

Sankalpa means Decision,
Determination that a true manager or leader must make every day...



Volume 5

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Issue 1

SANKALPA

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SANKALPA : Journal of Management & Research

aims at bringing out the intricacies of Management perspectives, concepts, and applications. The focus is on Indian Management and its interplay with Global Management knowledge, best-practices and research.

This issue is sponsored by : Dr. Satendra Kumar, Professor & Head, Ph.D Research Center, SMJV's CKSVIM



SMJV CENTENARY
1915 - 2015



C K Shah Vijapurwala Institute of Management

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Hon. Dr. Dipchandbhai Gardi's 1st Memorial Lecture 6th January, 2015

SMJV's CKSVIM organized 1st Memorial Lecture and a prayer meet in the memory of **Hon. Dr. Dipchandbhai Gardi**, Former Chairman of SMJV who passed away on 6th January 2014 at Mumbai. The lecture started with the prayers and two minutes silence was observed to mark the death anniversary of our beloved Honorable Dr. Dipchandbhai Gardi (Former Chairman SMJV). He was and is still considered as the "**Danveer Bhamasha**" who used to donate about 1 crore of rupees every day. He is considered as the silent donor who used to donate the amount very generously.

His sole motto was to "**live and let live**". He used to strongly believe in "**Karmayoga**". Infact, India needs people like him. By sheer hard work, dedication, highest level of gentlemanship and devotion to almighty, he became an icon for philanthropic activities in India.

The **Chief Guest** for the first memorial lecture was **Dr. Kamal Taori, IAS (Retd)**, Former Secretary to Government of India and Chairman - Rural Business Hub - India, Wardha / New Delhi.

The other Dignitaries were : **Dr. Rajesh Khajuria**, (Director), **Shri Nileshbhai Shah & Shri Divyangbhai Shah** (Local Management Committee Members) who were present, narrated a speech on Hon. Dr. Dipchandbhai Gardi.

Dr. Rajesh Khajuria said that he has been inspired greatly by Dr. Dipchandbhai Gardi's life and way of living. He narrated some incidents from the life of the great philanthropist to the audience. He also shared that on this occasion we also remember the tremendous contribution of all the Trustees: **Shri. Kirtilal Doshi, Shri. Shrikantbhai Vasa, Shri. Subodhratna Gardi** and other Trustees and also LMC Members: **Shri. Bipinbhai Shah, Shri. Pratapbhai Shah, Dr. Shailesh Shah, Shri. Deepakbhai Shah** and **Shri. Bhupendrabhai Makati**, to set up the institute of Management with the main donor, **Shri. K M Shah** and his family.

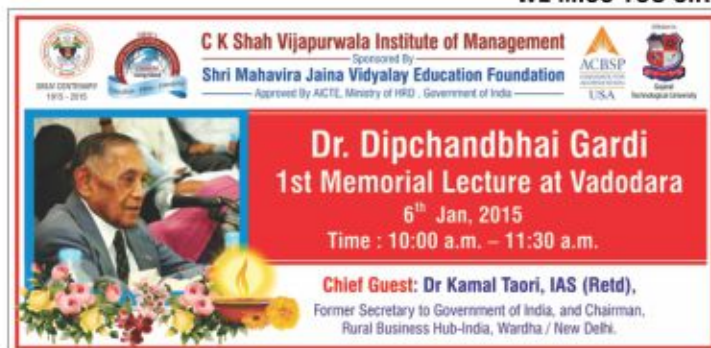
Shri Divyangbhai Shah, Local Committee Member of CKSVIM, said that Hon. Dr. Dipchandbhai Gardi's personality cannot be narrated in words, and to express him in writing, books are not enough to describe him. He had properties worth crores, still he used to live a life of a saint. He was far-sighted and had a great vision.

The **key note address** was given by **Dr. Kamal Taori**. He said he was glad to get associated with Dr. Dipchandbhai Gardi since the last five years. He said that he had learnt many things from his life. He has announced a reward of Rs. 10,000/- annually to those students who will do an innovative project.

Mr. Harshadbhai Shah, Superintendent of SMJV Boys Hostel, Vadodara, expressed his deep love by narrating incidences of Dr. Gardi's generous and philanthropic nature.

The **Vote of Thanks** was given by **Sh. Nileshbhai Shah** (Local Management Committee Member). He thanked some of the students in advance who will follow the footsteps of our beloved Hon. Dr. Dipchandbhai Gardi. He concluded by giving an example of the droplet of water on the lotus which shines like a pearl...describing Dipchand Sir, who shone out like the pearl of the society.

WE MISS YOU SIR



Poster for the 1st Memorial Lecture at Vadodara. It features a portrait of Dr. Dipchandbhai Gardi on the left. The text on the right reads: "C K Shah Vijapurwala Institute of Management", "Sponsored by Shri Mahavira Jaina Vidyalay Education Foundation", "Approved by ACITE, Ministry of HRD, Government of India", "ACBSP", "USA", "Dr. Dipchandbhai Gardi 1st Memorial Lecture at Vadodara", "6th Jan, 2015", "Time : 10:00 a.m. - 11:30 a.m.", "Chief Guest: Dr Kamal Taori, IAS (Retd), Former Secretary to Government of India, and Chairman, Rural Business Hub-India, Wardha / New Delhi." The poster is decorated with flowers and a small image of a lamp.



From the Heart of Editor-in-Chief...

Innovation - InnoVision - India!

Happy New Year 2015!

Year 2010-2020 is the Decade of Innovation, as was declared by the former President and Prime Minister of India in 2009. It is becoming true, and is getting a shot in the arm with the vision of new **Prime Minister Hon. Shri Narendra Modi**, who hails from Gujarat State.



Government of India, through new Ministry of Skill Development and Entrepreneurship, and existing Ministries of Micro Small and Medium Enterprises (MSME), Science and Technology, Food Processing and others as well as State Governments, Industry Associations like CII, FICCI, FGI, VCCI, Innovation Councils at National, Gujarat and Vadodara level, iCreate, GTU's Innovation Council and many others are working ceaselessly to promote the culture of Innovation in India. As if India is suddenly rising in the East with its 5,000 Years legacy of Ethics, Education and Innovation. Follow the link http://goindirectory.gov.in/search_result.php to see **Top 13 Innovation Initiatives by Government of India** and some State Government. It includes 'Tod-Fod-Jod' project by school children of Vadodara. But is it enough?

Innovative Cities Index was launched in past two years in The USA. San Francisco is 1st at Innovation Index of 57. Only 1 City of India figures in Top 100 Innovative Cities: **Mumbai** at 91st Number with Index of 46. Others far behind are Bangalore, New Delhi, Chennai, Pune, Hyderabad, **Ahmedabad** (Rank 363, Index 37), Surat, Lucknow, Jaipur, Kanpur, Kolkata and Madurai. See <http://www.innovation-cities.com/innovation-cities-index-2014-global/8889>. **Vadodara has to work!**

India, however, with its 11,406 Patents, is a fraction of percentage of **Total Global Patents at 5,087,843**. The USA alone accounts for 2,715,390 (54% of all) patents, while Non-US countries together account for 2,372,444 (46% of all) Patents as on 31st December, 2013. That's why, US is the No. 1 country in the world. Neighbouring **China** is yet to take a leap with 28,519 Patents. Here is the **opportunity for India** to roll its sleeves. See **Country-wise Data Table** at http://www.uspto.gov/web/offices/ac/ido/oeip/taf/cst_all.htm

How did **USA, Japan, Germany, Taiwan, South Korea, UK, France, Canada Italy and Switzerland** (in descending order, but all above 50,000 Patents) progress? **Think, Debate, Work, Enjoy!**

It takes Innovative Vision (InnoVision) for a Nation, followed by Innovative Policies, Innovative Design and manufacturing, Innovative Education and Training and Eco-system to become an Innovative Nation (InnoNation).

Next will be a Special Issue of SANKALPA on the occasion of **"4th International Conference on Business Ethics, Governance and Sustainable Enterprises"** organised by GTU and SMJV's CKSVIM at Gujarat Technological University, Chandkheda Campus, Ahmedabad with Cooperation Partners as **DHBW Cooperative University, Stuttgart, Germany; University of Applied Sciences, Bielefeld, Germany; Higher Education Forum (HEF), Navi Mumbai, and National Institute of Cooperative Management, Gandhinagar.**

Plan to be at GTU, Ahmedabad! You will enjoy the knowledge and networking...

Rajesh Khajuria, PhD, CMC, FIMC

Director, SMJV's CKSVIM, INDIA

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श्रद्धावाँल्लभते ज्ञानं तत्परः संयतेन्द्रियः । ज्ञानं लब्धा परां शान्तिमचिरेणाधिगच्छति ॥

"One who has faith and who with controlled senses is devoted to
attaining this wisdom is successful in his/her endeavour.
With wisdom and knowledge, he/she quickly attains the supreme peace."
- Bhagvad Gita

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APPEAL TO THE AUTHORS AND CONTRIBUTORS

The present issue (Volume 5, Issue 1) is the January-June 2015 Issue, which contains research papers / articles in various areas of Management and Research. The bi-annual Journal 'SANKALPA' portrays our strong conviction to disseminate the thinking of academicians and practitioners in the field of Business Management discipline, which they communicate through their 'Reporting' in the form of research papers, articles, study reports, case studies, original conceptualizations with logical vigor and vision.

The members of the Editorial Board appeal to all the academicians and practitioners to communicate their 'Reporting' to the Editor-in-Chief for publication in our subsequent issues, through the e-mail ID : publications@cksvim.edu.in

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From the Desk of Research Head, CKSVIM

The Ph D Research Centre, CKSVIM, continues to extend help to the faculty members of CKSVIM in particular, and faculty members of other institutions of Gujarat Technological University (GTU), Ahmedabad, in general, who are pursuing Ph.D Research or intend to pursue Ph.D Research.

The Mission and Objectives of the PhD Research Centre are:

Mission

- To promote 'Research Activities' at SMJV's CKSVIM, Gujarat Technological University and in other Institutions in the State of Gujarat and India.
- To promote Research Environment in CKSVIM capable of sustaining all kinds of research activities needed for the generation and dissemination of newer knowledge on a long-term sustainable basis.

Objectives

The specific objectives of the Research Centre therefore are :

- To encourage teachers and independent researchers to get into the habit of reading research journals to acquire current knowledge of the outcomes of the 'research studies' conducted by the Researchers and reported in these journals.
- To make them aware of the whole 'Process of Researches' of different kinds which can be undertaken by any Researcher and to motivate him/her to conduct 'Researches-studies' independently or as a member of the Research Team.
- To train the teachers and researchers in drawing inferences from the Research Studies reported in Research Journals / Magazines, Websites and to carry out the 'Concept – mapping' of the research findings to identify the 'gaps' in the Current Studies to enable them to design and conduct research studies with a view to bridging the 'research-gap' thereby adding new knowledge in the field of Research.
- To train the teachers and researchers in the design of Samples, Questionnaire to be used for collecting field data and to integrate them with the tools of Statistical analysis for drawing inferences and for fulfilling the objectives of Research Studies.
- To inspire the teachers and researchers for writing Research Papers and to get the same published in the 'referred- journals' of repute.
- To enable our teachers and researchers to undertake and complete their Ph.D Research and to earn their Doctorate in Management.
- To support and promote the publication of Research Journal of the Institute SANKALPA (ISSN 2231 -1904).
- To seek research funding from Government and Non-Government Organizations (NGOs) like GTU, UGC, AICTE, Ministry of Education, Government of India, Government of Gujarat; multi-lateral agencies like United Nations and others.
- To collaborate with and to seek co-operation from other research and educational institutions of India and abroad with a view to promoting Research activities among 'Teacher-researchers' as well as independent researchers.

The Centre is planning to conduct programmes to pursue its objectives and to fulfill its Mission and to realize its Vision.



Jan, 2015

Dr. Satendra Kumar
Professor and Head
Ph D Research Centre, CKSVIM

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(By Invitation)

Sharing Economy- A New Economic Model

Prof. O.S. Gupta : Visiting Faculty Member in Management Devi Ahilya Vishwavidyalaya, Indore

A small shop of three rooms crammed floor-to-ceiling named 'Leila' on Fehrbellines Strasse in Berlin stores things, like bikes, skateboards, rollerblades, tents, children's strollers, clothes, china glasses, cutlery, games, jigsaws, skis and an array of tools. This shop does not sell any of its wares; everything is available for free.

Its 500 members can borrow anything by donating items that they no longer need- their membership fee- so that they can be shared by others.

Some tools may be used once or twice and then they are put aside. These may be used by others. "If you cannot remember when you last used a gadget then you probably don't need to own it.", says a co-founder of the shop.

The basic idea of 'sharing economy' is a more frugal consumption through pooling of resources. Borrowed items may be kept for a few hours to a few days. These are registered in a book and virtually all are returned in time.

"This is an experiment in trust as much as a shop.", says a promoter. Since the shop belongs to the community, people do not take advantage and do not keep what is not theirs.

(Based on "The Shop That Shares" an article by Tim Bouquet, published in December, 2014 issue of Readers Digest, pp. 95-100)

"People seem very happy to give," says one of the promoters. I think they feel relieved of a burden when they find a place to leave their stuff and equally excited by the abundance of things in here that they can use. Anything with no borrowing value is put in the 'free' section. Anybody can take it and keep it.

Expenses like Euro 450 (Rs. 35000) monthly rent and living expenses for operators are met from donations from members ranging from 50 cents to Euro 50. No government funding is sought. The promoters do not earn from the shop. They earn money from traditional economy.

Lot of 'Leila' style shops are opening in other communities of Germany, Austria and Holland. Requests for help and advice are

received from groups in Adelaide and Manchester for opening borrowing shops.

The concept of sharing an economy and collective ownership began in the 1980s. It is often credited to Harvard economist Martin Weitzman and to books such as Rachel Botsman's "What's Mine is Yours: How Collaborative Consumption is Changing the Way we Live". It is breaking down barriers so people become better neighbours through consuming fewer resources and looking out for each other.

Sharing economy is working also in other areas like 'Mending', 'Repairing', and 'Time Banking'.

Mending

A Dutch journalist organised "Repair Cafe Foundation". It brings together people, who can mend things with broken gadgets. Now there are Repair Cafes throughout Europe.

Repairing

Repair Network Vienna comprises private and commercial repair companies that carry out 8,000 repairs a year and avoid 2,000 tons of waste annually. This is the brain-child of Sepp Eisenrieglar, who has dedicated his life to changing the throwaway culture.

Time Banking

Members of Timber Wharf Time Bank of London, a skills exchange network get one-time credit for every hour's help that they give (bike-fixing, decorating, web designing, etc) which they can spend on receiving help from other members.

In India car sharing was used by groups of people going in a common direction from a locality when in the beginning of the 1970s availability of petrol became a problem, because of blockade of the Suez Canal.

To conclude...'Sharing Economy' -a model wherein there's no money transactions, no bartering...just sharing...to make the economy more viable through a collaborative approach- a new economic model indeed!

Vadodara set-forth to be an Innovative City- A reflective approach

Dr. Rajesh Khajuria : Director, CKSV Institute of Management, Vadodara. Email : director@cksvim.edu.in

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Prelude

Vadodara is one of India's most cosmopolitan cities. Thanks to the vision and broadmindedness of the Gaekwads, the subsequent industrialisation, the propagation of academic activities and a strategically important geographical location, Vadodara has welcomed a wide spectrum of people from all over India and almost from all over the globe...a true cosmopolitan city by heart and mind! Needless to say, the Maharaja Sayajirao Gaekwad's family played a very crucial role in developing the City to its present grandeur. The city can well be referred as a 'cultural city'...owing to its rich cultural heritage; a 'Knowledge city' owing to its rich base of think-tanks and know-how in multi-faceted areas and an 'Innovative city' by virtue of its creativity and innovative ideas it is implementing in various fields. The city had recently hosted the VCCI Expo 2014 and will be hosting the 'Vad Fest' and Vibrant Gujarat Summit in the near future, to bring together global talents from across the world in this tinsel city.

The present paper is an attempt to bring Vadodara in the lime-light and show-case the prospects of it becoming an 'innovative city' in the near future. The paper draws attention to the grandeur, which this unique city already possesses by virtue of its rich cultural heritage and majestic past. The paper tries to highlight that Vadodara, has all the capabilities to be one of the world's most innovative cities, with little add-on efforts to be put up by the admirers and stake-holders of the city.

Key words : Innovation, Innovative city, Innovation Index

A glimpse of the rich historical background of Vadodara

Vadodara has a rich historical background...tracing over 2000 years and more! The Mughal rule over the city came to an end in 1732, when Pilaji brought the Maratha activities in Southern Gujarat to a head and captured it. Except for a short break, Baroda continued to be in the hands of the Gaekwads from 1734 to 1949.

The greatest period in the Maratha rule of Baroda started with the accession of the enigmatic rule of Maharaja Sayajirao III (Shrimant Gopalrao Gaekwad) in 1875. It was an era of great progress and constructive achievements in all fields. It was his dream to make Vadodara (Baroda) an Educational, Industrial & Commercial hub. Thus, the city is also referred as *Sayaji Nagari*

(Sayaji's City). The Maharajas contributed overwhelmingly to revive and reform Vadodara with some best initiatives like:

- Establishing compulsory primary education
- Implementing library system
- Building a university
(now the Maharaja Sayaji Rao University, MSU)
- Establishing model textile and tile factories
- Establishing great museums
- Encouraging art and architecture

The genesis of Vadodara as an 'Innovative City' from the historical reminiscence

In 1882, Maharaja Sayajirao Gaekwad III took over the mantle of the Baroda State from the Diwan Shri T Madhavrao. The period from 1882 to 1900 saw the consolidation of reforms and the development of physical and social infrastructure. Maharaja Sayajirao III was one of the foremost administrators, reformers and innovators of his times. He initiated a series of bold socio-economic reforms. He attached great importance to economic development and started a number of model industries to encourage initiative, and then handed back the working industries to private enterprise...an idea which today can be compared to the PPP Model (Public Private Partnership). He started model textile and tile factories. It is a result of his policy of industrial development that Baroda is today one of the most important centres for textile, chemical and oil industries.

In the social front, he boldly introduced compulsory primary education, adult education and a library movement (the first of its kind in India) to augment his adult education scheme...a genesis which can be compared to today's Sarva Shiksha Abhayan! It was he who visualized a general scheme of development in all branches of knowledge at different stages, with the Maharaja Sayajirao University of Baroda at the apex. Modern Vadodara owes its beauty, its educational institutions and its masterpieces of architecture to the insight and vision of this great ruler.

Setting up of the first cotton mill; the first industrial survey and systematic geological survey; enactment of the Municipal Act; construction of Ajwa Water Works and the underground

sewerage system; and the extension of railway lines were some of the innovative initiatives taken by the Maharaja. Efforts were made to develop the city in a planned manner as an educational and cultural capital. This phase saw the democratization of the local self-government, the introduction of property tax legislation, the codification of state laws, the separation of judicial and executive powers, etc. Vadodara was systematically planned and developed with adequate road widths, administrative centres, water supply, sewerage etc. It is a matter of great pride to know that the State of Baroda was the most pragmatic and developed state of British India!

Purpose of the study

Why Pose Vadodara as an Innovation City?

A city with such a majestic history and a magnificent past deserves to gain worldwide accolade and be able to mark a global presence in the present competitive era as well. As already discussed, the State of Baroda was the most pragmatic and developed state of British India....then what makes it not gain a global presence as an 'Innovation hub' today...when there are a plethora of minds and hands working in the city across various arena like academics, conglomerate, civic bodies etc.

Thus, the purpose of the paper is:

1. To identify the present prospects to make Vadodara an Innovative City in the global index of world's most Innovative cities.
2. To understand the contribution of various institutions like Chamber of Commerce & Industry, civic bodies, academia, corporate etc to make Vadodara an innovative city.

What is innovation?

