payments deficit. Industries and other sectors with a potential for import substitution have been given importance in our development programs.

There are some points which show the success of entrepreneur in import substitution as follow:-

Most programs involving import substitution facts have been considered successful enough to continued or renewed.

Import substitution in the long run is a relatively cost-effective strategy for economic development, creating jobs and economic growth for far less monetary cost than most other economic development strategies.

Areas with a ready supply of capital and willing entrepreneurs tend to have more success with import substitution.

Some theorists argue that the long –term vitality of certain cities and regions and stagnation and depression of others can be attributed to the success or failure of import substitution efforts.

VII. CONCLUSION

The policy of import substitution is well- suitable for a country like India because India has a large variety of resources for industrial growth. Its domestic market is small. Hence it is necessary to expand the domestic market by curtailing the imports. It is necessary to protect infant industry from the competition of foreign efficient and well established industrial producers. India needs and can afford a large – sized sector of capital goods industries. These are also needed for security purposes. India needs to self- sufficient and dynamic in the industrial field. India needs technological upgradation. This policy can enable the government to plan the allocation of resources as per its priorities.

At the end of this paper, we can say that the position of an entrepreneur in import substitution, actually 'Need of the Hour' and a great challenge for Indian economy to compete with other countries.

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Encouraging Entrepreneurship through Franchising

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ABSTRACT

Entrepreneurship is an act of undertaking innovations or introducing new things, finance and business insights, in an effort to transform those innovations into economic goods. In India, entrepreneurship is primarily considered as starting a new business. It comes with a sense of innate freedom and creativity but is followed by an inherent set of risks. Starting a business has long been considered a risky proposition. Just the potential for failure and loss discourages many would-be entrepreneurs from giving it a go. This is where franchising comes to the rescue. Franchises are wise as they come on board after the parent company has made all the major mistakes that will come with their new idea. Doing so, franchisees reduce their risk. Further, investing on a proven business model also paves the way for economic growth, employment growth, and export income fuelling activity in the small and medium enterprise (SME) sector. This report will provide an insight on how franchising can act as a pathway to entrepreneurship and the creation of wealth.

I. ENTREPRENEURSHIP IN INDIA

Entrepreneurship has been on the rise as a global phenomenon much before India became serious towards the development of entrepreneurship. In India, entrepreneurship is dated way back from the pre-colonial era. Indian trade and business was at its peak. Indians were experts in smelting of metals such as brass and tin. Kanishka Empire in the 1st century started nurturing Indian entrepreneurs and traders.

Following that period, in around 1600 A.D., India established its trade relationship with the Roman Empire. Gold was pouring from all sides. But, after the entrance of the Portuguese and the English into the Indian sea waters and the Indian business, they forced the entrepreneurs to become traders while they took over as entrepreneurs.

Gradually, after being annexed by the British East India Company from the early eighteenth century and colonized by the United Kingdom from the mid-nineteenth century, India acquired independence in 1947 after a tremendous struggle. It emerged as the world's twelfth largest economy at market exchange rates and the fourth largest in purchasing power. Economic reforms since 1991 may have transformed it into one of the fastest growing economies but unfortunately, it still suffers from high levels of poverty, illiteracy, and malnutrition. Above all, unemployment is the main problem that our country faces now. In this situation it is necessary to become familiar with the multi-dimensional aspects of Entrepreneurship. Interestingly, after the first Industrial policy resolution of 1948, the small scale sector, which later came to be known as 'the breeding ground of indigenous entrepreneurship', has been promoted and nurtured for its potential for addressing the larger developmental concerns. In spite of the domineering presence of large and medium enterprises in the economy, it is the small sector that has always dominated the inquiries into Indian entrepreneurship. The reason could well be that it is in the small enterprise that the presence of the entrepreneur is the most visible.

In a country like India which is vast, diverse and still on the stairs of development, small enterprises have a very definite role to play not only by contributing towards employment and income generation, but also in attending to the specific needs of a large proportion of customers. More importantly, the small scale sector has helped widen the entrepreneurial base by giving rise to a new class of entrepreneurs from the ranks of employees, business executive, technicians and professionals.

Presently, the awareness towards the path of entrepreneurship is picking up at a quick pace and is now growing at par excellence with the rest of the Asian countries. Following the global economic crisis, India had also been feeling the heat like the rest of the world which led to a fate of downsizing for many. Despite its sizeable youth population, it is being feared that the economy may not produce enough jobs to absorb the fast-growing labour force, leaving millions of young people feeling bitter and betrayed. To make matters worse, a recent Gallup study found that Indians are simultaneously the least and the most entrepreneurial people in Asia, with many Indian youths possessing strong entrepreneurial traits, though few actually wanted to start their own businesses. The reason being, till nearly the beginning of the last decade, Indian Economy was highly regulated and as such, setting up a new venture was directly related to how much capital one had.

The previous generation of Indian grew up in the 60s and 70s where getting a stable high-paying job was prized much more than doing a start-up. The youth at present is naturally a little skeptical of setting up a start-up venture. Moreover in India, failure is looked down upon, whereas start-ups fail a majority of times. Till 2005, there weren't too many inspirational figures of

entrepreneurs who made it big without much capital. But soon after the entry of Mukesh Ambani, Anil Ambani, Azim Premji, Adi Godrej, Lakshmi Mittal and Pallonji Mistry on the list of successful entrepreneurs, the youth started rising from their slumber.The start-up decision or the business ideas that were plaguing the minds suddenly came in the limelight and proved to be the right opportunity and time to realize that business idea. Moreover, now franchising form of business has also come to the rescue, emerging as a trustworthy solution to this problem.

II.OBSERVING ENTREPRENEURIAL UNDERSTANDING IN FRANCHISING

The concept of franchising is closely intertwined with entrepreneurship. Today, a person with a start-up business is not the only one to be called as an entrepreneur. A franchisee getting the rights to an established business model for a specific time period and in a specific geographic area can also be termed as an entrepreneur. Franchising is, at its core, an entrepreneurial alliance between two organizations, the franchisor and the franchisee. Therefore, notwithstanding the slow but significant change in the thought process of young adults today, institutes and colleges are now encouraging students by way of introducing entrepreneurial courses and subjects into their curriculum.

III. ADVANTAGES AND STRENGTHS OF A FRANCHISE BASED BUSINESS MODEL

As a business structure, a franchise can certainly be an appealing option. With a number of advantages, it is often the choice of those looking to start a new business without the risks associated with going out on their own.

1. **Power of a collective Brand** - A franchise offers the advantage of operating under the banner of an already established business. With an established brand name, a franchisee is buying in to a company that already has some recognition. With the opening of more and more franchises, the benefits of this name recognition increase. This subsequently leads to greater competitive advantage for the franchise owners, who benefit from the collective power of the brand name. The more recognized a brand name, the more consumers will gain trust in it. A start-up business venture will need many years to develop and build this kind of recognition and customer loyalty.

2. **Greater sense of Security** - Buying a franchise is often a more secure business decision because a major part of the work is done by the franchisor. The business is already a tried and proven one that has a base already in place. This means that for a franchisee, the main focus will be on following the model to see it through to success. While this certainly isn't easy either, it does eliminate the risk-factor inherent in the trial and error process of developing your own business from the ground up.

3. **Guaranteed Territory** - In most cases, a franchise's parent company will guarantee a predetermined territory to the franchisee and assist them in succeeding within that region. Territories vary depending on the company one is working with, but not having to compete with another franchise location from the same company in the given territory can help generate revenue.

4. **Easy Business Financing** - For a franchise, acquiring business finance is generally easier. Investors are far more willing to invest in a business with an established network, secure brand and effective support structure. In some instances, finance may be acquired from the franchisor, making life even simpler for the new business.

5. **Easy Business Relationships** - A franchisee can take advantage of the numerous business relationships already established by the franchisor. For instance, relationships with suppliers and perhaps distributors will already be in place and easy to manage.

6. **System Oriented model** - A franchise differs from other businesses as it follows an exact business model and plan in all of its branches. Thus, a franchisee would have less work to do in establishing a business plan, thereby following a plan with systems and rules in place. In many cases, a franchisee will receive training and help with the management and marketing. The franchise will reap the benefit of the parent company's marketing campaigns and strategies.

7. **Being Collaborative** - Similar to being system oriented, the best franchisees are those who can collaborate and work effectively with others.This type of collaboration is often unnecessary in the beginning of a start-up as much of the work is done independently and there are only few people to work with and/or report to. However, in a franchise system, a franchise owner will have to collaborate with others to ensure the success of its team and the company. There is great earning potential in the franchise business and many would do well to take advantage of such an opportunity.

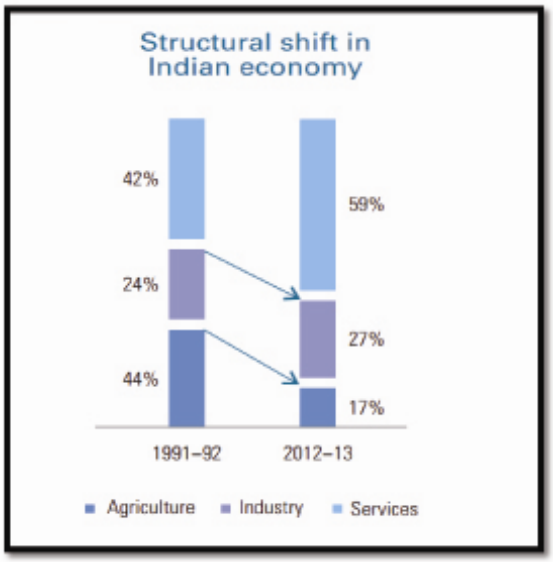
IV.VARIOUS SECTORS INVOLVED IN FRANCHISING MODEL OF BUSINESS

The franchising model of business is swiftly gaining exposure in India because of its ability to provide instant growth to businesses, at all level. Since liberalization, the Indian economy has witnessed steady evolution. The macro statistics reveal that agriculture is no longer the chief contributor to the Indian economy. Consequently, retail and service sectors are expected to play a major role. The country is gradually heading towards being a manufacturing and service based economy in the last two decades. This growth has given momentum to a huge entrepreneurial appetite.

