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**RURAL MARKETING POTENTIAL IN INDIA – AN EMPIRICAL STUDY****Dr. Shivani Kapoor****Dean, PSIT-CHE****PSIT College of Higher Education Kanpur****Email: deanbba@psit.ac.in****ABSTRACT**

Rural India has become the point for the corporate firms to join in the current times because urban markets are entirely engaged with many different categories of consumer products. Furthermore it has been found that rural incomes are mounting. This study is a mean to provide pertinent information about the rural marketing process carried out by the companies dealing in durable and non durable goods in order to find market for their products and it also inquire the reason of shift from urban to rural market This study even tries to investigate the actual reasons for the failure of companies while marketing their products. This study identifies the significant problems faced by companies in marketing their products to rural areas and suggests marketing strategies and methods to be followed in order to overcome those problems.

**Keywords:** Rural Market, Rural Consumers, Brand Awareness, Challenges.

**OBJECTIVES**

- To comprehend the rural market.
- To recognize the potential of rural market
- To review the shift from urban to rural market
- To probe the various parameters of potential of rural market
- To present suggestions for marketing strategies

**METHODOLOGY**

A questionnaire was used to gather primary information. Descriptive research method was used. To begin with informal interviews with 170 persons were conducted. Secondary data was collected from different market segments and additional players of the market.

## **LITERATURE REVIEW**

### **Overview on Indian Rural Markets**

Consumers in Rural Areas Care for Value (2010) said that more than Price Colgate and Philips have spend right from the beginning in rural India, saw the value of the market, developed products that were useful for the rural market, went into the rural markets with their distribution systems, and were very successful. In fact, the rural market always provided them with a nice buffer they could bank on. A significant part of their sales came from the rural market. These companies have been in rural markets for more than 50 years now

Malik Garima (2011), In her book titled, “Introduction to rural marketing” remarked that, the Indian rural market is witnessing a boom of late, all very thanks to the saturation being witnessed by the urban counterparts and with the advent of economic slowdown in the economy, the corporates are now on a hunch to look out for greener pastures where it can sell their offerings at reasonable profits. There is an intense competition in the market and none of the corporate wants to lose the golden opportunity offered by the great Indian rural market.

Pallavi(2011), in her research concluded that companies across different sectors are now approaching rural markets with attractive incentives to ensure targeted sales. The returns of Rural inhabitants in India and their purchasing power has amplified in recent years. The companies have to ascertain their needs and desires in order to exploit vast potentials of rural markets with suitable marketing strategies. On the whole backwardness, inclination for conservative way of life of the rural people etc. are some factors, which must be dealt with appropriately as these have been obstructing the growth of companies in the rural areas. Companies have to find ways to furnish to the rural markets by taking into account the 4 as i.e. affordability, awareness, availability and acceptability.

### **Brand Awareness of Rural Consumers**

Raman (2003) in his study “Strategies of Multi National Companies in Rural Marketing,” analyzed the strategies of MNC’s to penetrate into rural areas for the introducing new products. He scrutinized areas like telecommunication, automobiles, and service sector where approaches like joint venture have been implemented to cross the threshold in the rural area. He said that the

intensification and triumph of the MNC's in rural areas depends on the method of implementing different strategies in the marketing of their products. The strategies which need to be adopted by the MNC's should be supported by the cultural, economic, sociological, and psychological conditions along with a factor of marketing mix in that area. Further, these strategies have to be modified over a period of time to meet up the diverse demands of the customers. Subsequent to a decade of testing the MNC's have matured and agreed on a strategy "think small and keep the product simple". This strategy is being looked forward by many of the multinationals in the rural areas.

Nagaraja B. (2004) in his study "Market potential of durable products in rural areas" examined the consciousness and prospective of durable products in rural areas of Gujarat. His study was performed in the villages in close proximity with Ahmedabad and on the basis of judgment sampling 100 respondents were selected. He stated that the Indian rural market along with its huge size and demand base put forwards an enormous opportunity that MNC's cannot ignore. With 128 million family units, the rural populace is almost three times the urban population. To enlarge the market by exploring the areas beyond cities, numbers of multinationals are venturing into India's rural markets. The rural market forms nearly half of the entire market for TV sets, pressure cookers, fans, washing soap, toothpowder blades, salt, tea, and bicycles. As a result the rural market for FMCG products is growing at a much faster pace than the urban areas.

### **Purchase Behavior of Rural Consumers**

Jamal and Goode (2001) in their study "Effect of self image on purchase decision of rural consumers," observed the relation of product preferences with self image. They explored different rural areas in Maharashtra .they conducted their study with a sample size of 100 respondents and used random sampling as the sampling technique. They explained that the self-image/product image congruity (commonly known as self-image congruence) and marketing strategy can effect customer satisfaction by having a direct impact on product preference and purchasing decision of the consumers. It suggests that decisions regarding purchase are influenced by factors such as price, quantity, quality, shape, color, marketing strategies and promotional schemes etc.

Gupta (2006) in his study “Factors affecting the buyer behavior of customers -A case study of New Generation Bikes in rural market,” examined the awareness and purchase behavior of rural consumers. Banking upon Simple random sampling 125 respondents was selected from the rural areas of Kanpur, U.P. He revealed that factor affecting consumers who choose to purchase a new generation bike by emphasizing on easy finance, fuel efficiency, and which is reasonably priced may be marked as economic benefit factor .They are ready to compromise with lavishness to some degree at the cost of economic advantage. On the other hand clientele of second type are of aristocrat class who are least concerned with the bike’s price and fuel efficiency. They look for gains of luxury, dignity and safety from a new generation bike at all cost. Factor affecting consumers of this class may be marked as social benefit factor

### **Challenges in Indian Rural market**

Rural markets have immense potential. One faces many difficulties while exploring the potential of rural market. The idea of rural markets in India is novel in India and the area faces a number of challenges. Less number of retail outlets and Cost of Distribution are the key problems faced all through marketing. . The triumph of a brand name in the Indian rural market cannot be envisaged. Numerous brands, which were thought to do well have failed miserably. This is because most firms try to imply the same marketing plans to both urban areas and the rural areas. The distinctive consumption patterns, tastes, and needs of the rural consumers should be investigated at the stage of product planning so that they could do with the needs of the rural people. Therefore, it is the need of the time that marketers understand the societal dynamics and variations in attitude within each village.

The main problems in rural marketing are-

- Understanding and appreciating of the Rural Consumer is lacking
- Channel and Direct Management looks for concern
- Promotion, endorsement and Marketing Communication is far behind the demands of the time.
- Poor and pitiable Infrastructure adds to the problem
- Physical Distribution and circulation of goods is quite difficult

**The major hurdles prevailing the rural markets:**

- Distribution costs is quite high
- The small retailer are unable to carry stock without adequate credit facility
- Effective demand for manufactured foods is not being generated
- Initial market development expenditure is quite high
- Problems related to General Management and sales management still prevails.
- Problems of Mass communication and promotion still exist
- Problems related Banking and credit are yet looking for serious concern in the rural areas.
- Market research problems are an issue.
- Problems related to Wholesale and dealer network are exaggerating

**Rural Marketing in Modern India**

According to National Commission on Agriculture Rural Marketing is defined as decisions to produce salable goods and commodities that involve all features of the market system or structure, both institutional and functional, based on economic and technical concerns and includes the pre and post-harvest processes. Corporate defined Rural Marketing as —function that controls all the activities involved in evaluating, encouraging and translating the purchasing power of rural consumers into product specific effective demand to produce satisfaction and a better standard of living for accomplishing the goals of the organization.

The process should be able to stand difference in the human tendencies and socio-economic disparity between the urban and rural customers:

**URBAN TO RURAL (U 2 R):** A major part of rural marketing falls into this category. It includes the transactions of urban marketers who carry on the selling activities sell their goods rural areas, like pesticides, fertilizers, seeds, FMCG products, tractors, bicycles, consumer durables, etc.

**RURAL TO RURAL (R 2 R):** This includes the activities that take place between two villages neat to each other, like agricultural tools, handicrafts and bullock carts, dress materials, etc.

**RURAL TO URBAN (R 2 U):**In this category the rural producer sells his products in urban market , like seeds, fruits and vegetables, milk and related products, forest produce, spices, etc.



This category is generally a part of agricultural marketing.

### Analysis & Interpretation

**Table No: 1**

Age Group	No. of Respondents	% of Respondents
Less than 20 years	21	12.4
21-30 years	32	18.8
31-40 years	50	29.4
41-50 years	30	17.6
50 years and above	37	21.8
Total	170	100

#### Age Group of the Respondents

A question was administered to sample of respondents describing the age. 33.3% having age group 31-40 years and 16.7% with age group 41-50 years, constituting rural market.

**Table No: 2 Gender of the Respondents**

Response	No. of Respondents	% of Respondents
Male	102	60
Female	68	40
Total	170	100

Gender wise analysis shows that 64.2% respondents are male and rest of them are females. It means rural markets are being dominated by male folk.

**Table No: 3 Respondents Education**

Response	No. of Respondents	% of Respondents
Less than V	05	2.9
Till VII	52	30.6
Till X	41	24.1
Till XII	31	18.2
Graduation	23	13.5
Beyond Graduation	18	10.7
Total	170	100

The above table shows the respondent educational background. It is clear that the majority of the respondents are having the education between VII – XII, constituting the rural market.

**Table No: 4 Respondents' Monthly Income**

Response	No. of Respondents	% of Respondents
Less than Rs. 2000	19	11.2
Rs. 2001 - Rs. 5000	52	30.6
Rs. 5001 - Rs. 8000	39	22.9
Rs. 8001 - Rs. 10000	23	13.5
Rs. 10001 – Rs. 15000	21	12.4
Rs. 15001 & Above	16	9.4
Total	170	100

It is found that monthly income of the respondent ranging between Rs. 2000 and Rs. 10000, which indicates that the respondents can afford to make purchases.

**Table No: 5 Preferred Mode of Communication**

Response	No. of Respondents	% of Respondents
TV	59	34.7
Mobile	13	7.6
Radio	17	10
Announcements	15	8.8
News paper	13	7.7
Poster	16	9.4
Word of mouth	28	16.5
Skits/plays	09	5.3
Total	170	100

Advertisements through television and use of Viral marketing as communication mode are most preferred mode of communication.

Rural communication depends on or we can say effected by two major factors – Creating Awareness and Inducing Trials for the products to be marketed. . With the penetration of television media that have been increasing rapidly, the rural consumers are becoming more and more aware of brands which are again possible through advertisements.

**Table No: 6 Purchase Practices**

Response	No. of Respondents	% of Respondents
Personal	35	20.6
Small Group	46	27.0
Mass	89	52.4
Total	170	100

The purchase practices of rural consumer are shown in above table. It is evident that 52.5% of consumers practices mass purchasing. The small group practices and personal purchase practices constitute 26.7% and 20.8% respectively. The effect of mass media is clear and justified here.

**Table No: 7 Marketing Strategies**

Response	No. of Respondents	% of Respondents
Urban	104	61.2
Rural	6	3.5
Both	60	35.3
Total	170	100

Marketers can benefit most if they can make the rural people feel that they are valued as their customers. The key success to an effective rural marketing is that it should be very well aware of rural tradition, rural perspectives, rural mentality and their values. It requires complete knowledge of local language, culture, customs and modes of communication.

**Table No: 8 Effect of Languages**

Response	No. of Respondents	% of Respondents
Regional	120	70.6
National	21	12.4
Both of them	17	10
None of them	12	7.0
Total	170	100

It is clear from the above table that regional languages are always preferred in marketing. The success of rural marketing depends on the appropriate localization of campaigns and regional language plays an important role in it.

**Table No: 9 Purchase Influencers**

Response	No. of Respondents	% of Respondents
Price/Discounts	47	27.6
Brand/Company Name	54	31.8
Celebrity endorsement	28	16.5
Language	17	10
Content	14	8.2
Tagline	10	5.9
Total	170	100

The result shows that there is upward trend of disposable income in rural areas. Prices and discounts are not the sole parameters that affect their purchases. Rural customers are increasingly becoming conscious about the brand which effectively monitors their purchase.

**Table No: 10 Purchasing Decisions**

Response	No. of Respondents	% of Respondents
Self	65	38.2
Parent	37	21.8
Spouse	44	25.9
Children	24	14.1
Total	170	100

Above table depicts that the decision making in the rural market are taken by self followed by spouse and then by the parents. However the children play a very little role. No particular tactic can be derived out of this, rather the idea is to target the individual or the spouse or the child as per the product types and categories.

**Table No: 11 Perceptions on New Product/Brand**

<b>Response</b>	<b>No. of Respondents</b>	<b>% of Respondents</b>
No effect, stick to existing one	44	25.9
Experiment with the new one	16	9.4
Try out when dissatisfying with existing one	37	21.8
Try out on receiving positive feed back	73	42.9
Total	120	100

The study shows that the rural consumers usually do not experiment with a new product unless something really pushes them. The most influential pushing factor is positive feedback about the product that they get from others.

## **CONCLUSION**

The relevant information on overview of rural marketing process is presented within this study along with the information on advantages and disadvantages of social marketing process. The actual aim of this study is to identify the importance of rural marketing process and the significance of marketing the company products in order to create brand awareness among the customers and to overcome different problems related to marketing process. This study specified the significant information on importance of rural marketing process to the companies along with the role played by social marketing process in improving the brand awareness levels among the customers. According to this study rural marketing is the process that can be used as the best marketing technique in order to communicate the information of products and goods of the companies from existing customers to new customers. This study concludes that rural marketing process is playing vital role in marketing the products and services of the companies by using customers as the major marketing sources without implementing marketing plans and techniques. Finally, rural marketing process can be used as an alternate for traditional marketing process in order to create brand awareness among customers and improve the sales of company products.

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**RETAIL DISPLAY AND IMPULSE PURCHASES - A CONSUMER STUDY****Dr. Mohini Aggarwal****Associate Professor****MMV College Kanpur****ABSTRACT**

Retailing occupies a dissimilar place in the business world, involving various activities of shopping such as in-store shopping, purchasing through internet, and dealing in financial services, eating at the restaurants, visiting a beauty parlor or joining a health club. The retail activity has caught up the speed as never before and all along this way retailers have taken keen interest in displaying their merchandise in such a manner so that the customers are lured to buy even those products/brands that they were not intending to buy. Creating an effective retail display is vital for the success of any retail outlet. A display acts as a sales associate that constantly tries to sell products to its customers. And this thrust on in – store displays originates from one of the most unique feature of retailing. The proposed research work is an effort to find out the impact of Displays on Impulse Purchases and to assess the role of in-store advertising on consumer buying patterns. The researcher also intends to find out how product displays stimulate interest and entice customers to make purchases. The proposed research paper is an effort to study the relevance of Point of Purchase displays in retailing and its impact on Impulse Purchases. It shall also throw light on the various aspects of Point of Purchase displays and how does it motivates the consumers to make purchases and to what extent.

