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In this issue papers from computer science to social science, from issue related to finance to Human Resource are included and form a bouquet of varied types of perception and ideas.

Researching has no boundaries, at the very outset, we express our gratitude to all the members of the editorial board and contributors of this issue. The editorial team will continue to bring out the relevant and application oriented research through the platform of **DISSEMINATE KOWLEDGE IJRMST.** Constructive feedback is awaited to propel continuous improvement. Wish each one of you a thoughtful reading.

Dr. Uttam Jagtap

PhD, MBA, MCom

Editor, **DISSEMINATE KOWLEDGE IJRMST**

Associate Professor

Shri Vaishnav Institute of Management, Indore

Mahatma Gandhi National Rural Employment Guarantee Scheme and Inclusive Growth- A Case Study with reference to KANNOD Tehsil of DEWAS District in M.P.

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ABSTRACT

In 2006, India embarked on an ambitious attempt to fight rural poverty. The **National Rural Employment Guarantee Act** of 2005 created a justifiable ―right to work for all households in rural India through the National Rural Employment Guarantee Scheme renamed the **Mahatma Gandhi National Rural Employment Guarantee Scheme** (**MGNREGS**) in 2009. This promises 100 days of work per year to all rural households whose adults are willing to do unskilled manual labour at the statutory minimum wage notified for the program. After analyzing there are several findings such as impact of MNREGA on alleviating poverty, employment generation, rural development and inclusive growth. After result it is very clear that MNREGA is working very well implemented and it is changing the life of rural people. Impact of MNREGA in the rural area (Kannod) is positive as well as negative. One it is working effectively in case of employment generation, reducing poverty, reforming lands, and other positive works but on the other side it is affecting agriculture by reducing availability of manpower for agriculture work, increasing market wages etc.

Keywords- MNREGA, Inclusive Growth, Poverty, Employment

INTRODUCTION

Mahatma Gandhi National Rural Employment Guarantee Scheme

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is an Indian job guarantee scheme, enacted by legislation on August 25, 2005. The scheme provides a legal guarantee for one hundred days of employment in every financial year to adult members

of any rural household willing to do public work (unskilled manual work) at the statutory minimum wage.

This act was introduced with an aim of improving the purchasing power of the rural people, primarily semi or un-skilled work to people living in rural India, whether or not they are below the poverty line. Around one-third of the stipulated work force is women. The law was initially called the National Rural Employment Guarantee Act (NREGA) but was renamed as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on 2nd October, 2009.The Act aims at eradication of extreme poverty and at making villages self-sustaining through productive asset creation. The Government has referred to it as an "Act of the people, by the people and for the people". It envisages the following:

- Enhance livelihood security of the rural poor by generating wage employment opportunities in works that develop the infrastructure base of that particular locality.
- Rejuvenate natural resource base of the area concerned.
- Create a productive rural asset base
- Stimulate local economy for providing wage employment.
- Ensure women empowerment.

Inclusive Growth

Inclusive growth basically means, "Broad based growth, shared growth, and pro-poor growth". It decreases the rapid growth rate of poverty in a country and increases the involvement of people into the growth process of the country. Inclusive growth by its very definition implies an equitable allocation of resources with benefits incurred to every section of the society. But the allocation of resources must be focused on the intended short and long term benefits of the society such as availability of consumer goods, people access, employment, standard of living etc. It sets a direct relationship between macro and micro determinant of the economy and its growth. The micro dimension includes the structural transformation of the society and macro dimension includes the country's gross national product (GNP) and gross domestic product (GDP). To maintain rapid and sustainable growth is some time very difficult this is because resources vaporises during the allocation and may give rise to negative externality such as rise in corruption which is major problem in the developing nation. But however it has created an environment of equality in opportunity in all dimension of livelihood. Such as employment creation, market, consumption, production, and has created a platform for people who are poor to access good standard of living. If we

focus on the inequality between poor and rich household in a country we can reach to an optimal solution so that we can minimize the difference.

MNREGS and Inclusive Growth

The World Bank estimates that 456 million Indians now live under the global poverty line which is one third of the total global poor. Among them 75% live in rural areas and most of them are daily wagers, and landless labourers. In this context, Indian government enacted the National Rural Employment Guarantee Act, (NREGA) in 2005. National Rural Employment Guarantee Scheme (NREGS) was launched in February 2006 and it provides guarantee for one hundred days of employment in every year to adult members of any rural household to do public work-related unskilled manual work at the statutory minimum wage. This scheme was introduced with an aim of improving the livelihood security of unemployed rural poor, primarily semi or un-skilled workers living below poverty line. It attempts to bridge the gap between the rich and poor in the country. Also it ensures that one-third of the beneficiaries must be women who have registered and requested work under the scheme. NREGS is in implementation for the past three years. The scheme is not merely a wage employment programme. But it is focused on the regeneration of village economy in the long term. The Act‘s success or failure will have an impact on the entire rural development scenario in India. There is excitement as well as disappointment over its state of implementation. The scheme has huge potential for regenerating village economy in India, but only if it ensures to avoid the loopholes for corruption.

RESEARCH OBJECTIVES

The objectives of the research are as follows:

1. To find out the impact of NREGS on employment generation
2. To find if NREGS is useful in alleviating poverty
3. To find the impact of NREGS on migration of people from rural to urban areas
4. To find if NREGS is helpful in rural and agricultural development
5. To study how NREGS is contributing towards inclusive growth

RESEARCH METHODOLOGY

Research Design

The research methodology which is adopted by the researcher is Descriptive and Causal study using the "Statistical Package" to input all data from questionnaire and analyze to get results. Project is descriptive because it describe about MNREGA and its related facts. It is Causal, MNREGA is the cause and we have to study its effects.

Sample Plan

Sample territory: Sample territory is "**Kannod**" tehsil of **Dewas** district.

Sample unit: The sample unit are farmers, workers and Sarpanch of kannod.
Sample Population: The present study is an empirical one and field method is used for collection of required data the enquiry covers villagers and workers from kannod village.

Sample Size: Sample for the study is 130 people from the villages of Kannod.

Sampling procedure: Sample procedure is random sampling.

Data Collection: For collection of data three separate questionnaire were prepared, for farmers, for workers and for Sarpanchs. Since the workers are not able to understand English language, therefore all the questionnaires provided to them are translated in Hindi language. Also all the data was collected on one-to-one basis.

Statistical tools

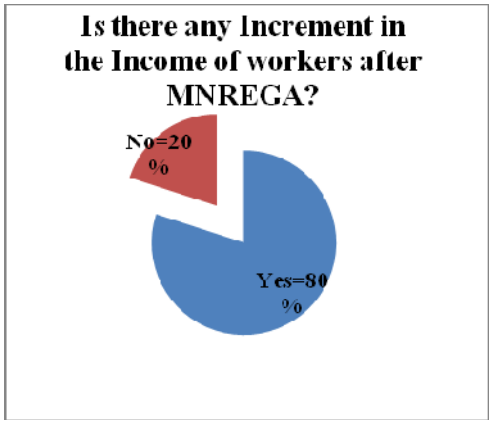
1. Frequency Distribution

2. Correlation- We have used "Karl Pearson's correlation test".

3. Chi Square Test

RESULT AND DISCUSSION

- Our very first objective of this research is to find the impact of MNREGA Scheme on employment generation: From **Figure 1** it is clear that Government is successful in generating the employment in the villages of Kannod by implementing the MNREGA Scheme. There is a full employment in Kannod.
- **Figure 1: Number of workers of Kannod Village working under MNREGA**



- Our second objective is to find that, is MNREGA is useful in alleviating poverty:
  After interpreting **Figure 2, Figure 3, Table 1 and Table 2** it has been found that poverty has been reduced to a great level, but has not alleviated completely. The reason being, that the workers are satisfied with what they are getting. They are reluctant to make extra effort to earn more.

Figure 2: Increment in the income of workers after MNREGA

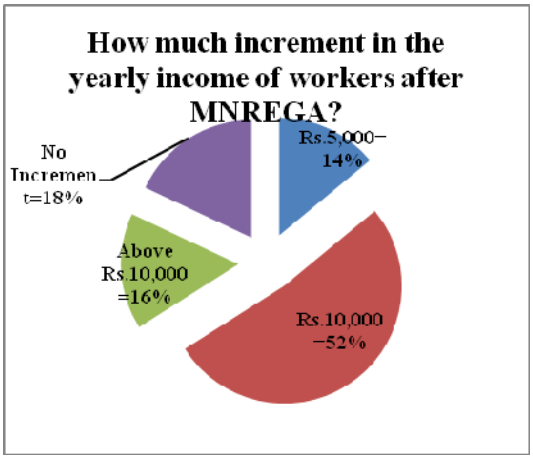


Figure 3: Increment in the yearly income of workers after MNREGA

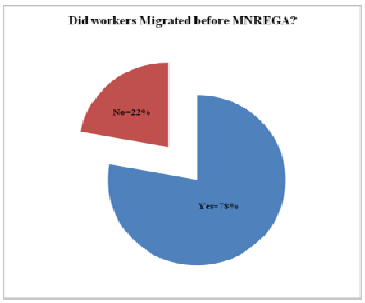


Table 1: Correlation between increase in the income of workers after MNREGA and the physical assets purchased by them

Correlations

		increment_income	PhysicalAsset_MNREGa
increment_income	Pearson Correlation	1	.802**
	Sig. (2-tailed)		.000
	N	50	50
PhysicalAsset_MNREGa	Pearson Correlation	.802**	1
	Sig. (2-tailed)	.000	
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2: Chi- Square test o the increment in daily wages of the workers after MNREGA

increment_income

	Observed N	Expected N	Residual
Yes	40	25.0	15.0
No	10	25.0	-15.0
Total	50		

Test Statistics

	Increment_DailyWages
Chi-Square	38.720[a]
Df	1
Asymp. Sig.	.000

- Our third objective of the research is to study the impact of MNREGA on migration:

  As we know that MNREGA provides job within 5 kilometre of the residence of the workers. So it is a very good tool for reducing migration of the workers. Workers are getting job in their area and not migrated to other area.

  From **Figure 4, Figure 5, Table 3 and Table 4** it is clear that 76% of the workers used to migrate to urban areas before MNREGA, which was reduced to 42% after MNREGA. But it seems not so significant, because there is only a slight decrease in the percentage of migration of workers from rural to urban areas.

  But, it is interesting and pleasing finding that although the migration is not reduced so much, but the days of migration have been reduced significantly.

Figure 4: Migration of workers before MNREGA

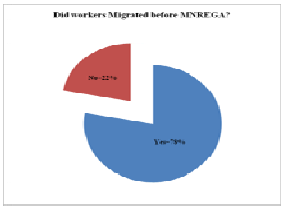


Figure 5: Migration of workers after MNREGA

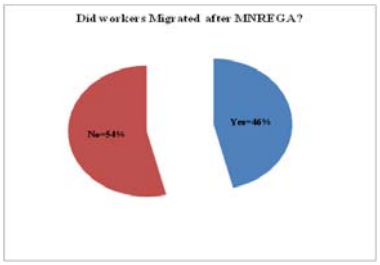


Table 3: Chi- Square test on the migration of workers before MNREGA

MigratedBefore_MNREGA

	Observed N	Expected N	Residual
Yes	39	25.0	14.0
No	11	25.0	-14.0
Total	50		

Test Statistics

	MigratedBefore_MNREGA
Chi-Square	15.680[a]
Df	1
Asymp. Sig.	.000

Table 4: Chi- Square test on the migration of the workers after MNREGA

Migration_afterMNREGA

	Observed N	Expected N	Residual
Yes	23	25.0	-2.0
No	27	25.0	2.0
Total	50		

Test Statistics

	Migration_afterMNREGA
Chi-Square	.320[a]
df	1
Asymp. Sig.	.572

- Our fourth objective is to find the increase in the rural and agricultural development of village:

  MNREGA is applied on the rural development of the area. In MNREGA those projects are undertaken which has improved the infrastructure of the village such as road, land reform, water conservation etc. this is very important for the development of the village.

  From **Table 5** it is clear that Rural and agricultural development of the villages of KANNOD has increase to a very large extent after the implementation of the MNREGA Scheme as agreed by more than 90% of the farmers and the workers. It also helped in transforming the village by the improvement in the conditions of irrigation facilities, more and more construction of lakes, improvement in the conditions of roads has directly or indirectly increased the agricultural productivity.

Table 5: Chi- Square test on the development work under MNREGA

DevelopmentWorks_MNREGA

	Observed N	Expected N	Residual
yes	57	30.0	27.0
no	3	30.0	-27.0
Total	60		

Test Statistics

	DevelopmentWorks_MNREGA
Chi-Square	48.600[a]
Df	1
Asymp. Sig.	.000

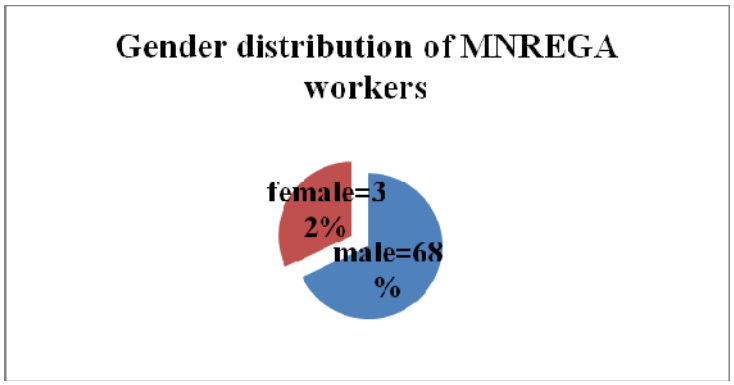
- While talking personally to the sarpanchs and farmers we found that and Small scale farmers are highly benefitted because earlier, they were deprived of using the water resources because they were already occupied by big scale farmers and hence the were facing the problems in irrigating their farms.

But, now after the implementation of MNREGA they are easily availing the benefits of the water resources which are constructed by MNREGA workers. Now they are capable enough to produce more with their small farms.

- Though the MNREGA highly benefitted small scale farmers, it did not prove to be very useful to big scale farmers as there were facing the scarcity of the labours for their agricultural work. And if the labours were available, they demand very high wages.
- The correlation between the increase in income of workers after MNREGA and their ability to purchase physical assets is highly significant. Which means that due to employment provided to workers under MNREGA have resulted in the increase of their yearly income which ultimately making them capable of purchasing the physical assets and help them improving their standard of living.
- Workers are very much satisfied working under MNREGA. The satisfaction level is high due to the good wages system, availability of local and guaranteed job. They are willing to continue their work with MNREGA in future also.

  Few workers are unsatisfied because the scheme provides only 100 days of job and it is not necessary that the job is provided. The unemployment allowances are also very low.
- Initiation of the MNREGA scheme also helped small scale farmers to construct the lakes etc for irrigation facility to be located at the right place, about which they were not having any knowledge earlier.
- On the other hand, large scale farmers also faced the problem of advancing the wages to the workers on their demand.
- It can be said that this scheme hampered the potential of the workers as they became more careless towards their work because they are least concern about their earnings, as they are assure of getting the wages from the government whether they do work or not.
- As we know the inclusive growth implies the sustainable development of every section of the society based on every parameter like employment. Poverty gender discrimination, education etc. In our research, many of the parameter has been studied linking MNREGA and inclusive growth, which yielded some of very important findings.

- In our earlier findings we have seen that there is full employment in the villages of KANNOD due to the implementation of the MNREGA Scheme, we can say that, employment is positively contributing towards inclusive growth.
- It is clear from **Figure 6** that there is a great variation in the number of male and female workers working under MNREGA scheme, so it has been concluded that it does not have any positive impact on inclusive growth.
- **Figure 6: Gender distribution of MNREGA workers**



- MNREGA is successful in increasing the income of the workers and hence, helps in reducing the poverty though not completely alleviating it, so we can say that this parameter has a little contribution towards inclusive growth.
- Migration is also an important factor towards inclusive growth, because if the rural people migrate towards urban areas then it will create the problem of resources in urban areas and also hampers the growth of rural areas.

  In our study we found that, migration has been significantly reduced after MNREGA which lead to the rural and agricultural development and ultimately contributing to the inclusive growth.
- Since India is an agrarian economy, hence its rural and agricultural development is very important. And MNREGA is highly contributing towards this. We have found that in the villages of KANNOD, MNREGA has helped in the construction of various lakes, roads, irrigation channels and various other types of physical assets and has majorly contributed towards inclusive growth.