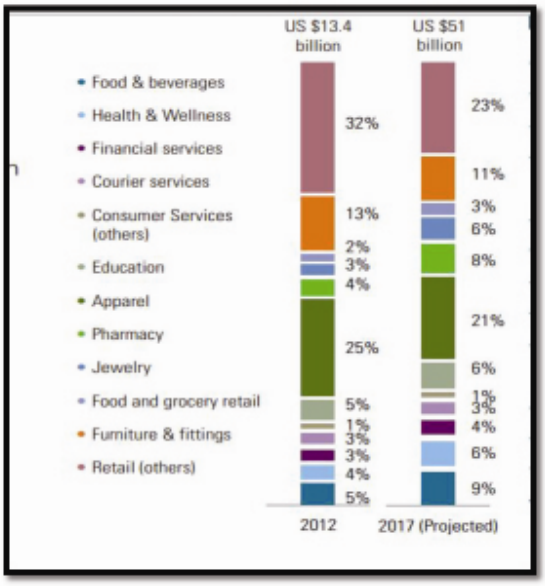
Over the last decade, franchising has surfaced as one of the most prolific and feasible ways of expanding businesses in India. Several industry verticals such as food and beverage, education, fashion, tourism and hospitality are leveraging their growth by franchising their products under various formats. India is home to more than 3,000 brands that use the franchise model. Bata was among the first franchisors in India. KPMG mentions that franchising is expected to continue to be one of the most popular business formats among organised retailers, especially to reach the tier II and III cities. The key industries that possess high prospects for the successful franchise opportunities in India are Retail franchising, Food and beverages, Health, beauty and wellness, Consumer services and Education and training. The individual growth and potential of these industries are driving the growth of the overall franchise sector in India.

Thus, with a variety of sectors opening opportunity gates of franchising, entrepreneurial talent in young minds is getting an exciting platform to explore. It is perhaps boosting the earning capabilities of youth in India, helping them to get independent with their own ideas and skills. As per the estimates by KPMG India, the franchising industry is expected to quadruple between 2012 and 2017. There is scope for franchising industry to contribute almost 4% of India GDP in 2017, growing from a current estimated contribution of 1.4 percent of GDP. This is also expected to create job opportunities for an additional 11 million people by 2017.

Key assumption: KPMG in India has considered the sectors of Retail, Food Service, Health & Wellness, Education, Consumer Services and other niche areas while estimating the franchising potential in India.



[Source: Centre for Monitoring Indian Economy (CMIE), Ministry of Statistics and Programming Implementation (MOSPI)]



(Source: KPMG India Estimates)

Franchise revenues growth - 30.2%
No. of franchise outlets growth - 30%
(Source: Source: KPMG India Analysis)

V. CONCLUSION

The definition of entrepreneurship has evolved over time as the world's economic structure has changed and become more complex. India needs an eco-system that encourages more and more mid-level enterprises to create more jobs, employing about 100-300 persons. The country's knowledge-based economy is a fertile ground for entrepreneurs. It is rightly believed that India has an extraordinary talent pool with virtually limitless potential to become entrepreneurs. Therefore, it is important to get committed to creating the right environment to develop successful entrepreneurs. Further, India today does not have any franchising specific laws; however various generic Indian laws such as Competition laws, Indian Contract Act etc are applicable on franchising operations. Any future consolidation with formulation of franchise specific regulations in this area should allow conducive growth of franchise systems along with protection of franchisee rights. Government should play a key role in supporting all the franchise industry stakeholders including franchisors, franchisees, financial institution, banks and industry associations. It should support public agencies and financial institutions to improve laws and promote franchising. It should encourage banks and financial institutions to increase financial incentives to support innovative franchise models in India. Changing dynamics in franchising industry would warrant a change in mindset as well. Thus, a collaborative approach involving Franchisees, Franchisors, Financial institutions and industry associations is the need of the hour.

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Bend Insensitive Microstructured Optical Fibres for FTTH Deployments

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ABSTRACT

Fiber-to-the-Home (FTTH) is becoming the main stream broadband technology of choice. Significant commercial deployment of FTTH has started only a couple of years ago in most of the countries. The main factor for the slow growth of FTTH is the higher installation costs compared to copper wires. While optical fibres have the benefits of signal capacity and immunity to electromagnetic interference, they suffer from losses due to excessive bending. When standard single-mode fiber (G.652) is used, the fiber must be installed cautiously avoiding small bends to restrict total single loss. Single Mode Fibre also has difficulty of transmitting video signals through bends tighter than about 30 mm in diameter. The bending requirement for deployment limits dimensions of hardware and imposes significant costs for FTTH installations. Hence bend insensitive single-mode fibers are attractive for FTTH applications to lower the installation costs and improve the system performance. Several fiber designs have been proposed to meet different bend loss requirements including both conventional and microstructure design approaches. This paper reviews recent progress that is reported in bend insensitive fibers.

Keyword— macrobend, FTTH, microstructure, power budget, single mode

I. INTRODUCTION

In FTTH, fibre is run from exchanges all the way to the subscriber premises up to the Termination Point (TP) on the wall of the subscriber's home. It is most cost effective to concentrate initial deployments of FTTH in densely populated areas for economical reasons. As in such dense areas the majority of subscribers either lives in multiple dwelling units or work in office premises. FTTH systems need to be optimized for such dense environments installations. In other words the FTTH industry needs optical cables that can be installed and handled in the same robust manner as copper cables. The overall objectives for an effective FTTH deployment optimization should therefore lead to a] reduction in up-front installation costs b] increase in the speed of making a subscriber connection c] reduction in life time operating costs d] and maximization of the reach & split ratio, and subscriber penetration of the network.

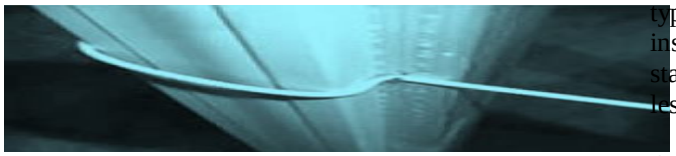

Fig.1a Optical cable under strain/tension

Fig.1b Optical cable with heavy bends

Typical FTTH installations are shown in Fig 1a and Fig1b. Optical cables routed in this manner can be subjected to tight bends, compression points in congested ducts, and stapling. In a dense environment such installation and handling practices of the optical fiber can see bends down to few mm in radius. For multiple dwelling units (MDUs) and in-home wiring applications, bend radii in the range of 5 mm are very common and hence bending losses must be kept to a minimum. Fibre macrobend loss of less than 0.1 dB/ turn at 5 mm is typically required to keep the inside wiring total loss at maximum a few tenths of a decibel. Bending losses of less than 0.1 dB/turn will ensure robust network performance under practical bending conditions, such as tight 90 corners, corners under load, fixation by stapling and excess cable storage in tightly confined spaces.

Conventional standard single mode fibres subjected to one full turn at a 5 mm bend radius would exhibit a loss in excess of 10 dB. A bend tolerant fibre compliant to the most stringent optical fibre bend standard [G.657.B] also seen to exhibit high loss in the region of 1 dB or higher. A typical bend-insensitive fibre in harsh, copper-like installation conditions with tight corners, tension, and staples should show total losses of the order of 0.2 db or less.

Optimizing the use of the available optical power budget from the central office to the dense areas of interest units needs to be exercised and that has several advantages like the ability to maximize network reach and/or to increase the split ratio. The use of a truly bend insensitive fibre helps to optimize network design and power budget. The specific power budget depends on the technology of choices like BPON [Broadband Passive Optical Networks], GPON [Gigabit Passive Optical Networks] & EPON [Ethernet Passive Optical Networks].

BPON conforms to the ITU-T G983.1 specification which is capable of 622 Mbps download and 155 Mbps upload. Each BPON fiber is split using an optical splitter to serve 16 or 32 users. GPON conforms to the ITU-T G984.1 specification. A 2.4 Gbps download speed coupled with a 1.2 Gbps upload speed is the need of the hour. Each GPON fiber is split to serve 16 or typically 32 users and next phase will support 64 users per fiber. In GPON for example the power budget from the central office to the optical network terminal (ONT) is of the order of 28 dB. Independent of the specific technology, however, it is not desirable to waste budget on inside wiring. The use of a truly bend insensitive fiber helps them optimize their network design.

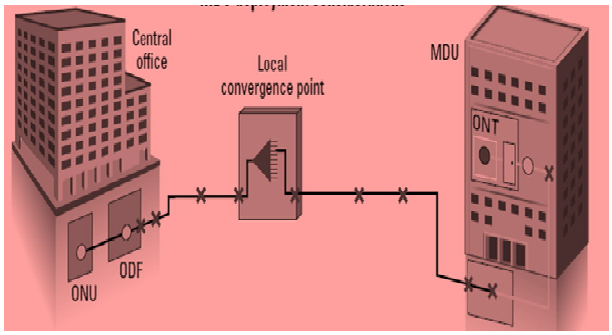

Fig.2 Dense building deployments

ODF - OPTICAL DISTRIBUTION FRAME
ONU - OPTICAL NETWEORK UNIT X SPLICE POINTS
ONT - OPTICAL NETWOTK TERMINAL
MDU - MULTIPLE DWELLING UNITS [OR OFFICES]

More bends during installation in buildings can give raise to unexpected additional losses. Those bend may disturb power budget or could deplete the repair and maintenance margin. Additionally cabling installations in such dwelling units or even in multi-complex offices are more exposed to unwanted public intervention than any other part of the network, increasing the possibility of network outages due to bends.

II. THE CHALLENGES IN FIBRE DESIGN AND DEPLOYMENTS

Improving the bend performance of an optical fibre presents an interesting challenge. There are several fibres designs or technologies that can significantly reduce the macrobend loss. However, the fibre industry must address the macrobend problem keeping in mind the compatibility with telecom industry requirements.

The first challenge is to reduce the bending loss at 1550 nm to less than 0.1 dB/turn at a bend radius of 5 mm to meet the requirements of harsh, copper cable-like handling conditions in MDU applications. As a reference point, the bend loss of standard single-mode fiber at1550 nm is typically 20 dB/turn at 5 mm bend radius. Hence a bend loss reduction factor of over 200 is required which is very difficult to achieve using conventional fiber designs. The second challenge is to meet the requirements of backward compatibility with the standard single-mode fibers imposed by the telecom industry standards. This requires a fibre that meets ITU-T G.652 standards for mode filed diameter, cable cut-off wavelength, attenuation and splice loss.

Single Mode Fibers (SMF) showing improved bending resistance compared with standard G.652D SMF are mandatory for the Fiber to-the-Home deployment (ITU-T G657A&B recommendation). Different profile designs allow reaching G.657B bend-losses levels while staying compatible with the legacy G.652D recommendation. The applicable industry standards and recommendations are displayed in Table 1, below.