**Keywords:** Retail, Impulse Purchase, Consumer.

**INTRODUCTION**

The ensembles for window displays were never as striking as they are today. The proposed research paper is an attempt to study the importance of Point Of Purchase displays in retailing



and its impact on impulse purchases. It shall also throw light on a variety of aspects of Point of Purchase displays and how does it stimulate the consumer to make purchases and to what degree. After the store layout is fully detailed, a retailer works out interior displays. These points of purchase displays offer

- Consumer with information ,
- Add to store ambiance and
- Serve a considerable promotional role

## **IMPULSE PURCHASES**

This incomparable feature of Impulse purchase has taken displays to the centre stage and as a consequence the retailers continuously search for pioneering ideas of displaying merchandise in order to have cutthroat edge over each other. Often retail purchase engrosses unplanned or impulse purchases. The grocery consumers generally close the eyes to print advertisements before shopping and in many cases grocery shopping is unintentional. Surveys point out that a significant number of grocery shoppers do not arrange a list before shopping. This signifies the essence of point-of-purchase displays, eye-catching store layouts, well organized stores, and store windows. Candy cosmetics, snack foods, magazines and other substances may be sold as impulse goods if they are placed in noticeable, high traffic locations in the store. The display near the cash counters at the exit points at Departmental Stores like Big Bazaar, Vishal Mega Mart, Spencer's etc. are true examples of retailer's mindful efforts of encouraging impulse purchases to the fullest extent possible. Attractive displays attract the customers to buy products that they had not intended earlier.

## **OBJECTIVES OF THE STUDY**

The main objective of the study is to find out the impact of Displays on Impulse purchases. To achieve this objective the following objectives were also framed.

- To assess the role of in-store advertising on consumer buying patterns
- To find out how in Store displays stimulate interest and entice customers to make a purchase.
- To study the impact of P-O-P displays on the brand decisions.

## RESEARCH METHODOLOGY

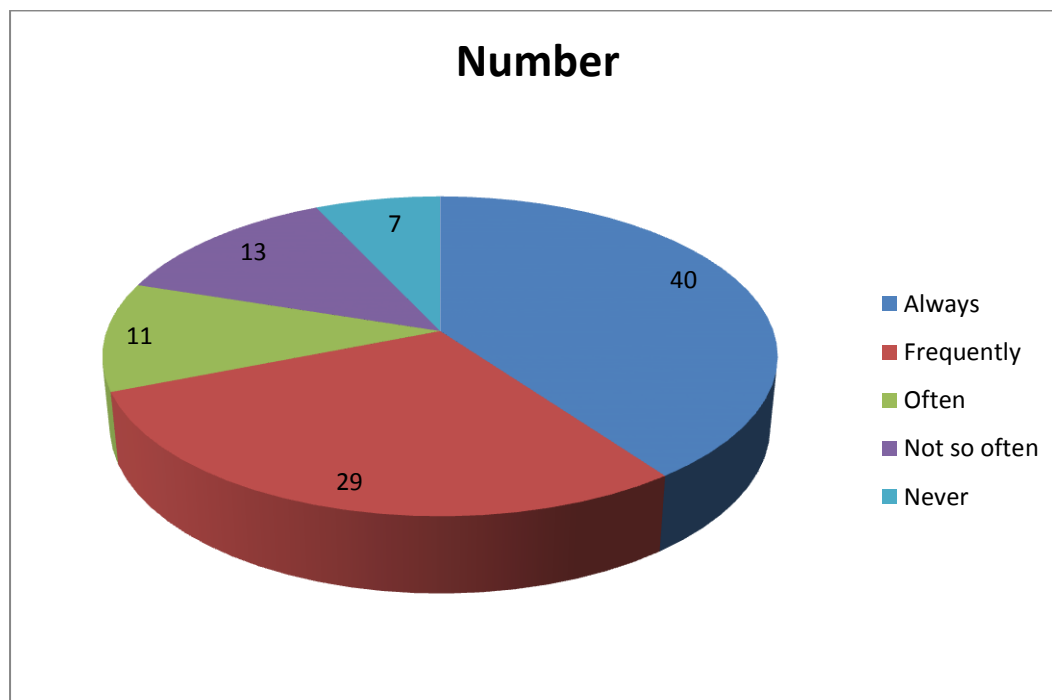
**Data Collection:** The primary data has been collected by using Survey Method. A schedule consisting of closed end questions has been used for the purpose of this study. The Primary Data sources were people from all walks of life. Secondary data sources used for the purpose of this study included magazines, newspapers, various websites, books etc.

### Sampling Method

Random Sampling Method has been used to select the sample. The sample size was 100.

The study was conducted in Kanpur City

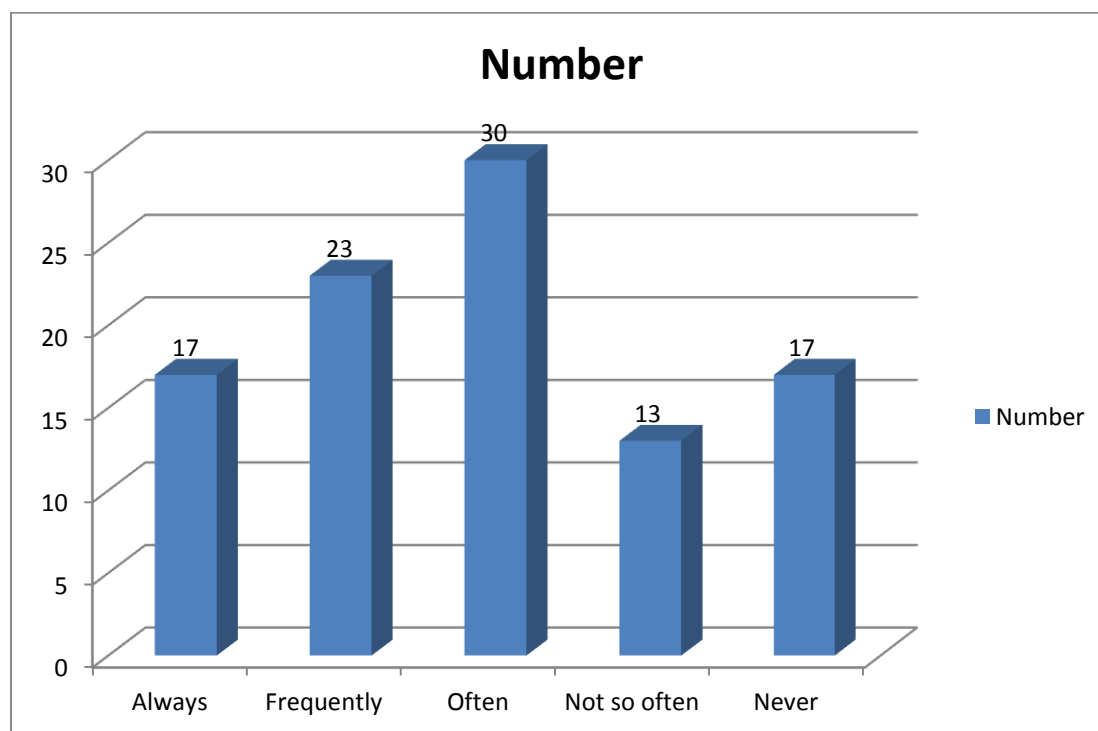
S.No	Frequency of Planning their shopping	Number
1	Always	40
2.	Frequently	29
3.	Often	11
4.	Not so often	13
5.	Never	7



A significant number of respondents I.E.40% said they always planned their shopping whereas, 29% said that they frequently plan their shopping followed by very few people (7 % ) who said they never plan their shopping.

### INFLUENCE OF POP DISPLAYS ON THE PURCHASE DECISION

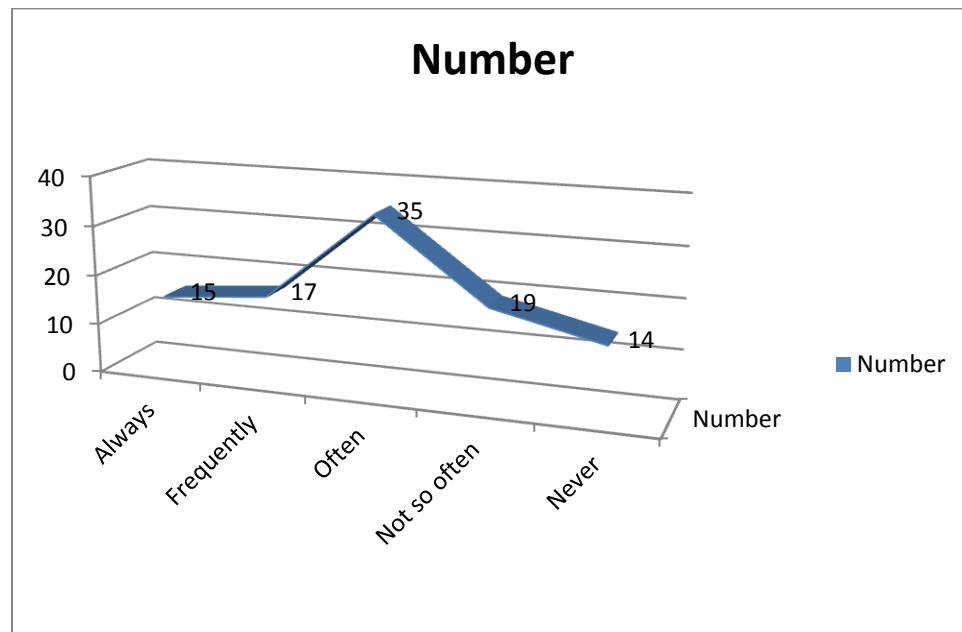
S. No.	Influence of POP displays on the purchase decision	Number
1	Always	17
2.	Frequently	23
3.	Often	30
4.	Not so often	13
5	Never	17



30% of the respondent said that their purchase decision often gets influenced by Point of Purchase displays, 23% said that their purchase decision frequently gets influenced by the POP displays whereas 17% of the respondents said that they always get influenced by he displays.

**ATTRACTIVE WINDOW DISPLAYS MOTIVATE TO ENTER THE STORE**

S.No	Attractive window displays motivate to enter the store.	Number
1	Always	15
2.	Frequently	17
3.	Often	35
4.	Not so often	19
5.	Never	14



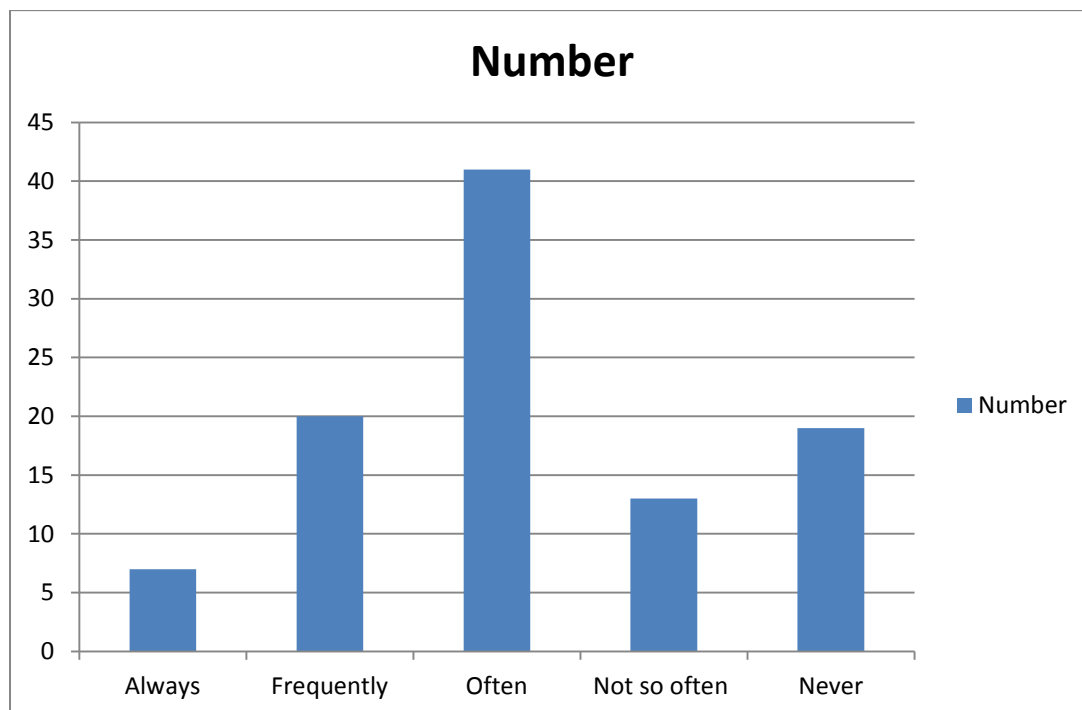
Significant respondents said that attractive displays often motivated them to enter a store followed by 17 who said that they frequently entered a retail outlet when attracted by displays however 14 respondents said that they got influenced to enter a retail outlet due to attractive displays.

**ATTRACTIVE DISPLAYS LEAD TO UNPLANNED PURCHASE**

A significant number of respondents i.e. 41 said that they got influenced by the attractive displays and often made purchases that they had not planned for followed by 20 who said that it

frequently happened that attractive displays made them make unplanned purchases. 19 of the respondents said that they never got influenced by attractive displays.

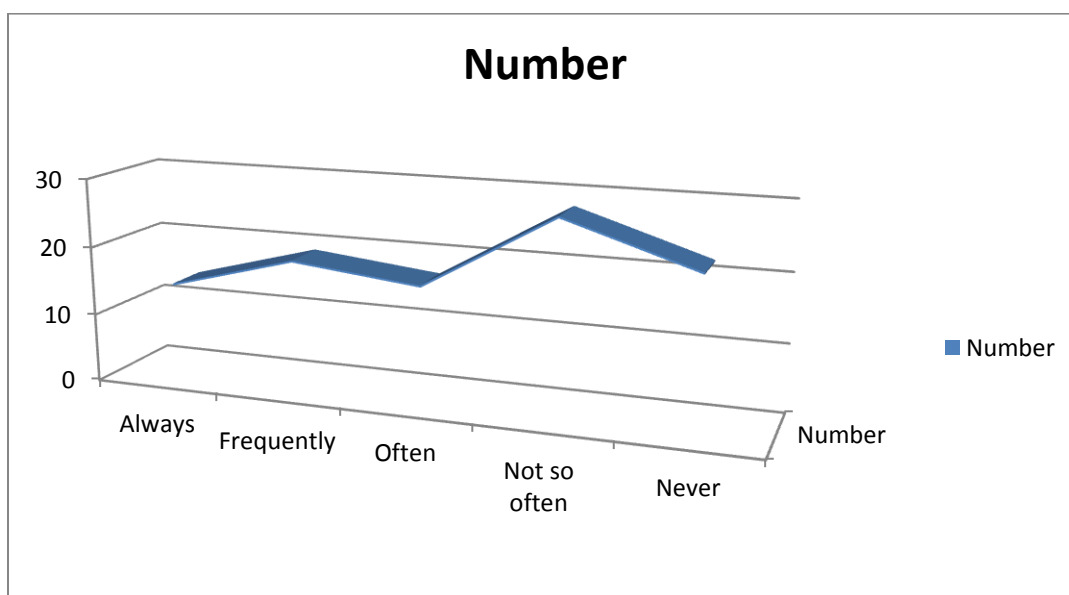
S. No	Attractive window displays led to unplanned purchase	Number
1	Always	7
2.	Frequently	20
3.	Often	41
4.	Not so often	13
5.	Never	19



### ATTRACTIVE DISPLAYS CHANGE THE BRAND DECISIONS

28 respondents said that their brand decisions never got influenced by attractive displays whereas 19 said that their brand decision frequently got influenced by attractive displays. 22 said that they never changed their brand decisions at the retail outlet