CONCLUSION

It can be concluded that MNREGA Scheme has been very effectively implemented in the villages of Kannod. Everything has its pros and cons and so has the MNREGA Scheme. On the positive side, we can say that, it has provided full employment in the villages of Kannod and also helped in reducing the poverty. Since the workers are getting employment in their own village, so there is significant reduction in the migration to urban areas in the search of work. It has also contributed toward rural and agricultural development. Improvement in all these factors are reflecting in the inclusive growth.

The Scheme do have some negative impacts like big scale farmers are facing the scarcity of worker and if they find some workers, then their wages are very high. Regulatory body of MNREGA is not very strict towards workers and so they are taking the undue advantage of it.

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Supply Chain Management in Retail Sector: with special reference to Big Bazar

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Abstract

Supply chain management is a buzzword probably used for the first time by the consultants in the 1980's and later analyzed by the business community. In simple terms supply chain management link all the supply interacting organization in an integrated two way communication system to manage high quality inventory in the most effective and efficient manner. As such supply chain management is a network of facilities and distribution options that perform the function of procurement of material transformation of these materials into intermediate and finished good and finally the distribution of these goods to the end user. The supply chain exists both in the service and manufacturing sector, although the complexity of chain may vary greatly from industry to industry and from firm to firm. Realistic supply chains have multiple end products with shared component, facilities and flows. However the flow of material is not always along a deemed network, various mode of transportation may be considered. Biz Bazar supports successful execution of supply chain management through the exchange of technology and strategic alliance by incorporating strategic collaboration with professional consulting companies and core technology vendors

***Keywords*:** Supply Chain management, Business Community, Two way communication, high Quality inventory, Service and manufacturing sector, Big Bazar.

SUPPLY CHAIN MANAGEMENT

1.0 Introduction

A *supply chain* is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.

According to Christopher, SCM is defined as," The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole."

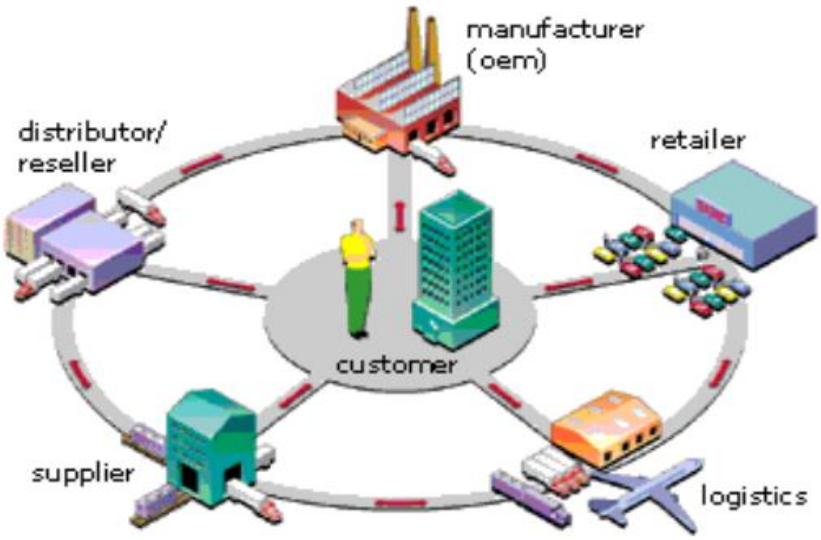
According to Professor Douglas M. Lambert, "supply chain management as the integration of business process from the end user through original suppliers who provide products, services, and information that add value for the customer."

Realistic supply chains have multiple end products with shared components, facilities and capacities. The flow of materials is not always along an arbores cent network, various modes of transportation may be considered, and the bill of materials for the end items may be both deep and large.

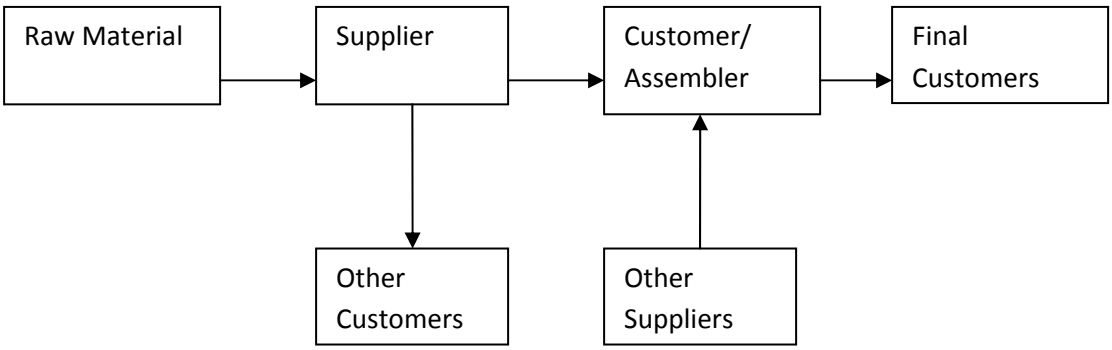
Traditionally, marketing, distribution, planning, manufacturing, and the purchasing organizations along the supply chain operated independently. These organizations have their own objectives and these are often conflicting.

Many manufacturing operations are designed to maximize throughput and lower costs with little consideration for the impact on inventory levels and distribution capabilities. Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there is not a single, integrated plan for the organization---there were as many plans as businesses. Clearly, there is a need for a mechanism through which these different functions can be integrated together. Supply chain management is a strategy through which such integration can be achieved.

Supply chain management is typically viewed to lie between fully vertically integrated firms, where a single firm and those own the entire material flow where each channel member operates independently. Therefore coordination between the various players in the chain is key effective management.



SUPPLY CHAIN PROCESS



Typical model of supply chain management

2.0 OBJECTIVE OF THE STUDY

In this research paper i would be focusing my attention on some of the important objective that is the part of my study. The following are the objectives:

- To study supply chain management of Big Bazar
- To study application of Information Technology in Supply Chain Management of Big Bazar in internet age.
- To find out the coordination among different departments through supply chain management for managing demand uncertainty.
- To study various phases of Supply chain management in Big Bazar.
- To analyze customer focus on supply chain management in Big Bazar

3.0 SUPPLY CHAIN MANAGEMENT OF BIG BAZAR

As such the strategy used by Big Bazar is Shorter product life cycle, improved quality, faster delivery lower price, which have define its success. It is based on the formula:

Competitiveness = competitive assets x ***competitive process***

Where competitive assets include technology, infrastructure, government institution etc and competitive process include quality customization etc. Big Bazar tries to build infrastructure in order to establish compatibility with the production and marketing structure and improve process. Logistic within the supply chain is the art and science of obtaining, producing, distributing etc in the proper place and in proper quantity.

4.0 MAJOR TRENDS IN SUPPLY CHAIN MANAGEMENT

4.1 CO- MAKERSHIP

It is defined as the development of a long term relationship with limited number of suppliers on the basis of mutual confidence. The main benefits of co maker ship are shorter delivery lead times, reliable delivery promises, faster implementation of design changes etc.

4.2 USE OF THIRD PARTY LOGISTICS

A decision to use third party logistic should be based on the organization needs, service provider capabilities etc. Outsourcing operations like storage, transportation, improve service levels, enhance flexibility and reduce cost.

4.3 PRINCIPLE OF PROCUREMENT

Activities that are done up to the last moment like packaging, labeling, etc is known as principle of procurement. The main aim of this principle is to minimize the risk of carrying finished product inventory at various points in the supply chain by delaying product differentiations to the latest possible moment before customer purchase

5.0 APPLICATION IN BIG BAZAR

Supply chain management has in recent years has played an important role in all the industries concerned. It has not only paved way for the induction of information technology but has also helped the manufactures in easy procurement of material and transferring the same to the ultimate consumer.

5.1 RETAILERS

Retailers are the second last chain in the distribution of the product to the ultimate consumer. Since they are at constant touch with the customer they are in a better position to understand their needs and wants. As such they send request to the distributors and to the manufactures for goods which are in demand. The manufactures through a well defined supply chain are able to send goods to the retailers. In the absence of this chain the manufactures can lose the customer.

5.2 SUPPLIERS

In today's scenario companies are not required to stock commodities in bulk owing to fluctuation in the market related to product preference. As such manufactures do not store raw material but place orders as and when the need arise. Here the role of supply chain comes into picture as it helps the supplier in providing material to the manufacture at an appropriate time.

5.3 MARKET SEGMENTATION

Supply chain helps in the segmentation of customers based on the service needs of distinct groups and adaptation to serve these segments profitability. This kind of segmentation can result in better prediction of the demand from the individual customers. Further segmentation also leads to know the demand of the products among the customer and also to know the future customer preference.

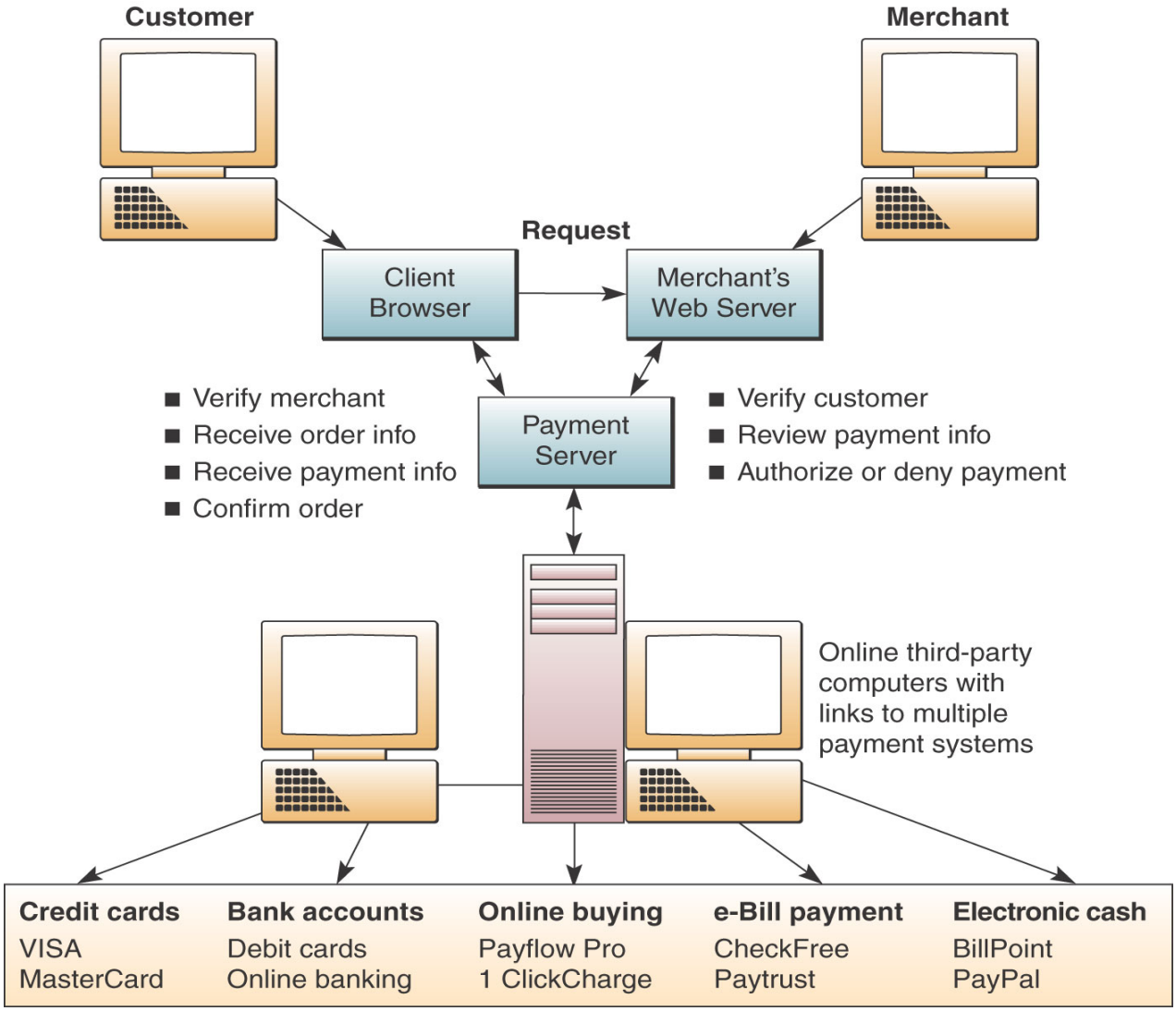
6.0 APPLICATION OF INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT OF BIG BAZAR IN INTERNET AGE

ELECTRONIC COMMERCE (E – COMMERCE)

The internet era has revolutionized commerce, making e- commerce a reality. The factors that have contributed to the success of e – commerce, are lower purchasing cost, reduction of inventories, effective customer service, marketing and sales etc. know time has come for the paper based business to give away to electronic business when supplier and customer will transact electronically. This would help in reducing cost, price, and increasing savings.

As such Big Bazar has tried to use **three important dimension of e – commerce** in his day to day activities. These are as follows:

- Reach is about customer information. It simply means as to how many customer a business can access or how many products it can offer;
- Richness is the depth and detail of the information that the business gives the customer or collects about the customer;
- Affiliation is about whose interest in business it represents. That is e – retailers with navigational function are shifting their affiliation towards customer;



ECOMMERSE PROCESS

7.0 SUPPLY CHAIN MANAGEMENT WITH OTHER DEPARTMENTS

A supply chain management is the hub of a large part of a company's business activity. By its very nature, it has tried to maintain cordial relationship with all other departments in the firm, as well with the supplier's. The reason been as it has to operate in accordance and in line with all other departments. I have tried to learn the role of supply chain with some of the departments in retail sector. To which a brief description I am giving below:

7.1 SUPPLY CHAIN AND MANUFACTURING

Supply chain plays an important role in the manufacturing, because it aims at procurement of material at the right time and through the right channels. Maintaining coordination between the two pays off in many ways. It assists in the efforts by obtaining faster responses from the supplier, working with suppliers to improve their capabilities etc, which is generally not seen in the common scenario.

7.2 SUPPLY CHAIN AND MARKETING

Supply chain should be marketing best friend as it directly or indirectly affects the sales process of retailing. Further in case the product is not demanded or the sale is less than in that case the supply management department can be intimated and they can further reduce the procurement of the material from the supplier.

Beside this supply chain also provides immediate information regarding increase in the material price. This helps the marketing department to evaluate the effects of rises in price estimates given for the future sales quotations, on current selling price and on plans for the future product lines.

7.3 SUPPLY CHAIN MANAGEMENT AND FINANCE

The finance department of BIG BAZAR is charged with two principle responsibility – obtaining funds and overseeing their use. Supply chain of BIG BAZAR is responsible for as much as eighty percentages of firm's financial resources. As such the chief financial officer has a vested interest in cost efficient supply chain management. This department has some very important role to play in supply chain as it determines the amount of resources that the firm needs to procure, when to procure, what to procure etc

7.4 SUPPLY CHAIN MANAGEMENT AND QUALITY

In BIG BAZAR major emphasis is been given to quality both in terms of raw material procurement and finished goods. As such quality professionals are involved not only in maintaining quality but also undertaking the development of new products, sourcing and minimizing quality problem throughout the supply chain.

8.0 FOUR PHASES OF SUPPLY CHAIN MANAGEMENT IN BIG BAZAR

The four phases of supply management require many perspective and inputs best obtained through a cross – functional approach. The four phases of supply management are as follows:

8.1 GENERATION OF REQUIREMENT - The generation of requirement is a critical activity that results in the identification of material to be purchased, along with the development of

specification and statement of work describing the requirements. This is an important phase since most of the designing is done relating to purchasing material, service and equipment. It also takes into account the commercial issues like cost, availability, substitute and alike.

8.2 SOURCING- The main aim is relating to the identification and selection of the supplier whose cost, quality, technology, dependability and service best suits the needs of the firm. Thus it not only aims at identification but also in maintaining cordial relationship with them.

8.3 POST- AWARD ACTIVITIES- This activity ensures that the firm receives what was ordered on time and at the price and quality specified. The activities that are been included are supplier development, technical assistance, troubleshooting, and the management of contract and the resultant relationship.