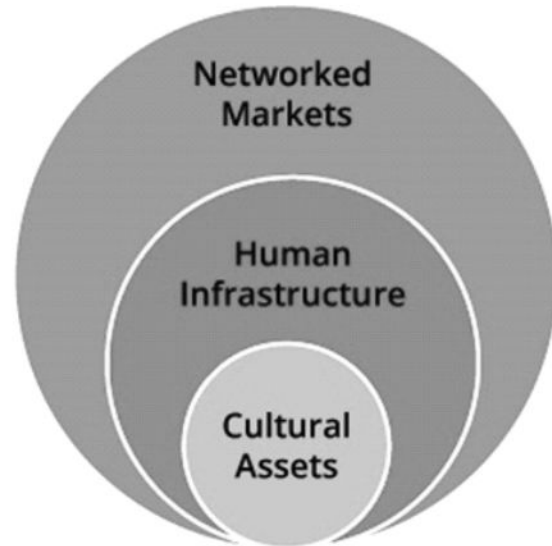
Innovation can be defined as 'finding a better/ news way of doing something'. Innovation is a new idea, device or process. Innovation can be viewed as the application of better solutions that meet new requirements, inarticulated needs, or existing market needs. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments and society. While a novel device is often described as an innovation, in Economics, Management Science, and other fields of practice and analysis-innovation is generally considered to be a process that brings together various novel ideas in a way that they have an impact on society. Innovation differs from improvement in that innovation refers to the notion of doing something different rather than doing the same thing better.

Innovation Cities Index 2014 : Overview

The Innovation Cities Index is an index based on pre-conditions for an innovation economy. The 445 cities in the Innovation Cities

Index 2014 are scored for innovation on 3 factors that capture the 2thinknow innovation process. The 3 factors are: Networked markets, Human Infrastructure and Cultural Assets as shown in Figure 1.

Figure 1: Three factors of innovation process



(Source: 2thinknow innovation process)

Cultural Assets: Measurable sources of ideas (e.g. designers, art galleries, sports, museums, dance, nature, etc)

Human Infrastructure: Soft and hard infrastructure to implement innovation (transport, universities, business, venture capital, office space, government, technology, etc.)

Networked Markets: Basic conditions and connections for innovation (location, military, economies of related entities etc)

It is interesting to know that 13 of the 445 cities in the Innovation Cities Index 2014 are from India. Only 1 City of India figures in the Top 100 Innovative Cities: Mumbai at 91st Number with Index of 46. Others far behind are Bangalore, New Delhi, Chennai, Pune, Hyderabad, Ahmedabad, Surat, Lucknow, Jaipur, Kanpur, Kolkata and Madurai. (See <http://www.innovation-cities.com/innovation-cities-index-2014-global/8889>). Sadly, Vadodara is yet to be reflected in the list...but with due efforts from various facets of the society, government including civic bodies of Vadodara, academia and the industry, it is possible for Vadodara to be ranked as one of the 'Innovative cities'...in the near future!

The innovative cities demonstrate high standards of creativity and innovation across a broad range of traits and industries making them all worthy beneficiaries of the recognition. Further, the cities which rank high are the ones who score across a range of metrics from patents, to skyscrapers, industry linkages, design, urban planning as also rethinking the way people live and work.

Vadodara...set-forth to be an Innovative City – The present prospects

The present section tries to highlight the various accomplishments which have already been established by Vadodara in relation to the 3 factors of innovation process given by 2thinknow innovation process, as a standard measurement. The three factors are: Networked markets, Human Infrastructure and Cultural Assets.

1. Networked markets

This includes basic conditions and connections for innovation like location, economies of related entities etc.

• Location

Vadodara is well connected to all major locations, such as Delhi and Mumbai, through DMIC (Delhi Mumbai Industrial Corridor) and N.H.8. Vadodara is well connected with all major locations across India, through rail, road and air-ways.

• Industry and commerce linkages

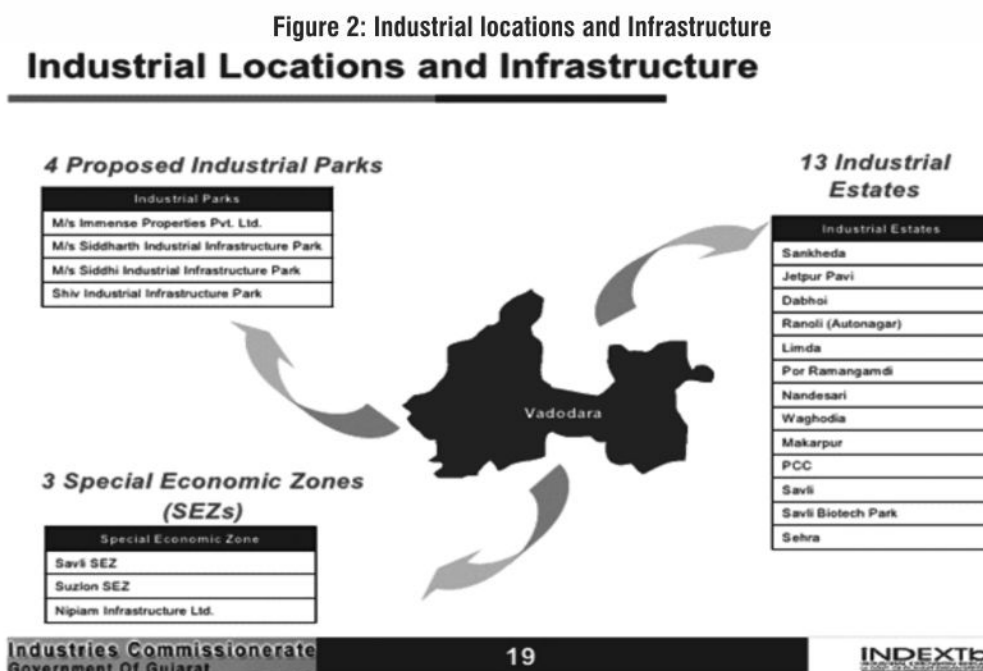
Vadodara enjoys a special place in the state of Gujarat, by virtue of being home to many large-scale industries, in the public and private sector, and also plethora of Micro, Small & Medium Enterprises (MSMEs). The industrial clusters in and around Vadodara include Chemicals & fertilizers, Pharmaceuticals, Biotechnology, Cotton Textiles, Machine Tools, Glass, Engineering, Tobacco, Fisheries and Dairy.

Several factors like raw material availability, product demand, skilful mobilisation of human, financial and material resources by the government and private entrepreneurs have contributed to Vadodara becoming one of India's foremost industrial centres. (Table 1: Industrial growth in Vadodara)

Table 1: Industrial growth in Vadodara, displaying number of factories and average number of workers

	Registered Working Factories				Average No. of Workers			
Year	2008	2009	2010	2011	2008	2009	2010	2011
No.	2685	2695	2747	2820	145293	155401	160496	161662

(Source: Industries Commissionerate, Govt. of Gujarat, 2013)



(Source: <http://www.slideshare.net/ourvibrantgujarat/vadodara-6077506>)

2. Human Infrastructure

This includes soft and hard infrastructure to implement innovation like transport, universities, business, venture capital, office space, government, technology, etc.

• Civic Administration

The two main institutions involved in planning and development in Vadodara are the Vadodara Mahanagar Seva Sadan (VMSS) and Vadodara Urban Development Authority (VUDA), the jurisdiction of both these agencies are demarcated clearly not only physically but also functionally. Recently, the civic authority of Vadodara is trying to tie up with a private consultant to develop the entire Vishwamitra bank region and clean the river and for its beautification. The civic authorities have also tied up with educational institutions to eradicate the problem of malnutrition among the poor children in the city. Vadodara has also launched a mobile app that allows citizens to report problems to the municipal authority and track if the issue has been resolved. Citizens can report common problems they observe, such as litter, potholes, broken street lights, water and drainage issues, to the Vadodara Municipal Corporation using the 'Smart City Vadodara' app. The authority is required to resolve each complaint within a stipulated time frame and update the citizen concerned through the app, along with photographs showing that the problem has been fixed.... great steps to make Vadodara an innovative city and to improve the quality of life of its citizens.

• Transport

The city is on the major rail and road arteries joining Mumbai with Delhi and Mumbai with Ahmedabad. Due to this Vadodara is known as the Gateway to the Golden Quadrilateral. Vadodara has air connectivity with all major cities of India.

• Education

The present educational foundation rests on over 20 public schools and over 100 private schools. Towering over all is the MS University, the feather in the hat of Vadodara's academia. The university caters to over 100,000 students. There are various courses on offer, ranging from Medicine to Commerce. The presence of a large number of higher educational institutes has made Vadodara city an educational and research hub.

• Media

A large number of national and regional news-papers, magazines, periodicals and journals are regularly published and circulated across the city. The city has five local FM stations. A network of optical fibre cables connects almost the entire city. The city is well-connected with a sound network through telephone services, wi-fi, broadband internet services etc.

• Agriculture, Horticulture etc

The district is the largest producer of pulses in the State of Gujarat, contributing 14.7% to be the total production. Vadodara is among the major fruit producing districts in the state, contributing 11.25% to the total fruit production. The district is the major cultivator of flowers in the state, contributing 16% of the total production. The district is among the highest contributors to the total production of bananas in the state (14.2%). It is the largest producer of brinjal in the state, contributing to 12.6% to the total production. Vadodara is the second largest producer of Guava (22.6%), Tomato (12.7%), Turmeric (16.8%). In addition, it is the third largest producer of papaya (9.7%) and custard apple (16.8%). (Source: Department of Agriculture, Govt. of Gujarat, 2007)

• VCCI, GTU & Vadodara Innovation Council

The **Vadodara Chamber of Commerce & Industry (VCCI)** is actively engaged in a plethora of key operations, emphasis on problem solving at the micro level as well as at macro level and services to the industrial members- ranging from large enterprises to the MSMEs (Micro, Small & Medium Enterprises). It is engaged in developing mutual relations for business and social aims. It organizes various activities like arranging for exhibitions, industrial fairs, seminars, talks, skill up-gradation through its Skill-Upgradation Centres, Information Centres, NRG Centre and the like, to name a few. The recently organized 5 day VCCI Expo 2014 had more than 150 innovative products on display by the blue chip companies, as well as the MSMEs and educational institutions as well. In addition to the Chambers of Commerce & Industry, a couple of Innovation Councils like the **Vadodara Innovation Council** (country's first city council recognized by National Innovation Council- NIC), the **GIC (Gujarat Technological University Innovation Council)** are doing their might to inculcate innovation in the city through various activities focusing on encouraging innovation in Vadodara through their spirited Team / Volunteers. It organizes regularly various Awareness Programs/ Talks to encourage questioning among the young citizens and to develop an 'out-of-the-box' thinking. It also creates awareness among the citizens and civic authorities through various Seminars, FM Radio Programs, comedy corporate dramas and the like and aims to nurture the soft skills and talent of the people/ students to lead their imagination in a proper way. The GIC undertakes various feasibility study by the students and encourages them to work on industry-defined problems and bring various innovative solutions through product/ process development etc.

• Information Technology

Privatization of computer industry had begun in late seventies in which Vadodara had played a major role. Vadodara is also fast

emerging as the country's IT / ITES Hub with recent identification by NASSCOM as emerging IT / ITES destination. Vadodara is now house to several leading BPO / KPO companies.

3. Cultural Assets

This includes measurable sources of ideas like designers, art galleries, sports, museums, dance, nature etc.

- **The People & Culture**

Vadodara is also known as '*Sanskari Nagari*', that is, a 'cultured city'. The city has a rich cultural heritage, which is remarkably cosmopolitan. So, the culture of the city is not just history or heritage; it is dynamic, ever-changing, alive and vibrant! Vadodara has welcomed a wide variety of people from all over India and also from all over the globe. A large number of local, national and foreign industries as well as foreign students, act as a catalysing and unifying force to bring in a rich and varied multi-cultural environment.

- **Sports**

Vadodara boasts of the oldest cricket ground in Asia called Moti Baug. Vadodara also has a couple of large-sized swimming which have become learning centers of swimming for lots of students from different schools in and around the city. Vadodara also held an International Marathon on 22nd Nov, 2009. It became the first non-metro city of India to have held a Marathon of such a large scale.

- **Places of interest**

The city showcases some of the grandest monuments like the grandeur Laxmi Vilas Palace, and a plethora of other monuments like the historically built MSU, Kirti Mandir, Aurobindo Ashram, Hazira Maqbara, Motibaug Palace etc to name a few. The city also showcases some of the finest world-class malls and multiplexes, excursion activities and spots like Ajwa-Nimeta, Pavagadh, Champaner (now a world heritage spot), Sindhrot Nature Park, Kayavarohan, Chandod, Dakor, Nareshwar, Sankheda, Kabirwad to name a few.

The road ahead in making Vadodara an Innovation Hub

Looking at the various accomplishments which have already been established by Vadodara in relation to the 3 standardized factors of innovation process viz. Networked markets, Human Infrastructure and Cultural Assets, it is a fact that the cumulative effects of the citizens, civic bodies, academia, corporate and other organizations can help Vadodara to be an 'Innovation hub'.

- **Role of civic body**

The civic body have to play a much more vibrant role in making Vadodara a 'Clean and Green City'...a precursor to becoming an 'Innovative city'. A lot of efforts in this direction would needed to

be accomplished like employing more number of volunteers and workers to accelerate cleaning activities, putting up CCTV cameras at various points to keep a vigil on traffic as well as rule-breakers, environmental policing and the like. Reducing the response time and taking rapid steps to answer the problems of the citizens would do wonders to make the city an innovative one.

- **Role of Chambers of Commerce & Industry and other Councils (public or private)**

The Chambers of Commerce & Industry and the Innovation Councils have started strategic steps to establish linkages between the industries, academia and the students by way of organizing/ participating in various conferences, Seminars, practically solving the problem of industries through feasibility study and projects, working close with the MSME sector and many other such strategies. A lot still needs to be accomplished by increasing the number of participants, Innovation Councils as well as increasing the number of volunteers and activities to further the process.

- **Role of educational institutions**

Educational Institutions can play a major role in making Vadodara an innovative city by imbibing the spirit of innovativeness among the student fraternity by organizing various innovative and creative activity-based learning, Seminars, feasibility studies, competitions and the like. Students need to inculcate out-of-the-box and innovative thinking.

- **Role of corporate conglomerate**

The rich and varied corporate conglomerate in and around Vadodara can play a very major role in marking Vadodara's presence in the global world as an 'Innovative city'. Vadodara has a rich combination of micro, small, medium and large enterprises as well as a good presence of MNCs as well as Public Limited companies. The MSMEs spread across the various industrial estates in and around Vadodara already are doing a remarkable job by manufacturing a large number of innovative products and services, which are being used by the large enterprises as well as are exported. The spirit of entrepreneurship and risk-taking is already in the blood of Barodians...however, entrepreneurial spirit needs to be furthered by encouraging the business environment.

- **Self-regulation and role of individual citizens**

It remains a fact that if each individual do their might of being innovative in their own way, in their own fields then the vector resultant would be a 'team' of innovative people across a spectrum of fields. Parents, teachers, society can work holistically to make Vadodara a clean and green city through self-policing.

Suggestions from student fraternity to make Vadodara an Innovation hub- A live study

Some suggestions were gathered from the Management students of CKSV Institute of Management, Vadodara, through an oral open-ended discussion regarding the trajectory to make Vadodara an innovation hub, and the following ideas were gathered from the student fraternity:

- Cameras should be installed at every traffic signal. Proper traffic signal rules should be implemented, including severe fines for non-compliance (the way it is practiced in the developed nations, with high literacy rate, as contrary to a developing country like India). To use GPS system for traffic control for eradicating corruption and to maintain proper rules and regulations.
- Students should be given an opportunity to organize trade fair every year.
- Citizens should be oriented to differentiate between wet and dry garbage and use it for agriculture process. Civic authorities need to actively undertake this activity.
- Cultivation of organic agriculture should be encouraged through private companies or through Public-Private Partnership models.
- To educate poor people and to take measures to eradicate poverty. Government, NGO's and club members should form a committee in every area of the city for the development of the poor and needy.
- To focus on tree plantation exhaustively.
- To conduct family-oriented religious activities every Sunday involving as many citizens as possible; this will help to imbibe a 'feel good' factor as well as ethics.
- Girls should be motivated to learn self-defense sports like boxing, karate for their safety, which can indirectly help to control crime rate in the city.
- Strict adherence of rules, regulations and legal system and to impose heavy fines/ punishment for non-compliance. Government to implement various measures to inculcate this spirit.

To conclude

Using a range of metrics from cultural dimensions to role of civic bodies, human infrastructure, urban planning, rethinking the way people live and work...there are many dimensions which leads towards the trajectory in making a city an 'innovation hub'.

A cumulative effort of civic administration, academia, corporate, global research collaboration, global sourcing of knowledge and off-shoring of R&D and innovation and the combined efforts of citizens per se can positively help Vadodara to come in the lime-light as an innovative city and an innovation hub!

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Dividend Declaration and Stock Price Behavior : Indian Evidences

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Abstract

This study investigates the dynamics and determinants of dividend announcement on share price volatility of the companies listed in Bombay Stock Exchange (BSE). The study uses Judgment Sampling of BSE – 100 over the period 2008-09 to 2012-2013 and employs the CAPM on excess returns for short term of 3 days prior and 3 days post the dividend announcement event and to determine the long term effect the dividend percentage is taken into account. The statistical application used to signify the result of dividend declaration on share price for short term is Paired T Test and Wilcoxon Signed Ranks test indicating the consequence of the positive impact on share price for dividend declaration. The effect of dividend proclamation on share price for long term has been attested by relying on the statistical tool of Correlation which shows negative outcome.

Key Words : Dividend Declaration, CAPM, Excess Returns

Introduction

Dividends act as gauging tool of financial soundness, solvency, management efficiency and overall growth of an organization. The common investor focuses on the firm's dividend policy to expect higher proceeds. The dividend payout ratio of firm determines proportion of earnings paid to shareholders and ploughed back in the firm for reinvestment. Both are desirable, but they are in conflict; a higher dividend means less provision of funds for growth and higher retained earnings means low dividends.

Dividend payout (investors' expectations) and value of firm should be considered for the overall contemplation for optimal dividend policy. However, there are certain schools of thought who give conflicting opinions to this effect. Miller and Modigliani (1961) argue that, in a perfect world, the value of the firm is unaffected by its dividend decision, so there should not be any wealth effect upon the announcement of a change in dividend payout policy. However, the studies by Walter (1963) and Gordon (1963) contradict this proposition.

The investors' expectation relies on the share price of the given firm which tends to change by the declaration of dividends. Dividend payment must increase shareholder's wealth. The

relevance and irrelevance of dividend announcement and shareholder reaction has been a debate over long time which conversed in many empirical studies. Roberts (1967) and Fama (1970) revealed that the share price fluctuations are free from any factors and are random.

Theoretical Strands and Literature Study

The pioneer study by Gordon (1963) hypothesized that dividend policy is relevant to the market price of the share and market value of the firm. The theory suggests if firm does not have viable investment opportunity the stock value will increase with increase in rate of dividend and vice-versa. Very strong evidence to this phenomenon is the study made by Walter (1963). He also suggested the same inferences with different approach for valuing share.

Aharony and Swary (1980) in their paper tested whether dividend announcement give more signal over current earnings about the expected future earnings. For this they used quarterly dividend announcement dates that vary from the quarterly earnings announcement dates at least by 11 days. Their findings showed a remarkable increase of 1 percent of average excess return over the 2 days announcement period. Their studies show that dividends provide more information about the future earnings than the current earnings announced by the management. Moreover, their results at the same time also support the semi form of efficient capital market in which the stock price efficiently adjusts to the newly acquired information.

Hess (1982) attempted to clarify the dividend controversy by addressing two issues: dividend related clientele effects and the information content of dividends. Very evidently he found that, information effects do not completely explain the dividend effect. Moreover, he further found the evidence that dividends were proxying for changes in expected returns of common stocks.

Asquith and Mullins (1983) based their study conclusions by analyzing the announcement of dividend and dividend increase in subsequent time. For the study, they tested 168 firms which either paid dividend or initiated once to pay dividends. Though the result is that dividend does signal information, the notable part is that the signal is stronger for firms which paid dividend for the first time as compared to firms which paid dividends regularly or

increased the dividend in the subsequent time. Their result was an evident that dividends do affect stock price which is the share holders' wealth indirectly.