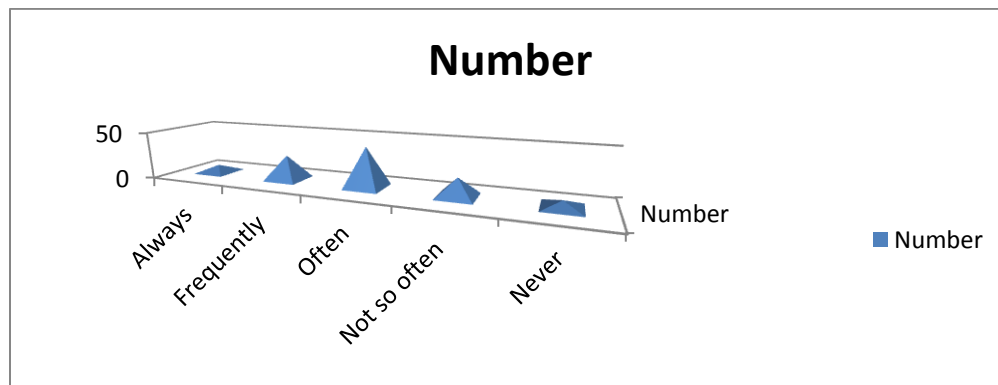
S. No	Attractive Displays change the Brand Decision	Number
1	Always	14
2.	Frequently	19
3.	Often	17
4.	Not so often	28
5.	Never	22



### BRAND DECISIONS TAKEN INSIDE THE RETAIL OUTLET

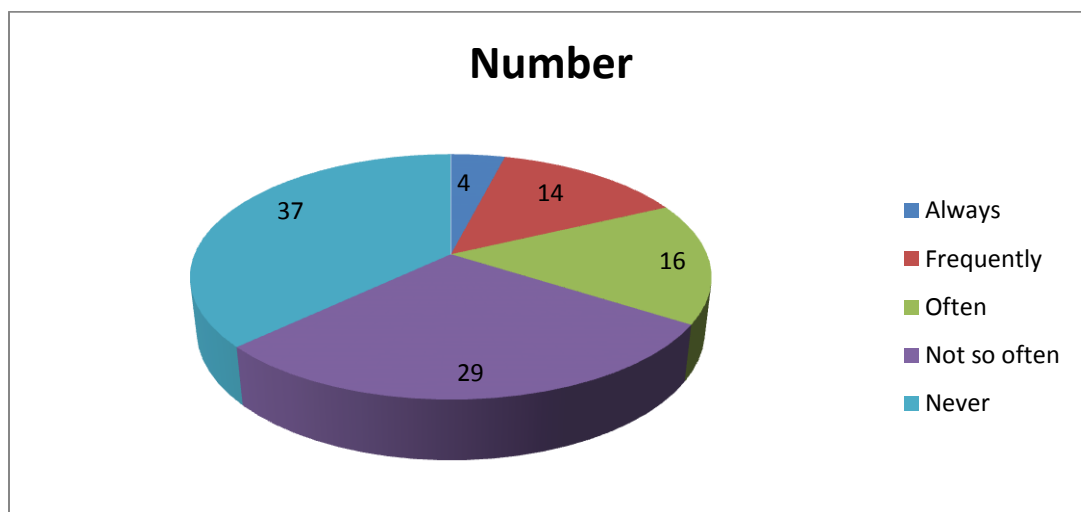
In order to study the impact of displays consumer responses for brand decisions taken inside the retail outlet for different product categories were taken, analysis of which is given below

S. No	Brand Decision taken inside the retail outlet for grocery	Number
1	Always	8
2.	Frequently	26
3.	Often	42
4.	Not so often	19
5.	Never	7



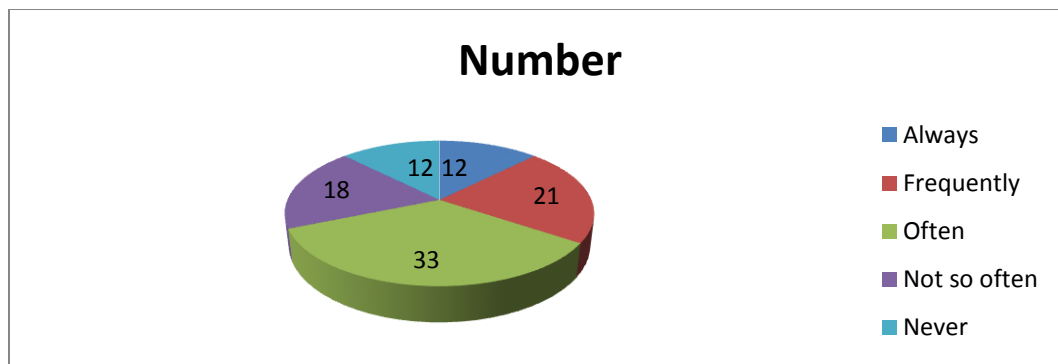
Forty two respondents said that they often took brand decision for grocery items inside the retail outlets, 26 frequently took brand decision for grocery items inside the retail outlets and 19 did not do it so often.

S.No	Brand Decision taken inside the retail outlet for cosmetics	Number
1	Always	4
2.	Frequently	14
3.	Often	16
4.	Not so often	29
5.	Never	37



For cosmetics, 37 respondents never took their brand decision inside the retail outlet, 29 did not it so often and only 14 respondents said that they frequently decided the brand of cosmetics to be purchased inside the retail outlet.

S. No	Brand Decision taken inside the retail outlet for Personal care goods	Number
1	Always	12
2.	Frequently	21
3.	Often	33
4.	Not so often	18
5.	Never	12



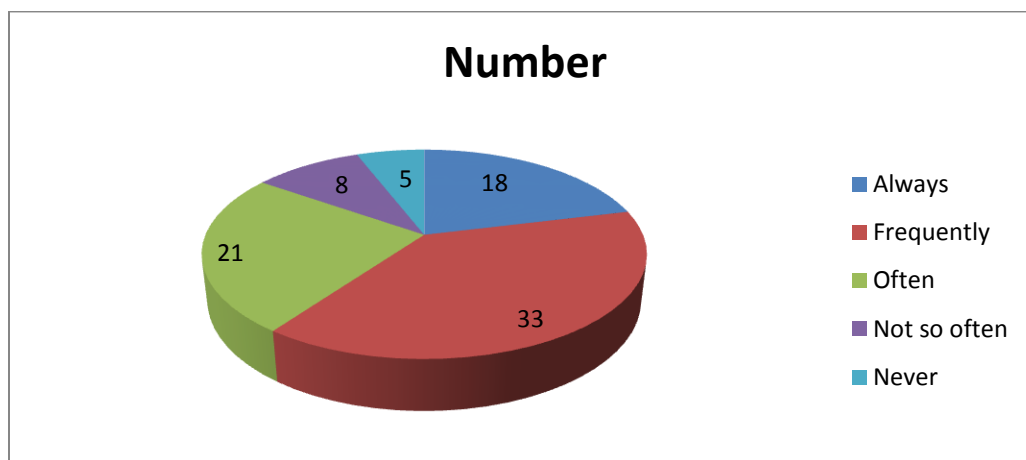
In case of personal care products 33 respondents said that they often took their brand once outside the retail store with 18 frequently doing so. However, 21 respondents said that they did not often take their brand decisions for the personal care products inside the store whereas 16 respondents said that they never did so.

S. No.	Brand Decision taken inside the retail outlet for white goods	Number
1	Always	18
2.	Frequently	33
3.	Often	21
4.	Not so often	8
5.	Never	5



For white goods 33 respondents said that it frequently happened that they took the brand decision while in a retail store whereas 21 often and 18 respondents always took brand decisions inside the retail outlet

### IMPORTANCE OF DISPLAYS ON PURCHASE DECISIONS



38 respondents said that displays have important role to play in influencing the purchase decision. 22 respondents were also of the view that displays are not important followed by 16 who did find displays important at all.

### FINDINGS

- Attractive window displays lead to an increase in footfalls in the store.
- Most of the respondents said that P.O.P. displays lead to purchases.
- Though attractive displays motivated a significant number of respondents to make purchases but very few changed their brand decisions due to these displays. This shows that displays do not influence the brand decision quite often.
- It was also found that impulse purchases were a universal feature in case of groceries.
- In case of cosmetics the brand decision rarely got influenced at the retail outlet which implies that for cosmetic the consumers are generally hard core loyal and frequently purchase cosmetics in a planned manner
- In case of Personal care products the brand decision often got influenced by the attractive displays and variety of brands available at the retail outlets.
- Most of the respondents took their brand decision for white goods inside the retail outlet which implies P.O.P. displays may have an impact on the consumer brand decision to some extent.

## **SUGGESTIONS**

- Since impulse purchase is very common for grocery items, therefore retailers should allocate the premium shelf space to the products with reasonably higher margins
- Displays lead to increased footfalls and impulse purchases being one of the special individuality of retailing, therefore to have increased average sale is that attractive P.O.P material should be used to attract consumers and motivate them to enter the retail outlet.
- Since the brand decision for white goods is generally taken inside the retail outlet therefore, the product and its different variations should be attractively displayed may lose to the competitors well displayed brand.
- In order to have attractive display of the product range available at a retail outlet, clutter should be avoided. The P.O.P items should be used in accordance to the standard of the target segment.
- Window displays should be able to convey the available product range to the consumers so as to attract the target customers to enter the outlet.
- Since Brand loyalty for cosmetics is high therefore each brand should be given a proportionate shelf space so as to draw the attention of customers with different brand preferences.

## **CONCLUSION**

A display definitely has an impact on consumer purchase decision and in the long term affects the retail sales by and large. If the in- store displays are professionally managed it can help the organization to en cash the feature of impulse purchases in retailing. Attractive displays is one of the main reasons for the growth of retail sector as such a fast pace. A well designed store with proper P.O.P displays gives the customers a chance to compare the product, feel it, check it and finally purchase it. Displays leading to purchases also strengthen the view that marketers create needs or rather make the customer feel the need for the product. Attractive displays have a vital role to play when consumers go for unplanned shopping and also help in creating customer awareness for the product as well as different brands available in the market. Thus it is concluded that displays definitely plays a major role in the growth of retail business.

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## **SOFTWARE PROJECTS EFFORT ESTIMATION APPROACHES: A CASE STUDY OF ESTIMATING THE EFFORT BY UTILIZING THE FUNCTIONAL POINT ANALYSIS**

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### **ABSTRACT**

Effective software project management is crucial to the success of any software project. Accurate cost estimation helps to complete project within time and budget. Many estimation models have been proposed over the last 30 years. Poor software project planning often leads to project faults and dramatic outcomes for the project team. If cost and effort are determined pessimistic in software projects, suitable occasions can be missed; whereas optimistic predictions can be caused to some resource losing. Nowadays software project managers should be aware of the increasing of project failures. The main reason for this problem is imprecision of the estimation. This paper provides a detail overview of existing software cost estimation models. The paper also present the case study of estimation of effort in one software development project i.e. online examination system by using functional point analysis and COCOMO Model.

**Keywords:** Software Cost Estimation Methods, KDLOC-Thousands of delivered lines of code, PM- Person Months, COCOMO- Constructive Cost Estimation, FPA-Functional point analysis

### **INTRODUCTION**

Size of the project is one of the most important indicators for software cost and effort. The estimation of effort and cost depends on the accurate prediction of the size. Generally, the effort and cost estimations are difficult in the software projects. The reason is that software projects are often not unique and there is no background or previous experience about them. Therefore, prediction seems complicated. On the other hand, production in such projects is not tangible so the measurement of effort, cost and the amount of progress in the software project is very

difficult. In addition, requirements of the software projects are changing continuously which will cause changing of the prediction.

## **PROJECT ESTIMATION TECHNIQUES**

Project Manager must know the effort, schedule and functionality in advance. Project factors change in the duration of a project, and they may change a lot. The main thing is to predict the factor by which they change [4]. So the process of estimation needs to be carried out. Estimating is the process of forecasting or approximating the time and cost of completing project deliverables or the task of balancing the expectations of stakeholders and the need for control while the project is implemented. Significant Research was carried out by Boehm in software cost modeling which began in 1965 with study of the 105 attributes of 169 software projects. This led to some useful partial models in the late 1960s and early 1970s. Although much work was carried on developing models of cost estimation, all of them were in same dilemma: “It was very difficult to predict the accurate cost of software development as software grew in size and importance it also grew in complexity.” The fast changing nature of software development has made it very difficult to develop parametric models that yield high accuracy for software development in all domains [7]. Software development costs continue to increase and practitioners continually express their concerns over their ability to predict accurately the costs involved. This was a major pitfall experienced. Development of useful models that constructively explain the development life-cycle and accurately predict the cost of developing a software product was a major objective. Hence, many software estimation models have been evolved. Estimations are broadly classified into the following categories [1].

1. Empirical estimation techniques.
  - a. Expert judgment techniques
  - b. Delphi Cost Estimation
2. Heuristic techniques
  - a. Basic COCOMO Model
  - b. Intermediate COCOMO
  - c. COCOMO2 or advance COCOMO
3. Analytical estimation techniques
  - a. Halstead’s Software Science

## **FACTORS AFFECTING THE ESTIMATION**

There are various factors which may affects the estimation of the project size, cost and effort involved in the software projects.

### **Personnel experience**

Experience of the individuals involves in the projects effect the estimate. Most experience developers perform better than junior developers. Therefore previous experience of the persons who will actually work or perform the task during the project execution is of very importance while estimating.

### **Project size and type of project**

Project size also affects the estimation process. Simply the previous experience of small projects cannot scale up for the estimate of the large projects. Studies have shown effort does not scale up linearly but exponentially. This is because larger projects require more integration effort between the components. Large project needs larger teams, and the size of the team also affects the total effort because in large teams we have to deal with the problem of communication among the team members. Hence in larger teams new efforts such as communication and coordination are added which increases the total effort require to complete the project.

Type of the project is another important factor. If an organization have experience developing desktop application they will take more time to complete a web application. Therefore estimation making do take into account the type of the project.

### **Level of uncertainty**

Every project has many phases or stages during the development. These are from inception to final production output. These stages may be inception, requirements, design, development, testing and then delivery to production environment. Now at start of the project there is too much uncertainty about the final product, as requirements may change or new parameter or new problems can arrive at any stage of the development. Due to this phenomena estimation process is more accurate at later stages as compare to start of the projects. Uncertainty level decreases as the project progresses from inception phase to implementation phase.

### **Different Assumptions**

Another factor which is important for consideration is programming language used in project development. Programming languages which is supported by a large community provides more

tools and help is readily available. This community support greatly enhances the productivity of the development team.

Estimation of the project also takes time available for the developers into consideration. Project manager also take into account whether developers are available for the whole time or they will be engaged in other projects during the development.

## **BENEFIT FROM ESTIMATION**

Estimation provides the basic framework to control the project. Project manager can measure their performance at any time during the project.

- Estimation allows for better resource allocation.
- Estimation allows basic foundation to develop plans upon.
- Good estimation provides the basis for better risk management and high project progress visibility.

### **What we do in estimation**

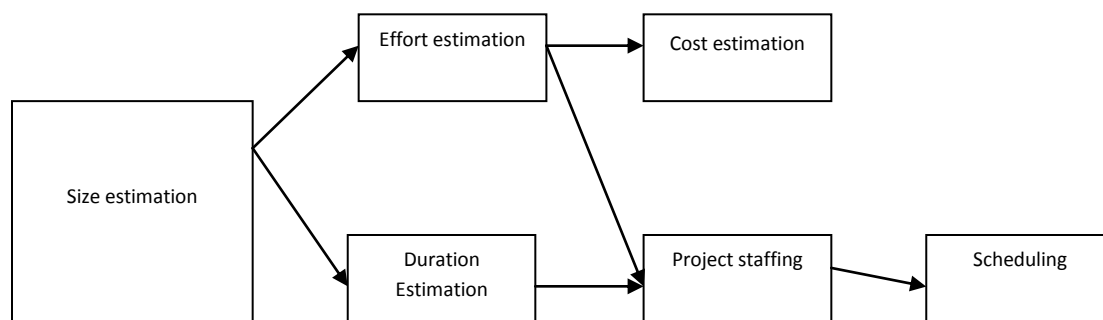
When project manager has given the task for estimation he has to estimate three things size, effort and schedule. He can adopt one or many techniques to calculate of each of these estimates. It is a better idea to go for many techniques while estimating. This will help in the sanity checks of estimates. Because if two techniques give estimates which are very distant from each another then it means there is some wrong assumption taken into consideration on which estimation is based.