Table 1

Attributes	G.657A		G.657B		
MFD 1310 nm Nominal range Tolerance	8.6 - 9.5 µm ± 0.4 µm		6.3 - 9.5 µm ± 0.4 µm		
Macrobending loss Radius (mm) Number of turns Max. at 1550 nm (dB) Max. at 1625 nm (dB)	15 10 0.25 1.0	10 1 0.75 1.5	15 10 0.03 0.1	10 1 0.1 0.2	7.5 1 0.5 1.0

These recommendations identify two classes: G657A shows slightly reduced bending sensitivity compared to already existing G.652D fibers and is fully compatible with this world wide installed fiber type. G.657B fiber show further reduced bending sensitivity, but this category contains a wider range of different fiber implementations because of which this category as a whole is not G.652D compliant. However, some implementations are compliant. The B-class version specifies fiber bend-loss levels for three different bend radii, 15, 10 & 7.5mm, and for two operating wavelengths, 1550 & 1625nm. Recently, questions have been raised concerning the bend-loss for extreme conditions and suggestions have been made to specify fiber bend radius as low as 5mm.

III. VARIOUS POSSIBLE DESIGNS

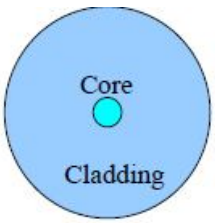

Fig.3a

Fig. 3(a) is a reduced mode field diameter (MFD) design with a simple step index profile. The reduction in the MFD can improve the bending performance, but will change other fiber parameters like cutoff wavelength, zero-dispersion wavelength, and dispersion slope and splice/connector loss significantly. Keeping in mind the bending performance and the backward compatibility, the MFD at 1310 nm can be reduced to about 8.6 m compared to about 9.2 m in typical standard single-mode fiber. With the reduced MFD, the 1550 nm bend loss is lowered to close to 2 dB/turn at a bend radius of 5 mm, which is still well above the bend loss requirement for MDU applications.

Fig.3b

The addition of a low index layer around the core as shown in the depressed cladding design in Fig. 3(b) helps in tuning the fiber zero-dispersion wavelength in the 1310 nm window. However, with backward compatibility constraints to the fiber design, the bending performance and other optical parameters that can be achieved with the depressed cladding design are essentially the same as the simple step index design with reduced MFD.

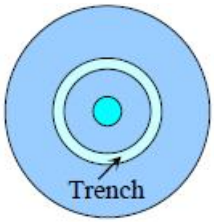

Fig.3c

The trench fiber design shown in Fig. 3(c) may offer the best approach among the conventional fibre designs. The low index trench reduces the power in the cladding region outside the trench, thus improves the bend loss. However, in order to keep the cable cutoff wavelength below 1260 nm required by the standards, the trench volume, which is defined as the product of the area and the relative refractive index change of the trench, has to be small enough to allow the mode to tunnel into the cladding. Typical bending performance of this trench fiber is about 0.5–1 dB/turn at 1550 nm with a bend radius of 5 mm. All of these conventional designs have similar limitations and cannot deliver the desired bending performance without compromising the other optical parameters required by the standards.

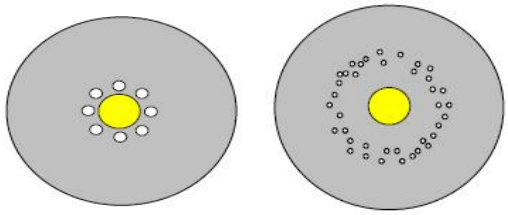
Fig.3d Fig.3e

A very different type of design approach is to use air holes in a hole assisted fiber design shown in Figure 3.d] & 3.e]. Such microstructured fibres can be either with random holes or periodic. The bending performance that can be achieved with this type of design is very good due to effective confinement of light. But maintaining compatibility with standard single-mode fibers has proven to be very difficult. The cable cutoff wavelength of this type of fibers is well above the 1310 nm and manufacturing in large volume is little involved as of date.

Recently, a new fiber design using the nano Structures technology [Ref 5] has been proposed by Corning to overcome the difficulties encountered in conventional designs. This novel technology enables new fiber designs having superior bend performance that meets the FTTH requirements and, at the same time, maintaining compatibility with large scale manufacturing, legacy fiber plant and existing field installation equipment and procedures.

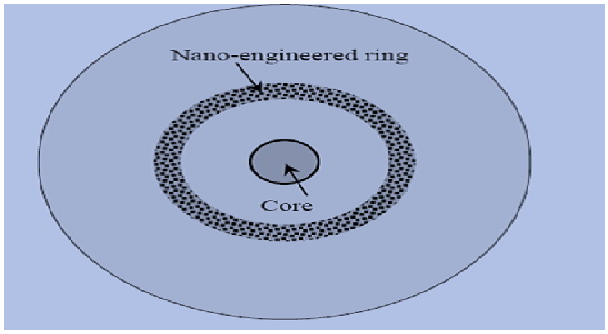

Fig.4 Bend insensitive optical fibres with nano rings

Figure 4 shows a schematic of the fiber design. It consists of a germanium-doped core and a nano-engineered ring in the cladding. The ring consists of nanometer-sized gas filled voids that are incorporated in the glass during the fiber processing. These voids are non-periodically distributed in the ring cross-section. The cross-sections of the voids are circular. They have diameters ranging from several dozens to several hundreds of nanometers. The void fill fraction can be designed to be between 1 to 10 percent depending on the ring dimension. The voids are sealed and non-periodically distributed along the fiber with void lengths ranging from less than one meter to several meters.

The refractive index of nano-engineered glass has much stronger wavelength dependence than that of fluorine doped glass. The index change for nano-engineered glass increases with wavelength, while the index change for fluorine doped glass is nearly flat in the wavelength range

of interest. This feature maximizes bend performance in the 1550 nm window while maintaining a cable cutoff wavelength below 1260 nm. Second, large negative index changes can be made with nanometer sized features. A relative index change as high as several percent can be achieved by using a nano-engineered design. Such a high index change is very difficult to realize using the conventional fluorine doping technology. Third, the scattering property of a glass having nanometer sized voids also has strong wavelength dependence. Light at shorter wavelengths has higher scattering losses than at longer wavelengths, which facilitates the suppression of higher order modes. These new features allow fiber designs with much better bending performance and with other optical parameters compliant with the FTTH standards.

IV. CONCLUSION

Bend insensitive fibers are a key enabling component for low cost FTTH installations. The objective for a bending optimized fiber should be meeting the key requirements for successful FTTH deployment like a] Compatibility with the existing base of single-mode fiber b] Easy splicing and connector mounting c] Full spectrum performance d] Reliability. The advancements in macrobend performance reported brings significant technical and economic benefits to FTTH installations by enabling optical fiber cables that can be handled and installed like copper, with no requirements for avoidance of bends and staples. Operators avoid significant amounts of installation rework that is caused by bend induced power loss and associated power budget failure. As a result, network operators are seeing significantly high potential for bend-insensitive fibers to reduce the first installed cost of an FTTH network, in particular in the dense environment, by accelerating subscriber connection and reducing the probability of failure during the network's lifetime through protection of the power budget.

V. ACKNOWLEDGEMENTS

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Role of Commercial Banks in Socio Economic Development A Case Study of SBI

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I. INTRODUCTION

Commercial banking is the most important part of modern banking set up. These days, the function of commercial banks is confined not only to advancing loans to the public and accepting their deposits, their contribution in accelerating the rate of economic development in under-developed and developing countries like. India is very important.Also banking is highly effective and useful in the fulfillment of various socio-economic objectives of the Government. Up to, 1969, the operation and functioning of commercial banks in India was confined only to medium and large sized towns and economically rich people.

II.PARAMETERS FOR ECONOMIC GROWTH

Capital formation is the important determinant of economic development. The basic problem of a developing economy is slow rate of capital formation. Banks promote capital formation. Commercial banks are very important source of **finance and credit** for industry and trade. Credit is a pillar of development. Credit lubricates all commerce and trades. An underdeveloped economy is characterized by the existence of a large non-monetized sector. **Innovation** is an essential prerequisite for economic development. Economic development needs an appropriate monetary policy. **Control and regulation** on credit by the monetary authority is not possible without the active co-operation of the banking system. In recent years, the SBI and other commercial banks are granting short term, medium-term and long term loans to agriculture and small scale industries. They transfer **surplus capital** from the development region to the less developed regions, where it is scares and most needed. Commercial banks are also helping manufacture to secure machinery and equipment from foreign countries under installment system by guaranteeing deferred payment. These qualities are called **"commercial virtues"** which are vital for rapid economies progress. The banker is in a better position to promote commercial virtues. Banks are called **"public conservator of commercial virtues".**

III.OVERVIEW OF PREVIOUS STUDIES

To formulate the problem scientifically, and to point out the importance of undertaking this study, it is essential to present a brief review of Researches undertaking in this area. Although the review involved a large number of studies only some significant studies which have direct and indirect bearing in the present study have been summarize at table 1

Overview of significant Research in the Past.

Table 1

Description of the former research	Explanation of present exertion
Naomi R. Lamoreaux[1]suggest in her paper if banks raise the capital for diversified enterprises thus the economy as a whole benefited from the ease with which capital can be mobilized.	Whether researcher also want to know in her paper that if capital formation also considered with capital diversification than it can be more effective.
Felix Rioja[2]studied the effect of financial development on the sources of growth in different groups of countries and also determine the effect on output growth occur primarily through capital accumulation.	In recent work researcher also included that if capital cumulation is avital source of development then credit brication is also a serving hand for economic development.
Pek Chen Goh[3] describes that all banks have relatively higher human capital efficiency than structural and capital efficiencies	Researcher suggests that agriculture field has also potential and if government focuses on this, it may also be effective capital generator.
Jose De Gregorio[4] examines in his research work that, the empirical relationship between long-run growth and financial development, provide by the ratio between bank credit to the private sector and GDP.	We find that this proxy is positively correlated with growth in a large scale economy but we can't neglect the controlling and regulation factor. If these two are not taken safely than active co-operation of monetary authorities can't be successful.

Katherin Marton[5] identifies that early reorganization initiatives, flexible approaches to privatization, and liberal policies towards foreign banks' involvement with the domestic institutions helped to build a relatively stable and increasingly efficient banking system.	The route of every economy especially in India is its agriculture empowerment, regional development, industrial expansion etc., by which sustainable enlargement can be possible at large as well as small level.