In a study by Kane, Lee and Marcus (1984), corroborative effect of simultaneous announcements of earnings and cash dividends was studied. Since the then recent researches on the informational impact of announcements of stock dividends and stock splits have been concentrated on pure events, such problems had not been focused on previously. In an effort to use all data available and explicitly control for the bias produced by other corporate information releases, such as announcements of earnings and cash dividends, the potential problem of the total signal being more than a sum of its parts has to be taken into consideration.

Miller and Rock (1985) extend their study of asymmetric information by amalgamating a firm's investment and financial policies. In their study, they also acquaint that managers benefit from trading of shares and use dividends as a false signal of good earnings and growth. Since investors do not have access to inside information, they purchase and invest in shares of firm leading to demand and prices to go up. However eventually the price do drop and level out but managers are benefitted who get bonus on the basis of performance.

Dividend increase does not always mean a signal of good news was studied by John and Lang (1991). In their study, they analyzed relation between insider trading and dividend announcement. Unlike other models where insider trading is exogenously stated, in their model it is indigenized. They show insider trading interacts with the dividend policy choice and affects the effect of dividend announcement in different ways. They tested their model on companies which made first time initiation of dividends and insider trading activity data was tried to match to the dividend initiation dates. Their result was that not all dividend announcements signaled good news, a firm has announced dividend but it has insider selling the stock, it will lead to negative effect and the reverse holds true when there is insider buying the stock with the dividend announcement. Therefore, they concluded that an investor must observe the insider trading activity in conjunction to dividend announcement to understand the effect of future stock price and earnings.

Eddy and Seifert (1992) examined stock price reactions to contemporaneous and non-contemporaneous dividend and earnings announcements. They examined that joint and single announcements were not perfect substitutes and the stock price reaction to joint announcements is significantly greater than the reaction to just one signal. Even several times joint announcement effect is twice than that of single announcement. They took the data of 1111 firms between 1983 and 1985. They

also found that for contradictory signals the stock market reaction is not significantly positive or negative.

Studies by Benartzi, Michaely and Thaler (1997) suggests that dividends play a role in slight change in future earnings but do not contain the informational content as proclaimed by earlier studies. They conducted categorical and regression analyses. In categorical analyses they undertook firm specific events and divided their results as per the extent of dividend changes in groups called quintile 1 to 5 where quintile 1 are firms experiencing lowest dividend increase and quintile 5 being with highest dividend increase. Then unexpected earnings are calculated for year 0, 1 and 2. Further they used regression analyses where changes in year 0, 1 2 were regressed on various variables like past and current changes in dividends. Their study concludes that there is a link between dividend and future earnings but it's minimal. Its more to do with past and current earnings as increase or a dividend announcement depict that the firm had a good financial year and excess returns it distributes as dividend.

Thirumavalavan and Sunita (2005) studied the impact of Share repurchases & Dividend announcements on Stock prices in the Indian context by taking the sample of firms listed on BSE for the period of 2002 to 2004. The study examined abnormal returns across various repurchases level. By studying the stock prices five days prior and after the dividend announcement they found share prices biased on the higher side after the dividend announcement. The significant observation of their study was that positive signaling existed only for a day after the announcements, the extent of positivism started declining after that.

Research Methodology

The key rationale for undertaking this study is to examine the stock price reaction to dividend announcement by taking into account the effect of market movements. Major postulation was taken as, "release of dividend information influences share price after discounting the impact of market index". In order to address this concern, BSE – 100 Companies (Bombay Stock Exchange) were taken as sample. The study was undertaken for the time period of 5 years from 2008-'09 to 2012-'13. This made total 513 observations for the analysis. ACE Equity database was used as a chief data source.

The impact of dividend announcement on share price was tested for both short term and long term. Short term was referred to as the time period of 3 days prior and after the announcement and the successive time gap between two dividend announcements were considered as long term.

Wilcoxon Signed Ranks Test and Paired T- Test were applied to

study the difference between Excess Returns before and after dividend announcement (short term). Pearson's Correlation was used to study the relation between quantum of dividend and excess returns in long term. Gauging the impact of dividend percentage more precisely, events of dividend announcements were bifurcated into two strand of less than 100 percent dividend and more than or equal to 100 percent dividend.

Excess Returns were calculated as difference between Expected Returns and Actual Returns. For the computation of expected returns, the equation of Security Market Line (SML) of Capital Assets Pricing Model (CAPM) was used.

$$E(R) = R_f + \beta (R_m - R_f)$$

R_f = Risk Free Rate (364 – days T-bills rate in India, 8.12 percent)

β = Beta

R_m = Market Return (Monthly Returns on BSE Sensex)

Data Analysis and Interpretation

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Excess Returns Before (Short Term)	528	-13.49	10.05	1.44	3.44
Excess Returns After (Short Term)	528	-83.78	16.13	1.37	5.25
Rate of Dividend (Less Than 100%)	242	4.00	97.00	41.98	25.60
Excess Returns (Long Term)	242	-95.68	105.07	4.96	23.22
Rate of Dividend (More Than 100%)	286	100.00	4000.0	279.16	386.03
Excess Returns (Long Term)	286	-101.08	87.39	5.57	14.24

Table 1 summarizes the descriptive statistics. Total 528 events were observed for short term. The mean Excess Returns were 1.44 percent and 1.37 percent and the standard deviations were 3.44 percent and 5.25 percent respectively for before and after the announcement. For the computation of the correlation, 242 observations were identified for less than 100 percent dividend having the minimum value of 4 percent and the maximum of 97 percent, indicating the average to be 41.98 percent and standard deviation as high as 25.60 percent. The Average Excess Return was observed at 4.96 percent with standard deviation of 23.22 percent.

Similarly, 286 observations were seen for more than 100 percent dividend where the average dividend was seen as 279.16 percent. In the same sample set the Average Excess Return was seen at 5.57 percent. The Average Excess Returns were not significantly different in both the cases.

Table 2 : Paired T Test

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	Mean	Std. Deviation	Std. Error Mean
		Lower	Upper	Lower	Upper	Lower	Upper	Upper
Pair 1	Excess Returns Before-Excess Returns After	0.07	4.7	0.21	-0.34 0.48	0.31	512	0.75

The calculated value of Paired T-Test shown in Table 2 is 0.31. Thus, the outcome accepts the hypothesis of significant impact of dividend announcement on share prices in short term. The cause behind the volatility of share price around the time of dividend declarations lies in the proposition that market sentiments can be higher in short term.

Table 3 : Wilcoxon Signed Ranks Test

Table 3.1: Ranks

		N	Mean Rank	Sum of Ranks
Excess Returns After (Short Term)	Negative Ranks	258(a)	258.33	64842.00
	Positive Ranks	269(b)	254.74	66486.00
	Ties	1(c)		
	Total	528		

a. ExcessReturnsAfter < ExcessReturnsBefore

b. ExcessReturnsAfter > ExcessReturnsBefore

c. ExcessReturnsAfter = ExcessReturnsBefore

Table 3.2: Test Statistics

	Excess Returns After-Excess Returns Before
Z	-0.25(a)
Asymp. Sig. (2 tailed)	0.81

a. Based on negative ranks

The non-parametric test, Wilcoxon Signed Ranks Test with 528 samples taken, amid 258 negative ranks and 269 positive ranks and one tie of rank computed. The statistical value of 0.25 (shown in table 3.2) verifies the acceptance of alternate hypothesis and confirms the significant difference between Excess Returns in short term before and after the announcement of dividends.

Table 4: Correlations

Table 4: Correlation between Rate of Dividend and Share Price (more than or equal to 100% dividend)

		Excess Returns Long Term	Dividend More Than 100%
Excess Returns Long Term	Pearson Correlation	1	0.02
	Sig. (2-tailed)		0.79
	N	286	286

Dividend More Than 100%	Pearson Correlation	0.02	1
	Sig. (2-tailed)	0.79	
	N	286	286

Table 4.1 shows the outcome of correlation with dividend more than or equal to 100%. There were 286 incidences in all and the correlation coefficient was observed very negligible at 0.02 which proves that the rates of dividend and share price are not significantly correlated in long term.

Table 4.2: Correlation between Rate of Dividend and Share Price (less than 100% dividend)

		Excess Returns Long Term	Dividend Less Than 100%
Excess Returns Long Term	Pearson Correlation	1	-0.01
	Sig. (2-tailed)		0.87
	N	242	242
Dividend More Than 100%	Pearson Correlation	-0.01	1
	Sig. (2-tailed)	0.87	
	N	242	242

Total 242 samples were observed having less than 100 percent dividend. It was very interesting to observe that likewise more than or equal to 100 percent dividend, the value of correlation with less than 100 percent dividend is also very negligible at -0.01.

Researchers confer that rate of dividend is immaterial from the view point of market participants (Modigliani and Miller) in long term. The reason for the same can be the fact that dividend contributes to the very insignificant amount of the income for shareholders.

Conclusion

The study demeanor to measure the relationship between the share price and dividend announcement provides a scenario to infer that in the short run the share prices are affected by the dividend announcement. Such impact can be evident to the phenomenon of momentum trading and the assumption that in short term prices are subject to manipulation (Dow, 1884).

Whereas, the study verifies that the dividend announcement does not affect the share prices in the long term (Modigliani and Miller, Eddy and Seifert). The rationale after the same can be that corporates retain the profit for future plans. This phenomenon is accepted by investors to foresee the growth of the company, which may indirectly benefit them in long term in the form of higher profits leading to better price appreciation. So, rather than distributing the revenue to the shareholders in the form of dividend, the companies prefer to plough back the profits.

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A Study on Impact of Work Life Balance - The Composite Behavior of the Employees Irrespective of the Departments at Shree Mahavir Metalcraft Pvt. Ltd.

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Abstract

While work-life imbalance and job stress are not new problems, they have received more attention than ever before. Together, these two problems pose risks to workers' well being as well as to organizational performance.

In crafting effective solutions, decision-makers need solid evidence on the scope and nature of the problems they face. Equally helpful is a clear understanding of what employers and employees view as potential solutions. In practice, improving the quality of work life remains a tough sell. Intuitively, many managers see the important links between the quality of work life and organizational performance. Yet they face barriers to progress. So it is necessary to update the case for taking action to improve the quality of jobs and work environments.

For a growing number of employers, human resource challenges are their biggest concern. Leading employers are recognizing that positive work life outcomes for employees from achieving work-life balance to the satisfactions of challenging work and career development are key ingredients of a successful business strategy.

In this paper an attempt has been made to understand the composite behavior of the employees in different departments at Shree Mahavir Metalcraft Pvt. Ltd. A detailed structured questionnaire has been used for collecting data from the respondents.

This study consists of 100 employees and Non Probability convenience sampling method has been adopted. Further, non parametric test has been carried out to test the hypothesis.

Keywords : Work life balance, stress, convenience sampling, Kruskal – Wallis test.

Introduction

Shree Mahavir Metalcraft Pvt. Ltd. was established in 1984 and has over the years emerged as a company providing complete range of Builder's Hardware and Locks. It is engaged in manufacturing Brass Door Handles and Precision Brass Components. They operate under two divisions: - One is into manufacturing of Brass Door Handles and Lock assemblies and the other is into manufacturing of precision Brass components

for the lock, auto and the electrical industry.

Shree Mahavir Metalcraft Pvt. Ltd. was started in Jamnagar, Gujarat on a very small scale where it used to make components on job work for companies like Bajaj and Mahindra. This continued for some years and in 1992 an opportunity came to work with Godrej locks where they were looking to outsource Brass components, and it clicked for SMI.

They grew slowly making precision brass components for Godrej, Bajaj, Kinetic, etc. Their line of business revolved around the lock, auto and electrical industry. In the year 2000 Godrej was planning to enter into the Door Handles market. They were by now the biggest brand in the locks industry and they wanted to make use of this goodwill in the Door handle market as well.

The research problem here is to identify some of the hindrance factors in work-life balance which are being perceived by the employees of different departments at Shree Mahavir Metalcraft Pvt. Ltd.

Work-life balance is a concept that supports the efforts of employees to split their time and energy between work and the other important aspects of their lives. Work-life balance is a daily effort to make time for family, friends, community participation, spirituality, personal growth, self-care, and other personal activities, in addition to the demands of the workplace. Work-life balance is assisted by employers who institute policies, procedures, actions, and expectations that enable employees to easily pursue more balanced lives.

The pursuit of work-life balance reduces the stress employees experience. When they spend the majority of their days on work-related activities and feel as if they are neglecting the other important components of their lives; thus, stress and unhappiness result. Work-life balance enables employees to feel as if they are paying attention to all the important aspects of their lives. Because many employees experience a personal, professional, and monetary need to achieve, work-life balance is challenging. Employers can assist employees to experience work-life balance by offering such opportunities as flexible work schedules, paid time off (PTO) policies, responsible time and communication expectations, and company sponsored family events and activities.

Meaning of Work Life Balance

Maintaining a balance between work life and personal life is called Work Life Balance. The meaning of work/life balance has chameleon characteristics. It means different things to different groups, and the meaning often depends on the context of the conversation and the speaker's viewpoint. The following are working definitions of terms used regarding work/life balance; some definitions overlap and some are continuing to evolve.

- **Work/family**

It is a term more frequently used in the past than today. The current trend is to use titles that include the phrase work/life, giving a broader work/life connotation or labeling referring to specific areas of support (e.g., quality of life, flexible work options, life balance, etc.)

- **Work/family conflict**

Work / family conflict is a push and pull between work and family responsibilities.

- **Work/life balance from the employee viewpoint**

It is a dilemma of managing work obligations and personal/family responsibilities.

- **Work/life balance from the employer viewpoint**

Work/life is the challenge of creating a supportive company culture where employees can focus on their jobs while at work.

- **Work/ family culture**

It is the extent to which an organization's culture acknowledges and respects the family responsibilities and obligations of its employees and encourages management and employees to work together to meet their personal and work needs.

Indicators

When you have balance you are:

- Satisfied with your work and home lives.
- Able to fulfill your responsibilities without guilt or regret.
- Healthy physically and emotionally.
- In control of your life

Loss of balance may cause you to:

- Miss work more often and not be as productive at work.
- Your involvement in the community may go down.

Work-life balance benefit to employers

- Business will attract and retain the best people.

- Increased employee retention.
- Reduced absenteeism./Increased labour availability
- Employee's loyalty.
- Increased productivity and profit.
- Making employees feel valued.
- The reputation of being an employer of choice.

Review of Literature

Dyer (1990) explains that stress is our body's biochemical response to an outside stimulus. Different stimuli will cause us to react differently. We may blush, jump or hide the reaction under a confident mask but the biochemical response of our body is the same – an increase in the heartbeat and the breathing rate, increased secretion of stomach acid and the release of certain hormones. An increased flow of adrenalin and acid in cholesterol and blood sugar cause a surge of energy to the muscles whilst the stomach becomes inactive. Emotionally we may experience frustration, anger, excitement or anxiety. Some Stress is good. Without thrills or excitement life would be dull. Indeed, after a short period of stress one's body is returned to equilibrium. Prolonged and continuous stress causes threat to health, which will lead to many physical and mental diseases. Stress has been conceptualized in the following ways: (i) as an external force which is perceived as threatening; (ii) as response to a situation demanding an individual to adapt to change, physically or psychologically; (iii) as an internal outcome of the external demand and internal resources and; (iv) as a personal response to a certain variation in the environment.

Lazarus (1966) maintains that stress occurs when there are demands on the person, which tax or exceed his adjustment resources. McGrath (1976) explains that there is a potential for stress when an environmental situation is perceived as presenting a demand which threatens to exceed the person's capacities and resources for meeting it, under condition where he has expected a substantial differential in the rewards and cost from meeting the demand versus not meeting it. As a competitive definition stress is a dynamic condition in which an individual is confronted with an opportunity, constraint etc.

Pestonjee and Pareek (1997) in their study wrote that the concept of stress was first introduced in the life sciences in 1936 by Hans Selye. During the last two decades the term "stress" has come to be widely used in relation to work organizations. Manson (1975), reviewing literature on stress, concluded that there was confusion and a lack of consensus regarding its definition. The term "stress" has been used variously to refer to (a)

stimulus (external force acting on the organism), (b) response (changes in the physiological functions), (c) interaction (interaction between an external force and resistance opposed to it, as in biology), and (d) more comprehensive combinations of the above factors.

Several attempts have been made to measure life events as sources of stress identifying and giving weightage to different events in a person's life like, transfer, changing house, admission of children etc. An excellent review of the life events scales developed in India, and the research conducted on life stress in India, have been provided by Sharma (1988) who has commended the stress scales developed by Dube and Singh et.al; Dube's Life Events Scale (1983) and Singh et. al.'s Life Events Scale (1983).

Golembiewski (1982) has suggested that Organizational Development (OD) is helpful in reducing and managing stress. According to him, OD ameliorates and prevents burnout of intervenors. Sen (1981) has stated that Job satisfaction and effective role behavior are positively related with approach styles. Goodman (1980) reviewed literature on stress among teachers in urban schools and examines the stress concept. Among the sources of stress identified are pupil misbehavior, environmental factors such as poor working conditions, poor organizational management, and non-participation in decision-making, personality characteristics, life experiences, interpersonal relationships, and structural variables such as school location, school racial composition and students' socio-economic status.

Stress can either have a positive or a negative effect on an employee's performance. Positive qualities are those in which the individual may feel more excited and agitated and perceive the situation positively as a form of challenge (Selye, 1956). Stress is also described as posing threat to the quality of work life as well as physical and psychological well-being (Cox, 1998). A high level of occupational stress not only detrimentally influences the quality, productivity and creativity of the employee but also employee's health, well-being and morale (Cohen & Williamson, 1991). Job-related stress tends to decrease general job satisfaction. Some studies suggest that stress level of a female employee is more on physical and emotional symptoms than their male counterparts (Flynn et al., 2009; McLean & Anderson, 2009).

Stress results in high portion of absence and loss of employment. The ratio of stress-affected persons in organisations is increasing at an alarming rate which affects both the employee performance and goal achievement (Treven, 2005). Stress is a term that refers to sum of physical, mental and emotional strains or tensions on a person or feelings of stress which result from interactions

between people and their environment that are perceived as straining or exceeding their adaptive capacities and threatening their well-being (Ghaleb, 2008).

Objectives of the study

Primary Objective

- To analyze how far the employees of Shree Mahavir Metal Craft Pvt. Ltd. are able to maintain balance between their work life and personal life.

Secondary Objectives

- To identify and analyze factors contributing to work life balance of employees.
- To study the factors which hinders work life balance and creates imbalances.
- To suggest measures that should be undertaken to improve work life balance.

Sample size of the study

This research study contains a sample size of 100 employees from the available population of employees at Shree Mahavir Metalcraft Pvt. Ltd.

Data collection method

This research has been carried out with the help of structured questionnaires i.e. the method used for data collection is primary data.

Sampling method

Non Probability Convenience sampling method

- Convenience sampling is a non-probability sampling technique where subjects are selected because of the convenience in their accessibility and proximity to the researcher.
- In all forms of research, it would be ideal to test the entire population, but in most cases, the population is just too large that it is impossible to include every individual.
- We prefer this sampling technique because it is fast, inexpensive and easy.

Hypothesis testing

In order to test the importance assigned to various parameters associated with Work-Life balance affecting employees in the workplace, an attempt has been made to find out if any relationship exists, regarding the composite behavior of the employees in different department. A non-parametric statistical technique Kruskal-Wallis test has been used to test the hypothesis.

Table 1: Employees of different departments rated their job according to given parameters.

Parameters	Production	Sales & Marketing	Finance	Human resource
Salary/wages	429	25	25	20
Location of workplace	330	19	20	15
Career development prospect	323	17	17	14
Flexible working hours	314	17	19	15
Leave arrangement	414	23	25	20
Job security	416	24	23	20
Friendly environment	311	18	17	15

H_{01} : There exists no significant relation between the views expressed by the employees of different departments and the departments where they work.