In estimation first thing is to estimate is the size of project. This is because most of the effort or schedule equations require size parameter. Size can either be in LOC (Lines of Code) or in function points. These are two major units for calculating the software size. Since at the start of the project it is very difficult to measure the LOC therefore Function Points calculation is used. From function points LOC required for implementing function points can be estimated. Function points to LOC calculation is based upon the programming language you are using. For example to implement one function point in C# one needs 40 to 80 Lines of code or 55 Lines of code as median value.

Effort is directly calculated from the size of the software. There are many models for calculating the effort. Effort is time required for one person to complete the project. Effort can be calculated

in staff-month, staff-week or person-hour. Here week and month are dependent upon the company policy.

After the estimation of effort the estimation can devise up the schedule for completing the project. There are also models and techniques for estimating the schedule for a software project. Schedule is calculated in either months or weeks. There is one major point when working on schedule estimation.



**Figure 1: Precedence ordering among planning activities** [1]

## CASE STUDY OF ESTIMATING THE EFFORT BY UTILIZING THE FUNCTIONAL POINT ANALYSIS

**Estimation for Online Examination System:** First the estimation will be made about the size, effort and schedule from the requirements for Online Examination System (say it Project A). After that the comparison will be made with the actual size, effort and schedule.

### Size for Project A

Function point analysis is utilized for estimating the size of project A. Briefly Project A is data capturing and processing software. It displays acquired result on the screen.

In function points estimation we have to take into accounts all external inputs, external outputs, internal logical files, external interface file and external queries. Now for project A

External Inputs	Complexity
Data Stream	High
Configuration files	Low
User Selection	Medium



User Input	Low
<b>External Output</b>	<b>Complexity</b>
Data1 screen	Medium
timing screen	Low
Data2 Screen	Medium
Status Screen	Medium
<b>Internal Logical Files</b>	<b>Complexity</b>
Storage file	Medium
Intermediate buffer	High
Intermediate Result	Low
Channel Files	Low
<b>External Interface Files</b>	<b>Complexity</b>
External Interface for Data2	Low

**External Queries:** Not Any.

Software system components	Complexity level									TOTAL CFP
	Low			Medium			High			
	Count	Weight Factor	Points	Count	Weight Factor	Points	Count	Weight Factor	Points	
	A	B	C=A*B	D	E	F=D*E	G	H	I=G*H	
User/External inputs	2	3	6	1	4	4	1	6	6	16
User/External outputs	1	4	4	3	5	15	0	7	0	19
User/External online queries	0	3	0	0	4	0	0	6	0	0
Logical files	2	7	14	1	10	10	1	15	15	39
External interfaces	1	5	5	0	7	0	0	10	0	5
Total CFP			29			29			21	79

This is called the un-adjusted FPs value or crude functional point (CFP). Either we can take this un-adjusted function point value as size or we adjust it using a multiplier. This multiplier may

come from the past project i.e. historical data or from the type of project for which you are estimating to compute the Relative complexity adjustment factor (RCAF) of the software system. Assign grades (0 to 5) to the 14 subjects that substantially affect the development effort [6][8]

$$RCAF = \sum_{i=1}^{14} S_i$$

Subject	Grade
1 Requirement for reliable backup and recovery	0 1 2 <b>3</b> 4 5
2 Requirement for data communication	0 1 2 3 <b>4</b> 5
3 Extent of distributed processing	0 1 2 <b>3</b> 4 5
4 Performance requirements	0 1 2 <b>3</b> 4 5
5 Expected operational environment	0 1 2 3 <b>4</b> 5
6 Extent of online data entries	0 1 <b>2</b> 3 4 5
7 Extent of multi-screen or multi-operation online data input	0 1 2 <b>3</b> 4 5
8 Extent of online updating of master files	0 1 2 <b>3</b> 4 5
9 Extent of complex inputs, outputs, online queries and files	0 1 2 3 <b>4</b> 5
10 Extent of complex data processing	0 1 <b>2</b> 3 4 5
11 Extent that currently developed code can be designed for reuse	0 1 2 <b>3</b> 4 5
12 Extent of conversion and installation included in the design	0 1 <b>2</b> 3 4 5
13 Extent of multiple installations in an organization and variety of customer organizations	0 1 <b>2</b> 3 4 5
14 Extent of change and focus on ease of use	0 1 <b>2</b> 3 4 5

The RCAF determines the Technical Complexity Factor (TCF):  $TCF = 0.65 + 0.01 * RCAF$

$$TCF = .65 + .01 * 42 = .65 + .42 = 1.07$$

$$FP = CFP * TCF$$

$$FP = 79 * 1.07 = 84.83$$

There is table which can convert the function point's calculation to Source Lines of Code (SLOC) measure. For each function to implement one need 63 Lines of java code.

Adjusted Function Points	Median Java LOC
84.83	5345

Hence estimated the size of the project A is 4666 LOC. Since the actual code of the project A is available, I can count the actual number of lines of code for the software.

I used a utility for LOC calculation. I have not counted the white space and the designer generated code but I do count the comments because a lot of effort was invested in writing good comments. Therefore in actual code I have got **5500** lines of code which is very near to estimated size of **5345**. One can see that this estimation is very close to the actual lines of code written.

## COCOMO

Cost models generally use some cost indicators for estimation and notice to all specifications of artifacts and activities. COCOMO 81 (Constructive Cost Model), proposed by Barry Boehm (Boehm, 1981), is the most popular method which is categorized in algorithmic methods. This method uses some equations and parameters, which have been derived from previous experiences about software projects for estimation. COCOMO-II is the latest version of COCOMO that predicts the amount of effort based on Person-Month (PM) in the software projects.

It uses function point or line of code as the size metrics and composes of 17 Effort Multipliers (shown in Table I) and 5 scale factors (shown in Table II). Some rating levels are defined for scale factors including very low, low, nominal, high, very high and extra high. A quantitative value is assigned to each rating level as its weight.

COCOMO II has some special features, which distinguish it from other ones. The Usage of this method is very wide and its results usually are accurate [5].

Two equations are used to estimate effort and schedule as below

Organic:  $\text{Effort} = A (\text{KLOC})^B * \prod_{i=1}^5 \text{EM}_i$  Where  $B = B + 0.01 * \sum_{i=1}^5 \text{SF}_i$   $A = 2.94$ ,  $B = 0.91$

$\text{Tdev} = C * (\text{Effort})^F$  Where  $F = D + 0.2 * 0.01 * \sum_{i=1}^5 \text{SF}_i$   $C = 3.67$ ,  $D = 0.28$

Attribute	Type	Description
RELY	Product	Required system reliability
CPLX	Product	Complexity of system modules
DOCU	Product	Extent of documentation required
DATA	Product	Size of database used
RUSE	Product	Required percentage of reusable components
TIME	Computer	Execution time constraint
PVOL	Computer	Volatility of development platform
STOR	Computer	Memory constraints
ACAP	Personnel	Capability of project analysts
PCON	Personnel	Personnel continuity
PCAP	Personnel	Programmer capability
PEXP	Personnel	Programmer experience in project domain
AEXP	Personnel	Analyst experience in project domain
LTEX	Personnel	Language and tool experience
TOOL	Project	Use of software tools
SCED	Project	Development schedule compression
SITE	Project	Extent of multisite working and quality of inter-site communications

**TABLE I Effort Multipliers**

Factor	Explanation
Precedentedness (PREC)	Reflects the previous experience of the organization
Development Flexibility (FLEX)	Reflects the degree of flexibility in the development process.
Risk Resolution (RESL)	Reflects the extent of risk analysis carried out.
Team Cohesion (TEAM)	Reflects how well the development team knows each other and work together.
Process maturity (PMAT)	Reflects the process maturity of the organization.

**TABLE II Scale factors**

### Effort and schedule for project A by basic COCOMO model

Estimation of effort and schedule for the project A has been done initially by the basic COCOMO model and then by COCOMO II Model. The Effort Estimation and time formula for the COCOMO Model is

Organic	:	Effort =	$2.4(\text{KLOC})^{1.05}$ PM	Time	: $T_{\text{dev}} = 2.5(\text{Effort})^{0.38}$ Months
Semidetached	:	Effort =	$3.0(\text{KLOC})^{1.12}$ PM	Time	: $T_{\text{dev}} = 2.5(\text{Effort})^{0.35}$ Months
Embedded	:	Effort =	$3.6(\text{KLOC})^{1.20}$ PM	Time	: $T_{\text{dev}} = 2.5(\text{Effort})^{0.32}$ Months

As we are education organization i.e. the Teaching members are not directly involved in the hard core coding of the projects so online examination system project categorized in semidetached category so the calculation of Effort and Time is

$$\text{Effort} = 3.0(5.4)^{1.12} \approx 19.83 \text{ PM}$$

$$\text{Time} = 2.5(19.83)^{0.35} \approx 7.11 \text{ Months}$$

Staff requirement = Effort/time =  $19.83/7.11 \approx 2.79$  i.e. Approx 3 Persons required to complete the project

Cost involved =  $3 \times 30000 \times 7 = 6,30,000$  + indirect cost

Here we assume that the all software personnel are available on average salary of Rs. 30,000/month

### Effort and schedule for project a by basic COCOMO II

The Effort Estimation and time formula for the COCOMO II Model is

$$\text{Organic: Effort} = A (\text{KLOC})^B * \prod_{i=1}^{17} E_{Mi} \quad \text{Where } B = B + 0.01 * \sum_{i=1}^5 SF_j \quad A = 2.94, B = 0.91$$

$$T_{\text{dev}} = C * (\text{Effort})^F \quad \text{Where } F = D + 0.2 * 0.01 * \sum_{i=1}^5 SF_j \quad C = 3.67, D = 0.28$$

Cost Driver	Degree	Value
RELY	Very High	1.1
DATA	Very high	1.28
RUSE	Very High	1.15
DOCU	Nominal	1
TIME	High	1.11

STOR	High	1.05
PVOL	Low	0.87
ACAP	Nominal	1
PCAP	Nominal	1
PCON	Nominal	1
AEXP	Nominal	1
PEXP	Nominal	1
LTEX	Nominal	1
TOOL	High	0.91
SITE	Very High	0.86
SCED	Nominal	1
CPLX	High	1.17

$$\prod_{i=1}^5 E_{Mi} = 1.50$$

Scale Factor	Level	Value
PREC	High	2.48
FLEX	Nominal	3.04
RESEL	High	2.83
TEAM	Very High	1.10
PMAT	Very High	1.56

$$\sum_{j=1}^5 SF_j = 11.01$$

Organic: Effort=A (KLOC)<sup>B</sup> \*  $\prod_{i=1}^5 E_{Mi}$  Where B=B+0.01\*  $\sum_{j=1}^5 SF_j$  A=2.94, B=0.91

$$B=0.91+0.01*11.01=1.02$$

$$\text{Organic: Effort}=2.94*(5.4)^{1.02}*1.50=24.635\approx 24.64\text{PM}$$

Tdev=C\*(Effort)<sup>F</sup> Where F=D+0.2\* 0.01\* $\sum_{j=1}^5 SF_j$  C=3.67, D=0.28

$$Tdev=3.67*(24.64)^{0.28+0.2*0.01*11.01}=3.67*2.631=9.66 \text{ Months}\approx \text{between 9 to 10 Months}$$

Staff requirement=Effort/time=24.64/9.66=2.55 i.e. 2-3 Persons required to complete the project

Cost involved is between 6, 00,000 and 8, 10,000+indirect cost

( $2 \times 30000 \times 10 = 6,00,000$  and  $3 \times 30000 \times 9$ ) here we assume that the all software personnel are available on average salary of Rs. 30,000/month

Real effort for this project is 24 Person-Month, real time is 8.5 months and size of the project (KSLOC) is 5.5(i.e. 5500 LOC).The actual Development and schedule is more approximately modeled by COCOMO II.

## CONCLUSION

Introducing and focusing on the estimation methods seems necessary for achieving to the accurate and reliable estimations. Software project managers are supposed to select the best estimation method based on the conditions and status of the project, describing and comprising of estimation techniques can be useful for decreasing of the project failures. There is no estimation method which can be present the best estimates in every situation. Because performance of each estimation method depends on several parameters such as complexity of the project, duration of the project, expertise of the staff, development method and so on, it is necessary to understand the principals of each estimation method to choose the best.

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**HUMAN ENDEAVOURS AND THEIR IMPACT ON SOCIETY & NATURE****Dr APS Bhadauria****Associate Professor****PSIT College of Higher Education, Kanpur,UP****E-mail: apsb71@gmail.com****ABSTRACT**

Human being since beginning of the civilization is doing almost everything either for himself or for the fellow human beings. In our endeavours, we have produced many things which made our life comfortable. At the same time the waste which is the outcome of the production and consumption process is causing a threat to us and other species of the nature. Human being is one part of the huge Nature/Existence. We cannot live/survive in isolation. We interact with nature for our various physical needs. All the technological developments and other efforts of the human beings are more or less are for the Human being. We either exploit nature or enrich it through our efforts. In the present days of development, our endeavors are the main cause of the disturbance in the balance of the entire nature. Nature is struggling from global warming and many other such threats. This research paper is an attempt to explore the impact of Plastic & E-waste produced through human endeavors on the Human beings and on entire nature. The attempt is also made to explore the means and ways to manage such waste in the efficient manner.

**Key words:** Human Endeavours, Plastic, E-waste, Nature, Waste Management

**INTRODUCTION**

Human civilization has witnessed numerous human efforts in the process of his survival and better living. Plastics and electronic gadgets are the wonderful inventions of 20<sup>th</sup> Century. Traditional material (cloths, paper, etc.,) as packing and carry bags are replace by plastic because of convenience. Growth in the consumption of plastics in World and India has increased



production of plastic waste. The plastic waste is now considered as environmental hazard. On the other hand electronic gadgets like computers, TVs, Cellular Phones, etc. contributed in the increase of human efficiency in terms of production, communication, etc. But the electronic waste or e-waste has become another menace of concern. All the technological developments and other efforts of the human beings are more or less are for the Human being. We human beings are the part of this nature. We cannot live/survive in isolation. We interact with nature for our various physical needs. We either exploit nature or enrich it through our efforts. Disturbance in nature is affecting our life and life of other species of nature. We need to rethink on our endeavours towards production consumption process.

## **OBJECTIVE**

This research paper is an attempt to explore the impact of Plastic & E-waste produced through human endeavours on the Human beings and on entire nature. The attempt is also made to explore the means and ways to manage such waste in the efficient manner.

## **RESEARCH METHODOLOGY**

Data for the research work is collected through Primary and Secondary data. “Primary data” was collected through the scheduler and “Secondary data” has been collected from the book and internet. The Scheduler consists of 22 questions covering the aspect related Plastic & E-waste Management. 55 persons (Dealers/Shopkeepers, customers and Kabadi/Garbage pickers) were contacted personally and telephonically for collecting their response on the subject. Data analysis is done on the basis of feedback provided by the respondents and inference drawn accordingly.