8.4 SUPPLY MANAGEMENT SYSTEMS- It is very important for a firm to have a management system. A cross functional approach to supply management allows each functional area affected by the procurement of material, equipment, and service to be involved at a point where it may contribute to the lowest total cost. For instance we take the case of 'operation has it in the productivity implication of different material'.

As such these phases of supply chain gives us an insight about the manner in which the activities are been conducted and how the process as a total works. Along with that it also enables us to understand the uniqueness of supply chain and its effectiveness and long lasting use in the retail sector

9.0 CUSTOMER FOCUS IN SUPPLY CHAIN MANAGEMENT

Therefore to attain these competitive advantages Big Bazar is making attempt to promote value to its customer by performing activities more efficiently than that of its competitors. It is trying hard to serve its customer base and has become a vital means of differentiation when product differentiators are dwindling.

As such when we focus our study towards customer we basically try to identify:

- The significance of customer in the supply chain;
- The importance of customer-driven strategies;
- The various strategies of customer satisfaction;
- The imperatives for supply chain management;
- The rationale of supply chain management towards customer.

9.1 FOCUS ON CUSTOMER SERVICE

Effective customer service has become a competitive requirement and a way to attract and retain customer. A focus logistics and customer service strategy is still a dream of various companies, to which BIG BAZAR is responding positively.

Despite all these efforts it is still trying to accomplish a complete customer service by taking into account the following:

- To provide a quantitative understanding of the customer requirement for each element of customer service, like delivery, reliability, availability etc;
- To measure the relative importance of each element of customer service;
- To assess the performance of the company and of its major competitors for each element of customer service;
- To provide an understanding of the relative significance of customer service issues related like price, product and quality.

9.2 CUSTOMER – CENTRIC SUPPLY CHAIN

In the context of present scenario 'customer satisfaction' is something that keeps on revolving in the minds of the competitors with reference to as how they could capture the market and have their dominance in terms of their product in the market. As such the focus has now shifted from product centered to customer centered because customer is considered as the king and unless they do not consume the products the company cannot be successful

When we talk in terms of BIG BAZAR we find that BIG BAZAR because of its sound policy and practical approach is able to provide the best service in the industry besides keeping lower cost than that of its competitors. This has being possible because it has prepared a clear written statement of his mission of the supply chain which is in consistent with key corporate strategic thrust.

10.0 RESEARCH METHODOLOGY

Type of research carried out was EXPLORATORY in nature; the objective of such research is to determine the approximate area where the drawback of the supply chain management lies and also

to identify the course of action to solve it. For this purpose the information proved useful for giving right suggestion to the organization

11.0 DATA COLLECTION METHOD

11.1 Secondary sources of Data:

Secondary data refer to the data that has been already collected .the secondary data, which has been used to carry out this study, are as follow: Books, Journals, Magazines, News papers, Industry Reports, Companies, internet site, Some other relevant study material and websites.

12.0 CONCLUSION

Managing faster supply chain has become imperative to gain and sustain competitive advantage. The challenge of the modern retail Company is to keep a holistic approach towards the management for remaining competitive on an international basis. The focus is on the increasing importance of the supply chain function to corporate competitiveness

As such a study of BIG BAZAR employees in supply department was conducted in order to understand the effective use of supply chain management and its application in the light of information technology. Research was conducted accordingly and a favorable response was seen among the employees towards the adoption of supply chain management which can be seen from the graphical representation.

The conclusion drawn is that most of the employees feel that use of information technology in supply chain would definitely going to benefit the organization in the long run. Thus the hypothesis set by me is accepted since BIG BAZAR does believe that information technology has important role to play in the supply chain management.

Therefore it is the responsibility of the company to undertake some serious action plan to make this introduced concept a success.

Further they should form a strong customer and supplier database and underline some strategies in order to promote the supply chain and make employees aware about it.

In fact a growing number of organizations are realizing the need for strategic sourcing as supply management.

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Determinants of Infant Mortality Rate in India

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Abstract: The infant mortality has got greater attention now days for performance of development of any country. Developed nations reduced infant mortality rate significantly while developing countries need lot of efforts for substantial reduction in infant mortality rate. The focus of this study is to determine the relationship among infant mortality rate, literacy rate and per capita income. In this study we have used 32 states data for the period from 2006-2011. These variables are indicators of health, economic status and literacy status of these states. By using Pearson's correlation we found that there is a strong and significant correlation between infant mortality rate & literacy rate and infant mortality rate & per capita income. The results show that the literacy and per capita income are negatively related to the infant mortality rate. Throughout these findings we concluded that the government needs to do few improvements in accordance to reduce infant mortality rate in India; such as: government should encourage free education , health intervention programs should focus on illiterate mothers and on households that are poor, make efforts to increase employment.

Keywords: Infant Mortality Rate, Literacy Rate, Per Capita Income, Infant Mortality Rate in India

1. Introduction

Macro-economic goals such as high Gross Domestic Product, increased exports and reduction in balance of payment deficits alone cannot ensure sustainable growth and poverty reduction. Socio-economic development of a country depends upon many factors. This thinking is embedded in the Human Development Index which incorporates variables addressing socio-economic development of people. In 2000, emphasis on human development was strengthened, when United Nations put forward Millions dollars for development. Goals aiming at eradicating poverty and hunger through increasing literacy among men and women, promoting gender equality, empowerment of women and improving health and other environment related aspects of life. Infant Mortality Rate

is a significant phenomenon closely related to the health level of a nation. The Infant Mortality Rate defined as the risk for a live born child to die before its first birthday is known to be one of the most sensitive and commonly used indicators of the social and economic development of a nation. Why do babies have higher death rate in some countries than that of another? The answer is perhaps best sum up by mentioning the two characteristic common to people in places where infant death rate is low, have high level of education and income.

The main objectives of this study are to show the correlation between Infant Mortality Rate & Literacy Rate and Per Capita Income & Infant Mortality Rate in India. To determine the relationship this study uses the data of 32 Indian states for the period from2006-2011. Understanding the relationships between these factors and infant mortality, can provide valuable information for social scientists, policymakers, and health professionals who are concerned with improving the survival of born children in India. The objectives of this study are following:

a. To determine the relationship between Infant Mortality Rate & Literacy Rate.
b. To determine the relationship between Infant Mortality Rate & Per Capita Income.
c. To give suggestions on the basis of the study.

The following hypotheses have been tested in this study:

Hypothesis 1

H_{01} = Literacy Rate does not have any impact on the Infant Mortality Rate in India.

H_{11} = Literacy Rate has negative impact on the Infant Mortality Rate in India.

Hypothesis 2

H_{02} = Per Capita Income does not have any impact on the Infant Mortality Rate in India.

H_{12} = Per Capita Income has negative impact on the Infant Mortality Rate in India.

2. Methodology

The study is based on secondary data, collected from the websites. This paper has tested above hypotheses quantitatively on the basis of available data. These hypotheses are tested by Karl Pearson's Coefficient of Correlation and t-test.

3. Infant Mortality Rate in India

Infant Mortality Rate is considered as primary and important indicator of a geographic area's overall health status or quality of life. Reduction of Infant Mortality Rate has been an important factor of the health policy of the Government of India and it has tried to address the issue right from the early stages of planned development.

Infant Mortality Rate has come down by three points 47 to 44 deaths per 1000 live birth during 2011. Table shows Infant Mortality Rate in the states of India for the period 2006 to 2011.

Table-1: Infant Mortality Rate in Indian States:

S. No.	States	2006	2007	2008	2009	2010	2011
1.	Andhra Pradesh	56	54	52	49	46	43
2.	Assam	67	66	64	61	58	55
3.	Bihar	60	58	56	52	48	44
4.	Chhattisgarh	61	59	57	54	51	48
5.	Gujarat	53	52	50	48	44	41
6.	Haryana	57	55	54	51	48	44
7.	Jharkhand	49	48	46	44	42	39
8.	Karnataka	48	47	45	41	38	35
9.	Kerala	15	13	12	12	13	12
10.	Madhya Pradesh	74	72	70	67	62	59
11.	Maharashtra	35	34	33	31	28	25
12.	Odisha	73	71	69	65	61	57
13	Punjab	44	43	41	38	34	30
14.	Rajasthan	67	65	63	59	55	52
15.	Tamil Nadu	37	35	31	28	24	22

16.	Uttar Pradesh	71	69	67	63	61	57
17.	West Bengal	38	37	35	33	31	32
18.	Arunachal Pradesh	40	37	32	32	31	32
19.	Delhi	37	36	35	33	30	28
20	Goa	15	13	10	11	10	11
21.	Himachal Pradesh	50	47	44	45	40	38
22.	Jammu & Kashmir	52	51	49	45	43	41
23.	Manipur	11	12	14	16	14	11
24.	Meghalaya	53	56	58	59	55	52
25.	Mizoram	25	23	37	36	37	34
26	Nagaland	20	21	26	26	23	21
27.	Sikkim	33	34	33	34	30	26
28.	Tripura	36	39	34	31	27	29
29.	Uttaranchal	43	48	44	41	38	36
30	A & N islands	31	34	31	27	25	23
31.	Chandigarh	23	27	28	25	22	20
32.	Puducherry	28	25	25	22	22	19

Source: www.data.gov.in (Data portal India)

In recent years, Infant Mortality Rate has declined in every state. Apart from these consistent trends, however there are substantial variations among states. Goa and Manipur have the lowest Infant Mortality Rate of 11, followed by Kerala with 12 deaths per 1000 live births. These states are good performing states in India.

Madhya Pradesh has the highest Infant Mortality Rate of 59 per 1000 live births followed by Uttar Pradesh and Odisha with 57 each. But these states improve well. Infant Mortality Rate declined from 74 in 2006 to 59 in 2011 in Madhya Pradesh, 73 in 2006 to 57 in 2011 in Odisha, 71 in 2006 to 57 in 2011 in Uttar Pradesh. Apart from these states Assam, Chhattisgarh, Rajasthan and Meghalaya have Infant Mortality Rates higher than the National average of 44.

It has been observed from the data that the states of India differ widely in levels of Infant Mortality Rate. High Infant Mortality Rate reflects the lack of proper childcare owing to poverty, lack of education and social preferences etc. Using the data of 32

Indian states for the period of 2011, the analysis seeks to determine which of socio and economic factors play an important role in reducing Infant Mortality Rates. In our empirical work, the variables used are Literacy Rate and Per Capita Income.

4. Infant Mortality Rate and Literacy

In developing countries education level is indicated by literacy rate, tend to have a strong effect on the Infant Mortality. Literate parents usually give birth to healthy babies because they themselves tend to be healthier than who are illiterate. In addition, literate parents are more likely to provide their children with a healthy environment and nutritious food than are illiterate parents, even when other conditions are similar. Lastly, literate parents are likely to have more information about health-care facilities and to have more influence within the family in deciding to take sick children for treatment. Table-2 presents the data of Infant Mortality Rate, Literacy Rate and Per Capita Income of Indian states for the period of 2011.

Table-2: Infant Mortality Rate, Literacy Rate and Per Capita Income of Indian states for the period of 2011.

S. No.	States	Infant Mortality Rate	Literacy Rate	Per Capita Income
1.	Andhra Pradesh	43	67.02	40366
2.	Assam	55	72.19	21406
3.	Bihar	44	61.8	13632
4.	Chhattisgarh	48	70.28	27156
5.	Gujarat	41	78.03	52708
6.	Haryana	44	75.55	59221
7.	Jharkhand	39	66.41	21734
8.	Karnataka	35	75.36	39301
9.	Kerala	12	94	49873
10.	Madhya Pradesh	59	69.32	22382
11.	Maharashtra	25	82.34	62729

12.	Odisha	57	72.87	25708
13	Punjab	30	75.84	44752
14.	Rajasthan	52	66.11	25616
15.	Tamil Nadu	22	80.09	51928
16.	Uttar Pradesh	57	67.68	17349
17.	West Bengal	32	76.26	32228
18.	Arunachal Pradesh	32	65.38	37417
19.	Delhi	28	86.21	108876
20	Goa	11	88.7	102844
21.	Himachal Pradesh	38	82.8	47106
22.	Jammu & Kashmir	41	67.16	27607
23.	Manipur	11	79.21	23298
24.	Meghalaya	52	74.43	35932
25.	Mizoram	34	91.33	36732
26	Nagaland	21	79.55	40957
27.	Sikkim	26	81.42	47655
28.	Tripura	29	87.22	37216
29.	Uttaranchal	36	78.82	44723
30	A & N islands	23	86.63	54992
31.	Chandigarh	20	86.05	99487
32.	Puducherry	19	85.85	79333

Source: www.census2011.co.in, http://pbplanning.gov.in, www.data.gov.in

It is observed from the table-2 that literacy rate emerges as an important factor associated with the infant mortality. Table- 3 presents the results of the Correlation Coefficient of Infant Mortality Rate and Literacy Rate.

Table-3: Calculated value Infant Mortality Rate and Literacy Rate.

	IMR-LR
N	32
Correlation Coefficient (r)	-0.70

t-statistics	5.4933

Correlation is significant at the 0.01 level ($t_{0.01}$=2.750)

The correlation between Infant Mortality Rate and Literacy Rate is significant as it is clear from the table- 3 where the value of r is -0.70 which is close to -1. Hence the null hypothesis (H_{01}) is rejected, which shows a negative and strong relationship between the level of literacy and infant mortality. The coefficient of correlation is negative and statistically significant at one percent level indicating clearly an inverse relationship between Infant Mortality Rate and Literacy Rate.

The conclusion is that Literacy Rate is highly influential in decreasing Infant Mortality Rate. Educated populations are more willing to seek medical care and improve sanitation practices. Malnutrition also decreases as education increases.

5. Infant Mortality Rate and Per Capita Income

Another important factor of the high Infant Mortality Rate is Per Capita Income. Azmat Gani's (2008) paper suggest that other than literacy , Per Capita Income and immunization rates are two core factors that determine health outcomes and causes infant mortality significantly. Infant Mortality Rate is a factor that can be associated with the well-being of a population. High Infant Mortality Rates could reflect improper childcare. A population with diseased and unhealthy infants dampens economic progress in many ways. Thus improved health conditions lead to superior economic performance at the national level. In this section we try to correlate the Infant Mortality Rate and Per Capita Income. It is observed from the table-2 that Per Capita Income affects Infant Mortality Rates in a positive way. Those states having higher Per Capita Income; they have lower Infant Mortality Rates. Table-4 presents the result of the Correlation Coefficient of Infant Mortality Rate and Per Capita Income.

Table-4: Results of Correlation Coefficient of Infant Mortality Rate and Per Capita Income

	IMR-PCI
N	32
Correlation Coefficient (r)	-0.59

t-statistics	3.999

Correlation is significant at the 0.01 level ($t_{0.01}$=2.750)

The correlation between Infant Mortality Rate and Per Capita Income is significant as it is clear from the table- 4 where the value of r is -0.59. Hence the null hypothesis (H_{02}) is rejected, which shows a negative and strong relationship between the Per Capita Income and infant mortality. The coefficient of correlation is negative and statistically significant at one percent level indicating clearly a inverse relationship between Infant Mortality Rate and Per Capita Income.

The conclusion is that Per Capita Income indicates the financial status of the family, thereby improving consumption patterns and expenditures on health and hygiene; this later proves as a significant variable that leads in reducing Infant Mortality Rate.

6. Conclusions and Suggestions

This paper measures the impact of Literacy Rate and Per Capita Income on Infant Mortality Rate. This study establishes the relationship between Infant Mortality Rate & Literacy Rate and Infant Mortality Rate & Per Capita Income using Karl Pearson's Coefficient of Correlation. It is found that the correlation between Infant Mortality Rate & Literacy Rate and Infant Mortality Rate & Per Capita Income are negative. The value of Pearson's Coefficient of Correlation is -0.70 for Infant Mortality Rate & Literacy Rate and -0.59 for Infant Mortality Rate & Per Capita Income. t-statistics value for Infant Mortality Rate & Literacy Rate is 5.4933 and for Infant Mortality Rate & Per Capita Income is 3.999 . These values are greater than critical value of t-distribution (2.750). It implies that correlation coefficient for Infant Mortality Rate & Literacy Rate and Infant Mortality Rate & Per Capita Income are statistically significant at the one percent level.