$H_{1,1}$: There is a significant relationship between the views of the employees and the department where they work.

Production	Sales & Marketing	Finance	Human resource
28	20	20	13.5
25	10.5	13.5	3
24	6.5	6.5	1
23	6.5	10.5	3
26	16.5	20	13.5
27	18	16.5	13.5
22	9	6.5	3

$$K = \frac{12}{N(N+1)} \sum_{i=1}^g n_i \left(\bar{r}_i - \frac{N+1}{2} \right)^2$$

$$= \frac{12}{N(N+1)} \sum_{i=1}^g n_i \bar{r}_i^2 - 3(N+1).$$

$$K = \frac{12}{28(28+1)} (7069.62) - 3(28+1)$$

$$= 17.5$$

The table value (critical) of chi-square (χ^2), at degree of freedom (c-1), where c indicates the number of columns) = 4-1 i.e.3 and $\alpha = .05$ is = 7.8147.

Interpretation

From the above Kruskal Wallis test it can be derived that $\chi^2_{tab} < K_{cal}$, therefore the null hypothesis stands rejected and, the alternative hypothesis is accepted. The observation of employees related to number of job parameters seen in the factory are not the same among the four departments. Judging the values in each group reveals that in sales & marketing, finance and human resource seen fewer response to job parameters and production has more response regarding job parameters in the factory.

Table 2: Employees of different departments rated their Job responsibilities vis-a vis interference with their family life .

Job Responsibilities	Production	Sales & Marketing	Finance	Human resource
Your job reduces the amount of time you can spend with the family	412	23	24	19
Problems at work make you irritable at home.	333	19	19	15
Your work involves a lot of time away from home	308	17	19	13
Your job takes up so much energy you don't feel up to doing things that need attention at home	297	17	17	16

$H_{0,2}$: There exists no significant relationship between their views on job responsibilities and the interference with their family life .

$H_{1,2}$: There exists significant relation between their views on job responsibilities and the interference with their family life.

Production	Sales & Marketing	Finance	Human resource
16	11	12	8.5
15	8.5	8.5	2
14	5	8.5	1
13	5	5	3

$$K = \frac{12}{N(N+1)} \sum_{i=1}^g n_i \left(\bar{r}_i - \frac{N+1}{2} \right)^2$$

$$= \frac{12}{N(N+1)} \sum_{i=1}^g n_i \bar{r}_i^2 - 3(N+1).$$

$$K = \frac{12}{16(16+1)} (1400.12) - 3(16+1)$$

$$= 10.56$$

The critical value of chi-square (χ^2) at degree of freedom(c-1) i.e., 4-1 = 3, and $\alpha = .05$ is (χ^2) is equal to 7.8147.

Interpretation

From the above Kruskal Wallis test it can be derived that χ^2 tab Kcal, therefore the Null Hypothesis stands rejected and the alternative hypothesis is accepted. The number of job responsibilities seen in the factory is not the same in four departments. Judging the values in each group reveals that in sales & marketing, finance and human resource seen less interference to job responsibilities vis-a-vis interference with their family life where as production department sees more interference in job responsibilities vis-a viz interference with their family life .

Table 3: Employees of different departments towards Hindrance factor that makes work life balance harder

	Production	Sales & Marketing	Finance	Human resource
Deadlines and schedules	344	20	20	16
Type of work you do	241	14	13	12
No. of hours you need to work	221	13	12	10
Expectations/attitude of supervisor or manager	331	20	18	14

Expectations/attitude of work males	193	11	11	9
How easy/ difficult it is to take leave	333	20	20	16
Amt. of notice you get about the hours/overtime you need to work	231	13	13	10
Having to take additional work home	226	13	11	9
Amount of travel required	225	12	11	10
Times meeting/training are scheduled	202	12	12	8
Starting and finishing time	190	11	14	10
Flexible timings	212	14	12	9

$H_{0.3}$: There exists no significant relationship between the views of employees towards hindrance factor that makes work life balance harder and the departments where they work.

$H_{1.3}$: There exists significant relationship between the views of employees towards hindrance factors that make work life balance harder and the departments where they work.

Production	Sales & Marketing	Finance	Human resource
48	34	34	29.5
45	26.5	22	16.5
41	22	16.5	6.5
46	34	31	26.5
38	11	11	3
47	34	34	29.5
44	22	22	6.5
43	22	11	3
42	16.5	11	6.5
39	16.5	16.5	1
37	11	26.5	6.5
40	26.5	16.5	3

$$K = \frac{12}{N(N+1)} \sum_{i=1}^g n_i \left(\bar{r}_i - \frac{N+1}{2} \right)^2$$

$$= \frac{12}{N(N+1)} \sum_{i=1}^g n_i \bar{r}_i^2 - 3(N+1).$$

$$K = \frac{12}{48(48+1)} (34902) - 3(48+1)$$

$$= 31.07$$

The critical value of chi-square (χ^2) at degree of freedom i.e. $(c-1) = 4-1=3$, and $\alpha = .05$ i.e. (χ^2). $05, 3 =$ is equal to 7.8147.

Interpretation

From the above Kruskal Wallis test it can be derived that χ^2 tab < Kcal, therefore the Null Hypothesis rejected and the alternative hypothesis is accepted. The number of hindrance factor seen in the factory is not the same in four departments. Judging the values in each group reveals that in sales & marketing, finance and human resource seen less hindrance factor to work life balance and production see more hindrance factor to work life balance in the factory.

Findings

- For 85% of the employees financial independence is the only factor that motivates them to work.
- 64% of the employees feels satisfied about the amount of time spends at work.
- 61% of the employees believes that any issues (official or otherwise) can be discussed with their superiors.
- 78% of the employees strongly agree that their job reduces the amount of time spent with their family.
- 84% of the employees agree that tight working schedule and related official problem might make them irritable at home.
- 53% of the employees believe that their work involves lot of time away from home.

Suggestions

- Encourage the creativity of the employees and guide them towards the fulfillment of the tasks.
- The organization can give flexible working hours to their employees hence they get relaxed for their next day.
- Organization should conduct stress relieving programs like yoga and meditation for the employees regularly in order to reduce the stress level.
- Develop more counseling services for problems like managing work and home.
- Review of work process to see if the burden on employees can be lightened.
- Participation of families at the time of festival celebrations. It will increase the loyalty of employees towards the organization.
- Sessions on time management, work planning can be provided to employees by their managers.
- By creating a friendly environment within the organization, the employees would enjoy working with their colleagues.
- Employees should be satisfied by providing their appraisal/bonus/incentives on time which will make them

happy at work in turn they will lead their life happily.

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Role of Professional Ethics in Construction Projects

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Abstract

The 12th Five Year Plan of India (2012-2017) has envisaged in construction project works around \$ 1.077 Billion USD and the planned outlay of infrastructure projects is nearly 65 percent of the total investment in construction.

There is a growing consensus of opinion within the Construction Industry and among general public that conduct of professional unethical practices are commonly found in Indian Construction Industry. But so far no study has been undertaken to investigate this perception. The author has taken up the 'Study on Role of Professional Ethics in Quality Management in Construction' along with the 'Study of present level of Professional Ethics in Construction Industry' in Indian perspective to fulfill this need. The study is to evaluate the perceptions of the Construction Players on Professional Ethical issues in the Indian Construction industry. In this research the Questionnaire research methodology has been employed to get the perceptions of construction professionals on conduct of Professional Ethics. The research findings indicate that various forms of professional un-ethical conduct have significant effect on the quality of construction. The research findings also suggest the means of improvement of quality by inculcation of professional ethics in Indian Construction Industry.

Key Words: Professional Ethics, Construction Industry, Quality of Construction, Construction Players, Professional Code of Conduct

Introduction

In the national economies of developed and developing countries, construction industry has a very important role to play (Zantanidis & Tsiotras, 1998). In most of the countries the construction industry drives the economic growth to a great extent. About one-third of gross capital formation is made through the construction industry. Abdul Rashid & Hussain, (2005) says that between 2 to 10 percent of the total work-force is employed in the construction industry. The current annual investment in the construction industry globally is around \$7.5 trillion USD and during the next ten years this investment is expected to double this figure. In India the construction industry is the second largest industry next to agriculture and account for eleven percent of

India's GDP. The planned outlay of infrastructure projects is nearly 65 percent of the total investment in construction. It has been reported in 2011 by Transparency International, "Bribe Payers Index" that out of all the prominent sectors in the world, public works contracts and construction scored the lowest. The Construction Industry's global value is expected to reach \$12 trillion per annum by 2020 (approximately 13 percent of GDP), according to Global Construction 2020 Study (Source: Global Construction 2020, Global Construction Perspectives and Oxford Economics). It has been estimated that unless adequate measures are taken a sum of \$1.2 trillion risks being lost to corruption on an annual basis – a figure that could double when considering management and execution inefficiencies. This is definitely a highly worrying matter.

Out of all sectors of the world economy, the construction industry sector was found to be the most corrupt economic sector, as per the findings of the survey for investigation on corruption by Transparency International (TI). It was further revealed that in the year 2004, 10 percent of the total value of construction was lost due to corruption in construction industry globally and US\$ 3,200 billion per year was lost globally due to corruption in infrastructure procurement.

In Indian construction industry, quality is a very important issue of concern. Professional Unethical Practices among players of Indian Construction Industry is on the increase. The lack of professional ethics, as evidenced by the high rate of uncompleted and delayed projects with huge time and cost over-run, poor and substandard quality of work due to non – adherence to contractual design and specifications leading to shoddy and uneconomical constructions and collapse of structures during construction or thereafter. India may be viewed by International business organizations as less easy, possible and likely, to do business in comparison to other developing nations due to corruption and lack of Professional Ethics. Research needs to investigate the authenticity of this perception. But so far no research work has been undertaken to investigate this perception. Due to globalization a critical need has now occurred to have a proper International Standard Quality Management System in place in Construction Industry Sector (Dong et. al, 2009; Abdul – Rahman et.al., 2006).

The connection between construction industry players' professional ethical behaviour and ethical ideology is significant in understanding the value held by construction professionals and a basis for altering behaviour in a more ethical direction in the best interest of the society, wherever the situation warrants.

Many thinkers examined the moral standards of the society and how these standards apply to our lives and whether these standards are reasonable or unreasonable (Velasquez, 1998). Notion of rights is doing good that will promote the most good, and acts that promote the general good are one of the factors that determine whether they are right (Ross, cited in Pressman, 1997).

Good ethical practice should be an important organizational goal. Ethics cannot be arbitrarily created but discovered through argument and persuasion (Johnson, 1991).

Professional ethics

In performing the functions right first time and every time by the professionals in Construction Industry, the Professional Ethics are the guide of moral principles and standards of conduct. The organizations of professionals establish codes and standards of professional ethics.

The reputation of the profession and confidence of the client and the public are affected due to the lack of conduct of professional ethics in the construction industry. The trust in the professionals of the construction industry is placed on the presumption that the service provided will be of benefit to the client and the public.

Professional conducts of construction players

In the interests for delivering value in construction related procurement to clients and society and in their dealings with each other, the principles governing the conduct of Indian construction players should be that: their behavior is equitable and transparent; they discharge duties and obligations in time and with honesty, integrity and professional ethicality; they comply with all applicable laws, acts, rules, codes and standards, legislations and associated regulations and they satisfy all relevant requirements established in procurement contract documents. The hall mark of professional ethics in construction industry is what a construction professional should or should not do in the work place. Project Quality, namely – adherence to specifications and drawings, completion of projects within contractually agreed costs and time are the results of the direct impact of the standards of ethical conduct of the constructional professionals.

Some of the most professionally unethical practices that are followed in the construction industry are: bribery, fraud, collusive tendering, withdrawal of tender bid, bid shopping, payment games (e.g., holding due payments), claims games (e.g., inflated

claims, false claims), extortion and threats, conflict of interest, professional negligence, negligence to environment and others. (Vee and Skitmore, 2003; Fan, Ho, and Ng, 2001a, 2001b; FMI and CMAA, 2004; Bowen et.al., 2007a). There exists unethical behaviour among, owner / client, architects, consultants, project managers representing owner / client, construction managers representing contractors, quantity surveyors of the client preparing estimates and bill of quantities, site engineers from both owner/client and contractors side and others.

Relationship between professional un-ethical acts and quality of construction

Quality and professional ethics go hand in hand and they are inseparable. Lack of quality is a major concern for construction industry. It is perceived that human factors, especially lack of professional ethics, causes majority of quality related problems. Where there is lack of 'professional ethics' in construction industry, corruption subsumes the entire construction industry resulting in total absence of 'quality', culminating in huge losses and damages. Quality is dependent on ethical behaviour. Quality and professional ethics have a common care premise to do right things right first time and every time. It is a proven way to reduce wastage, minimize cost, improve competitiveness and create customer satisfaction (Besterfield et al 2003). In the study (Hamzah Abdul Rahman, Chen Wang and Xiang Wen Yap, 2010), about 93.9 percent of the respondents agreed that professional unethical conducts would contribute to quality related problems in the construction industry. 72.7 percent of the respondents agreed that unethical conduct could be the main cause for poor quality of construction projects. 84.8 percent have agreed that unethical conduct would affect the effectiveness of the implementation of the Quality Management Systems (QMS).

International scenario

In a study conducted by Charles Vee and Skitmore R M (2003), as per perceptions of construction players, 90 percent subscribed to the professional code of Ethics, 45 percent organizations had an Ethical Code of Conduct, 84 percent considered good ethical practice to be an important organizational goal. All the respondents had witnessed unethical conduct in the form of unfair conduct (81%), negligence (67%), and conflict of interest (48%), collusive tendering (44%), fraud (35%), bribery (26%) and violation of environmental ethics (20%).

In a research study "How professional ethics impact construction quality" by Hamzah Abdul Rahman et al (2010), categories of unethical conducts by construction players are: under bidding, bid shopping, bid cutting; bribery; corruption; negligence; front loading, claims game; payment games; unfair

and dishonest conduct, fraud; collusion; conflict of interest; change order game; cover pricing, withdrawal of tender; compensation of tendering cost, in descending ranking order.

In a study of 'Unethical Practices in Pakistani construction industry' by Dr. Tahir Nawaz et.al.(2013), the major findings are – lack of training in ethics, corruption and bribery, fraud and unfair conduct.

In another study conducted by FMI/ CMMA (2003), major findings are : bid shopping, change order games, payment games, unreliable contractors, claims games, bribery, reverse bidding, over billing. The study found out that in order to insure ethical conduct through-out the industry more regulations, more ethical training and strong effective leadership are required.

Research methodology and data collection

The objectives of this research have been to study the:

- Integration of professional ethics with quality of construction, that is the study on influence of professional ethics in quality management of Indian construction industry,
- The present level of adherence of professional ethics by the players of Indian construction industry.
- Methods to enhance the ethical professionalism among construction professionals in order to improve quality of construction.

The start of research work was through a comprehensive literature review with the aim and overview of the study of the relationship between quality and professional ethics and also to study the level of professional ethical standards being practiced by the players of Indian Construction Industry.

Research methodologies adopted were data collection through questionnaires through survey and experts interview to achieve the objective of this research.

The categories of answers for the questions asked were in the form of 5 point Likert Scale: VL= very low, L= low, N= neutral/ average, H=high, VH= very high

180 (One hundred and eighty questionnaires) were sent to the targeted respondents all over India and 110 (One hundred ten) responses were received as shown in Table 1. The response rate is 61.2% which is much higher as compared to the response rate to 13.2% in the accepted research work of H A- Rahman, C Wang and XW Yap (2010).

Table 1: Questionnaire Respondents Data

S.No.	Type of Respondents	Number of Respondents
1	Media Persons	5
2	Academicians	7

3	Architects	17
4	Construction Managers	20
5	Consultants	8
6	Project Managers	20
7	Quantity Surveyors	8
8	Site Engineers	20
9	Others	5
10	Total	110

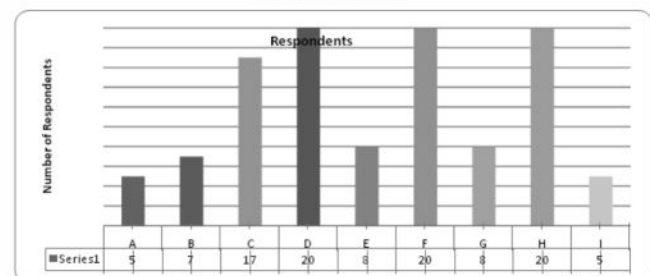
Data analysis Methodology

Data obtained from the filled in responses of the questionnaires were analyzed by descriptive statistics, using SPSS Version 18 and Microsoft Excel 2007 software. SPSS software was used to find out the frequency, mean, standard deviation of variables and presented the data obtained from SPSS in the form of 'Table', 'Pie Chart', Bar Chart, etc.. The Microsoft Excel software was used to link two variables to show their relationships. The results obtained were then explained, justified and compared with the findings of investigative case studies in Indian context and other related international research works. Finally, the research findings were summarized and conclusions were drawn.

Research findings

Figure 1 shows the distribution of total 110 numbers of respondents. The denotations of the respondents are shown as: A= Media Persons, B= Academicians, C= Architects, D= Construction Managers, E= Consultants, F= Project Managers, G= Quantity Surveyors, H= Site Engineers, I= Others

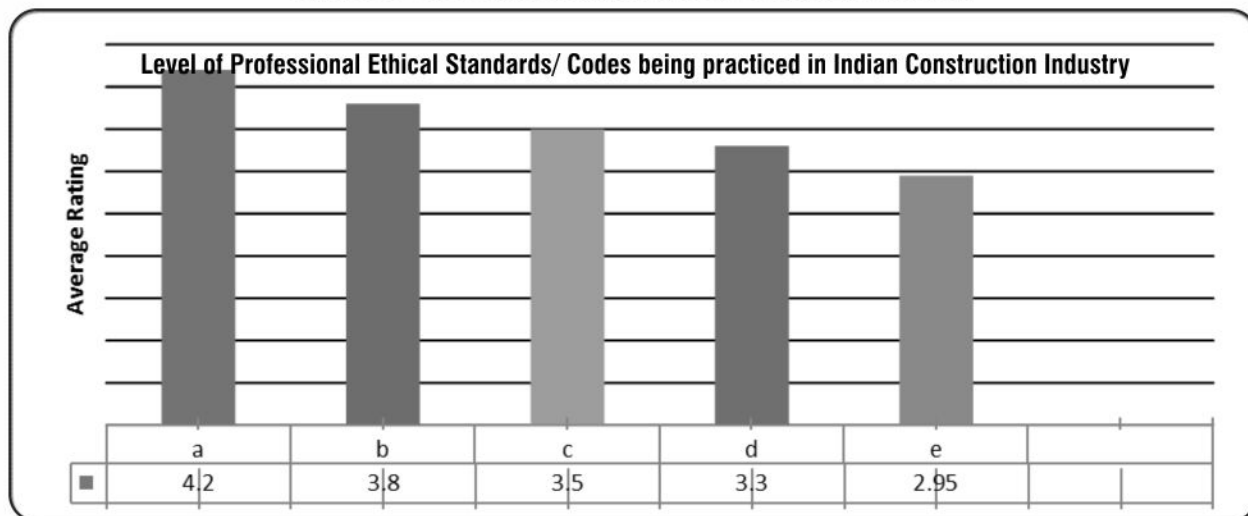
Figure 1: Number and Type of Respondents of the Questionnaire



As shown in Figure 2, the average rate of perception of the respondents about the level of professional ethical standards /codes being practiced in Indian construction industry on the attributes- professional code of ethics (4.2), training of employees on ethical conducts (3.8), personal ethics (3.5), Transparency (3.3) and good publicity practices (2.95). The results give the levels in descending order of being

practiced, where the highest value indicates least practiced. The attributes are denoted as: a = Professional Code of Ethics, b = Training of Employees on Ethical Conducts, c = Personal Ethics, d = Transparency, e = Good Publicity Practices.