IV. ECONOMIC DEVELOPMENT SCHEMES INITIATIVE BY SBI

(a) SHG-Bank Credit Linkage Programme:

SBI has actively participated in SHG-Bank Credit Linkage programmers' since its inception in 1992 as a pilot project of NABARD. Since then, the Bank has made a steady progress in financing SHGs. SBI's branches, spread all over the country, and have opened 13.52 lac Savings Bank accounts of SHGs.

Performance in SHG – Bank Credit linkage

Table 2

Year	March'10	March'11	March'12
Amount outstanding SHG Direct credit linked (Rs.)	5893 cr.	5471 cr.	5658 cr
No. of SHGs maintaining Savings a/c in the Bank	12.17 lac	12.62 lac	13.52 lac.
Amount in Savings a/c (Amt. in Rs.)	846 cr	829 cr.	934 cr.
Number of MFIs Financed	209	188	174
Amount outstanding to MFIs (Rs.)	1080 cr	946 cr.	927 cr.

(b) SBI – Emerging as a Leader in Shg-Bank Credit Linkage:

SBI is maintaining its position as a leader among Commercial Banks in credit linking of SHGs and is a prime driver for the movement. As at the end of March 2011, SBI, with a share of approximately 26% of total SHGs financed by Commercial Banks, is the leader among banks. 82% of these SHGs are women SHGs.

V.RESEARCH DESIGN AND METHODOLOGY

(a) Scope of study: - The study is conducted in Agra tehsil's villages which are benefited by financial inclusion and covered under micro finance schemes with reference to:

(i) State Bank of India (Public sector commercial bank)
(ii) SHGs (Agra Tehsil)

(b) Hypotheses:-

Ho_1: - Financial inclusion and inclusive growth are independent to each other.

Ho_2:- Impact of self-help group and inclusive growth are independent to each other.

(c) Sample Size: - A good sample is a true representation of the population. Table-3 hilights details of sample which is almost 50% of the total class.

Sample source for Primary Data

Table -3

Block	Village's Name	No. of A/c's	Sample Size	Percentage
Fatehpur sikri	Baha	23	11	50%
Etmadpur	Bahrampur	26	13	50%
Shamshabad	Basai Raimol	20	10	50%
Akola	Pesai	18	9	50%
Khandauli	Swain	25	12	50%
Total	**5**	**112**	**55**	**50%**

(d) Collection of Data: - This study is based on both primary and secondary data. Primary data have been collected from the respondents through the questionnaires/Schedule and interviews.

Primary data have been supported by secondary sources which was collected from journals and Magazines published, papers presented at seminars and conferences, publications etc. data have also been collected from Annual Reports of Reserve Bank of India, NABARD and other official Web sites.

(e) Statistical Tools

To test the hypothesis and presentation of survey findings, statistical techniques have been used like weighted average, Mean, SD, Z-Test etc.

VI. RESPONSE ANALYSIS

It is very important to know the current scenario of financial inclusion in India therefore in the present study researcher tries to explore some facts related to financial inclusion its applicability and Drawbacks through direct approach with people who somewhat related with financial inclusion. For effective and understandable study researcher has divided analysis part in three main categories on the basis of objectives.

(a) Analysis based on profiles of respondents.
Showing the profile of respondents.
Profile of Respondents

Table No. 4

Basis	Category of Respondent	Number	Percentage
Age	20-30	30	20
	30-40	93	62
	40-50	17	11
	50-60	10	7
	Total	150	100
Income(per day)	50-100	20	13
	100-150	60	40
	150-200	40	27
	200-250	30	20
	Total	150	100
Occupation	Farming	90	60
	Daily earner	20	13
	Milk men	25	17
	Artisan	15	10
	Total	150	100
Education	Primary	98	65
	Metrics	32	21
	High School	10	7
	Inter	10	7
	Total	150	100

(b) Analysis to measure awareness about financial inclusion in people and fig 1 are showing the awareness of financial inclusion among people and results.
Awareness about FI

Table -5

S. No	PARAMETERS	**MEAN VALUE**
1	No frill account	2.03
2	Micro insurance scheme	3.01
3	Micro credit	2.11
4	Pension plans	2.06
5	Cheque facility	1.86
6	Electronic fund transfer	2.09
7	Credit and debit cards	1.76
8	Overdraft facility	2.39
9	Payment and remittance services	2.02
10.	Financial market	1.98

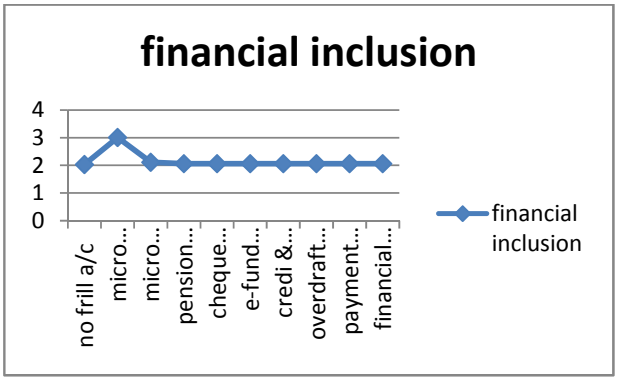


Fig. 1 showing the changes in economic conditions and habits of the respondents after joining the self-help group.

(C) Analysis of impact of SHG on inclusive growth of its members.
As far as the economic condition of group member of SHGs is concerned it can clearly understand from the fig.1 that on an average

they find good improvement in their economic condition after joining the Self-help group, as they find lot of improvement in their financial status followed by contribution to family and house hold income, housing condition and at last in their saving habits.

Impact of self-help group on inclusive growth of group members.

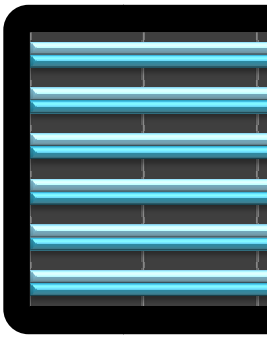
Table -3

Category	Parameters	Before Joining		After Joining		Z-Value
		Mean	**S.D**	**Mean**	**S.D**	
Economic Issues	Contributing to family income	1.55	0.80	4.15	0.79	-15.5
	Financial status	1.42	0.67	3.95	1.07	-12.65
	Saving habit	2.27	0.99	4.45	0.97	-9.86
	Contribution to household income after joining the group	1.55	0.83	4.5	0.86	-14.58
	Housing condition	2.05	1.24	4.2	0.92	-8.78
Average		**1.77**	**0.91**	**4.25**	**0.92**	
	Calculated Z value	-12.09				
	Tabulate Z value	1.96				
Self-Development	Confident in moderating group meetings	1.47	0.83	4.6	0.8	-17.08
	Confidence level	1.67	1.03	4.4	0.91	-12.47
	Communication skill	1.92	0.985	4.45	0.80	-12.55
	Dressing sense	2.27	1.07	4.2	1.02	-8.193
	Over all personality	2.1	0.969	4.35	1.01	-10.15
AVERAGE		**1.89**	0.97	**4.4**	0.912	
	Calculated Z value	-11.86				
	Tabulate Z value	1.96				
Social status	newspaper reading habit	1.7	1.05	3.85	1.10	-8.9
	Clean cooking and eating habits	1.55	0.86	4.1	1.13	-11.306
	feel recognized in family	1.375	0.731	3.95	1.12	-12.207
	Handling bank work	1.4	0.768	4.05	1.12	-12.37
AVERAGE		**1.506**	0.854	**3.99**	1.118	
	Calculated Z value	-11.16				

	Tabl

VII. EFFECT OF INCLUSION ON I

(a) **Self Development**
Changes in self-developm
after joining the self-help



As far as the self-developmer
SHGs is concerned it can clea
the fig.2 that on an average th
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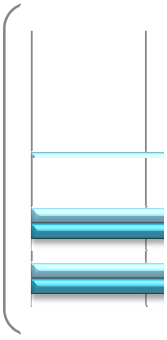
(b) **Social Status**
Fig. Changes in social status
joining the self-help group.



As far as other area of group
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social status after joining the

Skill Development for the Youth: A Global Quest

Siddharth Chaturvedi
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ABSTRACT
Education and Skill Development have the power to transform the economic condition of any nation. They are an absolute bet to get all segments of society involved for the benefit of a country's economic growth and transformation. Education, unlike in ancient times, has become more achievement-oriented than child-oriented. It does not address the needs of all the children who, in spite of various levels of scholastic competence, are capable of learning and need to develop those skills and become empowered to live effectively in this world. In India, young people who will soon be entering the labour market constitute the largest segment of the demographic structure. A majority of them have limited access to education and training, and most find work in the informal sector. In recent years India has rapidly expanded the capacity of educational institutions and enrollments, but dropout rates remain high, and educational attainment remains low. India so far has not sufficiently prepared its youth with the skills that today's industries require. Thus, to accelerate its economic growth, the country has introduced drastic policy reforms in skills development.

I. INTRODUCTION

Every successful goal achievement has proper skill development behind it. Skill-based education and training play a significant role in preparing the young masses for the workplace. More specifically, it bridges the gap between the worlds of learning and work by ensuring that the young people learn skills required by the labour markets.

Skill development is an essential element in improving the employability and potential productivity of the working poor and can be an important tool for reducing poverty and exclusion and enhancing competitiveness and employability. Education and skills can facilitate the working poor and vulnerable groups, such as people belonging to rural communities, persons with disabilities, or disadvantaged youth to escape the vicious circle of inadequate education, poor training, low productivity and poor quality jobs with low wages. Evidence for this can be found in any nation that has prioritized education and skills development. An increasing global competition, rapid technological intensification and highly young population have brought skill development in the center of all debates demanding a competitive India.

The objective of Skill Development is to create a workforce empowered with the necessary and constantly upgraded skills and knowledge to gain access to decent employment and ensure a country's competitiveness in the dynamic global market. It aims at increasing the productivity and employability of workforce both in the organized and the unorganized sectors. This initiative seeks an increased participation of youth, women, disabled and other disadvantaged sections with the enhanced capability to adapt to changing technologies and labour market demands.