It can be concluded from the above analysis that education is considered as a synonym for enlightenment and awareness for population; it results in adoption of best practices leading to reduced infant mortality levels. Educated population is more willing to seek medical care and improved sanitation practices. Malnutrition also decreases as education increases. Evidence is found in an Indian state of Kerala, where literacy is universal, the infant mortality is the lowest in India. Improvements in health are related to the gains in income associated with

improved education. Higher per capita income is influential in decreasing Infant Mortality Rate.

Furthermore, Literacy Rate and Per Capita Income have the strong impact on Infant Mortality Rate. Based on the above results the foregoing analysis suggests that Government should encourage free education for all. This will allow people to bring their wards to school, which will positively affect their belief system. Government should also make education more effective, the curriculum taught at various educational levels needs to be reviewed in the light international standards. The current state of the curriculum is lacking knowledge related to health and hygiene. There is need for proper curriculum designed to ensure that knowledge related to all elements of health, hygiene, and sanitation related problems are incorporated. Although it is not feasible to raise the socioeconomic status of every household in India in a short period of time, the family health programme can use information on the effects of socioeconomic characteristics to improve infant and child survival by targeting families at high risk. The results reported here indicate intervention programmes should focus on illiterate mothers and on households that are poor.

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MONEY SUPPLY AND STOCK MARKET RETURNS: EVIDENCE FROM INDIA

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Abstract

This study investigates the causal relationship between broad money supply and the stock price returns of NSE NIFTY. Augmented Dickey-Fuller test, Co-integration test and Vector Error Correction Method were used to determine the relationship between these two variables. Though other literatures have cited that there can be either direct as well as indirect relationship between money supply and stock returns, it was found out in this study that there is a short term relationship between the money supply (M3) and stock returns. Increase in money supply leads to increase in prices whereas according to indirect mechanism, an increase in money supply will lead to increase in the interest rates and thus there is an opportunity cost of holding cash or using it for speculative demand which will lead to a decrease in stock returns.

Introduction

An increase in money supply results in increased liquidity available for buying securities, resulting in higher security prices. On the other hand, an increase in money supply could also result in increased inflation, which in turn may trigger an increase in interest rate and dampen stock prices. Industrial production, which reflects real economic activity, affects the stock market index positively. An increase in interest rate would raise the required rate of return and the share price would decrease with the increase in the interest rate because an increase in interest rate would raise the opportunity costs of holding cash and trade-offs to holding other interest bearing securities would lead to a decrease in share prices. A rise in the rate of interest, therefore, means that the holding of cash is more costly in terms of sacrificed alternatives and that the

attractiveness of credit as a source of liquidity has diminished. The former tends to decrease the demand for money while the later tends to increase it, and the net effect may be negligible (Selden, 1956). (Lastrapes, 1995) find that money supply has a dynamic effect on price of real equity and (Pebbles, 1996) indicated that when an appreciating currency happens, it is generally accompanied by increases in reserves, money supply and decreases in interest rates. As a result, the cost of capital and imported inputs decrease, leading to an increase in local equity returns. Moreover, (Mookerjee, 1997) find that money supply and foreign exchange reserves have a long run relationship with stock prices in Singapore. In another study (Maysami, 2004) showed a positive relation between money supply innovation and stock market returns in Singapore. (Wongbanpo, 2002) showed that in ASEAN-5 countries, high inflation in Indonesia and Philippine leads to a long run negative relationship between stock prices and the money supply, while the money growth in Malaysia, Singapore and Thailand causes a positive effect on their stock market indices.

The way the variables individually affects the stock market is different. For example, index of industrial production should increase the corporate earnings enhancing the present value of the firm and it also increases the national disposable income, which should lead to more retail investment in the stock market. The opposite will cause a fall in the stock market. Interest rates should have a negative relationship with the stock market for two reasons: Firstly, the lower the interest rate, the lower the cost of capital for the corporate sector and higher the corporate earnings, which should have a positive influence on the stock prices. Secondly, the lower the interest rate in the fixed income segment, the higher the incentive for the investors to flock to the stock market to get better returns and thus stock market should get a boost. That the interest rate can be a major variable to influence the stock market has been captured very well in the period February, 2000 to September, 2001. This period has seen a drastic fall in the interest rate in the economy, carefully monitored by the Reserve Bank of India, which must have created a favourable impact on the corporate balance-sheet that in turn raises the stock prices.

The effect of the money supply on the stock market is not that obvious. It can operate in two opposite ways. On the one hand, monetary growth, due to its positive relationship with the inflation rate, should adversely affect the stock prices. On the other hand, it may the case that monetary growth brings economic stimulus, resulting in increased corporate earnings and increased stock prices. Further, since money supply has an inverse relationship with the interest rate, it should have a positive influence on the stock prices as there is a negative relationship between the interest rate and stock market. Which effect will the dominating factor at a particular juncture is difficult to predict. But at times, money stock has been the dominant influencing variable to the stock market has been evidenced by the movement between December, 1998 and February, 2000. The period considered has seen a rapid increase in money supply preceding that, which confirms the positive influence of money supply on the stock market in this period. The positive relationship between money supply and the stock price has been consistent with (Mukherjee, 1995), (kumar, 2012) (Prakash, 2014). Inflation rate has a positive relationship with the interest rate andhence should affect the stock market adversely. Inflation has a major bearing on the investors' psyche. To cope up with the rising inflation retail investors and other big investors will tend to look towards the stock market to give their assets a decent real return. However, the plausible effect of the exchange rate on the capital market is not simple to determine. A fall in the exchange rate should lead to more exports and more foreign exchange into the economy, which will increase the money supply and inflation in the economy.

Transmission Mechanism of Changes in Money Supply

The review of available literature indicates that money supply has a powerful effect on economic activity. Two transmission mechanisms exist to balance the variables in the model: the indirect mechanism which works through interest rates leading to increased consumption with a delayed impact on prices and the direct mechanism which works through aggregate demand and thus has a more immediate and potent impact on prices. The indirect channel involves the manipulation of interest rates by the central bank. For instance, lowering interest rates spurs investments subsequently. Business firms then respond to increased sales arising from the

excess money supply by ordering more raw materials and increasing production. The spread of business activity increases the demand for labour and raises the demand for capital goods. In a buoyant economy stock market prices rise and firms issue equity and debt. If the money supply continues to expand, prices begin to rise especially if output growth reaches capacity limits. As the public begins to expect inflation, lenders insist on higher interest rates to offset the expected decline in purchasing power over the life of their of their loans. Opposite effects occurs when the supply of money falls or when its rate of growth declines. In this case, economic activity declines leading to either a disinflation (reduced inflation) or deflation (falling prices). The transmission of excess money to inflation through the direct aggregate demand channel is very potent and has a telling effect on macroeconomic stability as it involves putting more money in the hands of consumers (making them feel weather and thus stimulating spending). The increase in aggregate demand exerts an upward pressure on the general price level in the domestic economy, with the extent of its impact depending on the elasticity of supply. In addition, the increase in demand may also cause a rise in imports, culminating in a downward pressure on the exchange rate as attempts are made to settle the increasing imports bill, thereby, causing a further increase in inflation. Furthermore, the corresponding increase in the demand for labour following the demand for higher production will cause a rise in money wages and unit labour costs. The recent developments in the analysis of non-stationary time series have forcefully brought out the pitfalls in establishing economic relationships-mere associations or causal connections-with the standard tools of regression analysis. The seminal work of Granger, Engle, Phillips and many others has underscored the need to test for the existence of such relationships and estimate the dynamic model in the cointegration-error correction framework which throws light on the short-run dynamics out of equilibrium. Johansen and his colleagues have provided a full information maximum likelihood procedure to test for one or more co-integrating relationships in a multivariate VAR framework when some or all of the variables are non-stationary.

In India, studies of demand for money have had a long tradition. Investigations which employ the standard macroeconomic framework have been competently reviewed by (Jadhav, 1994) who also provides a survey of the money-output causality testing literature both for developed countries and for India. (kumar, 2012) have investigated the relationship between the

stock market as represented by the Reserve bank of India share price index and a host of monetary and credit variables representing both the asset and liability sides of the banking sector's balance sheet. (Paul, 1992) study the impact of changes in real stock prices (among other variables) on monetary velocity. (Paul, 1992) has estimated demand functions for real balances using real stock prices and expected inflation as explanatory variables. (Sahadevan K. G. & Thiripalraju, 1997) have studied the lead-lag relations between money and stock prices and also carried out Granger-causality tests. All of these investigations have found a positive association between stock prices and money. (Sahadevan K. G. & Thiripalraju, 1997) also find some evidence of causation running from money to stock prices. All of these studies use the ordinary least squares regression framework and, where causality is tested, the traditional Granger causality framework. It is evident from the examination of the data that all the series except interest rates and possibly stock returns are non-stationary and one must use the multivariate cointegration framework both to test for any long-run relationships and, possibly, test for causality using the ECM framework.

(James, 1985) used Vector Autoregressive moving Average model to examine simultaneously the links between share prices and their major determinants. Their empirical model comprises share prices, real output, the money supply, and the nominal interest rate as a proxy for expected inflation. While changes in the nominal interest rate reflect changes in inflationary expectations, the nominal interest rate may vary in response to changes in the real interest rate independently from expected inflation.

(Mahmood, 2009) used the Engle-Granger test and Johansen and Juselius maximum likelihood procedure to test relationship between stock price and three macroeconomics variables which consist of inflation, output and exchange rates of six countries in Asian-Pacific region. The study provides evidence of long-run relationship between these variables in all countries, thus support the cointegration hypothesis with exception of Malaysia. Analysis rejected existence of short-run relationship between all variables in all selected countries except between foreign exchange rates and stock price in Hong Kong and between real output and stock price in Thailand. (Kwon, 1999), used Granger Causality from the Vector Error Correction Model

(VECM) and noticed the Korean stock market to be co integrated with a set of macroeconomic variables. Bhattacharya (2001), by applying the techniques of unit-root tests, cointegration and the long run Granger non causality test, tests the causal relationships between the BSE Sensitive Index and the five macroeconomic variables, like money supply, index of industrial production, national income, interest rate and rate of inflation using monthly data for the period 1992-93 to 2000-01. They found that there is no causal linkage between stock prices and money supply, stock prices and national income and stock prices and interest rate. The Granger causality test has been employed by Wu (2001) to determine effects of interest rates towards stock prices. He uses the monthly distributed variables such as money supply, interest rates and the government fiscal stance on the Straits Times Industrial index and found that the interest rate plays a significant role in determining the STII on the monthly investment horizon.

(padhi, 2012) analyzed the relationship between the Indian stock market (BSE SENSEX) and five macroeconomic variables – industrial production index, wholesale price index, money supply, treasury bills rates and exchange rates over the period 1994-2011. In order to find the long-run equilibrium they have used Johansen's co-integration and Vector error correction model. It was found that the stock prices positively relate to the money supply and industrial production which indicates money supply brings the economic stimulus enabling the aggregate stock prices to increase whereas it is negatively related to inflation. Arodoye, Nosakhare Liberty (2012), studied the impact of the macroeconomic variables such as inflation rate as well as Gross Domestic Product on the determination of stock prices in Nigeria. To analyze the dynamic relationships between stock prices, inflation rate and real gross domestic product they saw the help of Vector Auto Regression (VAR) model. The VAR approach avoids the endogeneity/ exogeneity problem by treating all variables as endogenous and it is a dynamic system of equations in which the current level of each variable in the system depends on past movements in that variable and all other variables in the system. They used the quarterly time series data which covered 25 years. Using the co-integration test, long run relationship between stock prices, real gross domestic product, inflation rate and interest rate over the period 1985 to 2009 were established. Whereas the use of variance decomposition and impulse response function indicate that stock prices respond to innovations in real gross domestic product, inflation rate and interest

rate in both the short run and long run. This shows that Nigerian stock prices are responsive to changes in macroeconomic variables in terms of their respective contributions and dynamic interactions. (Robert D. Gay, 2008), studied the relationship between the share prices and economic activity in emerging economics like Brazil, Russia, India and China using Box-Jenkins ARIMA Model. This paper has hypothesized for a positive relation between exchange rate and the stock market index. The analysis of the effect of international macroeconomic factors of exchange rate and oil price on the stock market exchange price of these 4 emerging countries did not reveal a significant relationship. This was expected as the other international and domestic macroeconomic variables (production inflation, dividend yield, interest rates, trade balance, and rate structure) may also have a role in the determination of stock prices expectations.

In comparison to the above, long-run relationship between stock market and the economic variables has received little attention of researchers except in Mukherjee, Naka, (1995), Chung & Ng (1998), Maysami and Koh (2000) and Nasseh and Strauss (2000). By using the concept of co integration, first introduced by Engle and Granger (1987), we can investigate the empirical long run relationships between stock market indices and both measures of economic activity and financial variables. Cointegration between stock prices and economic activity can be seen to be consistent with both internal & theoretical consumption and production-based asset pricing models. These models suggest that stock prices are related to expect future production through effect on the discounted value of changes in cash flows and dividends (Cochrane).

Review of Literature

The relationship between money supply and stock prices has been examined in many studies. (Sprinkel, 1965) compared the turning points in a stock price index with the turning points in the growth rate of money. He concluded that a bear stock market was predicted 15 months after each peak in monetary growth, and that a bull market was predicted two months after each monetary trough was reached. They have estimated the relationship between the supply of money and an index of common stock prices, seeking a forecasting tool in the implementation of investment strategies. Their findings indicated that the price of any common stock is determined by three

variables: the level and growth rate of dividends, the risk free rate of interest, and the risk premium. The risk-free rate of interest being a function of money supply, they concluded that the average level of stock prices is positively related to the money supply. The connection between money and stock prices can be viewed from an exactly opposite perspective. Here, policy-induced changes in the stock of money influence the variables which enter stock valuation e.g. interest rates, expected dividends, level of economic activity and expected inflation. Consequently, stock prices and stock market activity respond to current and expected changes in money supply. In fact, it has been argued that stock markets may anticipate future changes in money supply based on the current information set-including current and past changes in money supply-and factor these anticipations in current stock prices. The relationship between macroeconomic factors-including money-and the stock market has received considerable attention from economists during the last two and a half decades. Most of the empirical studies have been in the context of the US economy. An illustrative list would include Pearce and Roley (1983), Roley (1985), (Roley, 1983, 1985, 1986, 1987), Hardouvelis (1987) and McQueen and Roley (1993). A number of studies of 70's and early 80's vintage have been briefly reviewed by (Sahadevan K. G. & Thiripalraju, 1997) (1995). The last of these, examines the lead-lag relationship between money and the stock market in India as well as performs bivariate Granger causality tests.

The direction of impact of money supply on stock prices needs to be determined empirically. On the one hand, it can be argued that monetary growth, due to its positive relationship with the inflation rate (Fama, Stock Returns, Real Activity, Inflation, and Money, 1981) will adversely affect stock prices. On the other hand, it may also be argued that monetary growth brings economic stimulus, resulting in increased cash flows (corporate earnings effect) and increased stock prices. Dharmendra Dhakal, Magda Kandil and Subhash C. Sharma (1993), examined the interaction between the money supply and share prices. The objective was to find the validity of theoretical links underlying this interaction in order to draw some implications concerning policies designed to curb share market volatility in United States during the time period 1973-1991. A vector autoregressive technique is used which allowed for the simultaneous interaction

of variables relevant to the determination of share prices. The results are consistent with a direct causal impact of changes in the money supply on share prices. Changes in the money supply have causal impacts on the interest rate and the inflation that are transmitted to share prices indirectly through the causal impact that these variables have on share prices. Ray, Prantik and Vani, Vina (2003) attempted to understand the relation between the real economic variables and the capital market in Indian context. They took the monthly data of the various economic variables like interest rate, money supply, national output, fiscal deficit, foreign institutional investment in Indian markets from 1994 till 2003 and explained their relative influence on index of the Bombay stock exchange. Habibullah (2000), examine the lead lag relationship between stock prices and five macroeconomic variables, namely, interest rate, price level, national income, money supply and real effective exchange rate in Malaysia.