## **PLASTIC & ELECTRONIC GADGETS**

Plastics and electronic gadgets are the wonderful inventions of 20<sup>th</sup> Century. Plastic has made place in peoples life replacing the traditional packing and carry bag materials (paper, cloth etc.,). On the other hand electronic gadgets like computers, TVs, Cellular Phones, etc. contributed in the increase of human efficiency in terms of production, communication, etc. Our production and consumption process is generating plastic waste and electronic waste or e-waste to such an extent that it is now considered as environmental hazard.

## **ELECTRONIC WASTE**

Electronic waste, (E-waste) are the electronic equipments/products connects with power plug, batteries which have become obsolete due to advancement in technology, changes in fashion, style and status nearing the end of their useful life. Obsolete electronic devices such as computers, servers, main frames, monitors, TVs & display devices, telecommunication devices such as cellular phones & pagers, calculators, audio and video devices, printers, scanners, copiers and fax machines, refrigerators, air conditioners, washing machines, and microwave ovens are the parts of E-waste. It also covers recording devices such as DVDs, CDs, floppies, tapes, printing cartridges, military electronic waste, automobile catalytic converters, electronic components such as chips, processors, mother boards, printed circuit boards, industrial electronics such as sensors, alarms, sirens, security devices, automobile electronic devices, etc.

USA generated 3.16 million tons of e-Waste in 2008 and in 2012, 9 million tons of e-waste; major part of which being sent to landfills. As per Environmental Protection Agency (EPA), only 430,000 tons (13.6%) was recycled, the rest was trashed - in landfills or incinerators. According to CBS (American Commercial Broadcast) reports, world's biggest producers of electronic waste are United States and China.

Approximately 50 million tons of E-waste is produced each year world over. 30 million computers are discarded by USA each year and Europe disposes 100 million phones each year. As per the estimation of Environmental Protection Agency, only 15-20% of e-waste is recycled, the rest of these electronics go directly into landfills and incinerators.

## **GLOBAL TRADE ISSUES**

Developing countries have become the dumping ground for electronic waste. E-waste exported from the USA and Europe to these countries. The disposal cost of e-waste has increased due to increased regulation of electronic waste and concern over the environmental harm which can result from toxic electronic waste. An economic disincentive to remove residues prior to export is created by the regulation. Critics of the field says that it is easy for brokers (calling themselves recyclers) to export unscreened electronic waste to developing countries, such as China, India and parts of Africa, avoiding the expense of removing items like bad cathode ray tubes (the processing of which is expensive and difficult). The developing countries, due to their weak

laws, are becoming big dump yards of e-waste. Many of them do not possess the technology to recycle the e-waste, thus causing hazardous condition to their environment. It is effecting adversely to the people and other species of nature.

## **INDIAN SCENARIO**

Approximately 2 million obsolete computers originate from government offices, business houses, industries and household in India. In a single calendar year, Manufactures and assemblers approximately produce around 1200 tons of electronic scrap. Obsolescence rate of personal computers (PC) is reposted to be one in every two years. The consumers buy a new computer rather than upgrade the old one due to the changing configuration, technology and the attractive offers of the manufacturers. The said e-waste mostly end up in landfills or partly recycled in an unhygienic conditions and partly thrown into waste streams. In India, the biggest source of PC scrap is foreign countries that export huge computer waste in the form of reusable components. Other sources of computer waste are individual households; the government, public and private sectors; computer retailers; manufacturers; foreign embassies; secondary markets of old PCs. Electronic waste management in India is of greater importance not only due to the generation of our own waste but also dumping of e-waste particularly computer waste from the developed countries.

A report on e-waste by Research Unit (LARRDIS) Rajya Sabha Secretariat New Delhi (2011) states, “e-waste has emerged as one of the fastest growing waste streams worldwide today. The sheer amount of electronic equipments reaching end-of-life poses a huge challenge. Computers and electronics equipments are designed without giving sufficient attention to the aspects such as downstream impacts, and the ease of recycling. Thus, their dismantling is also extremely labour-intensive. As long as electronic products continue to contain an assortment of toxic chemicals and are designed without recycling aspects, they would pose a threat to environment and public health at their end-of-life. As electronic products are currently constituted, e-waste recycling operations in any country will generate polluting residues and emissions.<sup>181</sup> Toxics Link has reported that India has over 1.38 million obsolete computers with manufacturers adding about 1,050 tonnes of electronic scrap every year. It is currently estimated that India produces some 3.8 lakh tonnes of e-waste annually. E-waste now forms over 70 per cent of landfills. When developing countries like India start tightening and enforcing stricter legislation on trans

boundary movements of e-waste, developed countries may find it harder to avoid the issue of recycling and disposal through export. However, in March, 2010, in the journal titled Environmental Science and Technology, author Eric Williams, Assistant Professor in Arizona State University, wrote, "Trade bans will become increasingly irrelevant in solving the problem (of e-waste)". He argues that a complete ban on export of used and end-of-life electronics to developing countries would fail to solve the problem because the developing world would generate more used and end-of-life electronics than the developed countries as early as 2017. Additionally, by 2025, the developing world would generate twice the amount of electronic scrap as what will come from the developed nations."

### **EFFECTS OF PLASTIC WASTE**

The plastics pose number of hazards. Few of which are listed below:

- The plastic bags find their way to city drainage system as a result of "Throw away culture". This result in blockage of drainages, difficulty in maintaining the drainage with increased cost, creates unhygienic environment and spreading of water borne diseases.
- Littering of plastic bags also reduces rate of rain water percolating which effects the recharging of ground water.
- The plastic bags forming part of manure remains in the soil for years and deteriorates soil fertility.
- Animals eating the bags sometimes die.
- Plastic also finds way into the ocean. Fish and other marine species misunderstanding plastic garbage as food items swallow them and die.
- Harmful gases like carbon monoxide, dioxins and furans produce due to burning of plastic in open.

### **EFFECTS OF E-WASTE ON ENVIRONMENT AND HUMAN HEALTH**

E-wastes disposal is a problem faced in many regions of the world. Computer wastes which results in landfills produces contaminated lactates which pollute the groundwater. Melting of computer chips produces acids and sludge, which causes acidification of soil if disposed on the ground and pollutes water bodies/ground water if disposed in them. Toxic fumes and gases emit from incineration of e-wastes, thereby polluting the surrounding air. Breaking of circuit of some

electronic devices leaches mercury. The same results come in case of polychlorinated biphenyls (PCBs) from condensers.

Leaching of mercury is not the only problems, the vaporization of metallic mercury and dimethylene mercury, both part of Waste Electrical and Electronic Equipment (WEEE) is also matter of great concern. Landfills of e-waste may catch uncontrolled fires. This results in dangerous gases. Local environment and broader global air currents get affected by the toxic fall-out from open air burning, the health effects of certain constituents in e-wastes are put in the table below.

### E-Waste constituents' Effect on Health

Source of e-wastes	Constituent	Health effects
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (PB)	<ul style="list-style-type: none"><li>• Damage to central and peripheral nervous systems, blood systems and kidney damage.</li><li>• Affects brain development of children.</li></ul>
Chip resistors and semiconductors	Cadmium (CD)	<ul style="list-style-type: none"><li>• Toxic irreversible effects on human health.</li><li>• Accumulates in kidney and liver.</li><li>• Causes neural damage.</li><li>• Teratogenic.</li></ul>
Relays and switches, printed circuit boards	Mercury (Hg)	<ul style="list-style-type: none"><li>• Chronic damage to the brain.</li><li>• Respiratory and skin disorders due to bioaccumulation in fishes.</li></ul>
Corrosion protection of untreated and galvanized steel plates, decorator or hardner for steel housings	Hexavalent chromium (Cr) VI	<ul style="list-style-type: none"><li>• Asthmatic bronchitis.</li><li>• DNA damage.</li></ul>

Cabling and computer housing	Plastics including PVC	<p>Burning produces dioxin. It causes</p> <ul style="list-style-type: none"> <li>• Reproductive and developmental problems;</li> <li>• Immune system damage;</li> <li>• Interfere with regulatory hormones</li> </ul>
Plastic housing of electronic equipments and circuit boards.	Brominated flame retardants (BFR)	<ul style="list-style-type: none"> <li>• Disrupts endocrine system functions</li> </ul>
Front panel of CRTs	Barium (Ba)	<p>Short term exposure causes:</p> <ul style="list-style-type: none"> <li>• Muscle weakness;</li> <li>• Damage to heart, liver and spleen.</li> </ul>
Motherboard	Beryllium (Be)	<ul style="list-style-type: none"> <li>• Carcinogenic (lung cancer)</li> <li>• Inhalation of fumes and dust. Causes chronic beryllium disease or beryllicosis.</li> <li>• Skin diseases such as warts.</li> </ul>

Source: Ramachandra T.V., Saira Varghese K (2004): Environmentally Sound Options for E-Wastes Management, Envis Journal of Human Settlements, March 2004.

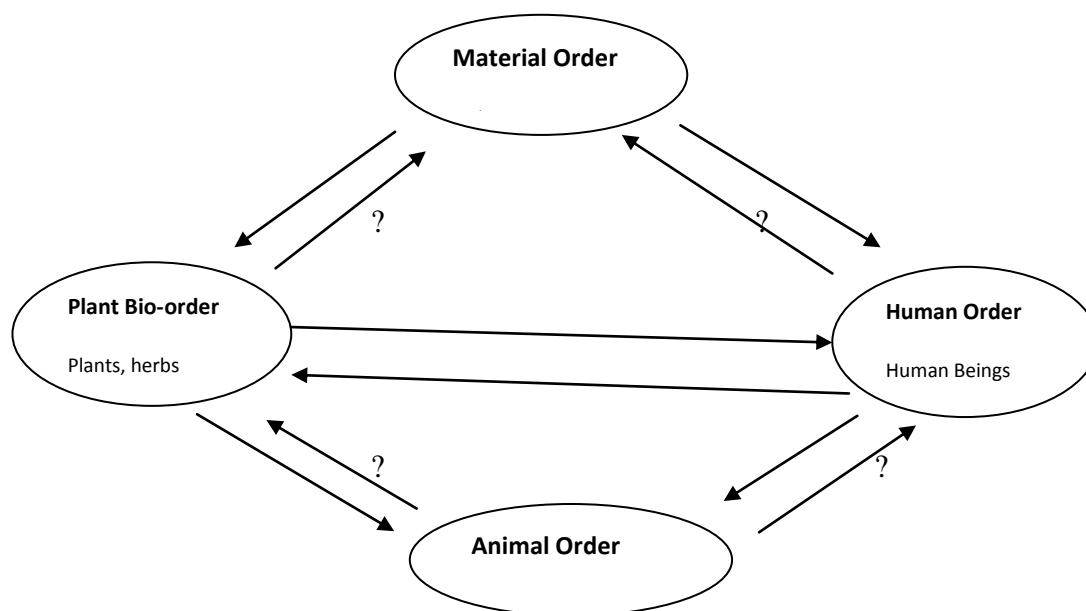
## MANAGEMENT OF E-WASTES

Ramachandra T.V., Saira Varghese K (2004) have suggested that management of e-waste should begin at the point of generation. They said that it could be done by waste minimization techniques and by sustainable product design. They suggested adopting the following for Waste minimization in industries:

- Inventory Management,
- Production-Process Modification,
- Volume Reduction,
- Recovery and Reuse.

## E-WASTE MANAGEMENT THROUGH RIGHT UNDERSTANDING

All the technological developments and other efforts of the human being are more or less are for the Human being. If that is the case then we have to rethink whether we are moving in the right direction or not? We have seen above the various harmful effect of plastic and e-waste. We human beings are the part of this nature. We cannot live/survive in isolation. We interact with nature for our various physical needs. We either exploit nature or enrich it through our endeavours. The four orders depicted below have relation with each other.



In the four order of Nature, if we leave the human order, we find all other three orders are in mutually fulfilling relation and coexist with each other. Human also have a natural acceptance to be mutually fulfilling to these three orders. We can check this for ourselves. However, we are not able to ensure this mutual fulfillment. We are dependent on the Material Order for the soil, water, minerals, metals, etc. and only end up in polluting the soil, water and depleting the fossil fuels; we depend on plants for our food and holding together the larger ecosystem, but we have/are destroyed/destroying forests and multiple species of plants and herbs; similarly we are dependent on animal for different activities, but we made many species of animals extinct, and are today know for our cruelty towards animals.

Thus, we see that the three orders besides the Human Order are in harmony and are fulfilling to the human order. However, we humans have not yet understood and learnt to live in relationship of mutual fulfillment with these three orders, This may be due to our lacking towards the understanding of harmony that exist between these orders and its importance. We are disturbing ourselves and the also the balance amongst the other three order.

Let us ask our self, “What is naturally acceptable to me/us?” Do I/we want to protect and enrich nature or do I/we want to exploit it? The answer is same for all of us – we want a spontaneous expectation to enrich nature. In other words it is one of our objectives.

Here we have to apply the managements controlling process whereby we check the deference between what we really want (objective) and what we are actually doing. Do you find any gap? Why are we working against our objective? If we continue doing so we will destroy our organization i.e. Nature where we survive. How can an organization survive if its components are working against it objective? We all have to work in coordination to sustain the organization i.e. Nature. This can be achieved by creating right understanding in all human beings towards/regarding our natural desire i.e. to enrich nature.

The following could help to tackle the menace.

- Products should be made in such a way that new innovations can be incorporated in them. Hence, generating less waste.
- Product should be made of longer durability. Thus decreasing the frequency of waste generation.
- New technological developments should be done keeping in view the exiting equipments.
- Such material should be used in products which can be recycled.
- There should be some effective waste collection method like buyback facility etc. to ensure proper disposal of waste.
- Public in general should be educated (preferably from his/her childhood), in both formal and informal way, about the basic objective of human, entire Nature and his/her role in the Nature.
- Traditional culture of carrying bag from home for marketing to be readopted to avoid plastic bag use.



- Recyclability of the produced products is to be ensured.
- Right understanding regarding requirement of wealth and its proper utilization need to be created in all of us so that the blind run for the wealth can be stopped which is the major cause of most the human made problems. Also about the basic objective of Human and their role in the Nature.
- Understanding about the four orders of Nature - Material Order (Soil, water, etc), Plant Bio-Order (Plants, herbs,), Animal Order (Animal, Birds) & Human Order (Human Beings) and their relation of mutually fulfilling each other and coexistence with each – other, needs to be created.

## CONCLUSION

When I ask people why are they doing particular thing if it is harming him, others and the nature. The reply comes, everybody is doing the same, and what can I do, time is such? What can a single person do to amend the wrong system? Then I ask, are you in competition with others to harm yourself, others and the nature? It is apparent that we are not clear on our endeavors. Some are harming Nature on the name of development. What may be the technological development, how can it be a development, if it is very against the natural objective of Human being of enriching nature. What is the use of such sweet, how tasty it may be, if it makes us sick or may kill in long run? Can't we intelligent species of earth use our intelligence for our natural objective of enriching Nature and thus protecting this wonderful planet. If we can land on moon, we can definitely produce such products which are eco-friendly and harmless to human.

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## **SUPPLIERS' LOCATION & QUALITY ASSURANCE SUPPLY CHAIN PRACTICES: AN INSIGHT**

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### **ABSTRACT**

In recent decades the supply chain has practiced substantial international extension as a consequence of market globalisation and the raise in competition. In this context, quite a lot of authors point to the need for a good SCM as a fundamental tool to remain competitive in the global race (Childerhouse and Towill 2003). Purchasing function is a key business practice within SCM (Lambert et al. 1996; Sanchez Rodriguez and Martinez Lorente 2004). The purchasing function is typically liable for selecting suppliers, managing long-term contracts, observing supplier performance and maintaining close and effectual supplier dealings. The purchasing function has just faced significant challenges such as supplier selection so as to realize efficiency in the relationship between supplier and buyer (Cox 2001, Florez Lopez 2007).