II. THE PRESENT SCENARIO OF SKILL DEVELOPMENT AROUND THE WORLD AND IN INDIA

The current standard model of learning fits neither people's diversity of talents and attitudes nor the demands of employers. Schools and universities in many countries, despite recent reforms, still focus on developing traditional cognitive skills, teaching narrow facts and solving routine problems with rules-based solutions. However, countries at all levels of development including Europe, Africa and China have realized that adequate education and skills can improve the employability of workers, the productivity of enterprises and the inclusiveness of economic growth. This realization has led to an increased interest in the devising of skill development policies to drive the change necessary to meet development challenges. Many policy makers are aware that if their countries are to gain or maintain their status as high-income countries, they must produce the higher value-added, higher quality goods and services that can yield higher wages and profits. To do this they need a skilled workforce and an education and training system that adequately prepares young people to enter the labour market. Across the world, skills development has been addressed with considerable seriousness. The countries that emerged successful in raising their employment rates among young people closely link vocational training with labour market needs. This can be sampled in the following chart according as per the Planning Commission Report of 2008:

India has changed its skills since 2008 and at present more and more employers are on a lookout for 21st century skills in the job seekers. It is not that the country does not have enough degree holders but the business and industry fraternity does not find it sufficient for employment. Surveys and studies are conducted at regular intervals and it has been reiterated so far that 80% workforce in rural and urban India does not possess any identifiable marketable skills.

India is one of the few countries in the world where the working age population will be far in excess of those dependent on them and, as per the World Bank, this will continue for at least three decades till 2040. This has increasingly been recognized as a potential source of significant strength for the national economy, provided that the country is able to equip and continuously upgrade the skills of the population in the working age group.

III. INDIA SPECIFIC SKILL DEVELOPMENT CHALLENGES

India's population, which is huge at 1.21 billion, is fast expanding at a rate of 17% and integrating rapidly into the global economy. India is among the youngest countries in the world, with the proportion of the work force in the age group of 15-59 years, increasing steadily. But unfortunately, it is lagging behind the developed countries and even countries like China primarily when it comes to skilling. Only 2% of our workforce has formal vocational skills. It has been estimated that to benefit from the demographic dividend that India boasts about, an additional 500 million people need to be skilled by 2020. But to reach this target, a whole set of challenges are required to be dealt with:

1. **Focus on formal system of education over vocational education**: Over the years, skill gap has become a growing concern. Our higher education system being degree driven, had put skill enhancement to the back burner, resulting in serious employability gap at almost 80%. This has resulted in neglecting the vast mass of people outside the formal system requiring some or the other skill training and contributing to the bulk of employment at the entry level of each industry. Be it technicians, sales officers, retail staff, banking operations staff, data entry operators or office assistants, the infrastructure required for training such a huge mass is currently not available.

2. **Growth of technology:** India has a great opportunity to meet the future demands of the world and become the worldwide sourcing hub for skilled workforce. However, the rapid growth of technology during last couple of decades has put our nation in a grip of severe skill deficit. Today, a large section of India's labor force has outdated skills and with current and expected economic growth, this challenge is going to only increase further, since more than 75% of new job opportunities are expected to be skill-based.

3. **Lack of IT knowledge in rural and semi urban areas:** There is an immediate requirement for introducing modern tools and techniques to people who are trained in traditional skills. Unless modern technological tools like internet are used to impart vocational training, skilling cannot be scaled up in a country where millions of youths are unemployed for want of skills.

4. **Tough competition between firms:** In the globalized era, competition has intensified among firms and industries, requiring them to improve the efficiency and quality of their products and services. This forces them to hire fewer, but more skilled, workers. Thus, the entry requirements for youth seeking work have become higher and tougher.

5. **Quantity of youth to be trained:** Over 65% of India's large population is below 35 years of age; a robust skills training and certification system for these large numbers is a tough task.

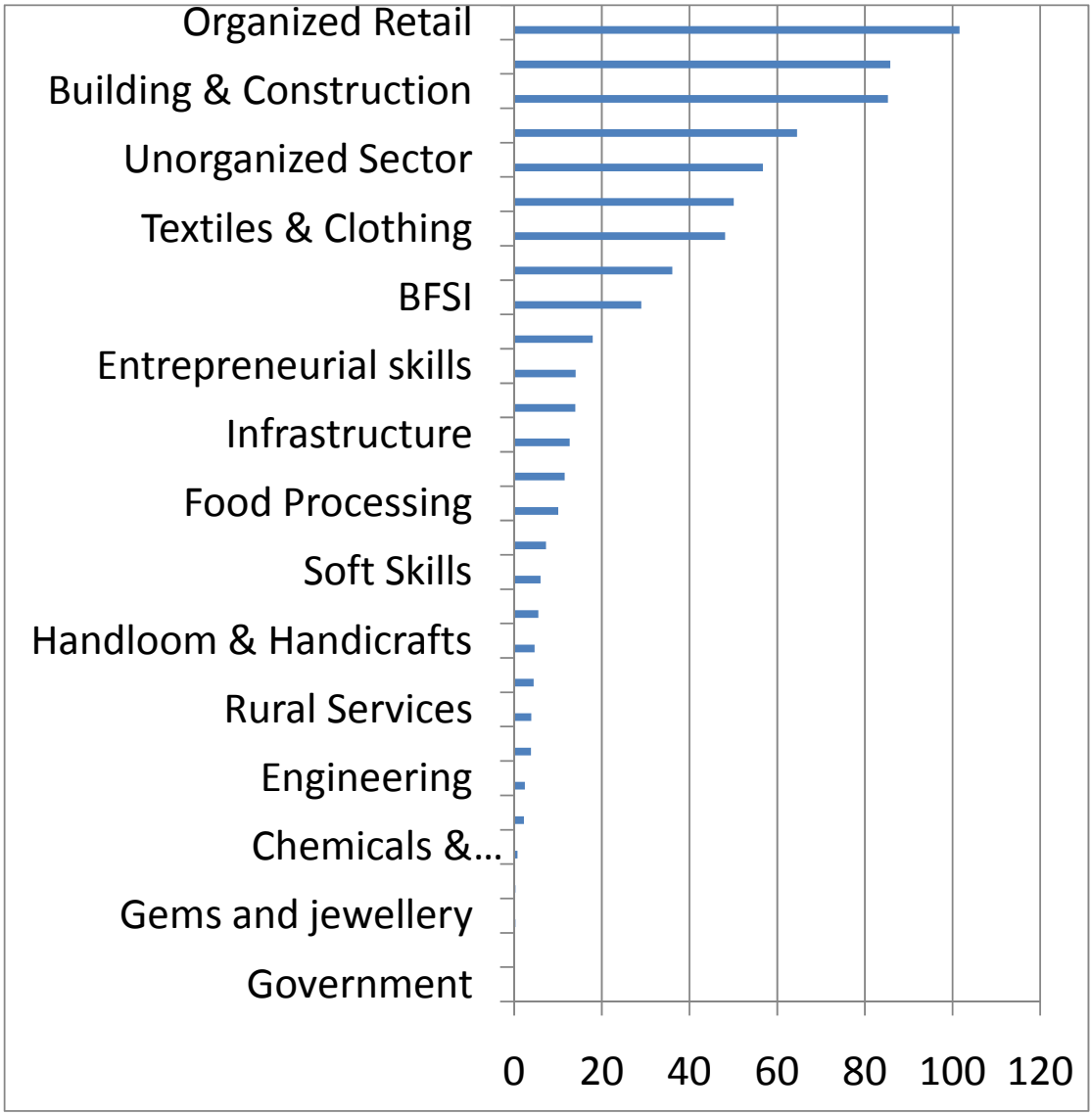
6. **Access:** India's large geographical territory and changing socio-economic conditions make the implementation of standardized, skill-based instruction a huge challenge**.**

The challenges for India get magnified, as it needs to reach out to the million plus workforce ready population, while facing an ever increasing migration of labour from agriculture to manufacturing and services. On the other hand, the country's workforce skilling is much darker with strength of formally trained worker at a dismal level of merely 5%.

IV. JOINT EFFORTS BY THE GOVERNMENT AND THE PRIVATE SECTOR IN OVERCOMING THE CHALLENGES

In order to achieve a sustained economic growth in double digits, it is important to focus on two important areas of skill development in both workforce and professionals and promotion of entrepreneurship at all levels. Awaking to this dire need, the Government has set a target of creating formally trained skilled workforce of about 500 million people by 2022. In its 12th Five Year Plan, India has set a tough challenge in the field of vocational education and training. According to the plan, the "demographic dividend" in India needs to be exploited not only to expand the production possibility frontier but also to meet the skilled manpower requirements of in India and abroad. Therefore, part of its National Skill Development Mission government has established the National Skill Development Corporation (NSDC) in the Public Private Partnership mode to facilitate setting up of large, high quality, for-profit vocational institutions. The NSDC has geared itself for preparing comprehensive action plans and activities which would promote PPP models of financing skill development.

In addition, NSDC also aims to set up 1,500 new ITIs and 5,000 skill development centers across the country as well a National Vocational Qualification Framework (NVQF) for affiliations and accreditation in vocational, educational and training systems. Likewise, it has set a sector wise skill target (in millions) presented below:



(Source: National Skill Development Corporation)

A total target of skilling 72.82 lakhs was accepted by various central government Ministries, and the NSDC, for the year 2013-14. The table below shows the allocated targets, and the latest status of target achievements as reported by these organizations to the National Skill Development Agency.

S.No.	Ministry / Organization	2013-14 Target (Persons)	Cumulative Achievement by end-June 2013	
			Number	% of annual target
1	M/o Labour & Employment	14,00,000	1,80,000	12.9%
2	M/o Agriculture[1]	12,00,000	1,71,935	14.3%
3	National Skill Development Corporation	10,00,000	53,473	5.3%
4	M/o Rural Development[2]	8,00,000	79,593	9.9%
5	M/o Micro, Small & Medium Enterprises[3]	6,50,000		
6	D/o Higher Education (MHRD)	5,44,000	36,044	6.6%
7	D/o Electronics & Information Technology[4]	5,10,000	2,00,690	39.4%
8	M/o Housing & Urban Poverty Alleviation[5]	4,00,000	7,812	1.9%
9	M/o Women & Child Development[3]	1,50,020		
10	M/o Textiles[6]	1,50,000	6,408	4.3%
11	M/o Social Justice & Empowerment[3]	1,21,400		
12	M/o Tourism	67,300	11,601	17.2%
13	M/o Tribal Affairs[3]	60,000		
14	M/o Home Affairs[3]	58,000		
15	M/o Road Transport and Highways[3]	56,000		
16	M/o Chemicals & Fertilizers	39,000	12,000	30.8%

17	M/o Commerce and Industry[3]	35,000		
18	D/o Heavy Industry	30,000	6,752	22.5%
19	M/o Minority Affairs[3]	5,000		
20	M/o Development of North Eastern Region[3]	4,000		
21	M/o Food Processing Industries[3]	3,000		
	TOTAL	**72,82,720**	**7,66,308**	**10.5%**

Skill Development Progress (FY 2013-14)

(Source: National Skill Development Agency, Government of India)

Indian Government's major initiative, Sarva Shiksha Abhiyan has already started witnessing success since its implementation. School dropout rates have declined from 80 lakh in 2009 to 30 lakh in 2012. Besides the Indian Government's holistic sustenance through all its initiatives in the form of necessary financial support, infrastructure support and policy support, the private sector has also recognized the importance of skill development and has begun facilitating the same via three key dimensions — non-profit initiatives, for-profit enterprises, and as a consumer. They are taking several initiatives to contribute effectively to the Government's endeavors.