Wongbangpo and Sharma (2002), explored the relationship between the stock returns for the ASEAN-5 countries of Indonesia, Malaysia, the Philippians, Singapore and Thailand and five macroeconomic variables. By observing both short and long run relationships between respective stock indexes and the macroeconomic variables of gross national product(GNP), the consumer price index (CPI), the money supply, the interest rate and exchange rate they found that in the long-run all five stock indexes were positively related to growth in output and negatively to the aggregate price level. But a negative long-run relationship between stock prices and interest rates was noted for the Philippians, Singapore and Thailand, and was found to be positive for Indonesia and Malaysia. In the end, causality tests detected an overall relationship between macroeconomic variables and stock prices for the five ASEAN equity markets. Dropsy and Nazarian-Ibrahimi (1994) examined the influence of underlying macroeconomic policies on stock returns using monthly data from 1970 to 1990 for 11 industrialized countries, concluding that predictable macroeconomic policies failed to predict stock returns. Wong (2005) examined the long run equilibrium relationships between the major stock indices of Singapore and the US and the selected macroeconomic variables for the period January 1982 to December 2002. The results of various co-integration tests suggest that Singapore's stock prices generally display a long run equilibrium relationship with interest rate and money supply but the same type of

relationship do not hold for the US. Whereas from the Granger causality test, they find a consistent influence of the stock market on the interest rate of Singapore but no causal nexus between stock price and interest rate and money supply is found for the US. Warren Bailey (1989) examined the association between weekly US money supply releases and its effect on Canadian stocks, bond and currency prices. They found out that US M1 releases are important for Canada's financial markets. Unexpected high US M1 growth leads to lower prices for Canadian stocks and bonds and higher Canadian short-term interest rates and thus there is a direct relation between the two. Mookerjee and Yu (1997) examined the nexus between Singapore stock returns and four macroeconomic variables such as narrow money supply, broad money supply, exchange rates and foreign exchange reserves using monthly data from October 1984 to April 1993. Their analysis revealed that both narrow and broad money supply and foreign exchange reserves exhibited a long run relationship with stock prices whereas exchange rates did not. Gargett (1978), talked about the correlation between the money supply and the general level of stock prices. He suggested that there is a causal relationship i.e., that liquidity changes move the market. He has said that liquidity supply variable is not the only variable affecting market prices. Interest rates, earnings, dividends, all influence stock prices. However liquidity supply variable appear to have a powerful effect on common stock prices during 1960's. Hosseini, Ahmad and Wah Lai (2011), investigated the relationships between stock market indices and four macroeconomic variables- crude oil price, money supply, industrial production and inflation rate in China and India. They conclude that the long term impact of money supply on the stock market index in India is negative which might be due to its weakly pro-cyclical, neutral or counter-cyclical monetary policy. Moreover, this negative long run effect conforms to the expectation that when money supply increases, it leads to higher inflation and lower returns which is consistent with the study of Abugri (2008). There is a positive relationship in China which could be due to the injection of public funds into the market which leads to boost corporate earnings. Gupta and Modise (2011), estimated the predictive power of selected macroeconomic variables for South Africa. They report that in-sample forecasts, interest rates, the money supply and world oil production growth have some predictive power in the short run, that for out-of-sample forecasts, interest rates and the money supply exhibit short-run

predictability and that the inflation rate shows a strong out-of-sample predictive power. Habibullah and Baharumshah (1996) examined the macroeconomic variables in particular money supply and output which are important in predicting stock in Malaysia. They used both M1 as well as M2 to determine whether Malaysia's stock market is informationally efficient. They use unit root test to point out the non-stationarity in macroeconomic variables. They have pointed out that the stock price indexes and macroeconomic variables, in particular money supply and national output are not co-integrated which suggests that stock price indexes in the Kuala Lampur Stock Exchange incorporates all past information on both money supply (M1 and M2) and output.

Bhattacharya (2001) by applying the techniques of unit-root test, co-integration and the long run Granger non causality test recently proposed by Toda and Yomamoto (1995), tests the causal relationships between the BSE Sensitive Index and the five macroeconomic variables, viz., money supply, index of industrial production, national income, interest rate and rate of inflation using monthly data for the period 1992-93 to 2000-01. They found that there is no causal linkage between stock prices and money supply, stock prices and national income and stock prices and interest rate. The price of a stock is determined by the present valve of the future cash flows is calculated by discounting the future cash flows at a discount rate. Money supply has a significant relationship with the discount rate and hence with the present value of cash flows. Mohammed Nishat, RozinaShaheen and Syed Tahir Hijazi (2004), says that in the case of Pakistan the money stock might very well convey information about Pakistan's risk-free rate, which is otherwise masked by the government control of nominal interest rate. When the interest rate is pegged by the government, underlying pressure from agents' liquidity preference which is ordinarily reflected in the interest rate is instead reflected in changes in the money stock. Since the money supply has a negative relationship with interest rates, this implies a direct relationship between the money supply and the stock prices. Maskay (2007), seek direct relationship between money supply and level of stock prices as well as whether anticipated and unanticipated changes in money supply affect stock prices differently. He found out that real activity hypothesis dominates Keynesian theory where there is a positive relation between money supply increase and increase in stock prices and anticipated change in money supply matter more than

unanticipated changes in money supply in determining stock prices. Mukherjee (1995) and Bernanke (2005) argue that a change in the money supply provides information on money demand, which is caused by future output expectations. Kandir (2008) investigates the role of macroeconomic factors in explaining Turkish stock returns. A macroeconomic factor model is employed for the period that spans from July 1997 to June 2005. Empirical findings reveal that exchange rate, interest rate and the world market return seem to affect all of the portfolio returns, while inflation rate is significant for only three of the twelve portfolios. On the other hand, industrial production, money supply and oil prices do not appear to have any significant affect on stock returns.

Mukhopadhyay and Sarkar (2003), conducted a systematic analysis of the Indian stock market returns prior to and after market liberalization and the influence of macroeconomic factors on returns. Specifically post-liberalization period (since 1995), real economic activity, inflation, money supply growth, FDI and the NASDAQ-index were significant in explaining variations in Indian stock return. Normal exchange rate, while significant during the pre-liberalization period was found to not be significant after liberalization. Akbar et al. (2012) examined the relationship between the Karachi stock exchange index and macroeconomic variables for the period of January 1999 to June 2008. Employing a co-integration and VECM, they found that there is a long-run equilibrium relationship exists between the stock market index and the set of macroeconomic variables. Their results indicated that stock prices were positively related with money supply and short-term interest rates and negatively related with inflation and foreign exchange reserve. Raju and Ghosh (2004) in attempting to calculate the volatility of stock prices for a number of countries came into conclusion that both in Indian and Chinese stock market volatility is higher compared to other emerging economies. Döpkeet. al. (2005) using monthly data of Germany concluded that volatility in the stock market can be explained by the performance of major macroeconomic indicators which have influence on business cycles. Xiufang Wang (2010) investigates the time-series relationship between stock market volatility and macroeconomic variable volatility for China using exponential generalized autoregressive conditional heteroskedasticity (EGARCH) and lag-augmented VAR (LA-VAR) models and

found evidence that there is a bilateral relationship between inflation and stock prices, while a unidirectional relationship exists between the interest rate and stock prices, with the direction from stock prices to the interest rate. However, a significant relationship between stock prices and real GDP was not found. Our study however is a prototype of this study but the structure of Nigerian economy is quite different from theirs. Even China today is known to be one of the fast growing countries in terms of economic activities and also classifies as an emerging country in the world whereas Nigeria is still a developing nation. Chinzara (2011) studies macroeconomic uncertainty and stock market volatility for South Africa. He indicates that stock market volatility is significantly affected by macroeconomic uncertainty, that financial crises raise stock market volatility, and that volatilities in exchange rates and short-term interest rates are the most influential variables in affecting stock market volatility whereas volatilities in oil prices, gold prices and inflation play minor roles in affecting stock market volatility.

Data and methodology

Data was collected through secondary method. To read the trends of the money supply, descriptive statistics is used. Time period is from 2000 to 2012.For finding out the relationship between money supply and stock market price returns, Augmented Dickey-Fuller Method, Co-integration Analysis as well as Vector Error Correction Method is used. Stock prices from April 2004 till January 2013 is taken for the analysis.

Augmented Dickey Fuller Test

The first step in performing the co-integration test is to test for the presence of a unit root in the individual series. We employ the Augmented Dickey-Fuller test (1979) for this purpose. Table 3.1 displays the Augmented Dickey-Fuller tests.

Table 3.1 Results of Augmented Dickey-Fuller tests

Variable	ADF Coefficient	t-stat	Probability
Return	-0.953705	-9.969744	0.0000
M3	-1.065475	-10.84126	0.0000
MacKinnon critical values:	1% - -3.494		
	5% - -2.889		

10% - -2.586

Descriptive statistics

Table 3.2 reports the result between stock prices and money supply. In the table absolute vales of calculated t-statistics were below the conventional MacKinnon critical values, which mean that there is co-integration or common stochastic trends between money supply M3 and stock price returns. This can result in a conclusion that money supply could have a short-run relationship which can be used to predict movements in stock prices. Null Hypothesis was Return has a unit root and the probability of that happening is 0.000. Thus we can tell that there is stationarity in returns.

Table 3.2 Descriptive Statistics

	LM3	LNIFTY
Mean	15.23822	8.266987
Median	15.25999	8.411012
Maximum	15.89893	8.722352
Minimum	14.53829	7.302227
Std. Dev.	0.433950	0.391193
Skewness	-0.105952	-0.882969
Kurtosis	1.687475	2.606670
Jarque-Bera	7.807011	14.45685
Probability	0.020171	0.000726
Sum	1615.251	876.3006
Sum Sq. Dev.	19.77281	16.06832
Observations	106	106

Cointegration

The concept of correlation in a growing economy is that of a common stochastic trend or cointegration. Many economic time series are not stationary. If, however, the first difference of a

series is stationary, the original series is said to be integrated of order one. As described in Engle and Granger (1987), two or more variables are said to be cointegrated, if individually each is non-stationary (has one or more unit roots), but there exists a linear combination of the variables that is stationary. To investigate the cointegration properties of stock prices, money supply, we test for cointegration between stock prices and money supply.

Table 3.3 shows the Trace Statistic and their critical values

Null Hypothesis	Trace Statistic	Critical Values	Probability
None *	17.00622	15.49471	0.0294
At most 1	3.585084	3.841466	0.1583

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 3.4 shows the Max-Eigen Statistic and their critical values

Null Hypothesis	Max – Eigen Stat	Critical Values	Probability
None*	13.42113	14.26460	0.0676
At most 1	3.585084	3.841466	0.1583

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The above tables show the co-integration between Money Supply (M3) and stock returns NIFTY. Null hypothesis says that there is no co-integration between the variables, whereas, alternate hypothesis says that there is co-integration between the variables. Trace Statistic says that there is a co-integration between the variables because the probability of null hypothesis is 0.0294. Thus we can say that co-integration between Money Supply and Stock Returns.

Error Correction Method

Error Correction:	D(LCLOSE)	D(LM3)

CointEq1	-0.096508	0.008927
	(0.03721)	(0.00536)
	[-2.59353]	[1.66591]
D(LCLOSE(-1))	0.083075	-0.009223
	(0.09893)	(0.01425)
	[0.83976]	[-0.64740]
D(LCLOSE(-2))	0.014277	-0.012538
	(0.09687)	(0.01395)
	[0.14739]	[-0.89876]
D(LM3(-1))	0.251465	-0.096923
	(0.69880)	(0.10064)
	[0.35985]	[-0.96311]
D(LM3(-2))	0.318647	-0.040916
	(0.69507)	(0.10010)
	[0.45844]	[-0.40876]
C	0.004737	0.015214
	(0.01558)	(0.00224)
	[0.30393]	[6.77892]

Standard errors in ( ) & t-statistics in [ ]

In Vector Error Correction Method, the negative relation between the variables as shown in the CoinEq1 suggests that there is disequilibrium and the error correction is done by VECM. Thus -0.096508 shows the negative relation. When calculated it is seen that 10 months is needed to correct the disequilibrium (1/0.096508). To show the relationship, the values should be negative i. e., the relation between D(LCLOSE(-1)) and D(LM3) is -0.009223 and D(LCLOSE(-2)) and D(LM3) is -0.012538. This means that increase in money supply anticipates the stock returns.

Summary and conclusion

On the objective where the relationship were to be tested between money supply –M3 and stock price returns, it was found out that there is a cointegration between money supply and stock price returns. Through ADF, it was found that there can be a long-run relationship which can be used to predict movements in stock prices. There is a co-integration or common stochastic trend between the two variables. There is a short-run relationship between the variables. This may be considered a yield equilibrium relationship. When disequilibrium occurs, represented by error-correction term (CoinEq1), an increase in the money supply results changes in the stock returns. Error is corrected in 10 months time which means that the error is corrected by money supply. Thus the public or the investors can see to the trend of money supply and the monetary policies to see the changes in the stock prices and they can actually predict the stock prices. This can also lead to increase in profitability for the investors as they can predict the stock prices beforehand itself.

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Innovative Promotional tools for small enterprises

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Abstract

Liberalization, privatization, and globalization have brought many challenges and opportunities for business firms. Global competition, technological advancements and varying needs of consumers are continuously changing the competitive paradigms. This makes all enterprises to understand the complexities and essentials of markets and to improve and sustain competitiveness. Response to such complexities and opportunities can be met by formulating appropriate strategies. It is possible that such environment may affect enterprises of different size and different sectors and regions differently. The study of marketing in SMEs has been recognized as a problematic area for researchers for over 20 years (Chaston and Mangles, 2002; Siu and Kirby, 1998). Small and medium firms cannot do conventional marketing as large organizations do because of the special characteristics of small firms. Hence the paper is an attempt to study and to suggest various innovative marketing strategies that may suit the small firms to market their goods.

Introduction

Post liberalization period in the Indian economy has brought many challenges and opportunities for business firms. Competition at global level, technological progress and varying needs of consumers are continuously changing the competitive paradigms. This makes all enterprises to understand the complexities and requisites of markets so as to improve and sustain competitiveness.

Small scale enterprises constitute a vibrant and dynamic sector of the Industrial economy of India. This sector has always recorded good growth in terms of manufacturing, employment generation and economic growth over the years. SMEs have been established in nearly all sectors of the Indian economy. The sector is less capital intensive and thus suits the Indian economic environment which possesses financial limitation and huge population. It is highly labor intensive and can build upon the traditional skills and knowledge. Small firms have limited resource for them whereas at the same time competitive resources are possessed by large firms, hence small firms need to carefully devise potential marketing strategies to identify unique competencies.

Academic studies have shown that marketing plays a significant role in all enterprises. Small firm marketing has unique characteristics that differentiate it from that of large organizations (Fillis 2002, Gilmore et al. 2001). Small and medium entities cannot do conventional marketing as large ones do (Verhees and Meulenberg, 2004; Gilmore et al., 2001). It is one of the biggest problems owner-managers face in their business operations.

Gyampah et al (2001) observed that small firms with limited resources are expected to perceive its business environment as being different from that of large firms with perhaps more resources and it is also likely to face different environment pressures with regard to market competitiveness The approaches that large firms use to benchmark their competitors and negotiate with suppliers are expected to be different from the approaches used by small firms (Vickery eth al, 1999).

Rationale

Marketing involves a large number of activities to be performed. These are categorized into four groups product, price, place and promotion. Marketing theory has been developed mainly based on studies on large organizations. In the literature it has been argued that marketing in large firms differs from that in small due to the special characteristics of the latter. One of the elements of marketing mix that is promotion is dealt in the study. Business promotion means marketing activities that are used to create awareness, remind, influence and retain the target customers. Consequently, there is a need to examine what innovative promotional tools small firms can adopt with the constraint of resources.

Review of Literature

Several researches has witnessed that nowadays small enterprises are also continuously adopting innovative marketing strategies to mark their presence in this competitive world. Much of this successful marketing is driven by innovation, however, to date, the prevalence of Innovative Marketing Research has focused on firm-specific characteristics of innovation, and/or the effect of external environment (Wolfe, 1994).

Raju T.V. and Gopal R.K.(2006) consider that key to success in industrial marketing is Customer Relationship Management and in need to be practiced by the organization immaterial of the size of their operation. The CRM practices need to be as innovative as the customer satisfaction factor to play an important role in today' market. With the change of philosophy and the trends in the market, the need of the CRM activities came into the existence.

