

ISSN: 2349-1647 (O)

ISSN: 2250-1940 (P)

RESEARCH EXPLORER

Vol: VIII

JULY-SEPTEMBER 2020

Issue: 28

Date of issue : 12 JULY 2020



CIF : 3.655



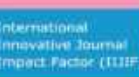
IRJIF : 2.78



JIF : 2.5

NAAS Score : 2.62

Indexed & Abstracted in



INDIAN ACADEMIC RESEARCHERS ASSOCIATION

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ROLE OF THE SUPREME COURT IN ELECTORAL REFORMS

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Abstract

The Electoral system and the laws have to evolve over the period of time to accommodate the changes in the political culture of any country. The process of electoral reforms is successful only when there is a coordination among the electoral machinery, the political parties, the candidates and electorate at all levels. Over the years the Election Commission of India kept pace with changing needs, aspirations, and technology. Throughout these years of innovation and development the Supreme Court of India has stood like a rock behind the commission. In many instances such as introducing the Moral Code of Conduct, NOTA, in curbing the criminalization of politics, the Election Commission has heavily depended upon the direction of the Supreme Court. Against this backdrop, this paper is going to focus on the contribution of the Supreme Court of India in reforming the electoral laws and enriching the democratic space in the country through its directions in various cases.

Keywords: Election, Election Commission, Electoral reforms, Democracy, Supreme Court.

INTRODUCTION

Elections are nothing but democracy in practice. The consent of the governed is expressed through the election in any democracy. In other words, election process provides legitimacy to the authority of the government. Representative government has become the best attainable method in establishing democracy in the modern world, periodic elections become necessary for this purpose. The adult franchise, impartial elections, independent judiciary, multiparty system are substance of democracy. Each citizen should have the right to vote on attaining the certain age and nobody should be disqualified on grounds of caste, creed, sex, language,

religion etc. The most important feature of a democratic polity is elections at regular intervals. The right to vote has emerged not only as a fundamental right, but as an instrument of political awakening. It is true that the principle of universal adult franchise was introduced in modern democracies only gradually, but today it is regarded as a necessary condition of democracy.

The main focus of this article is to highlight the role of the in bringing electoral reforms in India for democratic sustenance and better functioning. This article is divided into two parts. The first part focuses on functions of elections in democracy and various aspects of electoral reforms; second part highlights

the role of the Supreme Court of India in bringing electoral reforms in India with main focus on expanding the scope of Election Commission of India, addressing the issues of paid news, opinion polls/exit polls, criminalization of politics and introducing NOTA.

Democracy and Electoral Reforms

In modern politics representation is invariably linked with elections. As Harrop and Miller Explained, there are two contrasting views of the function of competitive elections. The conventional view is that elections are a mechanism through which politicians can be called to account and forced to introduce policies that somehow reflect public opinion. This emphasizes the bottom-up functions of elections: political recruitment, representation, making government, influencing policy and so on. On the other hand, a radical view of elections, developed by theorists such as Ginsberg portrays them as a means through which governments and political elites can exercise control over their populations and making them more governable. This view emphasizes top-down functions: building legitimacy, shaping public opinion and strengthening the elite.

The process of reform in governance has to start with reform of the electoral system, which serves as the entry point for the politicians to enter the governance system. Electoral reform is a change in the electoral systems that include

- Change in the voting systems
- Change in the vote counting procedures
- Rules about political parties
- Changes to election laws
- Eligibility to vote
- Ballot design and voting equipment
- Election monitoring
- Safety of voters and election workers

- Measures against bribery, coercion, and conflicts of interest
- Financial controls

India, being the largest democracy in the world, has to evolve a free and fair system to conduct elections. Reform is not a single time effort but a continuous process. The accomplishment of the modification would depend upon the operational compliance of the coordination of electoral machinery, the political parties, the candidates and electorate at all levels. There is a continuous attempt to reform the electoral system in India. The Joint Parliamentary Committee on Amendments to Election Law (1971-72), the Tarkunde Committee Report of 1975, the Goswami Committee Report of 1990, the Election Commission's Recommendations in 1998 and Indrajit Gupta Committee Report of 1998 etc. produced comprehensive set of recommendations regarding electoral reforms.

Supreme Court of India and Electoral Reforms

Over the years, the election commission of India has handled a number of issues and introduced many electoral reforms to strengthen democracy. Throughout these years of innovation and development the Supreme Court of India has stood like a rock behind the commission and helping in its endeavor to conduct elections as clean as possible. The Supreme Court of India has unbridled the powers of the Election Commission by interpreting the Articles 324 and 325. In many instances such as introducing the Moral Code of Conduct, NOTA, in curbing the criminalization of politics, the Election Commission has heavily depended upon the direction of the Supreme Court.