Figure 2: Professional Standards in Indian Construction Industry



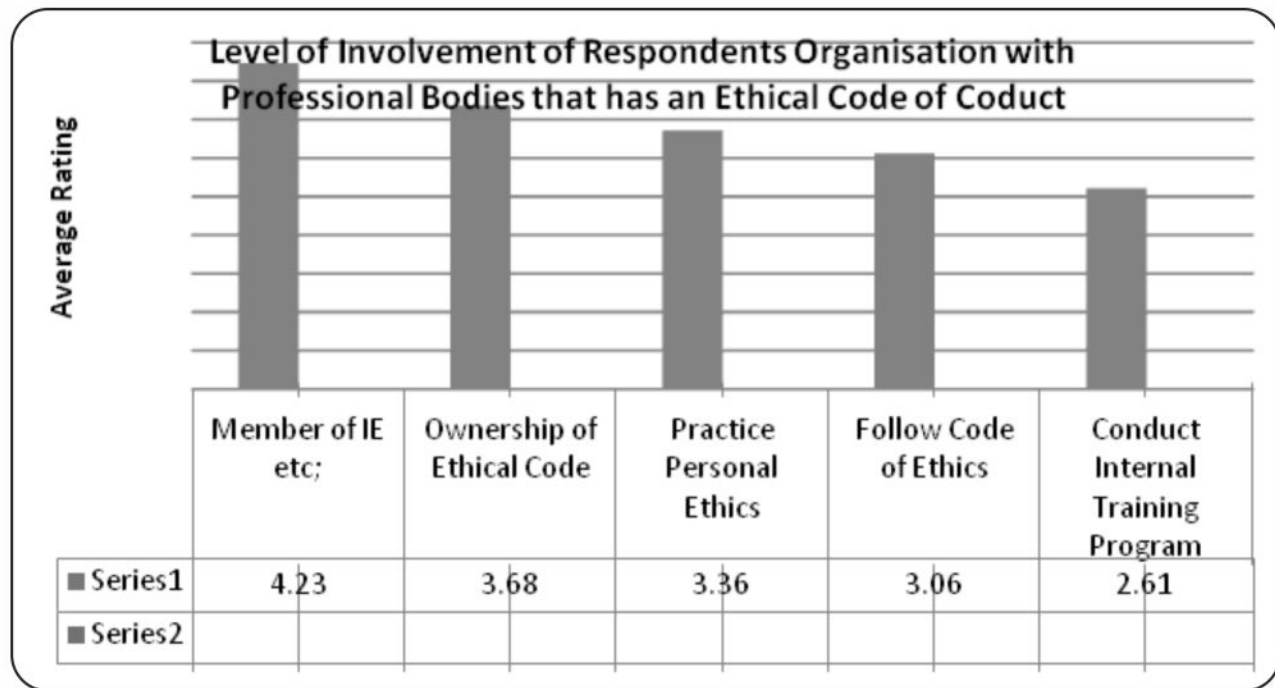
As shown in Figure 3, the average rate of perception of the respondents about the level of professional ethical standards /codes being practiced in own organization on the attributes- professional code of ethics (3.85), training of employees on ethical conducts (3.56), personal ethics (3.37), Transparency (3.14) and good publicity practices (2.76). The results gives the levels in descending order of being practiced, where the highest value indicates least practiced. The attributes are denoted as: a = Professional Code of Ethics, b = Training of Employees on Ethical Conducts, c = Personal Ethics, d = Transparency, e = Good Publicity Practices.

Figure 3: Level of Professional Ethical Standards being Practiced in Own Organisation

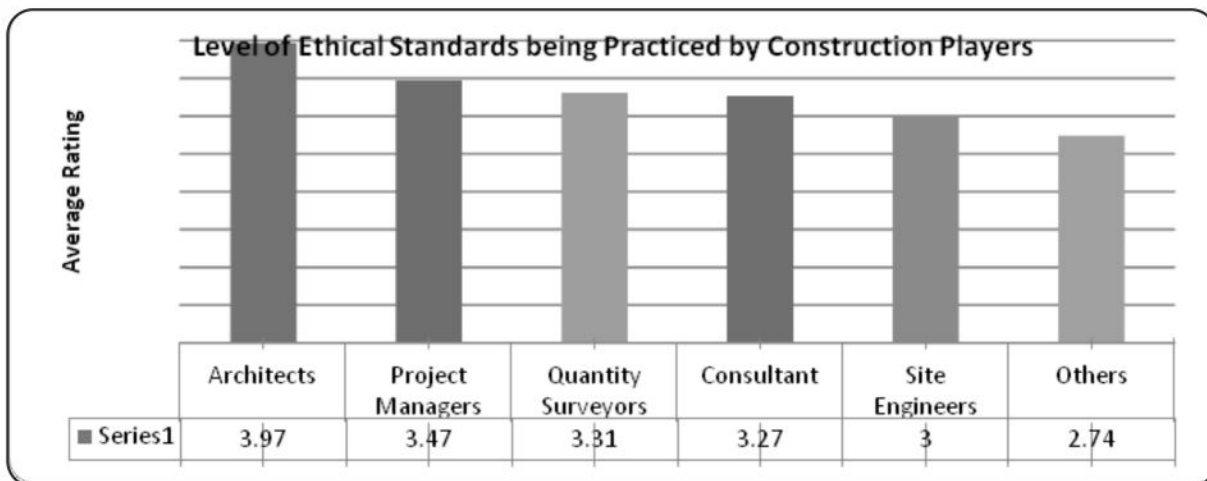


As shown in Figure 2 and Figure 3, the observed average rating of each attribute of ethical standards / code being practised are abysmally poor both in Indian construction industry and in the respondents' own organization, but the attributes practiced in own organization is better in comparison to the attributes practiced by the overall Indian construction industry.

As shown in Figure 4, the level of average rate of involvement of the respondents' organization with Professional Bodies that have an Ethical Code of – member of Institute of Engineers/ Indian Road Congress/ Indian Building Congress/ Project Management Institute/ Council of Architecture (4.23); organization has their Ethical Code of Conduct (3.68); engineers and supervisors practice personal ethics (3.36); , officers and staff follow internal standards/ code of ethics (3.06); conducting training programs on internal / standards / code of ethics (2.61). The results gives the levels in descending order of being practiced, where the higher value indicates more involved.

Figure 4: Level of Involvement of Respondents' Organization with Professional bodies that has an Ethical Code of Conduct.

As shown in Figure 5, the level of average rate of Ethical Standards being practiced/ maintained by players in Indian Construction industry – Architects (3.97); Project Managers representing owners/ clients (3.47); Quantity Surveyors, who prepare project estimates, Bill of Quantities (BOQ)s for the bid/tender, measure quantities for for payment (3.3); Constultants , who prepare detailed project report, structural engineering design and implementation for projects (3.28); site engineers , both from the owners and contractors' side for field execution of project works(3.00); Others including material suppliers (2.74). The results gives the levels in descending order of being practiced, where the higher value indicates more ethical.

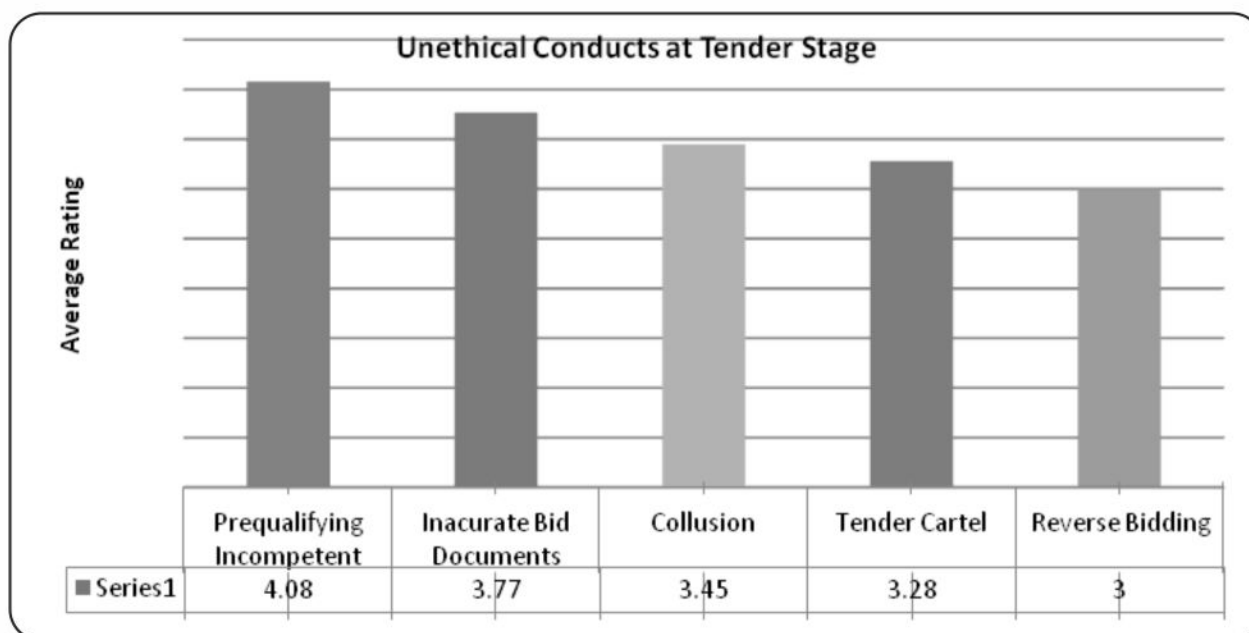
Figure 5: The level of Ethical Standards being Practiced by the Players of Indian Construction Industry.

As shown in Figure 6, the average rating of effectiveness of good ethical practices in Indian Construction industry – improvement of quality of construction including improvement of standards ,meeting delivery schedules (4.40); improvement of customer satisfaction (4.16); better following of drawing, specifications and standards/codes (3.76); reduction of cost of construction (3.49) and improvement of employee morale and standards (3.16). The results gives the levels in descending order of being practiced, where the higher value indicates more effective.

Figure 6 : Rating of Effectiveness of Good Ethical Practices

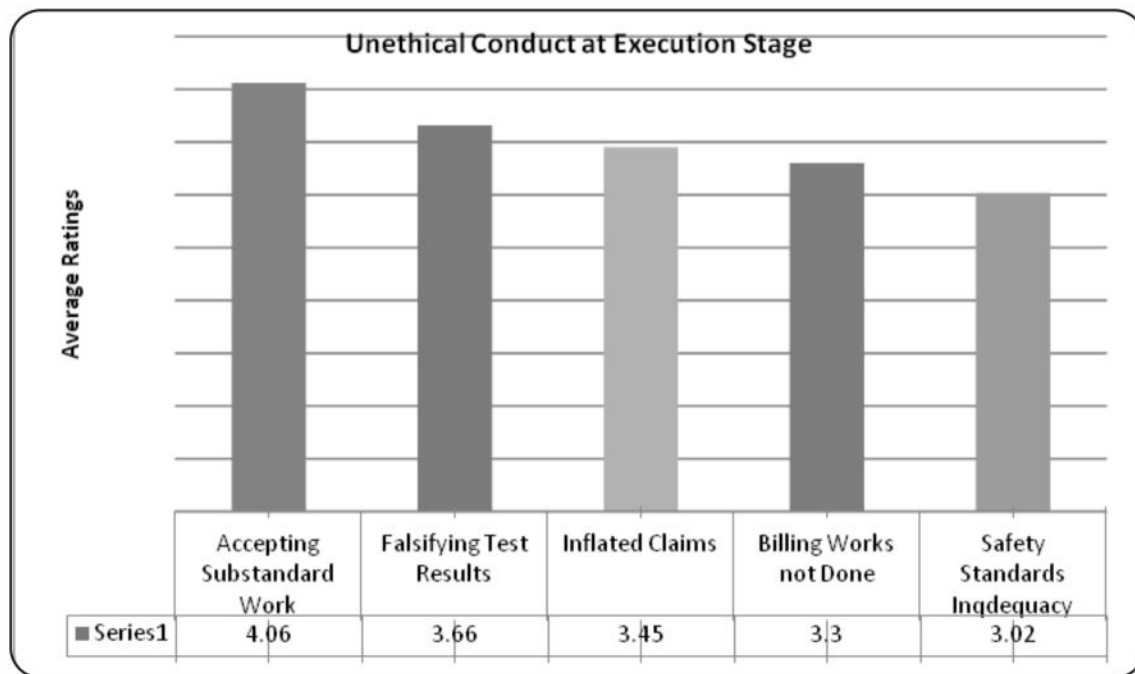
As shown in Figure 7, the average rating of prevailing unethical conducts of construction players at the tender stage – prequalifying incompetent contractors and consultants even fudging prequalification requirements (4.08); insufficient and inaccurate bid documents including Bill of Quantities and poor quality documents including inadequate information flow and disclosing tender informations to selective bidders (3.77); collusion between client and consultant and/or contractor (3.45); tender cartelling (3.28); reverse bidding /retendering and bid shopping (3.00).

The results gives the levels in descending order of prevalence of occurrence, where the higher value indicates more prevalent.

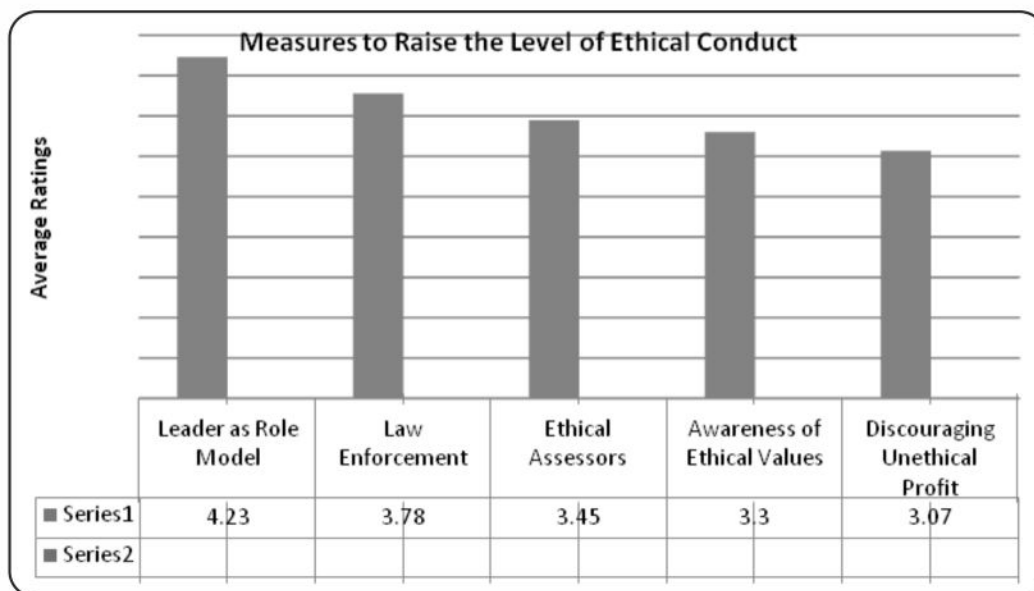
Figure 7: Rating of Prevailing Unethical Conducts of Construction Players at the Tender Stage

As shown in Figure 8, the average rating of prevailing unethical conducts of construction players at the execution stage – providing/ accepting substandard materials and workmanship (4.06); falsifying test results including covering up defective works during inspection and testing by the contractors (3.66); claiming/paying inflated rates, including playing change order manipulation games that is- substituting the loss making items with extra/additional/ new items of works (3.45); billing and paying for items of works not performed (3.30); inadequate safety standards at work (3.02).

The results gives the levels in descending order of prevalence of occurrence, where the higher value indicates more prevalent.

Figure 8: Rating of Prevailing Unethical Conducts of Construction Players at the Execution Stage

As shown in Figure 9, the average rating of the measures to raise the level of Ethical Conduct of Indian Construction Players – Leaders serving as role model (4.23); strict enforcement of laws and rules (3.78); appointing knowledgeable and honest ethical assessors (3.45); creating awareness about ethical values and code of conduct and improvement of quality consciousness (3.30); not encouraging profit –making under pressure at the cost of ethical conducts (3.07). The results gives the measure to be taken in descending order of prevalence of occurrence, where the higher value indicates more effective measure.

Figure 9: Rating of the Measures to Raise the Level of Ethical Conduct

As shown in Figure 10, the average rating of the reasons of difficulty to follow Professional Ethics in Indian Construction Industry – verification of facts in prequalification documents are very time consuming and cumbersome (3.92); project construction contracts are much less in numbers than contractors and bagging contracts are very stiff and therefore contractors/ consultants try to become

successful at any cost by resorting to each and every professional unethical practices (3.59); too many vulnerable joints exist in the project execution process chain starting from inception to completion, wherein professional unethical practices may be conducted to obtain undue benefits / results (3.39); strict government rules to award the work to the lowest bidder, impractical cost and time restriction and contracted price is much less than market price, without any consideration whether work can be executed by the contractor / contractor by fair means (3.30); accountability of individual construction player is very weak as work is executed as a team and segregating earmarking individual responsibility and accountability is very difficult and weak (2.97).

The results shows the reasons of difficulty to follow Professional Ethics in Indian Construction Industry in decending order, wherethe higher value of average rating indicates more difficult to follow.

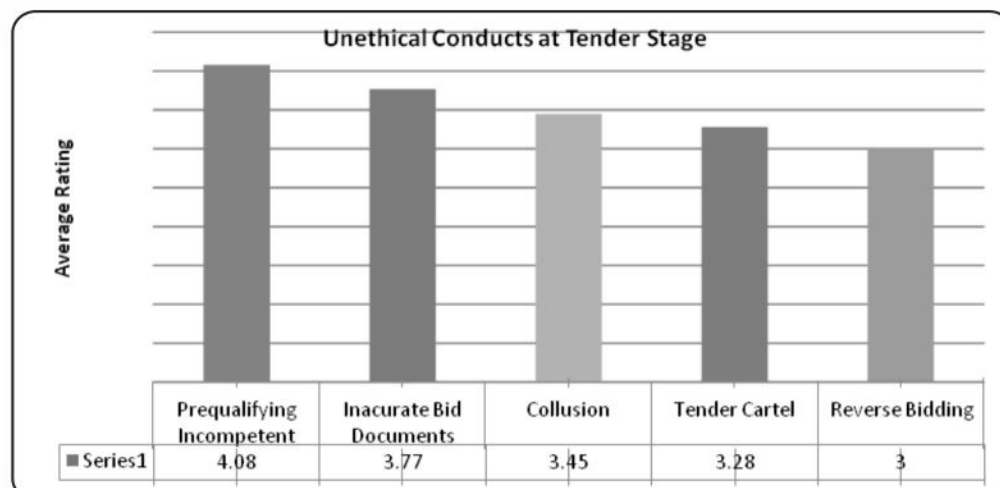
Figure 10: Reasons of Difficulty to Follow Professional Ethics in Indian Construction Industry



As shown in Figure 11, the average rating of prevailing unethical conducts of construction players at the tender stage – prequalifying incompetent contractors and consultants even fudging prequalification requirements (4.08); insufficient and inaccurate bid documents including Bill of Quantities and poor quality documents including inadequate information flow and disclosing tender informations to selective bidders (3.77); collusion between client and consultant and /or contractor (3.45); tender cartelling (3.28); reverse bidding /retendering and bid shopping (3.00).

The results gives the levels in decending order of prevalence of occurrence, the higher value means more prevalent.