Akula Ravi(2008) believes that co-branding can strengthen the performance of the existing products. This strategy can be considered as innovative marketing idea to captivate consumers' attention. With the shift in the technology, consumers are more tech-savy and internet blogs, e-stores etc are the innovative marketing practices adopted by SME the conclusion drawn by Agarwal, Vaishali(2009)

Bhatnagar, Jyotsna (2008) opined that to face the competition at international level SMEs need to look for formal cluster approach. This innovative marketing approach will help the SMEs to build on cohesive market strategies to beat competition. Whether the companies is large or small the ultimate aim is profit maximization and to beat the competitors the companies need to market their products to generate the sales (Carson, 1993).The marketing function in SMEs is hindered by constraints such as poor cash flow, lack of marketing expertise, business size and strategic customer-related problems (Doole et al., 2006).

Vasanth Kiran , Mousumi Majumdar , Krishna Kishore(2012)in their study tried to find out the gap between the small and large enterprise in terms of the importance and problems in innovative marketing in SME. They came up with model which says that in a situation where consumers are flooded with the informations of various products in a single second the SMEs should have an integrated business strategy which combines Business and Market insights, Brand Positioning, Processes and Management and Operational Marketing.

Jay Y Trivedi(2013) tried to find out the various marketing practices applicable to SMEs and to evaluate the benefits of E-marketing, internet marketing and CRM. They collected their data by different 5 managers of SMEs in Gujarat through personal interview and concluded that in SMEs can easily bring in the innovative marketing practices as they don't have layers between the decision makers and the people who implement these decisions. SMEs' innovative marketing strategy can work, if it is based on clearly formulated marketing programme to reach the potential and existing customers.

Promotional strategies for small firms

Due to the shift in the technology and the taste in the customer preferences, the SMEs need to adapt these new innovative practices for promoting and expanding their business.

Implementation of the few innovative practices can help the SMEs to fasten their decision making process and get closer to being customer oriented.

Events

Organizing, sponsoring and participating in various events like ***fairs, exhibitions, school and college promotion, flash -mob, nukad natak*** will be a good platform for small enterprise where they can have direct interaction with their target customers. Events provide an opportunity to induce the feelings for the product and give a real time experience.

CSR

Since the 1990s, environmental and social factors have become increasingly important strategic considerations for enterprises of any size. To be in the good books of the existing and potential customers, small enterprise too should continuously do activities related to social cause. Some common practices which a small enterprise can adopt are:

- ***Say no to Polybags***
- ***Minimizing pollution level***
- ***Tree Plantation near the factory area.***
- ***They should follow the rule of equal wages to all***
- ***Child Labor should be strictly prohibited at their workplace***
- ***Maintaining the quality of the product and checking on regular basis.***

Website

It is a certain aspect to understand the importance and benefits of internet in today's competitive era. Malosi (1999) intimated that internet is growing faster than all other communication technologies that have preceded it. This promotional tool is efficient, cost effective and its reach is unassuming and overwhelming. SMEs can create their own website and promote their products and services at a global level. Social media now a days is also one of the most effective and affordable ways to be in touch with customers.

Direct- Marketing

This is the most effective tool for small enterprise as this is the direct channel to reach and deliver goods and services to customer without using marketing middleman and avoiding unlikely costs by using direct mails, bulk SMS, telecalling.

Advertising

It is indirect in approach & has a long term perspective, like brand image and brand recall. Being flexible and selective in nature, it is the best medium for SME for advertising their products. Local newspapers, local radios, Paper inserts, local magazines, and outdoor medium such as pamphlets, posters, banners, hoardings etc are the conventional mediums through which the SME can reach the target customers effectively and efficiently in minimum cost. Due to high competition, co branding is also in practices nowadays, where two companies either promote their products together in a single medium or they pool their resources to promote each other's products which van be termed as barter advertising. e.g.,Newspaper Dainik Bhaskar promoting Sanchi Milk and Sanchi Milk packages promoting Dainik Bhasker.

Sales promotion

It makes the consumer to take a favorable purchase decision by providing one or other kind of direct inducement like discount, price off, gift, coupon etc. It is a short term & direct approach and expects an immediate response in terms of sales. Free samples, premiums, exchange offers are effective method of sales promotions in the introduction stage of any SME.

Small firms can also make use of guerrilla marketing where the promotion is unconventional, unexpected and usually indicative of a unique, memorable reaction from or interaction with the viewer.

Conclusion

Keeping in mind the various constraints of small firms, strategies have been suggested which small firms can use to promote their products and services such as participation in trade fairs, exhibitions, haats, melas and mandis, school and college promotions, nukkad natak, flash mob, co- branding, guerrilla marketing, use of websites and social media, sms, telecalling, banners, posters, inserts etc which are economical and can be effective if properly leveraged.

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An Improved Chaos Based Edge Adaptive Image Steganography Using Hadamard codes

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Abstract:
There are various techniques that are used to implement steganography and chaos based technique is one among them. Chaos played very important role in secure communication. It is used for analogue as well as digital systems. It has a very interesting property that produces very long and random non-repeating sequences which make it very difficult to decode [1]. In this paper we have use chaotic based image steganography using hadamard codes that are used to spread pixels to add the complexity for detection. We are using standard map to shuffle all pixels, a key to encrypt data and canny edge detector for detecting edges of the cover image. We are use lookup tables in this method for making calculation fast and easy. This method gives higher PSNR ratio compare to the previous method that proves that our scheme is very efficient in providing security.

Keywords: Image Steganography, Standard Map, Hadamard Codes, Canny Edge Detector

I. INTRODUCTION

In data communication data security always consider as an important factor. Many techniques are comes in this subject like Classical cryptography that used to secure plain text messages. Cryptography are mainly consider some important factor such as privacy, confidentiality, key exchange, authentication, and non-repudiation but somewhere that is not sufficient so Steganography comes into picture that hiding the whole existence of the information. Basically steganography is a Greek word that means Covered (Steganos) Writing (Graptos). Now a day Steganography is very necessary for computer security primary on internet [2]. There are different types of steganography but we must consider here only on image steganography. In Image steganography commonly two words are frequently use that are Cover Image and Payload Image. Here Cover image is used for hide the information and payload image is the hidden image. A cover may be simple text file it may be an image or an audio and video files. Among them Images are mostly used as a cover for steganography. Images are widely used as a cover because we can see lots of images in a day and it has high redundancy in representation. Image steganography can be classified into Spatial Domain and Transform Domain.

Spatial method adopted direct pixel manipulation for thrashing information. This technique is characterized by very low hardware requirement, less time complexity, low implementation time and it is very simple. In image steganography three points are noticeable:

- A place where to hide information in the image.
  Secure Embedding. And
- Security of the payload if it detect by the opponent.

The most suitable places for hiding information are edges of the image because the visual system of human eyes is very less sensitive to distortions in the edges and it also provides random positions of pixels. Applying pixels on edges are scattered payload on the cover and it reducing the probability of detecting by steganalyzers. [3]

II. RELATED RESEARCH

There are a lot of techniques that are proposed for image steganography and for providing security but here we are discussing some of techniques that are proposed from 2011.

In 2011 a study is conducted that define Steganography as a class of Algorithms having Secure Properties. In his works, he defined chaotic systems as intuitive i.e. a kind of noise-like spread system with sensitive dependence on initial condition. Furthermore, previously referenced works often focus on discretion and/or robustness properties, but they do not consider security. But stego-security and chaos-security have only been proven on the spread spectrum watermarking, and on the dhCI algorithm, which is notably based on iterating the negation function. There approach was entirely formalized and reasons to take place into the mathematical theory of chaos were explained. They have also tried to use stego-security and chaos security is for a large class of algorithms. [4]

In 2011, a new edge embedding technique has been introduced that target on higher PSNR rather than higher embedding rate. This method provides better PSNR. Edges of the image are obtained using sobel/canny edge detector. Only horizontal edges of a particular edge length are used further. These edge pixels are used for embedding purpose but to calculate the difference of these edge pixels with upper edge boundary. If this difference is greater than some predefined difference then these upper boundary pixels are used for embedding data bits accordingly. In this way the stego image with least perceptual transparency is obtained. The strong point of this method is high PSNR value

but having a drawback of least embedding capacity. Another drawback is that it uses horizontal direction edge pixel boundary only [5]. In 2012, a new parameterized canny edge detection based embedding approach has been introduced. Parameterized canny edge detector uses three parameters i.e. higher threshold value, Gaussian filter and lower threshold value. The value of
all these three parameters are user defined. This property makes the stego image more robust as different values of these parameters yields different outputs. In this approach three LSBs of all three channels of edge pixels are replaced with the secret data bits. The advantages of this approach are imperceptibility and irrecoverability [6].

In 2013, to improve the capacity and PSNR new LSB based edge embedding technique using hybrid edge detection filter. Rather than applying Canny with fuzzy edge detector as in combination of the Canny and enhanced Hough edge detector is used to get edge pixels. Message to be embedded is encrypted with AES to provide another level of security. The encrypted message bits are hidden in the smooth area pixels and edge area pixels. For hiding the message bits in smooth area adaptive LSB Substitution technique has been used. Whereas for hiding message bits in the edge area two components-based LSB Substitution techniques has been used. This method ensures the higher PSNR value and high embedding capacity. Also this method provides security against various attacks e.g. visual analysis, histogram analysis, chi-square and RS analysis [7].

As the studies showcase that Chaos-based approaches are frequently proposed to improve the quality of schemes in information hiding. This was in line with the study conducted in 2013 which proposes an edge adaptive image steganography mechanism which combines the benefits of matrix encoding and LSBM to embed data and also uses a chaotic mapping scheme to provide enhanced security to the payload. Some interesting research work has been carried out in developing edge based image steganography methods. Another research is held at 2013 that focused on hybrid chaos where they introduced a new hybrid steganography algorithm to achieve a higher level of security. There algorithm consists of a compound processing using Chaos – Fuzzy- Thresholding steganography method (CFT) for hiding the multimedia data, image, text, or sound. Implementation of the proposed CFT hybrid algorithm shows a higher degree of security level as the algorithm coordinates the data in the image dimensions using chaos distribution arrangement and performs a negative colour compression using Fuzzy logic Scheme. The data is embedded with the original image in the pixels least significant bits, so can’t appears within the image. The received image is separated and colour expanded then rearranged using the initial condition of the chaos coordination [8]

In Nadeem et.al (2014) proposed another technique of implementing an improvement in the plain LSB based image steganography in their study. They explained the use of bit inversion technique to

improve the stego-image quality. In these techniques, LSBs of some pixels of cover image are inverted if they occur with a particular pattern of some bits of the pixels. In this way, less number of pixels is modified in comparison to plain LSB method. [9] On the other hand, in 2014, research analysed the Least Significant Bit (LSB) substitution technique is the simplest way to hide information within the image. In this approach they are replaced with the binary data (i.e. information). However this is not a secure technique as the stego image contains flecks at the place where the message bits are hidden and hidden message bits can easily be recovered through repetition of the same process. Many attacks like difference image histogram, sample pair analysis; blind detection algorithm has been performed on this method. [10]

This paper is based on the work done by Ratnakirti Roya [3] is proposed, in which we use Canny Edge Detector, Standard Map and Hadamard Code to spread payload on the cover. We also use lookup tables for increasing calculations. Through this method we get higher PSNR value that is the main requirement for steganography.

III. PROPOSED METHOD

In proposed mechanism we are using chaotic based technique. For detecting edges in the cover image we are using Canny Edge Detector it selects pixels in the cover image and hide the information in those pixels. It is standard and very optimize edge detector that have high immunity to noise and ability to detect weak edges. We are using Hadamard Code to distribute image pixels. Basically, Hadamard Code is based on Hadamard matrix Hn. In general, it is based on H32, where n=2k and generator matrix is (k+1).2k. [11]

Here we are also using Standard Mapping. It is invertible discredited 2D map. That defines as:

$$x_{k+1} = (x_k + y_k + r_x + r_y) mod\ N$$

$$y_{k+1} = \left(y_k + r_y + K_c sin \frac{2\pi x_{k+1}}{N}\right) mod\ N$$

$where (x_k, y_k) and\ (x_k + 1, y_k + 1)$ is the original and permuted pixel position of an N N matrix and (r_x, r_y) is the offset of image respectively. The standard map parameter K_c is a positive integer [1].

Now, we follows some equations, suppose, a1, a2, a3 are bit positions according to pixel components Red(R), Green (G) and Blue (B). Suppose x1 and x2 are two message bits. Now, following conditions are:

X1= a1⊕a3

X2= a2⊕a3

Now, all possible conditions (in pairs) with required action are:

Table I

REQUIRED CONDITIONS

Conditions	***Required Action***
X1=a1⊕a3 ***X2=a2⊕a3***	***No change***
X1=a1⊕a3 ***X2≠a2⊕a3***	***Change a2(G) to satisfied conditions***
X1≠a1⊕a3 ***X2=a2⊕a3***	***Change a1(R) to satisfied conditions***
X1≠a1⊕a3 ***X2≠a2⊕a3***	***Change a3(B) to satisfied conditions***

Now we shows look up tables that increase the speed of the scheme. First table represent XOR table that we in calculations:

Table II

XOR RESULT

Input	

A	*B*	*Output*
0	*0*	*0*
0	*1*	*1*
1	*0*	*1*
1	*1*	*0*

Now we taking four variables (x1, x2, a1, a2 & a3) and checking all necessary conditions through this table and make required changes.

Table III

x1	*x2*	*a1*	*a2*	*a3*
0	*0*	*0*	*0*	*0*
0	*0*	*0*	*0*	*1*
0	*0*	*0*	*1*	*0*
0	*0*	*0*	*1*	*1*
0	*0*	*1*	*0*	*0*
0	*0*	*1*	*0*	*1*
0	*0*	*1*	*1*	*0*
0	*0*	*1*	*1*	*1*
0	*1*	*0*	*0*	*0*
0	*1*	*0*	*0*	*1*
0	*1*	*0*	*1*	*0*
0	*1*	*0*	*1*	*1*
0	*1*	*1*	*0*	*0*
0	*1*	*1*	*0*	*1*
0	*1*	*1*	*1*	*0*
0	*1*	*1*	*1*	*1*
1	*0*	*0*	*0*	*0*
1	*0*	*0*	*0*	*1*
1	*0*	*0*	*1*	*0*
1	*0*	*0*	*1*	*1*
1	*0*	*1*	*0*	*0*

1	***0***	***1***	***0***	***1***
1	***0***	***1***	***1***	***0***
1	***0***	***1***	***1***	***1***
1	***1***	***0***	***0***	***0***
1	***1***	***0***	***0***	***1***
1	***1***	***0***	***1***	***0***
1	***1***	***0***	***1***	***1***
1	***1***	***1***	***0***	***0***
1	***1***	***1***	***0***	***1***
1	***1***	***1***	***1***	***0***
1	***1***	***1***	***1***	***1***

Now we represent the table for required changes which satisfied all conditions that are represent in Table I.

Table IV

CHANGES IN BITS ACCORDING TO TABLE III

a1	***a2***	***a3***
0	***0***	***0***
0	***0***	***0***
0	***0***	***0***
1	***1***	***1***
0	***0***	***0***
1	***1***	***1***
1	***1***	***1***
1	***1***	***1***
0	***1***	***0***
1	***0***	***1***
0	***1***	***0***
0	***1***	***0***
1	***0***	***1***
1	***0***	***1***

0	***1***	***0***
1	***0***	***1***
1	***0***	***0***
0	***1***	***1***
0	***1***	***1***
0	***1***	***1***
1	***0***	***0***
1	***0***	***0***
1	***0***	***0***
0	***1***	***1***
0	***0***	***1***
0	***0***	***1***
1	***1***	***0***
0	***0***	***1***
1	***1***	***0***
1	***1***	***0***
1	***1***	***0***
1	***1***	***0***

Through this table we can easily get all the required changes.

Now we shows proposed algorithms: The proposed scheme is divided into three phases. The First Phase defines "*payload scrambling algorithm"* in which payload (the original image) is encrypted and shuffled by standard mapping and spread by hadamard codes. The Second Phase describes "*embedding algorithm"* where we take Cover Image (Image which hides the original image) and scrambled payload as an input and calculate edges of the cover image to embed the payload. Finally the Third Phase provides for the extraction of the original image by "*extraction algorithm*"

Phase1: Payload Scrambling Algorithm

Step1: Taking Original payload as Input.