1. Expanding the powers of the Election Commission

The scope of powers and functions of the Election commission under Art 324 of the constitution of India came under

the consideration of Supreme Court in *Mohinder Singh Gill Case* (1978). In this case, the Election Commission had declared the poll taken in Firozpur parliamentary constituency in 1977 general elections as void, on the basis of certain complaints. The petitioners contended that the Election Commission could only direct fresh poll at the polling stations where the poll was allegedly vitiated, and not in the entire parliamentary constituency. But the Supreme Court rejected the contention of the petitioners and held that art 324 is a plenary provision vesting the whole responsibility for national and State elections in the Election Commission and the words 'superintendence, direction and control' used in Art 324 are the broadest terms.

In another case, the validity of the Election Symbols (Reservation and Allotment) order 1968 was called in question in *Kanhiya Lal Omar vs. R.K. Trivedi and others* (1985). It was contended that the symbols order was legislative in character and could not have been promulgated by the Commission, as the Commission is not empowered by law to issue such a legislative order. The Supreme Court rejected the above contention and stated that the power to issue the Symbols Order is vested in the commission under Art 324. Art 324(1) which empowers the commission to issue all directions necessary for the purpose of conducting smooth, free and fair elections in the country, is a reservoir of powers and any provision could not be traced to the Representation of the Peoples Act 1951 or the Conduct of Elections Rules 1961, it could be traced to Art 324(1).

In another famous *Common Cause case* (1996) the Supreme Court held that the expression Conduct of elections in Art. 324 of the constitution is wide enough to include the powers of the Election Commission to issue directions to the effect that the political parties shall submit to the commission for its scrutiny,

the details of the expenditure incurred or authorized by the political parties in connection with the election of their respective candidates.

In *Union of India vs. Association for Democratic Reforms and others* case(2002), the Supreme Court, stated that a citizen has right to get relevant information about prospective candidates and directed the Election Commission that each candidate for election to Parliament or a State Legislature should submit a duly sworn affidavit, along with his nomination paper, which consists of the information about his past criminal conviction, pending criminal cases carrying a conviction of more than two years, assets, liabilities and educational qualifications.

2. Advisory Jurisdiction of the Election Commission

The Constitution of India vested the powers in the President in the case of a member of Parliament (under Art. 103) and the Governor in the case of a member of State legislature (under Art.192) in the matters of disqualification of sitting members of Parliament and of state legislatures, on all grounds other than the ground of defection. But before deciding such matters the President or the governor, as the case may be, has to refer the matter to the Election Commission for its opinion and act according to such opinion.

While deciding the matters on the advisory role of the Election Commission in *Brundaben Nayak vs. ECI* (1965) the Supreme Court has made it clear that the President and the Governors are bound by the opinion of the Election Commission in such matters and not required even to consult their Council of Ministers. The apex court observed in *Shamsher Singh vs. State of Punjab* (1975) that the actual adjudication has to be made by the Election Commission and the president and governors merely append their signatures to the order.

3. Paid News

Paid news is a phenomenon in Indian media, in which many of the mainstream media outlets were found to be systematically engaged in publishing favorable articles in exchange for payments. The Election Commission of India has issued directions in 2008 and 2012 to deal with the issue of paid news. In this issue also the Election Commission heavily depended on the orders or directions of the Supreme Court.

The Cable Television Network (Regulation) Rules, 1994 prohibit advertisements of a political nature. This issue as raised before the Andhra Pradesh High Court, which suspended the operation of Rule 7(3) of the above said rules, relating to the prohibition of political advertisements. The matter went to the Supreme Court in *Ministry of Information & Broadcasting vs. M/s Gemini TV and others* (2004) and the Supreme Court directed the Election Commission to monitor such advertisements on television and cable networks during 2004 general elections. In accordance with the order of the Supreme Court, the Election Commission of India issued guidelines in 2012 to set up State and District Level Media Certification and Monitoring Committee (MCMC) to identify the suspected cases of paid news, for monitoring of political advertisements in electronic media and print media. MCMCs are also entrusted with the responsibility of monitoring political advertisements in other media, in relation to candidates, either overt or covert, from Expenditure monitoring angle.

4. Opinion polls / Exit polls

In pursuance of the order passed by the hon'ble Supreme Court in 2009, the Election Commission has issued guidelines to be followed in the matter of publication/dissemination of results of opinion polls and exit polls in connection with elections to the Lok Sabha and State Legislative Assemblies. No result of any

opinion poll or exit poll conducted at any time shall be published in any manner by print, electronic or any other media, at any time –

- (a) during the period of 48 hours ending with the hour fixed for closing of poll in an election held in a single phase; and
- (b) In a multi phased election, and in the case of elections in different States announced simultaneously, at any time during the period starting from 48 hours before the hour fixed for closing of poll in the first phase of the election and till the poll is concluded in all the phases in all States.