The aim of this paper is to give an insight of different quality assurance supply chain practices & suppliers' location. The focus of interest is to discover whether or not the purchasing in low labor cost countries or in the same country is associated with the execution of quality management practices.

**Keywords:** Suppliers' Location, Quality assurance practices.

### **INTRODUCTION**

SCM can help to endow with a sustainable cutthroat advantage by improving product recital and service while concurrently reducing cost (Davis 1993, Li et al. 2006). Thus, the significance of SCM to business performance in the mechanized industry has been extensively documented in modern times from several diverse perspectives such as logistics, marketing, internal

organisation or incorporated information management (Croom and Giannakis 2004, Kaynak and Hartley 2008, Yeung 2008).

Activities like opting for suppliers, managing long-term agreement, monitoring supplier performance and preserving close and effective supplier relations, are also the element of the dispatch of quality management (QM) (Kaynak and Hartley 2008); therefore, the integration of QM and SCM is decisive to company competitiveness (Flynn and Flynn 2005, Matthews 2006). Efficiency in the association between supplier and buyer is linked with commitment, collaboration and other factors related to the inter-organizational and intra-organizational proportions of the management of external dealings in global purchasing (Sven et al. 2009). The intricacy of these challenges is strongly related to the internationalization of the production methods carried out by many manufacturing companies, which no longer foundation inputs only from firms based close by in geographical terms, but attain a large proportion of their supplies from plants positioned in other countries. The boost in input purchases for Western companies from vicinities such as Eastern Europe, Central and South America, Asia and North Africa has been particularly marked in recent times. The main reason for this happening obviously lies in the small labor costs for production recruits in those countries. However, buying in such settings elevates some questions regarding product eminence. The underdeveloped technology and untrained workforce usually associated with low cost supply may show the way to low quality. How this risk might be treated with is a problem which purchasing units must deal with. In this regard, quality management practices emerge as devices that can help firms to ensure that supply quality meets the requirements of competitiveness.

Despite the substantial impact of purchasing function on firm performance (Chen et al. 2004) and the rising importance of firms from foreign countries as suppliers, relatively little research on this subject is to be initiated in the pertinent literature.

### **QUALITY ASSURANCE PRACTICES IN SUPPLY CHAIN**

As pointed out above, many firms have internationalized their purchases. Some motives for purchasing abroad have to do with the success of a competitive advantage related to improvement and quality, which may not be accessible within the firm or even in the country where the firm is located (Steinle and Schiele 2008). However, companies also try hard to benefit from cross-border, factor-cost advantages through low-wage countries (Alguire et al. 1994, Ettlie and Sethuraman 2002). A classic manufacturing company spends between half and

three-quarters of its earnings on purchases such as raw materials, machineries and semi-manufactured goods (Cammish and Keough 1991, Dyer et al. 1998).

Therefore, purchasing in countries with low labor costs and, as an outcome, at condensed prices may help the firm to realize lower costs. However, if additional transport, maintenance or quality costs increase, low input costs may not robotically translate into lower total production costs. In fact, reducing input costs by finding the cheapest partners in international trade does not seem to be sufficient to make certain manufacturing hits. In this context, the execution of quality assurance practices may permit firms to obtain a good quality supply of raw materials and components (Gonzalez Benito and Dale 2001). In this way, companies can answer adequately to the new competitive environment in which factors other than price, such as quality and quick responses to vary and deliveries, also play a considerable part (Palaniswarni and Lingaraj 1994, Narasimhan and Carter 1998). Quality assurance practices may be defined as a set of actions and approaches in the firm that promotes communal involvement to work together in a course of uninterrupted improvement and product and service quality promises (Gonzalez Benito and Dale, 2001). One imperative subset centers on finding a supply firm that can afford quality, low-cost goods at the right time. Good management of suppliers is indispensable for quality because of the considerable impact of raw materials and components on the quality and trustworthiness of the production process (Deming 1986, Garvin 1987). With regard to these QM practices concerning supply quality, one may differentiate between the submission of internal and external quality practices; the association of each with supplier location is investigated in the following subsections.

## **INTERNAL QUALITY ASSURANCE PRACTICES AND SUPPLIERS' LOCATION**

From the inner viewpoint of quality assurance, the substance of certification systems must be underlined (Dale 1999, Sroufe and Curkovic 2008). Numerous studies have analysed the impetus for ISO 9000 implementation (Martinez Costa and Martinez Lorente 2008, Nair and Prajogo 2009), concluding that one of the key reasons is to get better internal operations. Quality managements systems like ISO 9000 or other more demanding standards such as ISO TS16949 call for an organisation to make sure that its supplied components to congregate product provisions. In relation to suppliers, this standard involves accurate product definition, including the necessities and verification of products through scrutiny. ISO 9000 unambiguously refers to

purchasing the features such as supplier evaluation, supervision of performance, records of good enough suppliers and an official written definition of requirements and provisions (Dale 1999). Through ISO 9000 preparation and listing, an organisation can expand its purchasing function more methodically, making SCM a tactical initiative for profitability (Yeung 2008). Firms that have successfully implemented a system like this one strengthen their control over suppliers and, as a consequence, diminish the faults that can materialize due to defective purchased goods. The positive effects of ISO 9000 in relation to suppliers have been exposed empirically by Casadesus and de Castro (2005).

When raw materials and components are purchased in low-cost countries, it is sensible to suppose that plants may to a certain amount mistrust supplier quality. As a result, they may try to put into effect greater control. In such cases, the guarantee of quality can be achieved through inner assurance quality practices such as principles that highlight the monitoring of suppliers. For this reason, so as to address the information and indecision that purchasing in low-cost countries can prompt, it may be said that firms which buy such supplies are more likely to have included quality systems of this kind to a larger extent.

## **EXTERNAL QUALITY ASSURANCE PRACTICES AND SUPPLIERS' LOCATION**

In the context of supply management, peripheral quality practices can be defined as the set of activities designed to promise supply quality through a closer and positive relationship with suppliers. Gonzalez Benito and Dale (2001) and Gonzalez Benito et al. (2003) submit to dissimilar practices with this goal, some of which intend to promote effective and efficient long-term associations with an inadequate number of suppliers. Other practices engross further involvement, through supplier participation in product design and development, problem resolving and process upgrading. Such exterior practices clearly go beyond the necessities of ISO 9000. However, as Casadesus and de Castro (2005) indicate, firms certified by this set do not approve practices such as prioritizing quality and service rather than price or the establishment of decided quality structures, in spite of concerning them as worthy of application. Moreover, the ISO quality standards guarantee only that a quality system exists, but cannot promise its functionality within a meticulous firm or supply chain (Sroufe and Curkovic 2008). The execution of these practices requires the allocation of information so as to set up trust, commitment and teamwork (Fynes et al. 2005). In addition, they can be predominantly difficult

and costly to bring in when suppliers are located in low-cost countries, for quite a few reasons. First, although quality management has become an element of doing business in developed countries, its approaches and techniques are innovative to many low cost countries. Moreover, given that repeated and appropriate communication is very important in resolving disputes and aligning perceptions and prospects (Morgan and Hunt 1994, Fynes et al. 2005), both operating expense for regular face-to-face meetings (Skarmeas et al. 2008) and transaction vagueness (Bello and Gilliland 1997, Kaufmann and Carter 2006) get higher when the geographical distance from suppliers is too far. In spite of the new development of innovative technologies of electronic communication and efficient logistical provisions, this is still the case (Salmi 2006, Betheshti et al. 2007, Carvalho and Costa 2007, Hsu and Wallace 2007).

In this condition, supernatural distance, defined as summations of factors put a stop to the flow of information from and to the market (Johansen and Vahlne 1977), is also a complex barrier to administer properly. Trade in international markets is marked by diverse social, cultural, political, technical, and economic proportions (Terpstra and Sarathy 2000). Such differences impose on exchange-partner management practices and styles, with significant insinuation for the management of cross-border relationships, mainly in phase relating to the execution of quality management practices (Johnson and Scholes 2000, Skarmeas et al. 2008). To defeat these barriers, companies must get hold of new foreign market knowledge incrementally and only slowly but surely increase their commitments to foreign operations (Salmi 2006).

Therefore, despite the fact that firms may have a particular interest in adopting external quality practices in their relations with suppliers, the problems that may arise through such implementation due to differences of many kinds between the partners might lead to a lower incidence of them.

The empirical evidence on external quality practices and supplier location is scarce. One relevant piece of research in this area is the article by Pfohl and Large (1997), in which East–West supply relationships in the agricultural machinery industry is analysed. To establish a successful East–West supplier–customer relationship, participant managers indicated that the most important requirement was a price lower than in Western Europe, but that a quality level comparable to Western Europe was also needed. Deficiencies in supplier quality were cited as one of the main reasons for the failure to establish successful relationships with Central and Eastern Europe.

## CONCLUSION

This paper deals with quality management practices used in a global supply chain. Particularly, the association among the geographical location of suppliers and the quality assurance practices used to take care of them has been analyzed.

In recent years, the removal of barriers to international trade and the addition of free trade areas, such as the European Union, have facilitated many firms to avail of diverse options in purchasing production inputs. In this sense, in response to the more spirited market environment, and also given the marked substance of raw materials and components in the total costs of products, many firms have sought after their inputs in low-cost countries. Despite this growing phenomenon and the significance of the purchasing function in firm performance, no papers have as yet dealt with this exacting topic in the specialized literature.

The literature indicates that only the realization of internal quality practices is related to supplier localisation, mainly when they are positioned in low-cost countries. Companies that purchase from suppliers located in low-cost countries put into apply the requirements that quality systems instituted in relation to the purchasing process. As a result, the approval of the products purchased is emphasized, followed by product confirmation on receipt.

With regard to external quality practices, their implementation might be anticipated to be easier when suppliers are located in close proximity. However, the literature evidently shows that firms implement these external practices depending on their size, the technological intricacies of the process or the strategic orientations toward the quality, rather than as a function of supplier localisation. Companies that procure in international markets so as to trim down input costs work hard on quality certifications to make certain the internal worth of their processes. Undoubtedly, these are good practices.

Even so, the literature show that the establishment of outer quality practices is more intricate for such companies. In this regard, given that there is harmony about the need to make an intensive effort to establish commitment and collaborative relations with suppliers to achieve improvements in quality and competitiveness for all the firms that encompass the vertical chain, the accessible high barriers to the expansion of these vertical relationships should be prevailed over. Therefore, the authorities should support collaboration between firms, helping them to make possible direct relationships with suppliers. This process is costly and its profitability is not noticeable in the short term; however, it is necessary to guarantee progress towards improvement



and competitiveness. For example, companies might be helped to incorporate competent young people in their workforces, who would be quite proficient of effectively carrying out the actions relating to suppliers. This study is not free of restrictions. For example, the cross-sectional nature of the data prohibits inferences regarding robust causality relationships. Further study is obligatory to offer more in-depth analysis on the ways in which the relationships depicted here may work. That is, further theoretical and empirical work is obligatory to define mediating variables among supplier localization and the use of quality assurance practices. In addition, the role of antecedent variables of both variables should be discovered. In this regard, Kraljic's model may provide practical insights regarding the role of product type. Whether the items occupied are strategic, bottleneck, leverage or non-critical may control the firm's choice of where to buy them and the quality assurance approach to be pursued.

This literature underscores the need to study the multifaceted relations between quality management and internationalization in detail. The country of origin of purchases is a erratic that is not considered in the main quality management models. However, this paper shows that it plays an imperative role in the decisions taken to accomplish quality assurance.

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**IMPACT OF CORPORATE BOND MARKET ON INDIA'S GDP:  
AN ANALYTICAL STUDY**

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**ABSTRACT**

India is a most fast developing economy. The most important factor which contributes to develop the economy of a country is long term fund. Without long term funds, no country can have a developed economy. The long term funds include two things that are equity share and debt securities. Now a day, the role of long term debt securities is very important in funds collection. Thus this paper examines the impact of the corporate bond inflows on the growth of India's GDP. The paper concludes that there is a strong and positive correlation between corporate bond inflows and GDP growth. It has also a great impact on the growth of GDP also.

**Keywords:** Capital Market, Corporate Bond Market, Government Bond, GDP, Regression Analysis.

**JEL Classification:** A10, E10, G10

**INTRODUCTION**

India is a fast growing and developing economy hence the corporate sector needs large amounts of long-term funds for expansion, modernization, restructuring operations and mergers/acquisitions. It can raise funds basically through equity share and debt security. There are limits to which a corporate/firm can raise funds through equity shares. Corporate need to be diversified the funding sources. Hence, they can raise capital either through long-term borrowings from banks and financial institutions or by issuing debentures/bonds. Banks cannot provide a large long-term loan because there are some restrictions by the government and also it will create asset-liability mismatch problem for them because their major source of capital is short term deposits. Then the other important source that is issue of debt securities is left.

The corporate debt/bond market is a market wherein debt securities of corporate are issued and traded. The corporate debt market in India has been in existence since independence. After some debt market reforms, it comes into force as an investment sector in 1985-86 when state owned public enterprises (PSU's) began issuing PSU bonds. However, in absence of a well functioning secondary market, such debt instruments remained highly illiquid and unpopular among the investors at large. Several measures have been taken in the recent past years to transform the corporate debt market in India predominantly under the aegis of SEBI. Some of these measures include de-materialization and electronic transfer of securities, rolling settlement, introduction of sophisticated risk management, trading and settlement system etc.

A developed financial and capital market plays a very important role in the economic growth of a country. During the last few years, corporate bond market and GDP of India have made good progress. Keeping this in view, the present paper seeks to check a relation between corporate bond market and GDP of India and also its impact on GDP growth.

## LITERATURE REVIEW

**Nils H.Hakansson (1998)** examined the principal differences between an economy with a well-developed corporate bond market free from government interference and an economy in which bank financing plays a central role and found that the presence of a well-developed corporate bond market has a strong positive effect on an economy and when the relative sizes of the banking system and the corporate bond market are more balanced, market forces have a much greater opportunity to assert themselves, thereby reducing systemic risk and the probability of a crisis.

**Fink et al (2003)** examines the relationship between the development of the aggregate bond markets and real GDP in 13 highly developed economies and concluded that real economic activity is significantly influenced by the development of the bonds market.

**Abbas and Christensen (2007)** tried to estimate the growth impact of domestic debt on economic growth covering 93 low-income countries and emerging markets over the 1975-2004. They found that moderate levels of non-inflationary domestic debt, as a share of GDP and bank deposits, are found to exert a positive overall impact on economic growth.

**Maana et.al (2008)** analysed the development in public domestic debt in Kenya and its impact on the economy for the period 1996 to 2007. The study found that the composition of Kenya's public debt has shifted in favour of domestic debt while considerable progress has been made in

extending the maturity profile of the debt. The study also pointed out that domestic debt expansion had a positive but not significant effect on economic growth during the period.

**USAID (2009)** tried to study the technical understanding of corporate bond issuances and approaches to developing a sustainable corporate bonds market in emerging economies. It was found by it that the amount of outstanding private debt securities as a percentage of GDP in emerging market economies is significantly less than that in developed economies and it suggested that by developing corporate bond markets in emerging market economies could be accelerated sustainable rates of economic growth.