Each year, educational institutes churn out millions of graduates who do not have the specific skills required by the market. If this trend continues, our economic growth would be hurt in the long term. To change this current trend, organizations like AISECT who have been promoting vocational training for almost three decades now, are continuously endeavoring to educate, train, empower and generate skilled workers through vocational training. Such organizations have opened academies to impart skills in different sectors and grant formal certification. Also, AISECT University has introduced skill-based courses in addition to strengthening skill delivery system at UG and PG level. Their skill development programs and AISECT'S presence in district and block level places ensure that the target youth trained by AISECT fulfils the need of the industry by taking up jobs at the entry level in the industry and even adding to informal employment in the unorganized sector.

With a network of over 12,000 centres, AISECT offers a wide range of vocational education courses with the objective of addressing the skill gaps pertinent to the emerging needs of a rapidly growing economy. Till date, the organization has transformed the lives of over 13 lakh students through a host of skill enhancement programs through its university-certified vocational courses as well as its association with the Central and State Governments for various skill development and capacity building programmes like the Swarnjayanti Gram Swarozgar Yojana (SGSY), Sarva Shiksha Abhiyan and Swashakti Project. AISECT has also tied up with the National Skill Development Corporation (NSDC) with an aim to skill about 13 lakh youth within 10 years.

V. CONCLUSION

India faces complex and enormous challenges in fostering skill development for youth. Moreover, majority of youth from economically and socially disadvantaged groups get very limited education and little access to vocational training. They work in the unorganized sector and enter the labor market without adequate vocational skills, leading to unstable, informal, and low-wage employment.

In India, the bulk of employment is in rural areas and in the unorganized sector, and almost all manufacturing firms are stationed in the informal sector. Noticing the segmented nature of the labour market, Indian youths must acquire education, training and skills for decent jobs. On one hand where the country narrates about its software engineers and impressive economic growth, its youth have limited access to education and skills training, high rates of school dropout, and large mismatches in the labor market. So even If the Indian Government has embarked on a drastic reform of its training policy by intensifying its efforts to increase the number of skilled workers, it needs to promote industrial development and achieve sustainable growth. The Government should investment more in education and training of youth and it must open training opportunities in the informal sector for youth who have not completed secondary education.

Moreover, it needs to put strong strategic emphasis on youth employability in order to bridge the gap between the industry requirements and the skill set of the youth. Launching job portals like rojgarmantra.com, which are targeted specifically towards the youth of rural and semi urban India is one way of bridging this gap. Such portals need to fulfill the local, entry level job requirements of private and public sector enterprises at the town, district and block levels. Government sees the youth as the future leaders of our country. Hence, it needs to realize that good placements alone will drive more youths to vocational training. Significant steps like including soft skilling of candidates, better information flow about jobs to candidates living in far-flung areas etc, may also contribute towards solving this problem. Once it is done, that day may not be far when India will emerge as the largest contributor to the global workforce, an exceptional strength compared to the rapidly ageing population in the Western countries, thereby witnessing a vibrant economic growth.

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Geotechnical Aspects of Buildings on Expansive Soils

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ABSTRACT

The geotechnical behaviour of expansive clay soils is investigated by looking into the geomorphologic, geological and climatic conditions and mineralogical composition of the soils in the study area. The geotechnical results are linked with the performance of the foundation as well as structures.

Since swell potential and swell pressure are key properties of expansive soils, the swell parameters were measured by free swell tests and one-dimensional oedometer swell tests respectively.

Physical conditions of the surveyed properties in the area confirmed the hypothesis of building damages due to poor building materials triggered by expansive soils. In support of the obtained data, the actual behaviour of the foundations is supplemented with prototypes of strip foundations whose performances are to be monitored over a long period. Finally, suggested are the ways forward to solve the problem of foundation on expansive soil.

Key Words **:**Expansive soils, soil properties, potential swell, Soil-Structure Interaction (SSI), and superstructure and substructure.

I. INTRODUCTION

Plastic clays termed as expansive soils or active soils exhibit volume change when subjected to moisture variations. The soil found in the case study is over-consolidated with the significant amount of expansive clay minerals (montmorillonite), mainly darkish grey colour. The case study being in Bairagarh in the semi-arid regions of Bhopal (M.P.) experiences two main seasons, the rainy and the dry seasons. During the rainy season, the expansive clay minerals attract water molecules resulting into massive change in volume.

Numerous masonry houses especially lightweight structures on these expansive soils in Bairagarh, have met with damages originating from differential heave. While the presence of expansive soil in the area can cause significant problem, the mere presence of it does not alone cause all the defects.

Apart from the expansive soil, the defects may originate from inadequate design, poor materials, poor job-site construction or multiple of the factors. In order to understand fully the problem behind the poor performance of buildings in the case study, a top agenda item is to build-up knowledge of expansive soils both as an entity in its own right, but particularly as a critical component with myriad linkages (Soil-Structure Interaction) to the whole structure, namely foundation and superstructure.

Generally, the structures include both superstructure (walls, floors and roofs) and substructure (foundation and soil). Foundations are in turn divided into two main categories: deep and shallow foundations.

The structures most susceptible to swelling/shrinkage on expansive soils are those with foundations located at shallow depths. Damages experienced by these structures include cracks in the foundation and walls and jammed doors and windows. The degree of damage based on observed cracks ranges from hairline cracks, severe cracks, very severe cracks to total collapse. The pattern of the cracks depends on whether it is a dooming heave or a dish shaped lift heave. The dome effect results from the movement of the moisture from the perimeter to the centre of the house while the saucer effect results from the moisture moving from centre to the perimeter.

Apart from the soil and types of foundations, defects can start off from the pitiable design and poor quality of construction materials. Building materials come in many forms, different sizes and different qualities. The problems of heave are more common in un-reinforced concrete or masonry due to their brittleness. The type as well as standard of material is always behind the poor performance of structures on expansive soils. Many single-storey buildings in the case study are poor quality residential buildings.

Although the problem of expansive soil has caused damages with respect to serviceability in the actual area, little has been done to address the magnitude of the problem on the expansive soils. It is from the above facts that the primary goal of this study is to investigate the crucial properties of expansive soil, where the majority of the problems originate, but also on the building structures because the magnitude of the damage is related to the interaction between the soil and the structure.

The laboratory tests concentrated on the determination of the Atterberg limits (widely used index properties of soils), particle size analysis, swell test, and x-ray diffraction (XRD) test in order to identify the expansive clays. To gain a better insight into the swelling properties of the soil, detailed investigations and inspections were conducted at two buildings in Bairagarh, Bhopal, where damages were very apparent.

II.STATEMENT OF THE PROBLEM

The presence of the expansive soils, also known as shrink-swell or swelling soils in Bairagarh Bhopal where semi-arid clayey soils are predominant has caught many builders unawares.

Swelling or expansive clay soils are those that comprise swelling clay minerals such as montmorillonite, which expand when the moisture in the soil changes. In addition, expansive soils have high degree of shrink-swell reversibility with change in moisture content.

A large number of structures especially lightweight structures found on these expansive soils have met with widespread problems associated with serviceability performance mainly in the form of cracks or permanent deformation.

III.OBJECTIVES OF THE STUDY

The primary objectives of this study are to do the following:

(a) Study the engineering properties and mineralogical composition of the clay soils, together with their origin

(b) Study and understand the important soil properties for the soil swell/shrink potential

(c) Find out the causes of the swelling of the sub-grade soil.

(d) Study and evaluate the performance of existing buildings in Bairagarh Bhopal region and recommend appropriate measures.

IV.IDENTIFICATION OF EXPANSIVE SOILS

Identification of potential swelling or shrinking subsoil problems is an important tool for selection of appropriate foundation (Hamilton, J. J., 1977 and Van Der Merwe D. H., 1964).

Despite the lack of standard definition of swell potential (Nelson, J. D. and Miller, D. J., 1992), there exist various geotechnical techniques to identify the swelling potential of soils. Surface examination, geological and geomorphological description can give indicators of expansive soils.

The morphological description includes a host of many things such as ground water table situation, colour of the soil, soil consistence, soil texture, soil structure, texture groups etc. Most of the relevant physical and mechanical properties to give indicators of swell potential are obtained by performing geotechnical index property tests such as Atterberg limits, unit weights and grain size distribution. Other tests direct tests) to determine the swell potential include volume change tests (free swell and swell in oedometer test), coefficient of linear extensibility (COLE) and mineralogical compositions by x-ray diffraction (XRD) test.

The direct methods consist essentially of laboratory swelling tests while indirect methods base on the correlation of certain physicochemical properties and mineralogical composition of the soils. Empirically correlating soil parameters like water content, Atterberg's limits, colloids etc. to the expansiveness is indirect method while tests like swell test and coefficient of linear extensibility (COLE) are direct methods.

(a) **Visual identification:** Field estimates of shrink-swell potential can be made by observing desiccation cracks. The development of desiccation cracks in the ground surface is apparent during the dry periods. The degree of potential swell determines the size of the cracks (Day, R. W., 1999).

Great potential swell is indicated by large and more frequent polygon arrangements of cracks while low shrink/swell means that potential for shrinkage cracks developing is low. Soils containing expansive clays become very sticky and plastic when wet and adhere to soles of shoes or tires of vehicles. They are also relative easy to roll into small threads.

Table: 1Criteria for describing consistency of in situ undisturbed fine-grained soils (ASTM D2488-00).

Degree of firmness	Pointer
Very Soft	Thumb will penetrate soil more than 25 mm
Soft	Thumb will enter soil about 25 mm
Firm	Thumb will indent soil about 6 mm
Hard	Thumb will not indent soil but the thumbnail will readily indent it.
Very Hard	Thumbnail will not indent it

(b) **Consistency:** Consistency is used to designate the degree of firmness or cohesion of intact fine grained soils (Day, R. W., 1999 and ASTM D2488-00, 2000) and it varies from 'very soft' to 'very hard' as indicated by the criteria in Table.