Figure 11: Rating of Unethical Factors which influence the quality of construction at tender stage



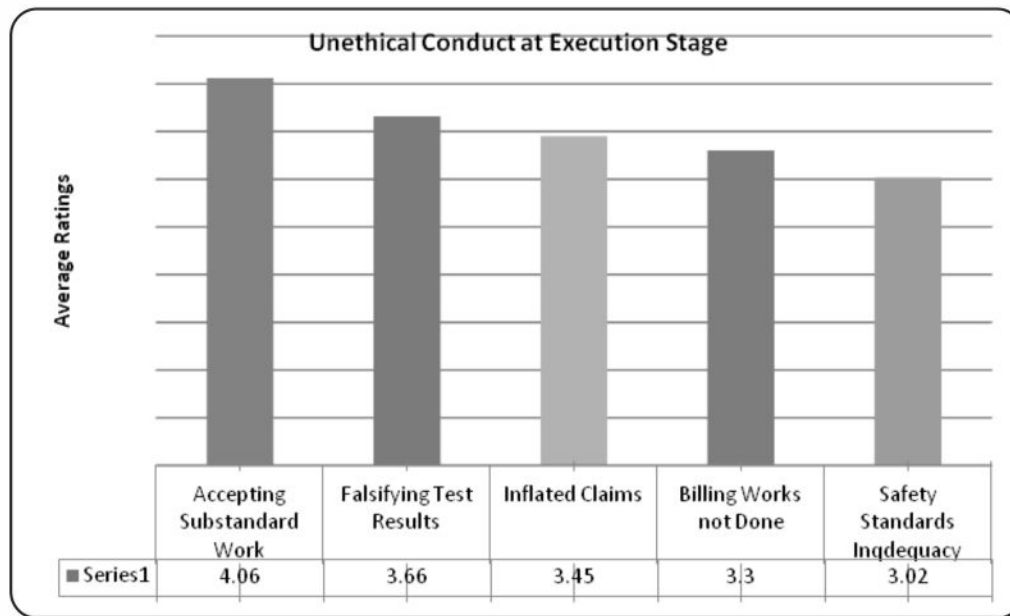
As shown in Figure 12, the average rating of prevailing unethical conducts of construction players at the execution stage – providing/ accepting substandard materials and workmanship (4.06); falsifying test results including covering up during inspection and testing by the contractors (3.66); claiming /paying inflated rates , including playing change order manipulation games that is -not executing the loosing items of work by substituting the with extra/additional/ new items of works (3.45); billing and paying for items of works not performed (3.3); inadequate safety standards at work (3.02).

The results gives the levels in descending order of prevalence of occurrence, where the higher value indicates more prevalent.

The first five in the ranking are:

1. prevailing unethical conducts of construction players at the execution stage – providing/ accepting substandard materials and workmanship
2. falsifying test results including covering up during inspection and testing by the contractors
3. claiming /paying inflated rates , including playing change order manipulation games that is - not executing the loosing items of work by substituting the with extra/ additional/ new items of works
4. billing and paying for items of works not performed
5. inadequate safety standards at work.

Figure 12: Rating of Unethical Factors which Influence the Quality of Construction at Execution Stage



Summary of results

The study examines and assesses the perceptions of construction professionals on the role of professional ethics in the quality of construction and the adherence of professional ethics by the players in the construction industry.

The results indicate that the professional ethics and construction quality are complimentary to one another. The results also indicate that there is substantial absence of professional ethical practices by construction industry players in India. The perception of respondents on professional ethical standards in Indian construction industry is substantially low and the respondents own construction industry is showing a shade better. In the construction industry human resource side both personal ethics and professional ethics and training of employees on ethical conducts are very low. The respondent organizations have their own ethical code of conduct and gives importance to business ethics as well as personal ethics. As per survey feedback report the rankings of ethical standards being practiced by Architects come on the top, project managers took second, construction managers and others are in the bottom most positions. As per respondents' perception about effectiveness of good ethical practices in construction industry, delivery of meeting schedules came on top with rating of 3.72 and quality of construction will be improved with rating of 3.63 against

overall rating of 3.6, higher ratings denotes better situation. In response to question of professional unethical practices at tender stage, 'prequalifying incompetent contractors and consultants' came on top with rating of 2.67 against overall rating of 2.43. Higher rating denotes more adverse condition. In response to question on measures to raise the level of professional ethical conduct around 91% respondents perceived leaders as role model is the best method, with ranking at top with rating of 4.39, Improvement of quality consciousness at number 3 top position with rating of 4.25 and inducting rewards and punishment rules at number 4 top position 4.20 against overall rating of 4.13, higher ratings denotes better situation.

The research findings indicate that various forms of professional un-ethical conduct have significant effect on the quality of construction. The research findings also suggest means of improvement of quality by inculcation of professional ethics in Indian construction industry.

Recommendations

Recommendations arising from the research that Project Managers, Construction Managers, Site Engineers, Consultants, Quantity Surveyors, Contractors and all other stake- holders in Indian Construction Industry should undertake construction projects with the QMS objective of obtaining best quality by inculcating Quality Management Systems and implementing professional ethics in every process of the value chain. ISO 9001: 2008 Quality Management System, Total Quality Management and ISO 14001:2004 Environment Management System, shall have to be implemented at all levels throughout the Construction Industry. All players in Indian construction industry must develop quality management processes and systems at their specific areas of operation within the industry

It shall be the aim of all stake holders to meet all contractual obligations, statutory and legal requirements in transparent and fair manner in respect to construction quality and safety.

Contractors and consultants should be employed on the basis of values of professional ethics namely, transparent, fair and unbiased written contracts. Contractors and consultants shall not make any unwarranted claims for additional payment or time or in laxity for adherence to specifications or drawings in the belief and consideration of 'nothing ventured, nothing gained'.

There should be regular awareness training on professional ethical values and these values should be upheld by each and every player in construction industry. Leadership quality is to be inculcated and nurtured among construction players. Environmental safety should be given adequate priority. There should be regular trainings and workshops on Quality Management Systems as per ISO 9001:2008, Total Quality

Management, Environmental Management Systems as per ISO 14001:2004 and Safety Management.

Way forward – Future scope of research

To make Players of Construction Industry totally free from Professional Un-Ethical Conduct, further research may be undertaken by future researchers, including the present author, from the point this research work is being culminated, to find out why the attitude of Professional Unethical conduct germinates and grows and how to eradicate totally the mindset of Professional Unethical Conduct of Construction Players in Construction Industry.

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Management of Delay in Construction Project in India

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Abstract

The Construction industry in India has a prime importance for Indian economy and is the second largest industry, next to agriculture. Currently, infrastructure development construction projects occupy a key position. In any construction project, contract time and cost overruns are common, which gives rise to claims leading to disputes. These disputes if not handled properly tend to consume time and money of all parties to the contract. To resolve the dispute in optimum time, it is essential to understand the root cause of disputes as early as possible. Hence, there is a need of analyzing the disputes scientifically. The present study reveals from the study of arbitration awards that the causes for delay claims can be grouped in domains and the probable decisions to the disputes can be traced through the probing questions considered by decision makers. This paper attempts to identify questions related to disputes for Indian scenario through literature, arbitration awards, court cases and discussions with professionals.

Introduction

Due to the very nature of the construction industry and varying contract conditions across different projects, contract claims are inevitable. Though claims are raised in numerous areas, delay claims are found to be most common. Yates and Epstein (2006) have observed that delays on construction projects and the claims originating from such delays are an integral part of the modern construction process. According to them, the construction delay claim process commences at the project inception itself. Referring to numerous past studies, Scott et al (2004) conclude that construction projects have a tendency to suffer from delays and such delays carry potential losses for all parties: for the employer (client, owner) through loss of use, and for the contractor and subcontractors through their prolonged presence on site. However, a delay in a construction project can be caused either by owner or by the contractor or by numerous other reasons.

As a first step in the study it is thought essential to understand various aspects of disputes arising out of time delay and extension clauses and identify the cases and relevant data that would provide greater insight into the disputes. Cases related to

construction disputes are found available in the two leading reporters of India: Arbitration Law Reporter (Arb LR) and All India Reporter (AIR). It is also found that these reporters publish only those cases whose judgements are pronounced in the High courts or the Supreme Court of India. As such these courts being primarily appellate courts in India, they generally look if there has been any "error of law" in the judgement of the case for which the appeal has been filed. Hence, the actual facts or evidences of the cases remain unknown to the reader of the cases. Therefore, to gather detailed information of the missing part of the background or the facts of the cases arbitration awards were taken for study.

Findings of the Awards related to Delay Claims

A total of 52 arbitration awards were collected through personal contacts with arbitrators or government officials. As the arbitration awards are not publicized and are required to be kept confidential, the names of the parties to contract are not revealed in the paper discussion. Incidentally, in all the awards, the claimants were private parties, while the respondents included both private and public bodies, with majority of them being government departments or public sector undertakings. Contract forms used were mostly Central Public Works Department (CPWD), Military Engineer Services (MES), Railways or State Public Works Departments and were related to different construction sectors.

It was found during the study that out of 52 arbitration awards available for study, 38 awards pertained to delay related claims. The delays were observed due to numerous reasons like late handing over of site, late issue of drawings, late supply of materials, delayed payments, delay on the part of sub contractor, etc. In many awards, more than one reason was found to be responsible for delay, e.g., in one case, there was delay in supply of material as well as delay in payment of bills by the owner, while in another case, there were orders of extra items through change order, but delay in finalizing their rates leading to non-payment of bills on time, etc. For the purpose of analysis, the claims were grouped in broad areas according to the reason causing delay and accordingly the awards were classified on the basis of broad reasons under which the claims had arisen. The distribution of awards under various reasons (behind the claims) is shown in the

Table 1.

Table 1: distribution of awards under various reasons (behind the claims)

Sr. No.	Reason causing delay	No. of awards
1	Delay due to late handing over of site	15
2	Delay due to late issue of drawings	05
3	Delay due to late supply of material, equipment and services like water & electricity called as late supply of resources	08
4	Delay due to change order	06
5	Delay due to non receipt of RA bills/ mobilization advance/ escalation on time	06
6	Delay due to subcontractor/ vendor/another agency	06
	Total	46

It was observed that in 35% cases, there was no award granted and the main reason for not granting the award was the contractor's failure to give notice on time to owner or to produce the evidence of his loss. Notices were given utmost importance by the arbitrators and in some cases, where no notices were served by contractor, the claims were rejected. However, yet in another case, the notice requirement was not complied and the compensation was paid as a reasonable remuneration for work done on the basis of quantum merit. To assess the loss claims by the contractor, evidences presented in the form of bills, records were considered. Although in certain instants the delay appeared to be fully attributable to the owner, yet no claim was allowed. However, if the extended stay was beyond the control of both the parties, 50% compensation was sanctioned.

In another award, the work was executed under extra item at the request of the owner, but the prices were not decided. The arbitrator allowed the payment of reasonable remuneration, as the object of paying for damages is to put the injured party in a position, as if the promise has been performed.

There were also claims on account of mental torture and loss of opportunity by a few contractors. Considering them to be remote and not falling under the purview of Clause 73 of Indian Contract Act, these claims were not allowed in any of the cases. As per Section 73 of the Indian Contract Act, the primary duty of the party who complains of the breach of contract by the defendant is to prove that he has suffered loss as a consequence of the breach, as well as its extent. If he is unable to prove the loss suffered by him, he cannot recover anything. In a few cases it was also observed that the owner has not levied liquidated damage, instead allowed extension of time. In these cases the arbitrators concluded that the delay is attributable to owner, and hence the contractor was entitled for compensation.

After the initial study of arbitration awards and extracting reasons for delays as given in Table 1, the first six reasons which contribute to about 85% of the total reasons were used for further study. These reasons are called 'domains' in all subsequent discussion. These domains are listed below and the detailed findings from awards under each domain are discussed in the following sections.

- Delay due to 'Late handing over of site'
- Delay due to 'Late issue of drawings'
- Delay due to 'Late supply of material, equipment and services like water & electricity called as late supply of resources'
- Delay due to 'Change order'
- Delay due to 'Release of payment of RA bills/ mobilization advance/ escalation'
- Delay due to 'Subcontractor/ vendor/another agency'

During the case study cases it is found that although the contractors have been trying to put onus of delay entirely on the owners and seek compensation, the contractors do not get their claims all the time. The case study has revealed certain logic followed by the arbitrators while deciding to allow or disallow certain claims. These logic are in the form of probing questions that helped arbitrators in their decisions. Hence, as the next step, the logic or the probing questions that are considered by the arbitrator while giving decisions are traced. These questions are named as 'factors'. Identification of the factors influencing decisions is considered essential as they contribute in building up the thought process of the arbitrator.

Factors Influencing to Decision

In this section various factors that are identified under different domains are presented. Identification of these factors is supported by relevant arbitration or court cases for better comprehension.

a) Identification of Factors under Delay due to 'Late Handing Over of Site'

During the study it was found that the claims due to late handing of site was noticed in 15 cases and only in five cases the arbitrator had awarded in favour of the contractor. In one case, though there was delay in handing over of site, yet the work was completed in 17 months as against the completion time of 30 months. The contractor had sought compensation for the delay in handing over of the site presumably for mobilizing additional resources for completing the work on time. This claim was denied by the owner and the arbitrator also rejected the claim stating that as the contractor did not submit either the revised schedule for early completion or the proof of overburden on account of revised schedule for early completion, the contractor

was not entitled for any compensation. In yet another case related to delay in 'part' handing over of site, it was established by the arbitrator that although there was delay in handing over of part of the site, it did not hinder the progress of work as the contractor's resources were fully utilized in the progress of work in other parts of the site and as such there was no idling of contractor's resources requiring compensation. Thus in the case of delay in handing over of the part site, it is first ascertained whether the part handing over actually hampered the progress of work and if handing over of part site in claim was an activity on the critical path. However, if it is proven that it is a critical activity, then the delay is attributed to the owner and appropriate compensation is granted. On the other hand, if it is not a critical activity, then any claim by the contractor ceases to exist. Incidentally, in the instant case the contractor abandoned the work when the scope of work was increased and rates for the extra work were not agreed to between the parties and the owner had to invoke the foreclosure clause. Similarly in a number of other cases the claim was denied by the arbitrator as the proper evidences to support the claim like bills, or other relevant documents were not submitted by the contractor.

b) Identification of Factors under Delay due to 'Late Issue of Drawings'

During the study it was found that there were total of five cases available wherein the claims related to late issue of drawings were dealt with. The drawings form an important part of the contract documents. Drawings may be issued by the owner either at the tender stage itself or in stages during execution of work or the contractor may have to develop the drawings and get them approved by owner's representative before execution. Thus there are three types of conditions of contract that define these responsibilities. Generally there is no claim when drawings are issued along with tender document unless there is some change order necessitating issue of fresh drawings. However, in the second type where drawings are issued in stages by owner during execution and if there is delay in issue, the notice by the contractor is required to support his claim. On failure to notify about the delay in receipt of drawings and its consequences to the owner, the contractor forfeits his rights of getting compensation. In the third type where the drawings are to be developed by the contractor there arise three situations: delay from the contractor's side in preparation; delay from the owner's side in checking and approving; and delay from both the parties. For the first two situations, the responsibility of delay is easily fixed while in the third situation which constitutes a case of concurrent delay, the claim has to be resolved using apportionment. Hence in case of issue of drawings, it is essential to establish who is responsible for the issue of drawings.

c) Identification of Factors under Delay due to 'Late Supply of

Material, Equipment and Utilities like Water & Electricity called as Late Supply of Resources'

There was a total of eight cases available in this domain. In one of the cases, there was a delay in supply of structural steel which was not supplied at regular intervals by the owner. It was observed by the arbitrator that even though there was a random supply of material, it has not affected the overall schedule and the claim for compensation was not allowed. This case prompted the question - whether delay affected project schedule?

Like in previous section, it is also essential to establish as to who is responsible for supplying the resources. Responsibilities for the procurement of resources are well defined in the contract and delay due to non-availability of resources is attributable to the party responsible for such procurement. As far as owner supplied material is concerned, the contractor is compensated for delay in the supply of material by the arbitrator, of course subject to production of evidence of losses on account of delay in receipt of material by the contractor. In one of the case, work could not be carried out due to non-supply of cement by the owner and contractor claimed for loss of overheads and profits. The arbitrator rejected the claim on the basis that there was no evidence to support the claim. He was looking for proof of actual payment made by the contractor to prove losses due to overhead and income tax return showing percentage of profit in other contracts to assess the loss in profit. Similarly in another case too, there was delay in the owner's supplies and non availability of equipment. The contractor neither furnished any details to substantiate the claim, nor produced any evidence, nor did he raise any claim during the progress of the work and the entire claim on account of delay in supply of material was made at the end along with other claims. Due to not issuing a notice on time about the delay and not claiming for compensation on time with proper documentary evidence substantiating the losses, the arbitrator denied this claim as a last minute claim.

d) Identification of Factors under Delay due to 'Change Order'

The nature of construction industry is such that full scope of work cannot be decided at the time of tendering and change orders are inevitable for successful completion of the project. Subsurface conditions and owner's changing requirement are often unpredictable leading to extra work. Change orders causing extra work is identified as a major source of disputes in case of residential building projects, particularly when users and the owner/engineers are two different entities. Generally the issues involved in the change orders are extra time that is required to be provided and the rates at which the contractor is asked to carry out the change order. In spite of well defined contract conditions, they become source of dispute mostly due to attitudinal problems of the parties that prompt disputes (Iyer et al 2001). Also in

contract condition there is a clause which states the percentage variation which is to be born by the contractor (CPWD clause 12, MES clause 7). Therefore the contractor is entitled for the claim only when the variation in quantity exceeds the prescribed limit.

Sometimes the timing of change order also becomes a source of dispute particularly when it is ordered at the end of the project when the contractor has almost wound up the establishment. Although necessary extensions of time as per the condition of contract is granted, the additional time may be inadequate and contractor requires mobilizing resources afresh. Thus while dealing with the disputes involving change order, it is necessary to identify the root cause which has prompted the change order. Since the study is limited to disputes related to delay claims, questions pertaining to this aspect only are considered.

e) Identification of Factors under Delay due to 'Release of Payment of RA bills / Mobilization Advance/Escalation'

A total of six awards were available involving the issue of delay due to payments. The construction contract involves different types of payments like, mobilization advance; running account bill, final bill which when delayed can delay the project. Normally contractors plan their finances considering the cash inflow of the part of the work completed. If they do not get the payment, naturally the project is hampered.

Reason for the running payment being withheld is generally due to substandard work or work not conforming to specifications by the contractor. In case of substandard work, it is generally assumed that the default totally lies with the contractor. When a substandard work is observed, contractor is generally issued a formal notice to improve the quality of work failing which his work will be suspended till the contractor showed due diligence to improve upon the quality of work. However, if the contractor is not served appropriate notice on time either in the certified copy of the running bill or through a separate letter, the owner is not in a position to levy liquidated damages in spite of an express provision in the contract. On the other hand, the rework on account of work not conforming to specifications may be the result of improper communication or interpretation by contract administrators.

The other reason for withholding payment is that the owner faces cash flow problems leading to delay in making payment. The contractor in this case becomes eligible for a claim of interest charges on the delayed payment.

Many contracts cater for provision of a mobilization advance by the owner at the commencement stage of a project to reduce the burden of mobilizing the resources of the contractor. In the event of a delay in release of this amount, it is likely that the expected fund flow of the contractor is affected; thereby affecting the

project schedule. When there is a delay in the release of the amount, it is the duty of the contractor to bring it to the notice of the owner that such an act would affect the project duration and cost. It is owner's right to know the implications of his acts so that he might reconsider his actions of delaying payments. In one of the case, there was a delay in payment by the owner which was proved, but as no notices of damages were given by the contractor to the owner while accepting the extension of time by the contractor the arbitrator denied the claim.

f) Identification of Factors under Delay due to 'Subcontractor/ Vendor/ Another Agency'

In many construction projects, some jobs are specialized and are assigned to a specialized agency, with expertise in the field. Alternatively, the owner may appoint the agency. Sometimes, in an industrial building contract where the equipment is to be supplied and installed by the contractor and the equipment is to be procured by the main contractor from a particular vendor, there is a delay in the supply of the equipment by the vendor to the main contractor causing delay to project. These delays are considered as third party delay and the contractor may be exempted from paying compensation to the owner. Also in some settled cases (Municipal Corporation of Delhi vs Jagan Nath Ashok Kumar ArbLR 1987(2) 344-348, Delhi Development Authority vs Polo Singh & Co. ArbLR 2003(1) 270-279, Prem Chand Sharma & Co vs Delhi Development Authority ArbLR 2003(1) 417-420, Northern Sanitation vs Hotel Corporation of India ArbLR 2005(1) 276-297) it was found that 'another agency', which has been assigned some part of the job by the owner, did not do his part of work. Delay by 'another agency' in completing his part of the job had the serial effect in several other contracts following the 'another agency'.