**Rogoff and Reinhart (2010)** exploited a new multi-country historical dataset on public (government) debt to search for a systemic relationship between high public debt levels, growth and inflation. They concluded that the link between growth and debt seems relatively weak at “normal” debt levels, median growth rates for countries with public debt over roughly 90 percent of GDP are about one percent lower than otherwise; average (mean) growth rates are several percent lower.

**Thumrongvit et. al. (2013)** studied the bond markets as a third key component of the financial system. They used a panel data set of 38 countries for conducting the study. They concluded that stock market development is positively related to economic growth and government bonds are positively related to economic growth, while the effects of corporate bonds change from negative to positive, as domestic financial structures expand in size and diversity.

**ICMA (2013)** studied the importance of corporate bond markets for economic growth as well as for investors, for companies, and for governments. And it found that the corporate bond markets have an important role in economic growth of the country. They bring substantial economic benefit by taking the strain off public sources of funding, easing pressure on bank lending etc.

## **OBJECTIVES OF THE STUDY**

1. To analyze the growth of corporate bond market and GDP in India.
2. To examine the relationship between corporate bond inflows and GDP of India.

## **RESEARCH METHODOLOGY**

The study is based on descriptive as well as analytical. The data have been collected through secondary sources such as NSE Annual Reports, various Bulletins of Reserve Bank of India, SEBI Annual Reports, Economic survey etc. It is a time series data and the relevant data have

been collected for the period from 1995 to 2013. Both correlation and regression analysis have been applied to know the cause and effect relationship between the variables: Corporate Bonds Investments and GDP of India. Although there are other factors affecting the GDP of India but to know the correlation between Corporate Bonds inflows and GDP growth the researcher assume the rest of the factors constant. The statistical significance of regression coefficients have been worked out and tested accordingly.

### Hypothesis:

In order to attain first objective of the study, statistical approach 'Frequency distribution' was applied. To attain second objective of the study, the below null and alternative hypotheses were made and tested statistically. The dependent and independent variables of the study are:

Dependent variable	Independent Variable
GDP at Factor cost	Corporate Bond Inflows

**H<sub>0</sub>:** There is no significant correlation between the Corporate Bonds Inflows and India's GDP.

**H<sub>1</sub>:** There is significant correlation between the Corporate Bonds Inflows and India's GDP.

### Linear Regression Model:

$$GDP_{fc} = \alpha + \beta * CBF + e$$

Where, GDP<sub>fc</sub> = Gross Domestic Product at factor cost

$\alpha$  = some constant

$\beta$  = Coefficient

CBF = Corporate Bonds Inflows in India

e = Error term

## RESULTS & DISCUSSION

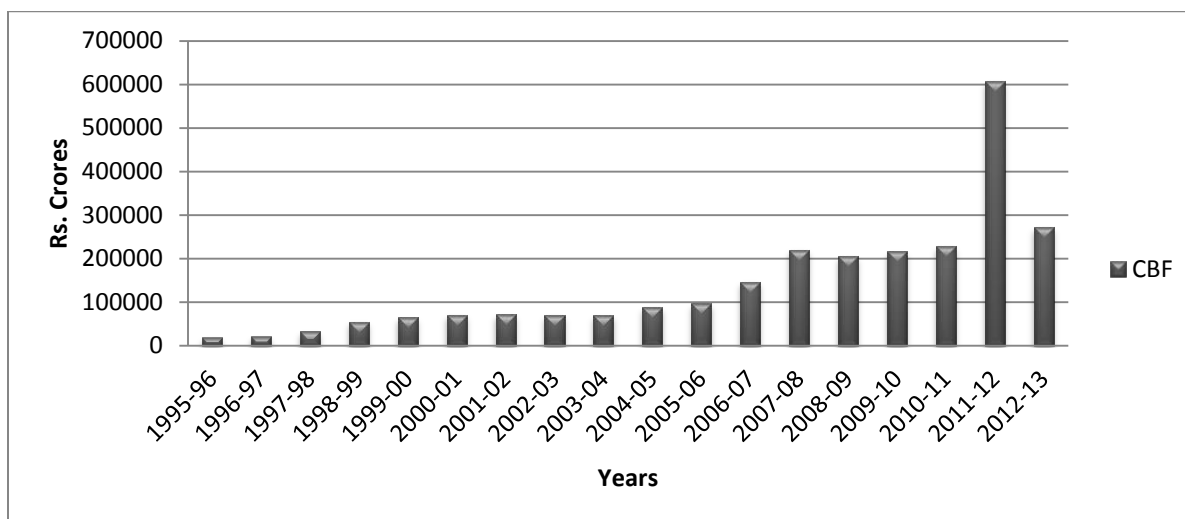
### Trends of corporate bond inflows and GDP growth

The chart 1 shows that investment flow through corporate bond has made continuous growth year to year. In last decade, its progress has high increasing trend. The impact of recession



during 2007-2009 can be seen here also as there is a decline during the 2008-09 as compared to previous year. The highest growth was in 2011-12 which amounts to more than 6 lakh crores.

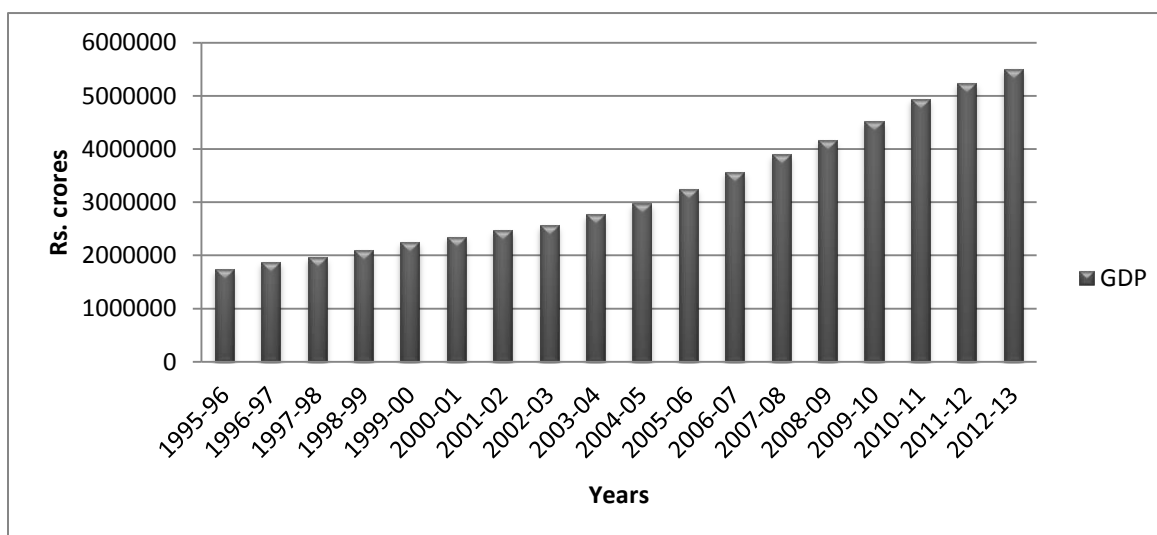
**Chart: 1 Funds inflow in corporate bond market**



**Source: SEBI**

The chart 2 represents the pattern of GDP growth during the selected period. It is clear from the chart that the GDP of India has made tremendous and continuous growth year to year. The GDP amount which was Rs 1737740 crores in the year 1995-96 increased upto Rs 5505437 crores. It has never a decline trend.

**Chart: 2 GDP Growth of India**



**Source: RBI**

### Correlation analysis

To check the relationship among corporate bond market and GDP, the data are tested statistically using Karl Pearson's correlation coefficients at 5% level of significance. The following table provides a summary of variables used in the study and matrix of multiple correlations of regression variables. It was analyzed from the results that there were positive and very high correlation between Corporate bond inflows and India's GDP which means that as the value of one variable increases, the value of other variables also tends to increase.

**Table 1: Correlation Matrix**

		<b>CB Inflows</b>	<b>GDP at Fc</b>
<b>CB Funds</b>	Pearson Correlation	1	.905(**)
	Sig. (2-tailed)	.	.000
<b>GDP at Factor cost</b>	Pearson Correlation	.905(**)	1
	Sig. (2-tailed)	.000	.

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

**\*Number of years: 18**

Thus, null hypotheses ( $H_0$ ) were rejected and alternate hypotheses were accepted on the ground that there is strong as well as positive correlation between corporate bond market and GDP of India.

### Linear regression analysis

The linear regression analysis expresses the relationship between two variables in the form of an equation. It also determines the cause and effect relationship between such variables. GDP is considered as dependent variable while Corporate Bond Inflows as independent variable.

**Table 2: Results of regression analysis**

<b>Dependent Variables</b>	<b>Constant</b>	<b>R-Squares</b>	<b>Beta-Value (B)</b>	<b>F-Value</b>	<b>Adjusted R-Square</b>
GDP at factor cost	2195385.483	0.710	6.722	39.253	0.692

Table 2 consists of R-square values which identified the proportion of variance, Beta value shows the regression coefficient as it always varies between +and – 1.0 in linear relationship, F-Value is used to test the hypotheses and Adjusted R- Square is considered a better population estimate. From the above result of regression analysis it has been observed that there is significant linear relationship between both variables such that higher level of corporate bond inflows results in higher GDP growth. The value of R-Square showed that 71% of the variance in GDP amount is explained by corporate bond funds.

## CONCLUSION

It was analyzed that there have been significant growth in both corporate bond inflows and India's GDP. Both have performed well during the period. The effect of financial crisis during the year 2007-08 has been very negligible on the both; corporate bond inflows and GDP. The correlation analysis results that there is a positive and very high correlation between corporate bond inflows and GDP. It means that as a country start to increase its corporate bond inflows in the market, it will affect on its GDP to grow. The regression analysis also predicts the same that higher level of corporate bond inflows in an economy will result in higher level of GDP growth. It doesn't mean that only corporate bond inflows has strong effect on GDP growth, there are many other factors also which have very strong impact on GDP growth. This is the limitation of the study.

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## **ACHIEVING HARMONY IN LIFE BY MANAGING WORKLIFE BALANCE THROUGH YOGA & MEDITATION**

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### **ABSTRACT**

The stress among employees in recent years has become fundamental and most important factor to be managed by the management in order to ensure smooth running of business, the productivity of employees is the most important factor as far as success of any organization is concern productivity depends upon the psychosocial well being of employees. Stress can affect health, work performance, social life and the relationship with family members. Stress should be managed both at individual and organizational level. Organizations must develop techniques to prevent and reduce stress in order to maintain harmony among employees. This research focuses on practices to be adopted by organizations to prevent, minimize and overcome the stress, study also aims at understanding use of yoga & meditation by different organizations as an antidote to achieve harmony in life and manage workplace stress by maintaining work life balance.

**Keywords:** Workplace Stress, Harmony, Stress Management, Worklife balance, Yoga, Meditation.

### **INTRODUCTION**

Stress at the workplace has become an increasing phenomenon because of so many changes like advancement in technology, changes in the economy of a country, stress is growing rapidly in recent years and can kill brain cells, It is noticed that not all stresses are destructive in nature but appropriate amount of stress is also necessary to keep the person motivated for work, it helps in initiating inspirations & work passion, the workplace stress cannot be ignored, and steps should be taken to make healthy working environment.

Stressed employees at workplace are found to be less efficient, less productive also increased level of absenteeism & turnover is noticed among them.

It is noticed that stress is a silent killer and prolonged exposure to it may lead to harmful effect on physical, Psychological and behavioral well being of an individual. Organizations should adopt effective stress management techniques to maintain efficiency & productivity of the organization resulting into Stress –free employees.

## **REVIEW OF LITERATURE**

1) The epidemic of workplace stress can be seen as a result of changing workplace and economic conditions over the past 20 to 30 years. Hoel, Zapf, & Cooper (2002) explain the changes that have taken place specifically relating to industrialized countries.

2) Kulkarni GK (2006) in an article Burnout published in Indian Journal of Occupational and Environmental Medicine 2006 said that rapid change of the modern working life is associated with increasing demands of learning new skills, need to adopt to new types of work, pressure of higher productivity and quality of work, time pressure and hectic jobs are increasing stress among the workforce.

3) According to the National Institute for Occupational Safety and Health, 80 percent of workers experience job stress.

4) According to David Fontana: Stress is a demand made upon the adaptive capacities of the mind & body. The stress response is a complex emotion that produces physiological changes to prepare us for —fight or flight.‖— to defend ourselves from the threat or flee from it was quoted by Walter Cannon (1932).

5) Dayo Akintayo (2012) found that working environment is significantly related to workers 'morale and also working environment is significantly correlated with perceived workers 'productivity

6) Dr. K. Chandrasekhar (2011) found that environmental factors are conducive to work and he also found that factors that affect attitude of employees to work are- interpersonal relationships control over environment, shift, emotional factors, job assignment, overtime duty, extended work.

7) Kang and R.S. Sandhu (2011) in their article said that Stress is an individual's state of mind in an encounter of a demanding situation or any constraint in the organization which s/he feels harmful or threatening for her/himself.

8) According to Pratibha Garg (2010) Job or occupational stress is mismatch between the individual capabilities and organizational demands.

## **RESEARCH METHODOLOGY**

The main objective of this paper is to analyze the stress causing factors at workplace. It aims to suggest few stress management techniques like Yoga & Meditation to minimize the stress level among employees at work place and maintain worklife balance in order to achieve harmony in life. The study is exploratory in nature and basically based on secondary data. For this purpose various Magazines, Journals, Newspapers, academic articles, books, Websites that dealt with stress at the workplace were referred. A rigorous literature review of the researches done to understand the causes of stress in the workplace and how stress management techniques like Yoga & Meditation can be used as a tool to reduce workplace stress. This study will help to find out causes and consequences of stress as well as the productive stress management mechanisms.

### **Defining stress**

Though modern world is viewed as world of achievements, it is also a world of stress. Stress is experienced everywhere, in family, business organization, enterprise, institute or in other social or economic activity, an individual is exposed to different stressful situations right from birth till death.

Stress is defined as an organism's total response to environmental demands or pressures.

### **Definitions of stress**

#### **Palmer, 'Occupational Stress', 1989**

'Stress occurs when perceived pressure exceeds your ability to cope'

#### **Cooper & Palmer, *Conquer Your Stress*, 2000**

[Stress is] the reaction people have to excessive pressures or other types of demand placed upon them. It arises when they worry that they cannot cope'

#### ***Confederation of British Industry*, Raymond 2000, 'Stress the Real millennium Bug'**

The emotional, cognitive, behavioral and physiological reaction to aversive and noxious aspects of work, work environments and work organizations. It is a state characterized by high levels of arousal and distress and often by feelings of not coping.'

There are two types of Stress

- Distress
- Eustress

**Distress:** Distress is the most commonly referred type of stress, having negative implications & occurs when an individual cannot adapt to stress, it also refers to the degree of physiological, psychological, and behavioral deviation from healthy functioning, in such kind of stress employees frequently experience enough stress to hurt their job performance and increase their risk of mental and physical health problems.

**Eustress:** This is the good & positive side of stress that results into the healthy, positive, constructive outcome of stressful events and the stress response, it gives feeling of fulfillment and is a process of exploring potential gains ,it activates and motivate people to achieve goals, change their environments and succeed in life's challenges.

Organizations should be focused more on distress than eustress.

## **SOURCES/CAUSES OF STRESS**

### **Organizational factors**

Organizational factors like rules and regulations, improper communication, work pressure, Less promotional opportunities, Lack of employees participation in decision-making causes stress at work place.