(c) **Particle size distribution (PSD):** The inherent swelling potential of soil is directly related to the total amount of clay-mineral particles (particles that are <2µ m in diameter) in it. The swelling potential increases with the increase of clay minerals. Moreover, particle size distribution of soil mineral separates are critical for getting hold of many soil properties such as water holding capacity, rate of movement of water through the soil, kind of structure of soil, bulk density and consistency of soil. All these are important in the identification of expansive soils.

Classification of the soils for engineering purpose depends very much on the system used. In this study, use is made of the two systems; the USCS and BS 1377. The grain size and grain size distribution are according to USCS, while the wet sieve is according to BS1377: Part 2: Clause 9.5: 1990. That means the distribution of particle sizes larger than 0.002 mm is determined by dry sieve, while a sedimentation process using a hydrometer determines the distribution of particle sizes smaller than 0.002 mm (Figure 2.5). For both systems, a cumulative frequency distribution is determined for each sample to characterize the grain size distribution.

(d) **Atterberg limits:**

In the year 1911 Atterberg proposed the limits (liquid limit *LL* , plastic limit *PL* and shrinkage limit *SL*) of consistency in an effort to classify the soils and understand the correlation between the limits and engineering properties like compressibility, shear strength and permeability (Casagrande, 1932). The limits represent the water holding capacity at different states of consistency.

The limits are the most popular procedures for gathering information on the expansive nature and mechanical behaviour of clay soils (Williams, A. A. B., 1958). The most useful classification data for identifying the relative swell potential are liquid limits (LL) and plasticity index (PI). The liquid limit is the water content at which a soil changes from the liquid state to a plastic state while the plastic limit is the water content at which a soil changes from the plastic state to a semisolid state (Figure 2.6). The plasticity index is calculated by subtracting the plastic limit (PL) from the liquid limit (LL). i.e., PI = LL - PL. It indicates the range over which the soils remain plastic. Soils that possess no clay minerals do not exhibit plasticity thus they pass directly from liquid limit (LL) to the semi-solid state when their moisture content is reduced.

(e)Liquid limit (LL): There are two methods to describe the liquid limit (LL) namely percussion cup method and fall cone method. In the percussion cup method, liquid limit is defined as the moisture content corresponding to a specified number of blows required to close a specified width of groove for a specified length (Casagrande, 1932 and 1958). The method however does not provide a uniform basis of comparison for fine-grained soils that differ in their reaction when subjected to a shrinking (dilatancy) test. Furthermore, there is a difficulty of cutting a groove in soils of low plasticity (i.e. silty soils) and the tendency of soil to slip rather than to flow.

(e) **Plastic Limit (PL):**Plastic limit is the water content at which the soil begins to crumble when rolled into 3 mm threads.

(f) **Shrinkage limit (SL):**The shrinkage limit is the water content dividing the semi-solid and the solid state of the soil. It is the water content at which further reduction in moisture content does not result into a decrease in volume of the soil mass.

(g) **Climate and Hydrological Conditions:**Climate, hydrological conditions, and geology govern the formation and behaviour of soils. The climate in particular is one of the most important factors in soil profile development. It helps change parent material into soil. Climatic factors, such as precipitation, temperature, wind and sunlight accelerate the formation of the basic material of soil. Soil is a mixture of minerals, air, water, and organic materials. Soils differ depending on how much of these different ingredients

they contain, and climate contributes to those differences.

Climate change will modify rainfall, actual evaporation, generation of runoff, groundwater level and soil moisture storage. Changes in total seasonal precipitation and in its pattern of variability are both important in the prediction of alternate cycles of swelling and shrinking.

The local effects of climate change on soil moisture, however, will vary not only with the degree of climate change but also with properties of soil. Heavy clay soils are thought to have higher water holding capacity than coarse-textured soils. The water-holding capacity of soil will affect possible changes in soil moisture deficits; the lower the capacity, the greater the sensitivity to climate change. That means coarse textured soils dry or drain more rapidly than fine-textured soils. The evaporation time-lag in fine-textured soils gives them chance to swell slightly before shrinkage. Thus, heaving of expansive clay may occur even without the presence of free water.

V.STRUCTURES (SUPER-STRUCTURES AND SUB-STRUCTURES)

(a) Morphology of Structures

The major elements of a building include the structure system (foundation or sub-structure, and the superstructure including the exterior walls, interior walls, floors and roof) and service system. To understand the elements of a building the knowledge of the principle attributes of a structure such as building systems, materials, and loading is indispensable. This part focuses on the major parts of structures directly linked to Soil-Foundation-Structure Interaction, mainly foundations and walls.

A single-storey is the building in one floor or level, usually on the ground, whose full width and height can be utilised throughout for maximum garaging, storage, living or workspace.

The term multi-storey building encompasses a wide range of buildings that have more than one storey. However, for more clarity the building can be classified according to the levels it is built in. For example, a double-storey building is that built only in two levels or floors. Likewise, a three-storey building is that which has three floors or levels.

To simplify the classification, many buildings with multiple floors or levels are referred as multistorey. However, tall buildings with multiple floors equipped with elevators are singled out as high-rise buildings. Very tall buildings are referred as skyscrapers. Some of the skyscrapers in the world are taller than 400 m (Taipei 101 tower in Taipei, Taiwan, 509 metres; Sears tower in Chicago, 442 metres; Petronas twin towers in Kuala Lumpur, Malasia at 452 metres tall etc.).

(b) The Sub-Structure (Foundation) Systems

There are two types of foundations used in construction: shallow and deep (Smith, G. N., 1992). Shallow foundation is that whose depth (D) below the finished ground surface is equal or less than the width (B). Strip footings, grade beam, pad footings and mat foundations fall into this category. Deep foundation is that whose depth is found very deep (depth greater than its least dimension) below the finished ground surface (Figure 2.20c). They include caissons, piles, piers and micro-piles. Normally the types of foundation and importance or types of the structure determine the extent and type of soil exploration for geotechnical tests.

(c) Identification of Damage in Structures

The most obvious identifications of damage to buildings are doors and windows that get jammed, uneven floors, and cracked foundations, floors, masonry walls and ceilings. Moreover, different crack patterns mean different causes for different foundation materials. In most cases, cracks due to shrinkage and expansive clay usually run from corner towards adjacent opening and are uniform in width or v-shaped, wider at the top than the foundation wall (Mika S. L. J and Desch S. C., 1998 and Ransom W. H., 1981). This pattern of cracks happens when the moisture movement is from the perimeter to the centre of the house. Figure 2.22 shows the typical crack pattern in the concrete slab-on-grade concrete due to centre heaving of expansive soils (Day, R. W., 1999).

In some cases, the cracks are wider at the bottom than the top due to dishing effect as opposed to dooming effect. This happens when the moisture moves from centre to the perimeter resulting into the saucer effect. In the dishing effect, the cracks are wider bottom than top because of the inwards tilt.

The identification is followed by the classification of the damage. The classification of the damage is very important to assess whether the building calls for strengthening, repair, renovation or demolition. Various researchers (Burland, J. B., *et al*., 1977, Boscardin M. D. and Cording E. J., 1989) put forward many definitions, specifications and guidelines for classification of damage in structures. Visible damages based on observed crack width as suggested by Burland and colleagues are reproduced in Table.

Table 2.10: Categorization of visible damages in structures (Burland, J. B., et al., 1977).

Category of damage	Description of typical damage	Approximate width of individual crack (mm)
Negligible	Hairline cracks	<0.1
Very slight	Fine cracks that are easily treated during normal decoration. Isolated slight fracture in building and cracks in external brickwork visible on close inspection	1
Slight	Cracks which are easily filled and redecorated. Several slight fractures may appear inside of the building. Cracks are visible externally and repainting may be required to ensure weather-tightness. Doors and windows may stick	<5
Moderate	Cracks that require some opening up and patching by a mason. Recurrent cracks that can be masked by suitable linings. Re-pointing of exterior brickwork and possibly replacement of a small amount of brickwork. Doors and windows stick, service pipes may fracture and weather-tightness is often impaired	5 to 15 or a number of cracks
Severe	Large cracks calling for extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and doorframes distort and floor slopes are noticeable. Leaning or bulging walls. Beams lose some bearing. Utility service disrupted	15 to 25 but also depends on the number of cracks
Very severe	Major repair job involving partial or complete rebuilding. Beams lose bearing, walls lean badly and require shoring and windows are broken with distortion. There is a danger of structural instability	>25

Generally, the evaluation has to base on experience and knowledge of the history of the building, construction details (detailed building materials and structural survey), crack patterns, construction pathology and existing physical condition. This is possible by means of walk through inspection to identify and categorize both distinct and hidden damages. Unfortunately, the evaluation proposed by Burland and colleagues falls short of a link between deformation and critical strain criteria and damage category. Furthermore, the evaluation does not take into account the type of the building and the construction anatomy.

VI.SITE RESPONSE DURING FOUNDATION AND STRUCTURE PERFORMANCE

An outbuilding to the church in a state of damage due to heaving. A wide-open horizontal crack developed between the ground slab and the external substructure wall. The inner substructure wall which is found deep into the estimated sensitive subsoil, experienced differential heave of the soil profile caused by differential water content from the liquid waste in the toilet, thus pushed the ground slab upward leaving behind the external shallow substructure wall. Effort to arrest the gap between the superstructure wall and the foundation with reinforcement proved futile. The gap opened further pulling the reinforcement apart. What happened is that, the wastewater percolated through under-lying expansive soil of the strip foundation of the internal wall making it too wet than that supporting the external wall. Since the structure is in semi-arid climates, the moisture differential was severe enough to differentially lift the slab. The consequences of the differential heave are seen also in the loss of verticality of the walls, misaligned doors and uneven floor of the toilet. This raises the doubt that the bottom of the pit-latrine was not provided with watertight slab. This case history is the classic demonstration of typical behaviour of light structures on expansive soils.

(a) **Foundation Depth**

Most of the structures in the case study area are found on strip foundation. The results indicated strong correlation between minimum depth of foundations into the sub-soils and the damages.

Most buildings found about 1.0 m deep were more susceptible to damage than those found shallower or deeper than 1.0 m. The results confirmed the hypothesis that the more sensitive
stratum is located at about 1.0 m deep from the ground.