Conclusion

This paper identifies the various delay domains and factors influencing the decisions by arbitrators. The factors are identified as questions asked by the arbitrators and viewed as the thought process of arbitrators or judges. These questions are extracted through literature, arbitration awards, court cases and discussions with professionals. As all the factors may not be present in a given case nor will all of them have equal influence in decision making, it is also essential to find out their relative importance. This may be taken as future research.

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To Make world Pollution Free - Carbon Credits

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Abstract

The Collins English Dictionary defines a carbon credit as “a certificate showing that a government or company has paid to have a certain amount of carbon dioxide removed from the environment”. The Environment Protection Authority of Victoria defines a carbon credit as a “generic term to assign a value to a reduction or offset of greenhouse gas emissions, usually equivalent to one tonne of carbon dioxide equivalent (CO₂-e).”

The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling emissions. The IPCC (Intergovernmental Panel on Climate Change) has observed that: Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG products, technologies and processes. Such policies could include economic instruments, government funding and regulation, Clean Development Mechanism (CDM), a flexibility mechanism of Kyoto Protocol, discusses trading and transferring of emission allowances between developing and developed nations. The shift to renewable energy options and low carbon technologies, in response to the concerns over energy security and climate change, is proceeding more slowly than many would like. CDM, a project-based system, aims to accomplish the overarching goals of the Protocol. It aims to encourage sustainable development in developing nations and intends to reduce the cost of compliance with the Protocol for developed nations. CDM Projects are designed for reducing greenhouse gases and increasing green cover on earth. It involves projects like energy efficiency, transport, methane recovery, industrial process changes, cogeneration, agricultural sector etc. CDM also known as “Carbon Trading” or “Carbon Credits” is the way of reducing carbon emissions and gain 'Certified Emission Reductions' (CERs) for a developing country in return to the technology, funds etc. provided by a developed country. In this process World Bank (WB) acts as a referee and provides carbon credits to developed countries. Recently held Carbon Bazaar'10 in New Delhi, India witnessed the presence of huge number of big industrialists and various government firms across the globe. This shows the concern of the world towards carbon credits.

There are two main markets for carbon credits; Compliance Market credits Secondary / Verified Market credits (VERs),

Keywords: CDM, Kyoto protocol, carbon credits, zero carbon footprint, Verified Market credits (VERs), greenhouse gases (GHGs).

Introduction

What is the Clean Development Mechanism (CDM)?

Climate change convention is a United Nations agreement to stabilize greenhouse gases in the atmosphere, at a level that would prevent dangerous changes to the climate. The convention on climate change was agreed at the United Nations Conference on Environment and Development (UNCED) in Rio, 1992. To date, 186 countries have ratified the convention. To put the convention into operation, a protocol was outlined in Kyoto in 1997. The most important aspect of the Kyoto Protocol is its legally binding commitments for 39 developed countries to reduce their greenhouse gas (GHG) emissions by an average of 5.2% relative to 1990 levels. These emission reductions must be achieved by 2008–2012: the so called 'first commitment period'. The developed countries with emission reduction targets are called the annex 1 countries, whereas those without targets are the non-annex 1 countries. The Kyoto protocol allows developed countries to reach their targets in different ways through 'Flexibility Mechanisms'.

These include: Bubble Mechanism: It refers to the European Union member countries that agreed to have a collective Quantified Emissions Limitations and Reduction Objectives (QELROs) of 8%, regardless of the actual individual countries' reductions. Emissions Trading: Trading of emission allowances between developed nations. Joint Implementation: Transferring emission allowances between developed nations, linked to specific emission-reduction projects. Clean Development Mechanism (CDM): The CDM is the only flexibility mechanism that involves developing countries. It allows developed nations to achieve part of their reduction obligations through projects in developing countries that reduce emissions or 'fix' or sequester CO₂ from the atmosphere. It provides guidance to people in developing countries who are responsible for establishing enabling policies and regulations in this area, as well as project

developers.

Objectives of the Paper

1. To get knowledge about carbon omission and absorption through business activities.
2. To identify what is Kyoto Protocol.
3. To get knowledge about how many companies In India follow rules of Kyoto protocol.
4. To know about the technology which are useful to maintain Carbon omission.
5. To know about the expenses incurred to maintain ecosystem safe.
6. To get knowledge about proposed future action to overcome from carbon omission system.

Structure of the CDM: The clean development mechanism is a project-based system. This means that it accomplishes its objectives at the relatively fine-grained scale of individual projects that are validated by designated entities and registered with the CDM executive board (CDM EB), the mechanism's governing body, rather than at an industry or sector-wide scale. Each project wishing to participate in the CDM must prepare a Project Design Document (PDD) that explains in detail how its future emissions reductions will be real, additional, and not induce leakage. It must also prepare a monitoring methodology that explains in detail how it will monitor emissions reductions made by the project. A project may also utilize a previously approved monitoring methodology. Real emissions reductions are ones that are monitored with sufficient care to insure that they actually occur. Additional emissions reductions are ones that are in addition to any that would have occurred absent the CDM subsidy. Leakage of emissions occurs when emissions reductions that would have occurred within a project absent the CDM subsidy, instead occur outside it because of the subsidy. All three of these concepts require that a hypothetical baseline of emissions be defined for each project, and in the case of leakage, the world outside the project. This baseline represents the timeline of emissions that would have occurred absent the subsidy provided by the CDM (and thus absent the emission reduction project). It is an attempt to represent the counterfactual of business as usual emissions in a world without CDM. The CDM project baseline is described in terms that vary by the project type. Nevertheless, several common variables can be seen in most PDDs. Project proponents often describe the regulatory baseline, that is, the flux of emissions permitted by local law and regulation. They often describe the financial baseline, that is, the lack of an adequate return on investment without the benefit of the CDM subsidy. They often describe typical technologies applied by the type of project in the PDD and how the CDM subsidized

project exceeds these local standards. Finally, they sometimes must describe a sectorial or national baseline for installations of the project type. Ultimately, the CDM project proponents must quantify the hypothetical emissions that would have occurred in the future without the CDM project subsidy. Of course, project proponents and environmental regulators do not live in a world without CDM. They have, given the potential for foreign subsidies, acted strategically in order to maximize many projects' baselines and so maximize the potential for the generation of certified emission reductions (CERs). The fact that most industries involved in CDM projects are already highly regulated makes this strategy attractive and not difficult to implement. An environmental regulator faced with the choice of preventing an emission with a domestically costly regulation or allowing it to be prevented by domestic polluters being paid a subsidy from an extra-national entity will have obvious political incentives for selecting the international subsidy over new regulation. The end product of the CDM process is the issuance by the CDM EB of an emissions offset to the project participants. This offset can then be sold to an annex 1 nation or a party within one that has obligations under the Kyoto Protocol. The offset, called a Certified Emission Reduction (CER), assuming that certain CDM facilities are established, may be used by annex 1 countries in lieu of emissions reductions within their territories for meeting emissions reductions targets. Private parties that have been assigned emissions allowances by their governments may also purchase CERs and use them as permits to emit in excess of their assigned allocations or as an alternative to purchasing allocations from other participants in their domestic market.

Goals of the CDM: The clean development mechanism was created with three goals: It aims to accomplish the overarching goals of the framework convention. It aims to encourage sustainable development in non-annex 1 nations. The CDM is intended to reduce the cost of compliance with the protocol for annex-1 nations. The clean development mechanism is intended, according to the protocol, to help in accomplishing the goal of the convention of preventing dangerous interference with the climate system. It aims to do this by assisting developing countries in reducing their emissions of GHGs. Thus the CDM is a significant and indeed the only way in which Non- annex 1 signatories to the Kyoto protocol will contribute towards achieving its goals. A not unrealistic hope for the CDM was that by providing non-annex 1 nations with financial incentives for low-carbon intensity development, These nations' development paths might be nudged onto more climate friendly paths and engaged for the long haul. The second CDM objective, sustainable development, is left largely undefined by the protocol or the implementing directives of later conferences of the parties. To the extent that the provision has teeth, it is given them by the requirement under the CDM, that

the host country of a project must certify that it meets the Designated National Authority (DNA)'s standards of sustainability. Although some DNA's have prioritized particular types of projects, they have not rejected other types that would otherwise be capable of producing CERs. The third CDM goal, lowering the cost of compliance for annex 1 parties, was thought possible for two reasons. The majority of additional energy capacity to be built up to and during the first compliance period (2008-2012) would be located in the developing world where rates of economic growth were highest and energy infrastructure was least developed. Also, the relative cost of prematurely retiring high-carbon emission intensity power plants is significantly higher than building new low or zero carbon emission energy capacity. Thus, if the CDM could be used to subsidize the substitution of new clean power capacity in the developing world for premature retirement of old dirty power capacity in the developed world, it could substantially lower the cost of treaty compliance with no change in environmental outcome since the location at which an emission reduction of a particular quantity of CO₂ takes place has no impact on the environmental benefit – lower atmospheric greenhouse gas concentrations.

CDM project types: Carbon credits or CERs are sold to entities in Annex-I countries, like power utilities, who have emission reduction targets to achieve. Type of projects, which are being applied for CDM and which can be of valuable potential, are:

- **Energy efficiency projects** : Increasing building efficiency (Concept of Green Building/ LEED Rating) e.g. Technopolis Building, Kolkata; Increasing commercial /industrial energy efficiency (Renovation and Modernization of old power plants); Fuel switching from more carbon intensive fuels to less carbon intensive fuels; and also includes re-powering, upgrading instrumentation, controls, and/or equipment.
- **Transport** : Improvements in vehicle fuel efficiency by the introduction of new technologies; Changes in vehicles and/or fuel type, for example, switch to electric cars or fuel cell vehicles (CNG/ Bio fuels); Switch of transport mode, e.g. changing to less carbon intensive means of transport like trains (Metro in Delhi); and; Reducing the frequency of the transport activity.
- **Methane recovery** : Animal waste methane recovery and utilization; Installing an anaerobic digester and utilizing methane to produce energy; Coal mine methane recovery; Collection and utilization of fugitive methane from coal mining; Capture and utilization of fugitive gas from gas pipelines; Methane collection and utilization from sewage/ industrial waste treatment facilities.
- **Industrial process changes** : Any industrial process change resulting in the reduction of any category greenhouse gas emissions.

- **Cogeneration** : Use of waste heat from electric generation, such as exhaust from gas turbines, for industrial purposes or heating (e.g. Distillery-Molasses/ bagasse)

- **Agricultural sector** : Energy efficiency improvements or switching to less carbon intensive energy sources for water pumps (irrigation); Methane reductions in rice cultivation; Reducing animal waste or using produced animal waste for energy generation and any other changes in an agricultural practices resulting in reduction of any category of greenhouse gas emissions.

Carbon Credits

Mechanism Carbon Trading

Let us say that India decided to invest in a new power station, and has decided on a particular technology at the cost of X crore. An entity from an industrialized country (which could even be a company) offers to provide India with slightly better technology, which costs more (say Y crore), but will result in lower emissions. The industrialized country will only pay the incremental cost of the project – viz. Y minus X. In return, the “investing” country will get certified emission reductions (CERs), or credits, which it can use to meet its Kyoto commitments. This is a very good deal indeed – but for the investing country. Not only do they sell developing countries their technology, but they also meet their Kyoto commitments without lifting a finger to reduce their domestic emissions. Countries like the US can continue to pollute at home, so long as it makes the reductions elsewhere.

The World Bank has built itself a role in this market as a referee, broker and macro-manager of international fund flows. The scheme has been entitled clean development mechanism, or more commonly, carbon trading. The carbon market creates transferable rights to dump carbon in the environment and vegetation far in excess of the capacity of these systems to hold it. Billions of dollars worth of these rights are to be awarded free of charge to the biggest corporate emitters of greenhouse gases in the electric power, iron and steel, cement, paper and other sectors in industrialized nations who have caused the climate crisis and already exploited these systems most. India is considered as the largest beneficiary, claiming about 31 per cent of the total world carbon trade through the clean development mechanism (CDM). It is expected to rake in at least \$5 billion to \$10 billion (Rs 22,500 crore to Rs 45,000 crore) over a period of time.

Future of Carbon Market : Post Kyoto 121 B2B (business to business) meetings took place for direct business negotiations between buyers/ investors/ technology transferors from European nations mainly from Germany and the CDM project proponents from India. High level one to one meetings provided

an insight to climate change issues and policies in Indian context and India's stand on these issues beyond 2012. Future areas of cooperation and core climate change issues pertaining to energy and environment in India were also discussed.

CDM's Best Example in India : CFL-for-bulbs to be world's biggest carbon credit project will shut out 40M tonnes of carbon from atmosphere annually. The project, which will allow the government, investors, discoms and CFL manufacturers to sell CFLs at Rs 15 each, instead of the Rs 100 they currently cost on average, has been approved by the UN.

India had bagged the world's largest carbon credit project that will help replace 400 million incandescent light bulbs with energy saving CFL bulbs at dirt-cheap prices in a year while preventing 40 million tonnes of carbon from entering the atmosphere annually. The project, which will allow the government, investors, discoms and CFL manufacturers to sell CFLs at Rs 15 each, instead of the Rs 100 they currently cost on average, has been approved by the UN under the global carbon credit scheme called clean development mechanism. The mammoth size of the project can be gauged from the fact that the world's second largest CDM project earns only about 1.5 million credits a year in comparison. Almost half the households in India will immediately benefit from the scheme and as other areas get electrified; those villages will get added on. Bureau of Energy Efficiency is the nodal agency for the grand project.

The scheme-called 'Bachat Lamp Yojna' works like this. The discom in a state decides to implement the scheme. It picks up a financial investor, which lends the upfront finance to buy the CFL bulbs at market price to replace the bulbs in the discom's area. The discom then distributes the bulb to its consumers at Rs 15 a piece and collects the regular bulbs, which it then destroys. For every ten bulbs that consumers use for a year, a tonne of carbon is prevented from escaping into the atmosphere as CFL bulbs use substantially less power than incandescent ones. For every tonne of carbon saved, the Bureau of Energy Efficiency, acting as the anchor, gets a carbon certificate from the UN, which it then hands over to the investor. The investor sells the carbon credit in the international market where buyers —such as manufacturers and power producers in Europe — buy the certificates to meet the greenhouse gas emission reduction targets the countries have set for them. At present, each certificate sells at around 10-12 Euros in the international spot market. BEE estimates that investors will be able to recover the rest of the Rs 85 per bulb by 5-6 years and by the 7th year, earn some on the top. BEE has in its scheme ensured that the CFL bulbs are of a standard that they last that long. Several states and cities have been ready to take advantage of the scheme the moment it had become operational.

Failures of CDM

The CDM is neither functioning well as a market for emissions reductions nor is it a successful subsidy. As a result, it is creating skewed but powerful political institutions and interest groups whose interests are not aligned with the ultimate goals of either the UNFCCC or the Kyoto Protocol. Given the relatively poor performance, at least initially, of other markets for atmospheric pollution, this result is perhaps not entirely surprising nor should it be seen as a reason to abandon the CDM. The CDM fails as a market because it has animated accounting tricks that allow participants to manufacture CERs at little or no cost. It fails as a subsidy because the developed world has had to purchase these emissions reductions at an extremely high premium that bears no relation to their cost. The CDM, even as it is supplying CERs to developed world parties to the Kyoto Protocol at prices that are less than they would otherwise have to pay, is an excessive subsidy that represents a massive waste of developed world resources. It is probably too late to change the structure of the CDM in order to address its shortcomings prior to the end of the first commitment period.

Literature Review

NR Sethuraman talked about the Carbon credits market in India and role of solution provider. Developed countries have to spend nearly \$300-\$500 for every ton reduction in CO₂, against \$10-\$25 by developing countries. India's GHG emission is below the target and so, it is entitled to sell surplus credits to developed countries. Anindita Bhattacharyya Sarkar T. R. Manoharan (2009), in their research work gave an estimation of carbon in harvested wooden handicraft products.

The average consumption of wood (any broad leaf species) per SME unit in Saharanpur in a week has been estimated as 10,000 kg approximately. These SME units may be a cluster or many small single room units or a single big factory with its own production centre. The carbon content was calculated. Total value of CO₂e for both registered and unregistered units in Saharanpur \$0.24 + \$5.34 (million) \$5.58 million. For one EME wooden handicraft unit is about \$1.525 and the same for all units together will be about \$5.28 million or Rs. 258.72 million. It was noticed that the best option to avail these benefits was to initiate the process through an association of SME wooden handicrafts or a agency, including those set up by the government rather than individual SMEs themselves. There are several such agencies currently in operation in the area. There is need to develop an integrated project in the area to address energy efficiency. Innovative technologies that reduce waste, improving the quality of supply and sourcing wood from sustainably managed and certified forests and trees outside the forests.

Sudipta Das (2009), partner with Ernst & Young in advisory

service, says some intermediaries represent the carbon credit buying community in the developed world. "Sometimes they misguide their clients, who start believing that getting their carbon emission certified and selling them is risky and tedious and there is no proper return," he says, adding that many companies end up selling carbon credits at ridiculously low rate. Das says companies should approach only renowned consultants who can help them have successfully sold their carbon credits at good market rates and learn from their experience.

According to Natham Martin (2006) emission of carbon dioxide from the combustion of fossil fuels, which may contribute to long-term climate change, are projected through 2050 using reduced-form models estimated with national-level panel data for the period of 1950-1990. Using the same set of income and population growth assumptions as the intergovernmental Panel on Climate Change (IPCC), it is found that the IPCC's widely used emissions growth projections exhibit significant and substantial departures from the implications of historical experience. This model employs a flexible form for income effects, and handles forecast uncertainty explicitly. It is find clear evidence of an "inverse" relation with a within-sample peak between carbon dioxide emissions (and energy use) per capita and per-capita income.

Issues and Concerns over CDM

The Steps to Sustainable Change in the World: Ensuring a continued acceptance of CDM by developing countries requires taking fully into account these countries' concerns in the climate negotiations — or any international negotiation for that matter.

Conclusion

- The Indian market is extremely receptive to Clean Development Mechanism (CDM). Having cornered more than half of the global total in tradable certified emission reduction (CERs), India's dominance in carbon trading under the CDM of the UN Convention on Climate Change (UNFCCC) is beginning to influence business dynamics in the country.
- Despite all the research, carbon credit cannot be a standardised system as it is basically a policy created commodity. But it would allow for a great deal of policy and project level experimentation over the next few years until the various systems converge on some accepted modalities.
- It is expected that it will be the electricity companies, on the one (selling) side, and the cement companies, on the other (purchasing) side, to first explore the market. Some of the companies or projects that could benefit from carbon credits are : Renewable energy; biomass; hydropower; geothermal; wind and solar energy; co-generation; fuel witch; waste processing; landfill

gas extract in; biogas applications; a forestation/ reforestation, and so on. Carbon credit is thus expected to redefine global trade and may bring about a drastic change in the ratings of various countries in the global market in the near future.

- India and China are likely to emerge as the biggest sellers and Europe is going to be the biggest buyers of carbon credits.

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Technological Innovations in Indian Banking Industry – Changing Banking Scenario

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Abstract

Since last many years the role of banking in the process of financial intermediation has been undergoing a profound transformation. India's banking system has seen some major financial innovations. There are many innovative changes that have taken place in the banks. The major drive for financial innovation has been globalization of financial systems, deregulation, and great advances in technologies. Due to increasingly integrated financial systems which are facing higher volatilities, more competition and wide varieties of risks, financial technological innovation has become an essence to provide new products and strategies to better suit different circumstances of time and market and to meet different requirements of participants in financial system. The paper presents a broad overview of the current state of the banking industry in India. Attention is paid to growth path of banking sector with technological advancement.

Key Words : Information Technology, Financial Innovation, Indian Banking Industry

Introduction

Information technology refers to the acquisition, processing, storage and dissemination of all types of information using computer technology and telecommunication systems. Technology includes all matters concerned with the furtherance of computer science and technology and with the design, development, installation and implementation of information system and applications. Innovation derives organization to grow, prosper & transform in sync with the changes in the environment, both internal & external. Banking is no exception to this. In fact, this sector has witnessed radical transformation based on many innovations in products, processes, services, systems, business models, technology, governance & regulation. With the globalization trends world over it is difficult for any nation big or small, developed or developing, to remain isolated from what is happening around. For a country like India, which is one of the most promising emerging markets, such isolation is nearly impossible. More particularly in the area of Information technology, where India has definitely an edge over its competitors, remaining away or uniformity of the world trends

is untenable. Financial sector in general, and banking industry in particular, is the largest spender and beneficiary from information technology.