5. Issue of criminalization of politics

Section 8(4) of Representation of Peoples Act, 1951 states that if a sitting member of Parliament or state legislature is convicted and sentenced to not less than two years of imprisonment shall be disqualified from being member of house. However, if the member goes on appeal against his conviction within 3 months, he shall not be subjected to disqualification. This provision facilitated that they could not be disqualified until the appeals or revisions were exhausted. The Supreme Court in its landmark judgment in *Lilly Thomas vs. Union of India* (2013) has struck down section 8 (4) and held it as unconstitutional and void. In *Resurgence India vs. Election Commission of India* judgement (2013), the Supreme Court said that returning officers should reject nomination papers of candidates who do not provide all relevant information about their assets, liabilities, and criminal cases, if any.

6. Introducing of NOTA

In *People's Union for Civil Liberties vs. Union of India and others* (2013), the Supreme Court ruled that the voters should have the option to reject all the candidates who were standing for election in their constituency. It directed the Election Commission to include the option 'None of the Above' (NOTA) in the Electronic Voting Machines (EVMs) to ensure privacy for those who don't find

any candidates suitable. The Supreme Court felt that it would contribute to cleansing of politics that the political leadership would formally know that there are people unhappy with the parties' choice of candidate and this would build moral pressure on political parties to rethink on their choice of candidates with criminal background or dark image. Thus the introducing NOTA in the ballot units of EVMs is an offshoot of the Supreme Court's verdict.

Conclusion

In India as the democratic process is deepening, institutions such as Election Commission assumed crucial importance to formulate a conscious policy towards rule enforcement in order to establish a fair and vibrant representative democracy. Despite the criticism on Indian Judiciary's proactive decisions as judicial activism or judicial overreach by the critics, the Indian judiciary is extending its relentless support to the electoral reform process in India. As we have seen in the above mentioned cases, the apex court through its judgements enabled the Election Commission of India to introduce some reforms and expanded the scope of the Commission within which it functions. India's ongoing good governance reforms process will be successful only if the core issues like electoral reform is addressed.

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Available online @ www.iaraindia.com
RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal

ISSN: 2250-1940 (P) 2349-1647 (O)

Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)

Volume VIII, Issue 28

July-September 2020

Formally UGC Approved Journal (63185), © Author

PROPER VENTILATION CAN CONTROLS THE INDOOR AIR POLLUTION IN BUILDINGS

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Abstract

Environment, as we all understand, is nothing but our surroundings, which can be badly affected by smokes, smells, dusts, gases, oxygen deficits, noises, and vibrations, etc. When such substances or actions hazardously affect our Environment, we call them as pollutants, and the process whereby the surroundings get adversely affected, is known as environmental pollution. Public health engineer, who is responsible for removing all kinds of wastes of a society, is evidently responsible for cleaning the environment from such pollutants, and, thus, to ensure a healthy and wholesome surroundings, to ensure health and happiness for the people. On an average, about 17 litres per hour of CO, is exhaled by an adult human being through respiration. CO₂, is not toxic, and its smaller concentrations up to about 0.04 percent rather stimulates respiration; but the higher concentrations of about 1.5 percent cause nausea, depression, and headache. When CO₂, concentration rises to about 2.5 percent or so, it may even extinguish a burning candle. Still higher concentrations of the order of 5 percent may cause fainting and prove fatal. To avoid such CO₂, excesses in a building, it is necessary to provide sufficient entry of fresh air, through proper ventilation.

Keywords: Indoor Air Pollution, Ventilation, Systems of Ventilation, Room Air Purifiers, Controlling Indoor Air Pollution.

1. INTRODUCTION

Environmental sanitation, which evidently means cleaning of the Environment, therefore, becomes the major task of a public health engineer, In

this task primarily, includes; collection and disposal of refuse and sewage from houses, buildings, and other public areas, the subject which has already been dealt in the earlier chapters of this book.

Provision of sufficient and Wholesome air to the buildings and residents for controlling indoor air Pollution, is also included as a work of environmental sanitation, and hence, Usually, included in the subject of 'Public Health Engineering Because it is the wholesome air, on which depends the health of the public. Under this context, we are adding this chapter on Ventilation of Buildings, although strictly speaking, the topic should normally be covered under 'Building Construction'. However, before we discuss design aspects governing ventilation of Buildings, we shall first describe the harmful effects caused by indoor air Pollution and its present status.

1.1. Sources, Effects and Status of Indoor Air Pollution: In a developing country like India, the most important source of indoor air Pollution is combustion of domestic fuel (such as cow dung, wood, and crop Residues) used for cooking, on which 80% (1991 census) of our population Relies. It has further been estimated by Indian Council of Medical Research (ICMR) New Delhi, that globally 30 lakh people die over year due to air Pollution, out of which 18 lakh people die due to indoor air pollution in Developing countries, In India alone, 5.89 lakh people die annually due to Indoor air pollution (4.96 lakh in rural areas and 0.93 lakh in urban areas).