Step 2: Encrypt image with key input : r_x, r_y, n*(iteration)*

Step 3: Applying Standard Mapping using Standard Map as follows:

$$x_{k+1} = (x_k + y_k + r_x + r_y) mod\ N$$

$$y_{k+1} = \left(y_k + r_y + K_c sin \frac{2\pi x_{k+1}}{N}\right) mod\ N$$

where (x_k, y_k) *and* $(x_k + 1, y_k + 1)$ *is the original and permuted pixel position of an N N matrix and* (r_x, r_y) *is the offset of image respectively. The standard map parameter* K_c *is a positive integer*

Step 4: Spreading image pixels using Hadamard Codes.

$$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -1 & 1 & -1 \\ 1 & 1 & -1 & -1 \\ 1 & -1 & -1 & 1 \end{bmatrix}$$

Step 5: Get Scrambled payload as a Output.

A. ***Phase 2: Embedding Algorithm***

Step 1: Taking Cover image and Scrambled payload as a Input.

Step 2: Find the edge pixels in cover image using an edge detection algorithm (Canny edge detection).

Step 2: Find binary equivalent of the payload image pixels to apply LSB.

Step 3: Find the length of the payload L.

Step 4: Finding the no. of pixels necessary for embedding. Let pixnum: =L/2.

Step 5: Set a counter i.

Step6: Set K=1.

For i: =1 to pixnum

1. pix:= i th pixel.

2. Here, a1= Red, a2=Green, a3= Blue

3. Suppose x1=B(K), x2=B(K+1).

4. Embedding it according the conditions shown in Table IV and replace the original pixels.

5. Set K=K+2.

B. ***phase3: Extraction Algorithms:***

Step 1: Taking Stego image, Message length, pixel information and key as an Input.

Step 1: Set counters i.

For i: =1 to pixnum

pix: = ith pixel.

Step 2: Perform calculations using Table III.

Step3: Apply decoding using key and get the original message as an Output.

IV EXPERIMENT AND ANALYSIS

The algorithms are implemented in MATLAB. We have use Baboon, Chrome, Apple and Peppers as a cover images and

Barbara as a payload image. Now we shows snap shots related to our simulation. The first figure shows the GUI interface:

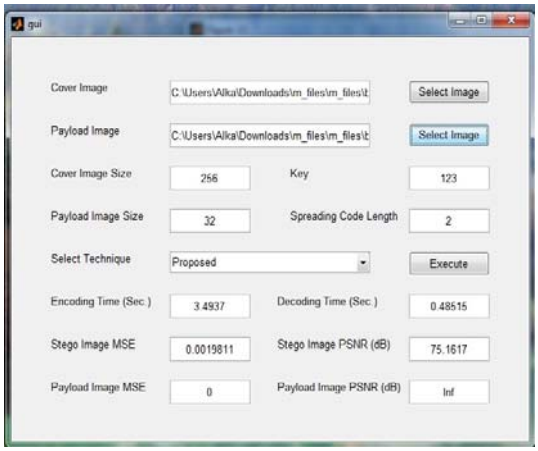


Fig. 1 GUI Interface

Here we show the payload image Barbara that we used in proposed scheme and scamblled image related to that image.

Fig.2 Payload Image

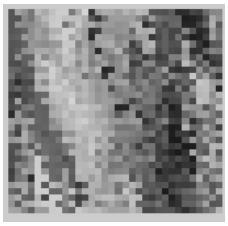


Fig.3 Scrambled Image

Here we represent Cover images named Baboon, Chrome, Apple and Peppers and show their Edge image and Stego image respectively:

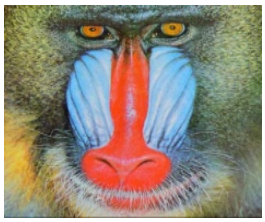


Fig.3Cover Image

Fig.4 Edge Image

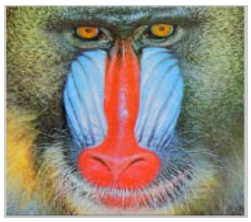


Fig.5 Stego Image

Fig.6 Cover Image

Fig.7 Edge Image

Fig.8 Stego Image

Fig.9 Cover Image

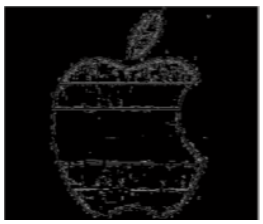


Fig.10Edge Image

Fig.11Stego Image

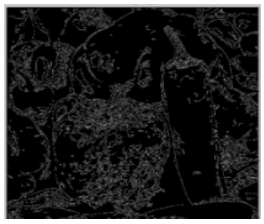


Fig.12Cover Image *Fig.13Edge Image* *Fig.14Stego Image*

Now, we represent tables for distortion measure and embedding time for various levels of embedding of Previous Technique and Proposed Technique.

1. Table for Previous Technique using Cat Mapping:

Table1 Distortion measure and Embedding Time

Payload	PSNR (db)				Encoding Time				Decoding Time			
	Baboon	Chrome	Apple	Peppers	Baboon	Chrome	Apple	Peppers	Baboon	Chrome	Apple	Peppers
32X32	69.219	81.345	81.073	81.253	5.983	3.561	3.545	3.607	2.608	1.737	1.723	1.732
60X60	69.754	75.830	75.752	75.773	10.736	11.058	11.105	11.289	6.424	6.037	6.040	6.354
64X64	75.216	75.218	75.218	75.219	12.854	12.527	12.554	12.593	6.881	6.858	6.984	6.831
80X80	73.275	79.519	79.340	79.312	19.695	21.164	21.115	20.992	10.647	10.619	10.677	10.656
100X100	77.375	77.488	77.447	77.352	31.616	31.191	31.467	31.7955	16.847	16.639	16.573	16.697
Avg.	72.967				16.176				8.681S			

Payload	PSNR (db)	Encoding Time	Decoding Time

2. Table for Proposed Methode using Standard Mapping:

	Baboon	Chrome	Apple	Peppers	Baboon	Chrome	Apple	Peppers	Baboon	Chrome	Apple	Peppers
32X32	69.23	81.37	81.07	81.23	5.67	3.47	3.41	3.46	1.67	1.67	1.67	1.66
60X60	75.77	75.86	75.78	75.78	10.73	11.25	10.67	11.80	6.09	5.91	5.87	5.91
64X64	75.23	75.30	75.21	75.70	12.12	12.09	12.05	12.17	6.65	6.69	6.67	6.70
80X80	73.28	79.59	79.72	79.32	19.25	19.91	19.94	20.27	10.47	10.40	10.72	10.55
100X100	77.36	77.52	77.43	77.36	30.89	30.04	30.02	30.39	16.35	16.53	16.42	16.64
Avg.	76.95555				15.48				8.262			

Table 2 Distorttion measure and Embadding time

All the values shown in tables represents that the proposed technique produces high Peak Signal to Noise Ratio (PSNR) for all the tested cover images and payload sizes. Average rate of embedding is 2bits per pixel. The average *PSNR* for the method is 76.955 which are higher than the minimum threshold for human visual system (40dB). Hence, the proposed mechanism produces high fidelity stego image with negligible visible distortion than previous technique.

V GRAPHS AND COMPERISON

Here we show comparison between previous and proposed technique from graphs that prove that proposed technique is efficient and secured.

Graph 1: Image Vs PSNR

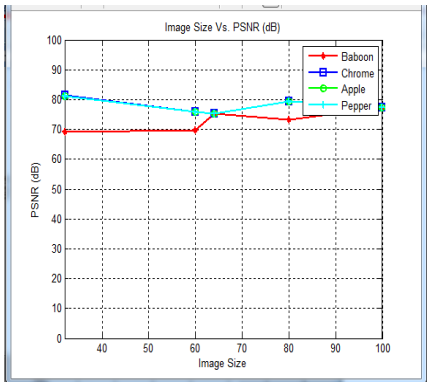


Figure 15 Image Vs PSNR

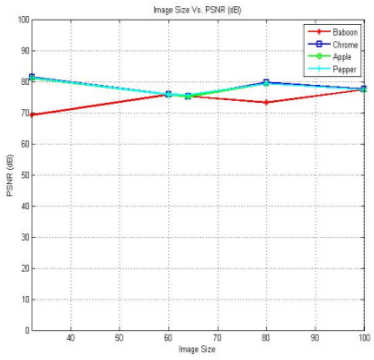
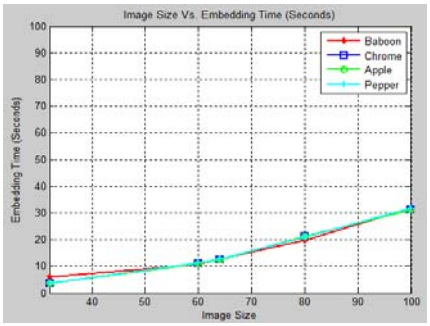


Figure 16 Image Vs PSNR

(Previous Method) *(Proposed Method)*

Graph 2: Image Size Vs Embedding Time



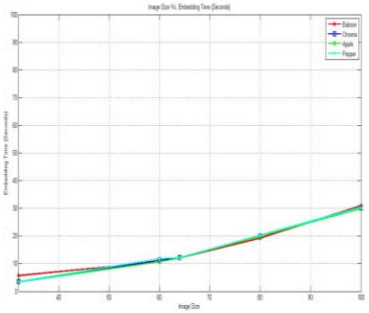


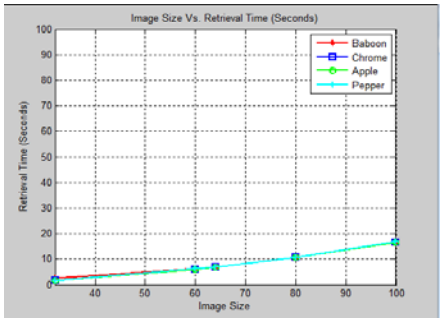
Figure 17 Image Vs Embedding Time

Figure 18 Image Vs Embedding Time

(Previous Method)

(Proposed Method)

Graph 3: Image Size Vs Retrieval Time



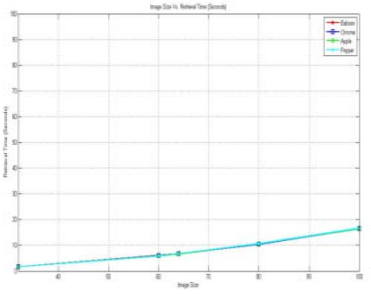


Figure 19 Image Vs Retrieval Time

Figure 20 Image Vs Retrieval Time

(Previous Method)

(Proposed Method)

IV CONCLUSION AND FUTURE WORK

The proposed technique is improved over the erstwhile LSB technique by using a key and a random shuffling applying a chaotic standard map. In order to provide an additional security to the payload, spread spectrum codes called *hadamard codes* are used which spreads image pixels on the cover

image.The proposed technique also provide an improvement of the edge adaptive technique by using look up tables to get the positions of bits on edges for replacing original image pixels. The tabular representations formulated above provide an easy and efficient method of getting the position of pixels which improves the speed of calculations.

However, even this is subject to certain limitations. The proposed scheme is prone to steg analysis attacks .Distort the payload before embedding, making it difficult to retrieve information i.e. the original image. Thereafter the proposed technique provides layered security to payload that can only be decoded by applying the correct key. Future work will focus on extending the proposed method to reduce time complexity. In future we will also doing work to find out a technique which is easy and efficient to implement to find edges in colour planes

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Your Favorite Cell Phone Might Be Harming Your Health

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Abstract

Cell phones are having a great influence in our live and are very convenient to keep with us. Cell phones are a faster and more effective way to transfer information. We all know that mobiles are beneficial for us, but with this mobiles have another side also which is harmful for us. This paper will review about some researches which expose the possible links between mobiles and health disturbance of mobile users. Here, firstly we will take a brief review about the mobile and its radiation and after that we will deeply discuss about the effects of radio frequency electromagnetic fields (RF-EMFs) on users' health. The objective of this study is to discuss about the health effects of exposure to mobile phones.

Keyword: Radio Frequency Electromagnetic Fields (RF-EMFs), Specific Absorption Rate (SAR), Commission Scientific Committee on Emerging and Newly Identified Health Risks (CSCENIHR), The International Agency for Research on Cancer (IARC), World Health Organization(WHO), National Cancer Institute, National Radiation Advisory Authorities, Group 2B –carcinogenic, Dielectric Heating, Apollo Medical Team, American Academy of Otolaryngology, Deoxyrib Nucleic Acid (DNA),Environmental Working Group (EWG), Perfluorooctanoic Acid (PFOA), Escherichia coli (E. coli) bacteria ,Computer Vision Syndrome (CVS), Muscle twitching, Thumb twitching.

Introduction

As we are seeing that, everyone is using mobile phone. It provides us a wireless communication media and makes our life easier with its several features. Indeed, it is a resource that gives its user's great advantages. In earlier times cell-phone used to be a craze, symbol of money and success but nowadays even kids find it a necessity of life. [3]A mobile phone (also known as a cellular phone, cell phone, and a hand phone) is a phone that can make and receive telephone calls over a radio link while moving around a wide geographic area. It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone

network. In addition, mobile phones also support a wide variety of other services such as text messaging, MMS, email, Internet access, short-range wireless communications (infrared, Bluetooth), business applications, gaming and photography. Mobile phones that offer these and more general computing capabilities are referred to a smart phones. [1] After this discussion, if we talk about radiations then we can define it as:

"Radiation is energy travelling through space in the form of waves or particles. It occurs naturally and has always been around us". [4]Radio-frequency is a form of electromagnetic radiation (EMR). EMR is a wave-like energy that is emitted and absorbed by charged particles. [2]Some experts suggest a little radiation is good because it uses in medical science to combat and diagnose some illnesses. [4]In the case of a cell phone, the phone emits the EMR (in the form of radio-frequency) and the human operating it absorbs it. [2]The type of radiation emitted from mobile phones is Electromagnetic radiations. It present in mobiles because they use radio frequency (RF) waves for wireless communication. [4]EMR can be classified into one of two categories: (1) Ionizing – the more powerful of the two, (2) Non-Ionizing – the less powerful and lower frequency. [2]

Fig.1: Shows cell phones emit radio-frequency energy

Here In fig 2 we are showing graph 1 which describes the increasing rate of mobile user year by year and with this it also shows a prediction about number of mobile user for the upcoming year i.e. 2015.

Fig.2: Show increasing rate of mobile user

Besides this ,the next figure shows about the activities done by user on mobile phone.The activity can be in the form of message,voice call,checking time,music,gaming,access Internet,camera ,alerts ,calender etc.In other words we can say that Figure 2 indicates the dependency of user on mobile phones.

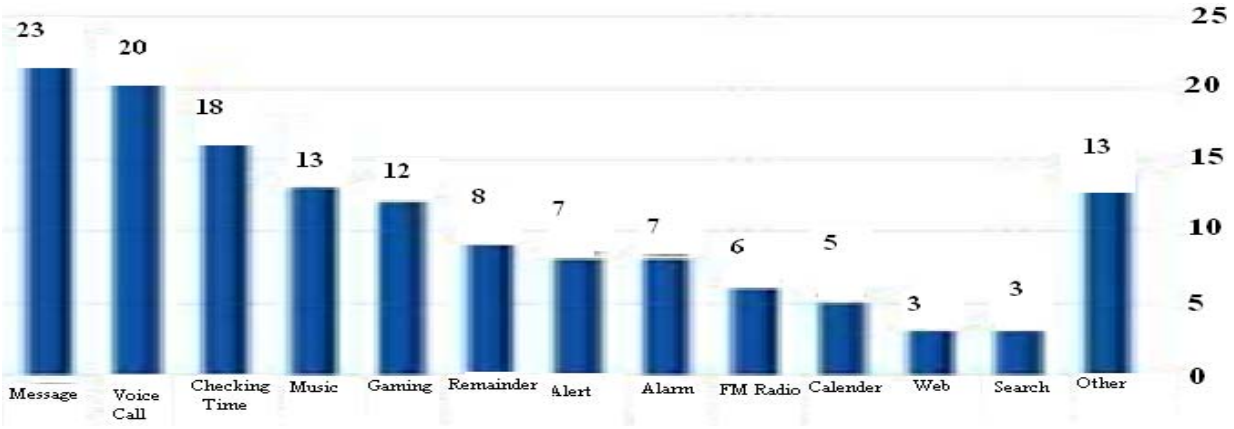

Fig.3: Shows dependency of users on mobile phones.