(b) **Construction Materials**

Poor quality building materials are common in the case study area. The masonry walls and masonry infills are in some cases a hotchpotch of materials ranging from clay bricks to concrete blocks mostly of low quality.

(c) **Conclusions of the Study of Existing Buildings in Bairagarh, Bhopal Region**

Many of the structural problems originate from improper design or construction, insufficient foundations and weak or inadequate materials triggered by the swelling soils. Other factors influencing the degree of likely damages include the climatic conditions, age, poor drainage and wet spots around the foundations, and neglected maintenance of the buildings. Taken together these factors underlying building damages are not mutually exclusive. The main challenge for any inspector is to investigate technically which one of these is predominant in any particular case.

VII.CONCLUSION

Expansive soils have been investigated in this study. The existence of expansive soils could damage foundations of above-ground structures. It is unfortunate that neither these soils were observed before nor had report been published regarding the characteristics of expansive soils and their adverse effects in the case study area. It is not therefore surprising that the side effect of expansive soils is ignored in both design and construction of structures.

This paper has helped identify the expansive soils and associated problems in the area. The more positive outcome of the research will be to sensitize the implementation of the proposed mitigation measures to prevent structural damages originating from the behaviour of expansive soils.

This awareness is a very positive development in terms of ensuring the durability of the properties in the area. The positive outcomes of this paper have the potential to improve the safety of the communities by assisting homeowners in promoting proper design, positive construction and maintenance altitudes.

Most of the damages caused by expansive soils are due to poor construction and lack of timely maintenance by the homeowners and are in most cases preventable, yet the communities have insufficient knowledge about the features and behaviour of the expansive soils.

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Bivalent Metal Ion Catalyzed Hydrolysis of Organ Phosphorus Compounds in Mild Acidic Conditions

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ABSTRACT
Hydrolysis of O, O-diethyl, O-p -cyanophenyl phosphate (organophosphorus compound) has been studied in acidic medium with catalyst Cu^{++} cation and the rate maxima observed were at around pH 6.0. Since the metal aquo complexes are known to exist in equilibrium with deprotonated species and therefore, metal bound OH nucleophile might be available abundantly even in acidic aqueous solutions.

Key Words- organophosphorus, hydrolysis, bivalent, metal cation

I. INTRODUCTION

Synthetic organophosphorus compounds are used extensively as agricultural and domestic pesticides including insecticides, fungicides and herbicides[1]. Due to environmental concerns associated with the accumulation of these pesticides in food products and water supplies, there is a great need to develop safe, convenient and economically feasible methods for pesticides detoxification[2,3]. The organophosphorus pesticides of major commercial and toxicological interest are esters or thiols derived from phosphoric, phosphonic, phosphinic or phosphoramidic acid. The OPs exert their main toxicological effects through non-reversible phosphorylation of esterases in the central nervous system (Aldridge and Reiner, 1972; WHO, 1986 b). The acute toxic effects are related to inhibition of acetyl cholinesterase (AChE) (WHO, 1986 b). The inhibition of this enzyme causes over stimulation of nicotine and muscarinic acethylcholine receptors. The POs exert other toxic effect on the central and peripheral nervous system. This toxic effect is called 'organophosphorous induced delayed neuropathy[4,5]. The POs are mainly detoxified through oxidation and hydrolysis[6-9]. The detoxification of phosphorus (v) pesticides and nerve agents is a challenging problem in catalytic hydrolytic chemistry. Metal ions are required in most enzyme catalyzed nucleophilic displacement reactions at phosphorus (V) and therefore a logical choice in the search for catalysts to promote hydrolysis of man made phosphorus (V) toxins[7-10]. The role of metal ions has been considered to be Lewis acid catalysis through coordination of the metal ion to substrate, rendering the later more susceptible to nucleophilic attack. Substrate ligation to metal ion may also assist the departure of the incipient leaving group[11,12]. In, addition, a metal ion ligated to substrate may act as a carrier of nucleophilic hydroxide ion. The pka of the water ligated to metal ion is considerably lower than that of water itself, so that at a given pH, a higher concentration of hydroxide ion can be obtained in the presence of metal ion[13-16]. This study includes hydrolysis of O, O-diethyl, O-p -cyanophenyl phosphate, catalyzed by Cu(II) in mild acidic aqueous solutions.

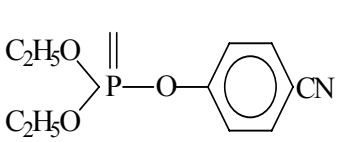
II. EXPERIMENTAL

(a) Synthesis of crude compound:- PCP (3.50g, 0.03 M), water (25 ml), carbon tetrachloride (70 ml), NaOH (4.8g, 0.12 M) and TBAB (1.0g, 3.0 M) was taken in a 500 ml RBF and stirred for 15 min. To this stirred solution, diethyl phosphite (16.6g, 0.12 M) in CCl_4 (30 ml) was added drop wise in 10 min A slight exothermic reaction took place, which was controlled with the help of cold water bath. The mixture was stirred for one hour. The mixture was then filtered and organic layer separated. The organic layer was washed three times with ice cold water till free from alkaline impurity. It was then dried with fused $CaCl_2$; solvent first removed by distillation on a water bath and then under reduced pressure. The crude compound so obtained was distilled under vacuum (78 %) Yield

(b) Purification of compound:- The crude compound was subjected to TLC (absorbent: silica G, eluent – hexane: acetone 4:1) analysis; showed two spots, one corresponding PCP and another to that of the compound, slightly lower level. In order to remove PCP, the extraction of the crude material was done with n-hexane, till TLC showed single spot. After evaporation of n-hexane the residue was redistilled. The pure compound, was transferred to a sample tube, properly stoppered with the help of PTFE tape and stored in a refrigerator.

(c) Spectral data:- The compound thus obtained was then subjected to UV, FT-IR and GC-MS.
UV: □max – 232 nm,
GC-MS M+ (m/z): Single peak

The spectral data were in good agreement with reported values which confirmed the structure of the compound as O, O-diethyl, O-p -cyanophenyl phosphate.



O, O-diethyl, O-p -cyanophenyl phosphate

(d) Preparation of stock solution:- Stock solution of compound (5×10^{-3} M) in dioxan was prepared by dissolving 0.068gm in minimum quantity of dioxan in 50 ml amber colored VF. The solution was then made up to mark by further addition of dioxan. The solution was mixed well, stoppered with the help of PTFE tape and stored in refrigerator.

A typical kinetic run was made by adding KCl (0.037g , 10m*M*), $CuCl_2$ (0.004g, 3×10^{-4} *M*) in water in 50ml flask to which approximately 40-45 ml water was added. The pH of the medium was adjusted by using 0.1 *N* HCl or 0.1 *N* KOH. HEPES buffer (0.122, 10m*M*) was used to maintain pH ≥6.0. The solution was chilled and 0.15 ml of solution of compound in dioxan (5×10^{-3} *M*) was added to it. It was made upto mark with chilled water, mixed well and equal volume of this was then quickly transferred to separate test tubes for the convenience of our measurements. The properly stoppered test tubes were placed in a digital water bath maintained at 83^0C (±0.5^0C), such that the temperature inside the test tubes were at 80^0C. The test tubes were withdrawn one by one at definite time intervals and the measurement of liberated p-cyanophenol was made as p-cyanophenolate anion as described earlier. All other runs (i.e., pH 1.0-5.0) were carried out in unbuffered aqueous solutions, as metal salt solutions acts as self buffers [17]. Similar kinetic runs were performed for varied [Substrate/Metal] ratio e.g., 1:30, 1:15, 1:10, 1:5 and 1:1 at pH value 2.0.

III. RESULTS AND DISCUSSON

The reactions were observed for more than three half lives and plots of log A_∞-A_o / A_∞-A_t, (where A_o, A_t and A_∞ are absorbance of p-cyanophenolate anion at time zero, t and infinity respectively) versus time were linear indicating that the hydrolysis occurs via first order kinetics with respect to the parent compound. In contrast to this, Cu catalyzed hydrolysis rate maxima has been found at pH 6.0, which is indicative of catalytically active species of copper being present around this pH (Chapter-1). A ~ 5640 fold increase in rates with respect to metal free hydrolysis at pH 6.0, clearly shows superior catalytic ability of Cu around neutral pH. However, below pH 6.0, the rate decreases which might be due to the decrease in the concentration of active copper hydroxo species. Above pH 6.0, the decrease in rates seems to be possible as evident by the precipitation of copper as its hydroxide[18].

From the magnitude of pK_a value, it became evident that hydroxo species formed from Cu^{2+} would bind more efficiently to esters molecules than those with other metal ions and additionally might facilitate intramolecular nucleophilic attack by metal bound hydroxide ion at phosphorus atom initiating the formation of a six membered ring intermediate. Thus the reaction appears to follow a push-pull mechanism as described in the case of bivalent metal ion catalyzed hydrolysis of phosphorus compounds [19-22, 23-27]. Therefore, considering the above facts it has been proposed that, electrons of sulfur atom of the P=S bond binds with complexed metal ions making phosphorus an electron deficient centre, which subsequently being attacked by OH^- ion of the adjacent metal ion to liberate the cyanophenol.

Effect of pH on metal catalyzed hydrolysis of O, O-diethyl, O-p -cyanophenyl phosphate kept at concentration 1.5×10^{-5} *M* at 80^0 C

Table 1

*p*H	Cu^{2+}	Metal Free
1.0	0.2	0.27
1.5	0.4	0.25
2.0	0.7	0.21
2.5	2.0	0.20
3.0	3.0	0.15
3.5	4.0	0.10
4.0	4.2	0.06
4.5	4.9	0.05
5.0	6.2	0.03
5.5	7.4	0.02
6.0	10.9	0.02
6.5	7.1	0.01
7.0	5.2	0.01

Effect of pH on metal catalyzed hydrolysis of O, O-diethyl, O-p -cyanophenyl phosphate kept at concentration 1.5×10^{-5} *M* at 80^0 C

Table 2

*p*H	Cu^{2+}	Metal Free
1.0	0.2	0.27
1.5	0.4	0.25
2.0	0.7	0.21
2.5	2.0	0.20
3.0	3.0	0.15
3.5	4.0	0.10
4.0	4.2	0.06
4.5	4.9	0.05
5.0	6.2	0.03
5.5	7.4	0.02
6.0	10.9	0.02
6.5	7.1	0.01
7.0	5.2	0.01

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