### **Individual factors**

It refers to person's own personal problems such as being impatient, aggression, improper time management, rigidity, it is noticed that sometimes individuals fails to understand the expectations of their family members, peers, superior and subordinates resulting into role ambiguity/role conflict which in turn causes employee stress.

### **Job concerning & other factors**

Job demands, relationship with colleagues, bullying, uncomfortable workplace, Lack of Training, Lack of confidentiality, Crowding, Inflation, technological change, social responsibilities and rapid social changes are other factors causing stress.

### **Symptoms of stress**

Stress can have great effect on emotions, mood & behavior of a person, it also affects various systems, organs, tissues all over the body, therefore the issues related to stress has changed to a major phenomena for both employers and employees.

Symptoms identified among stressed persons are :

- Being out of breath
- Frequent blushing & sweaty most of the time



- Nervousness
- Anxiousness and frustrations
- Abnormal behavior towards society, family and friends (Social withdrawal and isolation)
- Stuttering or stammering
- Light headedness, faintness, dizziness
- Ringing, buzzing or “popping sounds
- Rashes, itching, hives, “goose bumps”
- Constipation, diarrhea, loss of control
- Sudden attacks of life threatening panic
- Frequent urination
- Depression, frequent or wild mood swings
- Trouble learning new information
- Forgetfulness , confusion
- Difficulty in decisions making
- Feeling overloaded or overwhelmed
- Frequent crying spells or suicidal thoughts
- Feelings of loneliness or worthlessness
- Work efficiency or productivity
- Mumbled speech & self-harm.
- Defensiveness & suspiciousness
- Smoking, alcohol or drug use
- Excessive gambling or impulse buying
- Alcoholism & eating disorders

## **WORKLIFE BALANCING STRATEGIES**

Here are some key strategies:

### **Track your time**

Allowing workers to start or end the workday earlier or later can reduce work/life stress, individuals should take out some time for themselves.

### **Facility to work from home**

Working from home results in high morale and job satisfaction, it also lowers employee's stress and turnover which in turn helps workers to better manage their work/family demands

**Leave work at work**

Best way to work life balance is to leave your work related issues at work, donot take them back to home.

**Relaxation techniques**

Learning relaxation techniques can be one of the most effective ways of dealing with stress. Relaxation will deepen breath, slows pulse and heart rate.

**Deep breathing**

One should take a few minutes to practice deep breathing doing it several times a day will help to calm body and mind.

**Massage therapy**

It can lower the heart rates and blood pressure, also relaxes tense muscles that helps to release stress.

**Friendly atmosphere**

This helps employees to share their joy and sorrow and helps in removing tensions and worries

**Laughter:** smiles and laughter can lighten mood.

**Balanced diet**

One should *maintain a balanced diet* to keep body healthy. One should take healthy food. Too much fatty "comfort" food adds weight and loose energy.

**Sound sleep**

Body requires *adequate sleep* to restore energy, one should try going to bed early after a hot bath, or listening to a relaxing music to help fall asleep.

**Exercise**

It is the best ways to release tension and relax our minds and bodies, swimming and biking are excellent exercises. Walking with dog in garden, cleaning and vacuuming the house, enjoying dance and Yoga are all forms of exercise.

**TIPS for easing Work Life Balance (WLB)**

1. Set firm boundaries - WORK STAYS AT WORK
2. Have a planning session at end every week - look at what deadlines are ahead and schedule tasks with appropriate work hours to complete the task (do not include home time to complete the task).
3. While at WORK ... ALWAYS BE NICE

4. While at WORK ... ALWAYS TAKE TIME TO LAUGH
5. While at WORK ... CREATE A HAPPY ENVIRONMENT
6. While at WORK ... ALWAYS PRIORITISE SOMETHING FOR YOU

**Strategies for Managing Stress**

- Learn to say No
- Eat Well
- Drink plenty of water
- Enjoy Sports
- Take time for vacations
- Utilize leisure time
- Listen music
- Practice Yoga & Meditation

**Organizational strategies to cope stress**

It is the moral responsibility of corporate to practice healthy work culture and environment; several tools should be applied to reduce stress among employees like

- Job Redesign
- Goal Setting
- Social Support
- Healthy work culture
- Recreational activities

**Role of Yoga and Meditation:**

Yoga is a mind-body practice that combines physical poses, controlled breathing, and meditation or relaxation. Yoga may help reduce stress, lower blood pressure and lower your heart rate. And almost anyone can do it. Yoga helps to access an inner strength that allows to face the overwhelming fears, frustrations, and challenges of everyday life.

In order to release stress a small daily routine of exercise, breathing, and meditation should be followed Few Yoga exercises if practiced daily ( prior to meditation) help in regulating breath and relax body by gently releasing tension from the large muscle groups, flushing body parts and brain with fresh blood, oxygen, and other nutrients, and increasing feelings of happiness & wellbeing.

Sun Poses encourage breathing deeply and rhythmically, exercises can also be adapted in an office chair. One can purchase Yoga video CDs that provide a complete introduction to yoga exercises and contains a 30-minute exercise routine that contains breathing, relaxation and meditation.

In performing yoga basic emphasis is done on breathing and connection of mind/body/spirit results into strong emotional benefits. It is found that people practicing yoga frequently report that they sleep better and feel less stressed feeling of handling a stressful event more easily, whether it's family or work is experience, Breathing switch attention from feelings of anxiety to feelings of relaxation.

Yoga is one of the six foundations of Indian philosophy and has been used for millennia to study, explain, and experience the complexities of the mind and human existence (Feuerstein, 1998).

The Yoga way of life encompasses the philosophy of Karma Yoga (path of detached action), Jnana Yoga (knowledge of self), Bhakti Yoga (trust in the supreme order) and Raja Yoga (asana, pranayama, meditation, etc). According to Bhole (1997), hatha-yoga practices like asanas (i.e. posture), pranayama (i.e. breathing practices intended to influence vital forces), kriyas (i.e., cleaning process), mudras (i.e., certain internal attitudes) and bandhas (i.e., neuro –muscular locks) are mostly taught as physical practices.

Dr. K.N Udupa (2000) concluded in his research that stress-related disorders evolve gradually through four recognizable stages. Firstly psychological changes such as anxiety, irritability and insomnia arise due to over stimulation of the sympathetic nervous system. In the second stage symptoms such as high blood pressure, elevated heart rate and increased intestinal motility surface. In the third stage, a more profound physical or biochemical imbalance sets in, while in the final fourth stage, irreversible symptoms that often requires surgical or long term management appears.

Rudra Bhandari, Balkrishna Acharya and V. K. Katiyar (WCB 2010) , in their study The yogic intervention was comprised of selected yogic postures, breathing mechanics (Pranayama), gestures, psychic locks, concentrations, and meditations was given for one month among 50 corporate personnel (25 male& 25 female) from Indian Telephone Industry, Raebrali, India. The result met showed significant effect of the yogic intervention to manage distress and enhance work performance at  $p<0.01$  and favored the efficacy of corporate yoga to boost health, harmony,

morale, work motivation, commitment, performance and productivity at individual and organizational levels.

*Mindfulness meditation activates the “rest and digest” part of our nervous system, helping with stress management.*

Meditation, Yoga, Relaxation Response is the best way to fight stress and reinvigorate the mind, Meditation that cultivates mindfulness is particularly effective at reducing stress, anxiety, depression, and other negative emotions and feelings, and it is a skill tool for Life intensification, Stress Management, Emotional and Spiritual Fulfillment. It helps in balancing mind and body, meditation also helps to increase mental vigilance, attentiveness— resulting in clarity of mind & decision making.

Meditation has made its strong existence in corporate environment and is one of the best ways to reduce stress in the workplace. Companies like IBM Corp., Medtronic Inc., are offering meditation programs on-site to their employees to reduce stress.

Companies are arranging Meditation workshops which are proving to be a valuable training tool in the workplace as meditation has so many practical applications. It is a skill that can be easily learned and can be done anywhere and at any time; a few minutes of meditation if done throughout the day can make vast difference in employees, attitude, productivity and effectiveness.

#### **TIPS for a Lifestyle with Exercise**

1. Start with something you ENJOY
2. MAKE it regular (2 times a week)
3. Start slowly ... and BUILD gradually
4. ALWAYS make time for exercise
5. SUNDRY exercise is important
6. Exercise for your HEALTH
7. Become ADDICTED

#### **LIMITATIONS OF STUDY**

The time period for carrying out the research was short as a result of which many facts have been left unexplored.

## CONCLUSION & SUGGESTION

The paper was intended to study the importance of Yoga and meditation to cope up with workplace stress and achieve harmony in life. The causes of stress at the work place range from personal issues to work overload, organizational pressure, other factors like change, long working hours, bullying, shift work ,sex or racial harassment, unhealthy working environment and conflicts among colleagues and managers.

Management can utilize some resources for reducing the stress level of the employees by:

- Providing health facilities to employees.
- By arranging Stress relieving classes of Yoga & Meditation.
- Encouraging more of organizational communication & employees participation in decision-making to reduce role ambiguity/conflict.
- Encouraging decentralization
- Creating safe & healthy working environment.
- Appreciating the employees on accomplishing and over-exceeding their targets.
- Free time activities and entertainment.
- Easy and on time access to therapist

It can be concluded from the present study that there is a positive and significant relationship between stress and Yoga and Meditation. Organizations should adopt the philosophy of “Healthy mind and healthy body”.

This philosophy adopted by management will help to cultivate right attitude and transform societies into a stress free society. As the study was conducted in area of Yoga & Meditation with an intention to find their positive effect on the employees who were suffering from workplace stress, the strong evidences of the positive effect of Yoga & Meditation gives this study a clearer approach to these interventions which result in a major reduction of workplace stress.

From the study it can be suggested that organizations can also implement some new innovative practices for Stress Reduction activities like:

- Festival Celebrations
- Friendly sports meet
- Team Outing
- Yoga & Meditation

- Dance and Healing through Music
- Themed and Corporate Events
- Annual Days
- Award Ceremonies

Daily practice of complete relaxation, time management, sharing of feelings and leisure activities, Yoga and meditation is of great importance, even a few minutes of meditation during work day can make a huge difference. This practice of focusing the mind on stillness will teach how to consciously quiet one's mind whenever one feel overwhelmed. Meditation touches the inner soul leading to less dependence on medications, greater self-awareness, and a fuller happier & Blissful life.

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**LEADERSHIP BY FEAR: TRIED AND TESTED METHOD****Mohammed Asad Khan****Assistant Professor****PSIT College of Higher Education, Kanpur, UP****Email: mak81@live.com****ABSTRACT**

This paper aims at exploring a new style of Leadership which is through fear. Fear exists. It's here. It's with us always; sometimes dormant and hibernating, but frequently gnawing at our physical, mental, emotional, intuitive and spiritual ramparts. Fear is a painful emotion. It's physically and mentally draining; and emotionally – even spiritually – corrupting. Fear makes employees recoil. It freezes them and stymies their productivity and performance. Those who give good results, are credited as outstanding performers, while the ones who don't perform well, are held liable. The fact is that no one is born a good or a bad performer. It is the environment that plays a crucial role in determining an individual's performance.

**Keywords:** leadership, trends, performance.

**INTRODUCTION**

In ancient India, the throne on which kings sat was known as the Singh-Asan, the lion-seat. The patron goddess of kings, Durga, also rode lions. Images of lions adorned the gates of royal palaces and could be seen at the top of pillars.



One such image adorns our national emblem. The close association of lions with royalty had a reason. Everyone knew that the lion was the king of the jungle, the greatest predator, on top of the food chain, with no natural enemy. But that was not what a king was supposed to be. Lions are the ultimate alpha male. A lion lays claim over a pride of lionesses by fighting off other males. The battle is fierce. The winner takes it all. The losers are left without partners or mates. There is no sharing of lionesses. When a lion takes over a pride it kills all the cubs fathered by the previous alpha male.

Thus the lion ensures that only his gene pool survives. Having taken over a pride he rests, leaving all the hunting to the lionesses. When the lionesses hunt any prey, they make way and allow the lion to eat his fill before they feed themselves. Thus in a pride, the lionesses do all the work while the lion enjoys the fruits of their labour.

They hunt, he eats. They bear his cubs and take care of the young, but it is the lion that decides if a young cub should live or die. He is the absolute master and they are his slaves.



For many people, lions are the perfect symbol of leadership. Followers should be like lionesses, afraid of and subservient to the lion. When the leader takes over, he wipes out all traces of the predecessor. The leader does not work, nor does he help or guide.

All he does is that he relaxes and stake claim to the fruits of the labour of the followers. This is the case in the warehouse at Bhiwandi where Shekhawat is in charge. He sits all day in his office and expects his team to deliver. If they don't, he denies them wages or delays their bonuses. Everybody fears Shekhawat.

There are rumours that he uses violence to intimidate his people. He does not like being criticised. And if anyone complains about him to the management, they risk losing their job, or worse. But the management allows Shekhawat to function. They feel only he can manage the rather tough lot at the warehouse.

Before Shekhawat, they had sent Pande to manage the warehouse. Pande was a gentleman who tried to motivate the men with words and tried to get everyone to follow the policies. But the labourers were a rowdy bunch. They simply ignored Pande and threatened to form a union when he tried to act tough.

Pande had to be replaced. Shekhawat was brought in. He used brute force to get the workers at the warehouse in order. They quivered in his presence. Like lionesses, they did what he told them to do. This made the management happy. But they are also afraid. Shekhawat knows his power and is slowly becoming a law unto him.

There are rumours that he demands bribes from vendors before allowing their goods to be unloaded from trucks. No one is sure, but no one is willing to check. The fear is the roar of Shekhawat.

Leadership by fear may not be part of management books, but it is a tried and tested method. Feudalism is essentially leadership by fear. Today explicit violence may be considered illegal and uncivilised, but implicit violence is still practised, and extremely popular. The most popular non-violent fear-inducing tool is the threat of sacking people.

This is especially visible when the markets are down and jobs are scarce. When a manager says, "My way or the high way," it is a lion growling. One often hears managers moaning that young people today are not afraid and in fact threaten to quit when threatened with sacking, indicating their desire to be lions.

But in ancient India, the king was expected to sit on a lion, not be a lion. His patron goddess, Durga, rode a lion, meaning she domesticated the king of the jungle. The message here is about human beings having the ability to overpower and outgrow the animal urge to dominate and frighten others into submission.

The king was not expected to treat his people like animals who needed to be controlled by fear or force. To treat people like lionesses and to behave like a lion is to an act of de-humanisation. A king was expected to help his subjects discover their humanity. Humans are the only animals who can empathise.

The king was therefore expected to provoke his people into empathy, and in the process unlock their own hidden potential. To be the lion is to be the leader who frightens. To sit on the lion-throne was to be a leader who inspires.

## **CONCLUSION**

Anyone in a leadership position who acts like a dictator – keeping their employees in fear – soon finds that once they start down that path of “fear” that the tiger or lion will turn and eat them.

Leadership by fear rarely works in the long term. It may work in the short term, but eventually, the employees who feel they are being mistreated will begin to act out. While the bottom line may improve, employee morale sinks and key employees leave. Once employee morale sinks and employees leave, productivity and performance is soon to follow and then, ultimately, customer service. Eventually, the loss of morale, performance and service will affect the bottom line and the fearful leader, who has become the despised leader, is eaten by the “Tiger” or “Lion” that he created.

Leadership is not about pushing. It’s about pulling. By that I mean, an effective leader helps employees draw forth their skills and talents, as well as find new ones, and use them to not only improve the bottom line, but also themselves as people. This can never happen from leading by fear.

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