Financial innovation is the process through which finance managers or intermediary institutions in financial markets add value to existing plain products that satisfy the user needs. According to John Finnerty, "Financial Innovation involves the design, the development, and the implementation of innovative financial instruments and processes, and the formulation of creative solutions to problems in finance". The various innovations in banking sector are ECS, RTGS, EFT, NEFT, ATM, Retail Banking, Debit & Credit cards, free advisory services, payments of utility bills, fund transfers, internet banking, telephone banking, mobile banking, issue of free cheque books, traveler cheques and many more value added services.

Objectives

1. To study the various financial innovation in banking sector.
2. To study the changing banking scenario with reference to Information Technology.

Literature Review

Merton (1992) in his research concluded that financial innovations lowers cost of capital, reduces financial risks, and improves financial intermediation. The primary function of financial system is to facilitate the allocation and deployment of economic resources in an uncertain environment.

Avasthi and Sharma (2000-01) have analyzed in their study that advances in technology are set to change the face of banking business. Technology has transformed the delivery channels by banks in retail banking. It has also impacted the markets of banks.

Jalan B. (2003), concluded that IT revolution has brought about a fundamental transformation in banking industry. Perhaps no other sector has been affected by advances in technology as much as banking & finance. It has the most important factor for dealing with the intensifying competition & the rapid proliferation of financial innovations.

Merton and Bodie (2005) emphasized that financial innovation is helpful in ensuring smooth functioning and improves the overall

efficiency of the system by minimizing cost and reducing risk. More generally, financial innovation has been a central force driving the financial system toward greater economic efficiency.

Transformation of Indian Banking System – The Journey

Since independence Indian banks have undergone through major shifts which can be categorized as pre reform (before 1991) and post reform period (after 1991). Pre-Reform period, was a period of consolidation of banks up to 1966. This time is also known as a period of historic expansion in both geographical and functional terms from 1966 to mid- 1980s. During 1980s to 1991 banks saw the consolidation of branches. But these changes were policy induced and not driven by market forces. Entry of technology in the Indian banking sector can be traced back to the Rangarajan Committee report, way back in the 1980s but during nineties, the banking sector witnessed various liberalization measures. New private sector and foreign banks emerged - equipped with the latest technology. These banks opted for a different model of having a single centralized database through a network infrastructure, instead of having multiple databases for all their branches. These changes were market driven, having the influence especially of globalization. Deregulation has opened up new opportunities for banks to increase revenues by diversifying into investment banking, Insurance, credit cards, mortgage financing, depository services, securitization, etc. Now the banks have started with the concept of multi- channels, like ATMs, credit cards, debit cards, telephone/mobile banking, internet banking, call centers, etc. The role of banking is redefined from a mere financial intermediary to service provider of various financial services under one roof acting like a financial supermarket.

Computerization of Banks from manual to automated

Prior to the 20th century, banking saw little change, but it has undergone dramatic transformation in the last few decades. Initially banking was based on the manual things, which was prone to errors, mistakes in calculations, and theft etc. Technology enablement of the banking industry started with automation of branch and teller operations, with the goal of improving customer service. Manual operations, such as the issuance of cash receipts and payments, transfer of funds between accounts in the same branch, and certain paper clearing operations were automated. Realizing the benefits of technology enablement, banks slowly moved towards complete automation. Automation enabled easy retrieval of customer and account data at the teller workstation to speed up customer service and process efficiency on one side and quicker consolidation of General Ledger data and MIS availability to the branches on another side. The 1980s and early 1990s saw the advent of massive computerization, electronic fund transmission and

ATMs. These innovations increased banking efficiency and output. Automation progressed at a different pace across countries, based on acceptance and cost, and was largely driven by the needs of the banking sector. The Internet revolution in the late 1990s drove banking automation into online mode, and ushered in data centralization. This paved the way for a number of banking solutions including core banking applications covering critical branch operations, deposits, lending, trade finance, treasury and investment banking.

Present Status

Indian banking industry, today, is in the midst of an IT revolution. The technology changes have put forth the competition among the banks. This has led to increasing total banking automation in the Indian banking industry. The tremendous advances in technology and the aggressive infusion of information technology had brought in a paradigm shift in banking operations. New private sector banks and foreign banks have an edge over public sector banks as far as implementation of technological solutions is concerned. However, the later are in the process of making huge investment in technology. For the banks, technology has emerged as a strategic resource for achieving higher efficiency, control of operations, productivity and profitability. For customers, it is the realization of their 'anywhere, anytime, anyway' banking dream. This has prompted the banks to embrace technology to meet the increasing customer expectation and face the tough competition.

The recent trends show that most 'brick and mortar' banks are shifting from a 'product-centric' model to a 'customer-centric' model as they develop their new e-banking capabilities. They have been using electronic and telecommunication networks for delivering a wide range of value added products and services. The financial reforms that were initiated in the early 90s and the globalization and liberalization measures brought in a completely new operating environment to the banks. Services and products like "Anywhere Banking," "Tele-Banking," "Internet Banking," "Web Banking," "E-Banking" etc. have become the buzzwords of the day and the banks are trying to cope with the competition by offering innovative and attractively packaged technology based services to their customers. IT has also made the payments very easy. Imperative to the greater adoption of electronic payments are speed, efficiency and security, as also creating trust and safety of operations in the minds of the users. There have been several initiatives for infrastructure enhancement for the same. The trend of greater acceptance of electronic payments over paper cheques by the general public is boosted.

Technological Development in Banks

Developments in the field of Information Technology strongly support the growth and inclusiveness. Technology in banking

sector is one of the focus areas of banks. The banks in India are using Information Technology (IT) not only to improve their own internal processes but also to increase facilities and services to their customers. Technological innovation not only enables a broader reach for consumer banking and financial services, but also enhances its capacity for continued and inclusive growth. IT improves the front end operations with back end and helps in bringing down the transaction costs for the customers of the banking sector by facilitating inclusive economic growth.

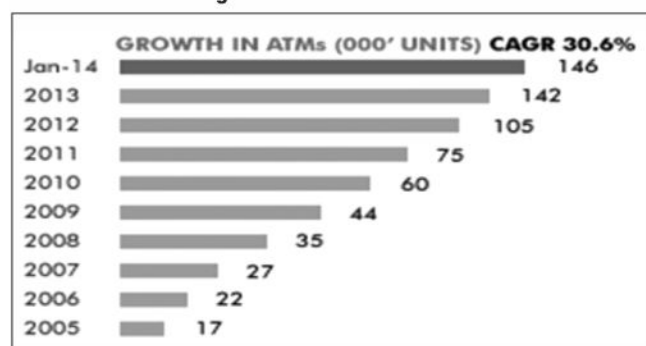
The various technological developments that took place in the Indian Banking Industry are as follows.

• Growth of ATMs

Even though ATM originally developed for cash dispenses, now it includes many other bank related functions such as- cash withdrawal, paying routing bills fees and taxes, printing bank statements, funds transfers, purchasing online products, train tickets reservations, products from shopping mall, donations and charities, adding pre-paid cell phone/mobile phone credit, advertising channels for own or third party products and services and payment of insurance premiums.

About 70% of the total ATMs are in urban/metro areas. Public Sector banks have stronger reach in rural areas. The use of electronic payment has witnessed manifold increase, partly reflecting increased adoption of technology. The growth of volume of ATMs indicates that customer most prefer ATMs for transactions. ATMs in India have increased to 1,45,858 in January 2014 (See Table 1).

Figure 1: Growth in ATMS



(Source: <http://www.ibef.org/industry/banking-india.aspx>)

• Core Banking Solution:

Core banking solution is a networking which creates an environment where the entire bank's operations can be controlled and run from a centralized hub. This creates a centralized customer data base which makes anytime, anywhere, anyway banking possible. It provides faster and efficient service to the customers. Banks under the core banking Solution are shown in Table 1

Table 1: Banks under the core banking Solution

Name of the Bank	Branches under core banking solutions
Public Sector Banks	90%
Nationalised Banks	85.9%
State Bank Group	100

Source : Report on Trend and Progress of Banking in India 2009-10, PP-55

• Mobile Banking

Mobile banking is used for performing balance inquiry, account transactions, payments etc. via a mobile phone. Mobile banking is performed via SMS or the Mobile Internet, but can also use special programs downloaded to the mobile device. Table 2 shows the trend in the mobile banking

Table 2: Trend in the mobile banking

Year	No. of Users (Million)	Volume (Million)	Volume (Million)
2010-11	5.96	6.85	6.14
2011-12	12.96	25.56	18.21
	(117.45%)	(273.139%)	(196.58%)
2012-13	22.51	53.30	59.90
	(73.69%)	(108.53%)	(228.94%)

Note : Figures in brackets indicate the growth over the previous year.

(Source: RBI Report <http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&ID=760#4>)

• INFINET

The 'INFINET' - Indian Financial Network is a satellite based wide area network using VSAT (Very Small Aperture Terminal) technology set up by the RBI in June 1999. The hub and the Network Management System of the INFINET are located in the Institute for Development and Research in Banking Technology, (IDRBT) Hyderabad. A Closed User Group of the member banks of the network called the "INFINET User Group" has been formed to resolve issues of common interest on a continuing basis. Among the major applications identified for porting on the INFINET in the initial phase are e-mail, Electronic Clearing Service - Credit and Debit, Electronic Funds Transfer and transmission of Inter-city Cheque Realization advices.

• S.W.I.F.T

SWIFT stands for the Society for Worldwide Inter-bank Financial Telecommunication. It was set up in 1973 and is based in Brussels. It facilitates reliable and expeditious telecommunication facilities for exchange of financial message all over the world. In SWIFT, financial world conducts its business operations with speed, certainty and confidence.

• Net Banking

Internet banking is both, a medium of delivery of banking services and as a strategic tool for business development, has gained wide acceptance internationally and is fast catching up in India with more and more banks entering the fray. India can be said to be on the threshold of a major banking revolution with net banking having already been unveiled. Costs of banking service through the Internet form a fraction of costs through conventional methods. Rough estimates assume teller cost at Re.1 per transaction, ATM transaction cost at 45 paise, phone banking at 35 paise, debit cards at 20 paise and Internet banking at 10 paise per transaction. The cost-conscious banks in the country have therefore actively considered use of the Internet as a channel for providing services. Fully computerized banks, with better management of their customer base are in a stronger position to cross-sell their products through this channel.

• Growth of Plastic Money

Plastic money is the alternative to the cash or standard money. It is convenient to carry. The Various Plastic money/cards include ATM cards, Debit Card, ATM cum Debit Card, Credit Card. Plastic money was a delicious gift to Indian market. Now several new features have been added to Plastic money to make it more attractive. The latest data released by the central bank showed there were 18.8 million credit cards in the country at the end of November, 2013. HDFC Bank remained the largest issuer of credit cards with a base of 5.1 million cards. While Worldline India expects HDFC Bank to remain the largest issuer in 2013-14, it expects the bank's share in the issued base to fall to 27% from 33 percent earlier.

• Launch of RTGS

RTGS stands for Real Time Gross Settlement system. It is a fund transfer mechanism where transfer of money takes place from one bank to another on a real time and on gross basis. This is the fastest possible money transfer system through the banking channel.

• Automated clearing House (ACH)

Automated clearing house (ACH) is an electronic network for financial transaction. In clearing house, computers are employed to handle cheque. The nature of work involved in clearing operations is voluminous, repetitive, routine in nature. ACH processes large number of debit and credit transaction in batches so make this process easier.

Table 3 presents the statistics of the increasing trend of use of technology in banks

Table 3: Increasing trend of use of technology in banks

Item	Volume (million)			Value (₹ billion)		
	2011-12	2012-13	2013-14	2011-12	2012-13	2013-14
1	2	3	4	5	6	7
Systemically Important Financial Market infrastructures (SIFMIs)						
1. RTGS	55.0	68.5	81.1	539,307.5	676,841.0	734,252.4
Total Financial Markets Clearing (2+3+4)	1.9	2.3	2.6	406,071.2	501,598.5	621,569.6
2. CBLO	0.1	0.2	0.2	111,554.3	120,480.4	175,261.9
3. Government Securities Clearing	0.4	0.7	0.9	72,520.8	119,948.0	161,848.2
4. Forex Clearing	1.3	1.4	1.5	221,996.1	261,170.1	284,459.5
Total SIFMIs (1-4)	56.9	70.8	83.7	945,378.7	1,178,439.5	1,355,822.0
Retail Payments						
Total Paper Clearing (5+6+7)	1,341.9	1,313.7	1,254.0	99,012.1	100,181.8	9,3014.8
5. CTS	180.0	275.0	589.3	15,103.7	21,779.5	44,203.1
6. MICR Clearing	934.9	823.3	439.0	65,093.2	57,504.0	31,129.8
7. Non-MICR Clearing	227.0	215.3	225.7	18,815.1	20,898.3	17,681.8
Total Retail Electronic Clearing (8+9+10+11+12)	512.5	694.1	1,108.3	20,575.3	31,881.1	47,856.3
8. ECS DR	164.7	176.5	192.9	833.6	1,083.1	1,268.0

9. ECS CR	121.5	122.2	152.5	1,837.8	1,771.3	2,492.2
10. EFT/NEFT	226.1	394.1	661.0	17,903.5	29,022.4	43,785.5
11. Immediate Payment Service (IMPS)	0.1	1.2	15.4	0.4	4.3	95.8
12. National Automated Clearing House (NACH)	-	-	86.5	-	-	214.8
Total Card Payments (13+14+15)	678.1	931.7	1,262.1	1,562.5	2,051.5	2,576.3
13. Credit Cards	320.0	396.6	509.1	966.1	1229.5	1539.9
14. Debit Cards	327.5	469.1	619.1	534.3	743.4	954.1
15. Prepaid Payment Instruments (PPIs)	30.6	66.1	133.9	62.0	78.7	82.4
Total Retail Payments (5 to 15)	2,532.4	2,939.5	3,624.4	121,149.9	134,114.4	143,447.4
Grand Total (1-15)	2,589.3	3,010.2	3,708.0	1,066,528.5	1,312,554.0	1,499,269.4

- : Not applicable

Note: 1. Real time gross settlement system (RTGS) includes customer and inter-bank transactions only.

2. Settlement of government securities clearing and forex transactions is through the Clearing Corporation of India Ltd. (CCIL).

3. Banks from 27 Magnetic Ink Character Recognition (MICR) Cheque Processing Centres (CPCs) and 67 non-MICR CPC locations; 20 MICR CPCs and 3 non-MICR CPC locations; and 21 MICR CPCs and 1 non-MICR CPC locations are participating in CTS-Chennai, Mumbai and New Delhi Grids respectively. Consequent upon migration of total cheque volume to cheque truncation system (CTS) in various CPC locations, the total number of MICR CPCs in the country reduced from 66 to 19 (as on May 21, 2014).

4. The figures of cards are for transactions at point of sale (POS) terminals only.

5. The NACH system was started by National Payments Corporation of India (NPCI) (in December 29, 2012), to facilitate inter-bank, high volume, electronic transactions which are repetitive and periodic in nature.

6. Figures in the columns might not add up to the total due to rounding off of numbers.

(Source : RBI Annual Report 2013-14)

• Electronic Clearing Services (ECS)

ECS is an electronic mode of payment which is used for bulk transfer from one bank account to another bank account. The service is for companies and government department to make or receive large volume of payments, rather than for funds transfer by individual. Table 4 shows status of ECS Transaction in Crore (Rs.)

Table 4: Status of ECS Transaction in Crore (Rs.)

Item	2005-06	2006-07	2007-08	2008-09	2009-10	2010-2011
ECS Credit	32,324	83,277	7,82,222	97,487	1,17,833	1,81,686
ECS Debit	12,986	25,441	48,937	66,976	69,819	73,646

Source: RBI, Annual Report 2010-11

• National Electronic Fund Transfer (NEFT)

NEFT facilitates online transfer of funds from one bank account to another bank account. The limit of transferring fund is 200000/- . In India, NEFT system lives with effect from 21 November 2005. NEFT was sent to cover all banks which were participating in the special electronic funds transfer (NEFT) clearing. NEFT was made on the structured financial messaging solution (SFMS) platform. In NEFT public key infrastructure (PKI) technique is used for maintaining security.

• Electronic Funds Transfer (EFT):

Electronic Fund Transfer (EFT) is a function of electronic banking that facilitates to customer transfer of funds from any branch of a bank to any other branch of any bank in the shortest time period.

- **EDI**

Electronic Data Interchange is the inter-organizational exchange of business documentation in structured form such as order and invoice via computer to computer. It is the application to application transmission of business information and document in standard formats.

Risks and Challenges in Using Technology

Developing or acquiring the right technology, deploying it optimally and then leveraging it to the maximum extent is essential to achieve and maintain high service and efficiency standards while remaining cost effective and delivering sustainable return to shareholders. Early adopters of technology acquire significant competitive advances. Managing technology is therefore, a key challenge for the Indian banking sector. The nationalized banks and commercial banks have the competition from foreign and new private sector banks. Competition in banking sector brings various challenges before the banks such as product positioning, innovative ideas and channels, new market trends, cross selling at managerial and organizational part. Banks are restricting their administrative folio by converting manpower into machine power i.e. banks are decreasing manual powers and getting maximum work done through machine power.

On the other hand, technology has made it possible to deliver services throughout the branch bank network, providing instant updates to checking accounts and rapid movement of money for stock transfers. However, this dependency on the network has brought IT department's additional responsibilities and challenges in managing, maintaining and optimizing the performance of retail banking networks. Illustratively, ensuring that all bank products and services are available, at all times, and across the entire organization is essential for today's retail banks to generate revenues and remain competitive. Besides, there are network management challenges, whereby keeping these complex, distributed networks and applications operating properly in support of business objectives becomes essential. Specific challenges include ensuring that account transaction applications run efficiently between the branch offices and data centers. In this complex and fast changing environment, the only sustainable competitive advantage is to give the customer an optimum blend of technology and traditional service with technology occupying a pivotal role in delivery of banking services, the expectations of the consumer have also been growing. Broadly, these expectations are swift service with minimal response time, efficient service delivery, tailor-made and value-added products to suit specific needs, hassle-free procedures and minimum transaction costs, and pleasant and personalized service. As different classes of customers have

different expectations from the banks, we need to adopt a segmented approach to study the expectations of the consumers.

The Way Ahead

These all innovations have no doubt changed the overall pattern of banking system. The banking today is redefined and re-engineered with the use of IT and it is sure that the future of banking will offer more sophisticated services to customers with the continuous product and process innovations. Thus there is a paradigm shift from sellers market to buyers market. So banks also change their Approach from "Conventional Banking to Convenience Banking" and "Mass banking to Class Banking". So banks are now more concentrating on providing value added services to customers. But IT can be fully useful only if they enable to meet the challenges in the present environment.

In India it can be successful only if it is properly implemented in rural areas also. There is also need to maintain privacy and confidentiality of data. Many nations deem privacy to be a Subject of human right and consider it to be the responsibility of those who concerned with Computer data processing for ensuring that the computer use does not revolve to the stage where different data about people can be collected, integrated and retrieved quickly. Another important responsibility is to ensure the data is used only for the purpose intended. For this, there is a need to implement IT and other Cyber laws properly. This will ensure the developmental role of IT (Information technology) in the banking industry.

Conclusion

- The banking sector in India has undergone significant transformation in the past few years. However, the numerous challenges faced by banks such as increasing competition, pressure on spreads, and systemic changes to align with international standards have necessitated a re-evaluation of strategies and processes in order to remain competitive in this dynamic environment.
- Since the demands of customers from various segments are not identical, there has to be a judicious mix of technology and the human element in customer service and banks should ensure that the service levels and efficiency is improved in the all facets of banking.

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