Radiofrequency exposure limits for mobile phone users are given in terms of Specific Absorption Rate (SAR) – the rate of radiofrequency energy absorption per unit mass of the body. [20]

Effect of mobile phone radiations on human health

The effect of mobile phone radiation on human health is the subject of recent interest and study, as a result of the enormous increase in mobile phone usage throughout the world. Mobile phones use electromagnetic in the microwave range. Other digital wireless systems, such as data communication networks, produce similar radiation.The WHO has classified mobile phone radiation on the IARC scale into Group 2B . Many scientific studies have investigated possible health symptoms of mobile phone radiation. These studies are occasionally reviewed by some scientific committees to assess overall risks. A recent assessment was published in 2007 by the European Commission Scientific Committee on Emerging and Newly Identified Health Risks (CSCENIHR). It concludes that "exposure to RF fields is unlikely to lead to an increase Health risk in humans". [24]

Fig.4: Shows possible health risk by the exposure of RF fields.

Now, we will discuss all possible health risk one by one**.**

Cell Phones and Possibly Carcinogenic:

we have discussed in above section that there are two types of EMR (Ionizing and Non Ionizing).The National Cancer Institute have recognized that this radiations are being capable of increasing the risk of cancer.[2] The International Agency for Research on Cancer (IARC), concluded that radio-frequency was possibly carcinogenic to humans.[19]In 2011, International Agency for Research on Cancer (IARC) classified mobile phone radiation as Group 2B - possibly carcinogenic. [9]That means that there "could be some risk" of carcinogenicity, so additional research into the long-term, heavy use of mobile phones needs to be conducted. [5] The WHO added that "to date, no adverse health effects have been established as being

caused by mobile phone use." [6]Some National Radiation Advisory Authorities [7] have recommended measures to minimize exposure to their citizens as a precautionary.

Cell phones have been linked to cancer of the eye by a German study. Using a cell phone may increase the chances of eye cancer. [23]

Cell Phones and Brain

There have been numerous recent reports of headaches occurring in association with the use of hand-held cellular telephones. [10]In another series of studies, radio-frequency has also been linked to aiding in the development of brain tumors, particularly in children. One particular study conducted at the Örebro Hospital in Sweden identified that 10 years of cell phone use resulted in an average 290% increased risk of brain tumor development. Children in particular were identified as being the greatest at risk because they have smaller brains, a lower skull bone density, a less effective blood brain barrier and more connective tissue making them capable of absorbing up to 3 times as much radiation as an adult.[2]A recent study showed that when people used a cell phone for 50 minutes, brain tissues on the same side of the head as the phone's antenna metabolized more glucose than did tissues on the opposite side of the brain [14] A cell phone emits about 1 Watt of electromagnetic radiation. Most of that zooms away to find a cell phone tower. The tissues of the user will absorb a part of this radiation. These tissues include the caller's hand, ear, scalp, skull, and brain. The closer a tissue is to the cell phone's antenna, the more of the radiation the tissue absorbs. [15]

The possible risk of radio-frequency electromagnetic fields for the human body is a growing concern for our society. [8]One well understood effect of microwave radiation is dielectric heating, in which any dielectric material is heated by rotations of polar molecules induced by the electromagnetic field. In the case of a person using a cell phone, most of the heating effect will occur at the surface of head, causing its temperature to increase by a fraction of a degree. In this case the level of temperature increase in an order of magnitude less than that obtained during the exposure of the head to direct sunlight. The brain's blood circulation is capable of disposing of excess heat by increasing local blood flow. Swedish researchers from Lund Universities have studied the effects of microwave radiation on the rat brain. They found a leakage of albumin in to the brain via permeated blood brain barrier. [15][16]

At the frequencies used by mobile phones, most of the energy is absorbed by the skin and other superficial tissues, resulting in negligible temperature rise in the brain or any other organs of the body. [19]

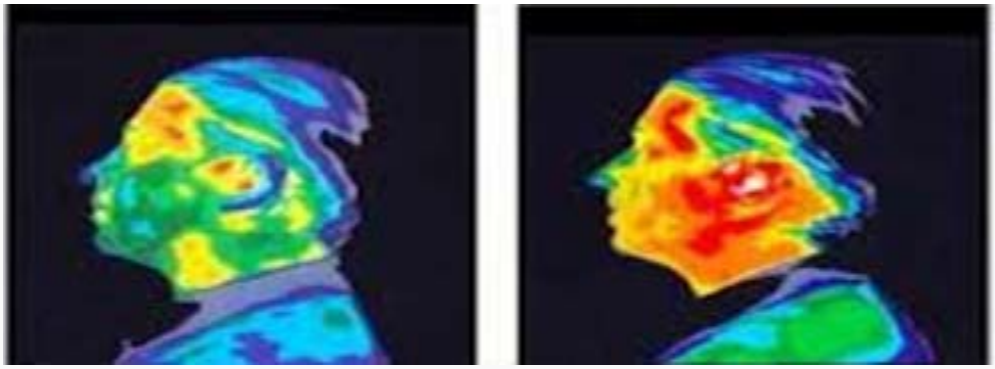

Fig.5: Shows Thermo graphic Effect.

Figure 5 has two images, user A and user B. Image of user A with no exposure to harmful cell radiations. Whereas second image shows user B after 15 minutes phone call. Here yellow and red area indicates thermal effect (heating) that can cause negative health effects.

Fig.6: Shows Cell phone and Brain

Some researchers said that cell phone users had an increased risk of malignant gliomas. One hour of cell phone use per day significantly increases tumor risk after ten years or more. Tumors are more likely to occur on the side of the head that the cell headset is used.[19]Scientists have reported some health effects of using mobile phones including changes in brain activity, reaction times, and sleep patterns. [4]

Cell phones and Ear

Long-term and intensive mobile phone use may cause inner ear damage. [25], Some researchers claims that mobile phone users should only use the left ear for making calls, supposedly to lessen the effects of exposure to cell phone radiation. The message attempts to convince readers that using the right ear for mobile calls can directly damage the brain and it is therefore wiser to favour the left ear. [26] While on other hand the "Apollo medical team", claims that mobile (cell) phone users should always use the left ear for calls because using the right ear will directly affect the brain. A later version, which circulates as a graphic, omits the medical team reference but maintains that using the right ear for mobile phone calls makes our brains more prone to mobile radiation. [27]

According to the study conducted by the American Academy of Otolaryngology, the electromagnetic waves emitted by the phone caused damage, and this hearing loss is not necessarily caused by the high volume. However, Dr. Woodall says that there have been many other recent studies that have shown that regular talk by cell phone can play a role in hearing damage. [28]

Cell Phones and Human Reproductive System

Collectively, the research indicates that exposure to cell phone radiation may lead to decreases in sperm count, sperm motility and vitality, as well as increases in indicators of sperm damage such as higher levels of reactive oxygen species (chemically reactive molecules containing oxygen), oxidative stress, DNA (Deoxyrib Nucleic Acid) damage and changes in sperm morphology. [12]

A number of studies have shown relationships between mobile telephone use and reduced sperm count and sperm quality in males. The Environmental Working Group (EWG) has a web page entitled "Cell Phone Radiation Damages Sperm, Studies Show" published August 2013. The EWG page reviews and tabulates studies showing relationships between mobile phone use and low sperm count and sperm quality. [19]

Cells phones are also a source of perfluorooctanoic acid (PFOA), a harmful chemical which has been linked to female reproductive/development damage. [18]

Fig.7: Shows the effect of cell on male's productive system.

Cell Phones and Chronic Pain:

Cell phones require constant use of your hands, especially when sending text messages and e-mails. Responding to messages at rapid speed can cause pain and inflammation of your joints. Back pain is also common with increased cell phone use, especially if you hold the phone between your neck and shoulders as you multitask. "Long periods of cell phone use cause you to arch your neck and hold your body in a strange posture. This can lead to back pain, neck pain. [16]

Fig.8: Shows chronic pain caused by regular use of cell phone.

Cell Phones and Germs:

Our cell phone follows us everywhere. More than 75 percentages of people keep their mobile with them even in toilet also. One study found fecal matter on 1-in-6 cell phones. Fecal matter can spread E. coli (Escherichia coli) bacteria, which can cause diarrhea, urinary tract infections, and even kidney failure, which can be deadly. Bacteria can also spread to your skin and trigger breakouts. [17]

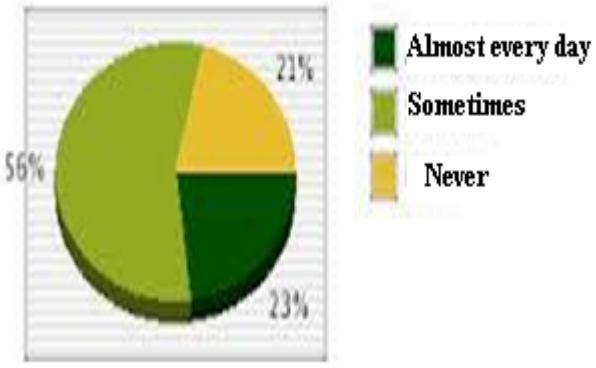

Fig.9: Shows percentage of users used their mobiles in toilet.

Cell phones and vision

A new problem that some eye experts are calling computer vision syndrome (CVS) is sweeping the country; it can affect up to 90 percent of people who spend two or more continuous hours a day with their eyes glued to a screen, whether it's that of a computer, an e-reader, or a Cell phone. [21] According to the Vision Council, more than a third of adults reported spending four to six hours a day with digital media or related electronic devices. As digital use increases, so do potential vision problems, including eye strain. Symptoms of digital eye strain include eye redness or irritation, dry eyes, blurred vision, headaches, or even long-term nearsightedness. [22]

Fig.10: Eye strain by frequently use of mobile.

Cell phone has been linked to cancer of the eye by some researchers. Besides the development of eye cancer, cell phone radiation can also be responsible for the formation of contaracts. Burning of the eyes, pain behind the eyes and a general deterioration of the vision are all hallmarks of damage caused by cell phone radiations. [23]

Cell Phones and Associate effects

Some users of mobile handsets have reported feeling several unspecific symptoms also, during and after its use; ranging from burning and tingling sensations in the skin of the head and extremities, fatigue, sleep disturbances, dizziness, loss of mental attention, reaction times and memory retentiveness, headaches, malaise, tachycardia (heart palpitations),to disturbances of the digestive system.[11]

Cell Phones and Traffic accidents

Research has shown an increased risk of traffic accidents, some 3-4 times greater chance of an accident, when mobile phones (either handheld or with a "hands-free" kit) are used while driving due to distraction. [4]

Fig.11: Cell phone while driving.

Cell Phones and sleeping:

Using a mobile phone before going to bed can damage your health; it claims that radiation from the handset can cause insomnia and headaches as well as cutting the time spent in deep sleep.
Failing to get enough sleep can lead to depression, lack of concentration and personality changes, attention disorders and poor academic performance.
But Professor Bengt Arnetz, who led the study, suggests that “mobiles have measurable effects on the brain."
He believes the radiation may activate the brain's stress system, making people more alert and less able to fall asleep. [13]

Fig.12: User with mobile at sleeping time

Cell Phones and Thumb Twitching:

Now a days people are facing pain problem in their muscles and thumbs from variety of reasons. [29] These conditions are diagnosed when an exceeding use of mobile keypad or touch screen is done. [30]Muscle twitching is the presence of uncontrollable muscle contractions that might be temporary or chronic. When this occurs in the thumb, it can be referred to as thumb twitching, and it might occur for a variety of reasons, including overuse of the muscle from playing video games, texting or internet access via mobile. [31]

Fig.13: Texting can lead to thumb twitching.

Conclusion

The use of cell phones seem to be a mandatory for the modern age, as it gives us access to voice and data services in almost every part of the world. However, there is a downside effect to our dependence on them. On the basis of this paper we have found that chronic cell phone use may have a negative impact on long-term health. In other words we can conclude the effects of cell phone use on our lives as: “Increasing exposure of radio frequencies heightens the risk of cancer in mobile user. Its chronic use also effect on our brain, ear, eyes, reproductive system, sleeping time and with these we also suffer from joint pain, headaches, anxiety, burning and tingling sensations in the skin of the head, loss of concentration and reaction. Cell phones also cause germs to be spread more easily. Cell phone use causes hundred of accidents per year.”

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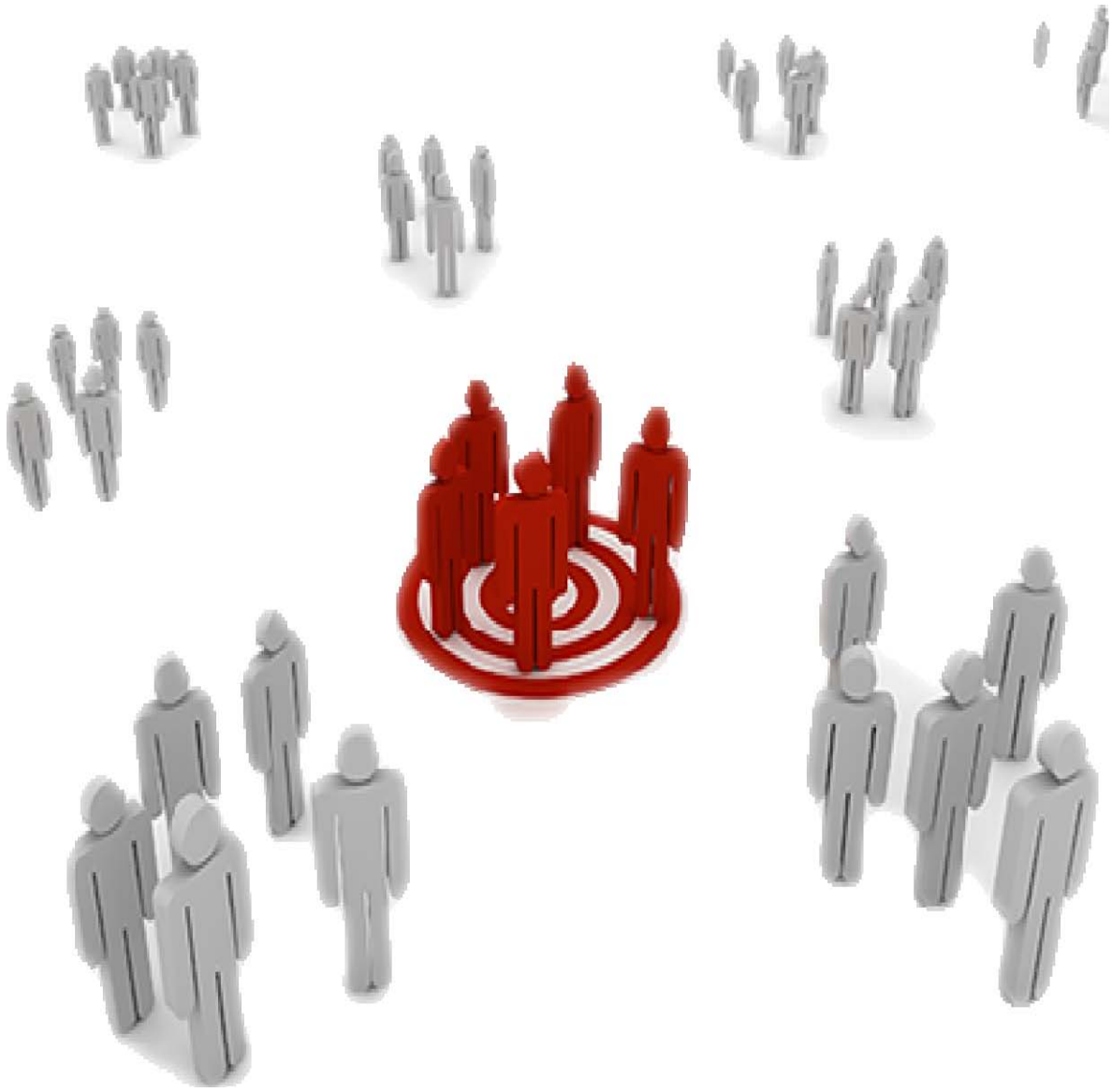

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