The indoor air pollution has infect, been found to be much worse than the Outdoor air pollution, since a pollutant released indoor is thousand times more likely to reach the lungs than a pollutant released outdoors. It is generally the Women and young children and infant who face the maximum adverse effect of indoor air pollution. In poor households, there is no separate kitchen, and people usually stay in the same room where they cook, or burn fuel to heat during winter. Moreover, women who work on cooking, and their young children particularly the infants, always necessarily stay at the place of cooking or burning of traditional

fuel. This exposes them to continuous indoor air pollution over long hours. This proves worst for the children (up to the age of about 6 years), whose lungs are in the developing stages.

Promoting the use of cleaner fuels, improved stoves and better ventilation of Homes and kitchens should therefore be given top priority to reduce indoor air Pollution, Moreover, children and pregnant women, who are most susceptible to ill effects of indoor air pollutions, need to be protected on top priority from Indoor air pollution.

2 VENTILATION

Ventilation may be defined as the art of supplying air to a given space, and also includes the art to remove the old vitiated air from that space. In order to understand as to how a particular space is to be provided with sufficient and wholesome air for its residents, it is necessary to understand as to how a particular space get affected by the manner in which it is occupied by humans or other living creatures.

2.1. Effects of Occupancy of a Space:

When an enclose space is inhabited by humans and/or animals, etc., the following effects are produced: Oxygen content of the space reduces; Carbon dioxide content of the space increases; Temperature of the space increases; Humidity of the space increases; and Organic matter and odours in the space increases; as discussed below:

Fresh air usually contains 21% of oxygen (by volume); whereas, the exhaled air contains only about 17% oxygen. The continuous respiration will, therefore, continuously reduce the available oxygen in an enclosed space. More is the number of occupant's respiration in the given space, more deficiency of oxygen will be created. Such oxygen deficits cause headache, anorexia, vertigo, nausea etc. In order to avoid such oxygen deficits in a given building inhabited by people, it is necessary to ensure supply of sufficient

quantity of fresh air through ventilation. Similarly, fresh air normally contains about 0.04% of carbon dioxide; whereas the exhaled air contains as high as 50% of carbon dioxide. On an average, about 17 litres per hour of CO₂ is exhaled by an adult human being through respiration. CO₂ is not toxic, and its smaller concentrations up to about 0.04% rather stimulates respiration; but the higher concentrations of about 1.5% cause nausea, depression, and headache. When CO₂ concentration rises to about 2.5% or so, it may even extinguish a burning candle. Still higher concentrations of the order of 5% may cause fainting and prove fatal. To avoid such CO₂ excesses in a building, it is necessary to provide sufficient entry of fresh air, through proper ventilation.

A person, on an average, produces about 300 B.Th.U. (- 69 k) of heater hour. A large part of this heat is lost by leakage through the rooms. Inspire of such leakage, the room temperature may considerably rise, if it is occupied by many persons. This is because of the reason, that about 38 B.Th.U. (8.7 kC) of heat can raise the temperature of about 38 cum-sized room (4 m x 3 m x 3 m, approximately) by about 1°C. The heat so produced by occupants of the room is either to leak out to the atmosphere, or is to be ultimately absorbed by their bodies. And since a body temperature is to be maintained at 37°C (98.4° F), this extra heat has to be continuously dissipated by the occupants themselves. Higher outside temperatures retard this dissipation, reduces leakage, and thereby causing discomfort to the occupants. If things become severe, it may lead to heat exhaustion, heat cramp, and finally heat stroke. Continuous supply of fresh air through proper ventilation is, therefore, very necessary to avoid heat effects.

Moisture, in the form of water vapour, is released by inhabitants of building @ about 1.08 kg per day (46 gm. per hour). This increases the humidity of

the room/building, thereby decreasing evaporation and cooling of the bodies of the inhabitants, and thus causing them discomfort. This moisture, supported by the dust particles, also acts as carrier of germs and pathogenic bacteria from one person to another, causing water borne diseases. Organic matter and odours are released by human beings from their skins, clothing, and mouths. The increase of these in an enclosed space, occupied by several persons, may cause nausea, headache, and may even aggravate ones existing illness.

2.2. Purpose of Ventilation: Ventilation, as stated earlier, is meant for supply of fresh air, and to replace the old hot used up (exhausted) air. The ventilation ensures the removal of bad effects of occupancy of an enclosed space; By providing necessary oxygen to remove oxygen deficit caused by respiration; by removing and diluting CO₂ in the air; by lowering down the temperature by removing hot used up air and replacing it by colder fresh air;(i.e.) by reducing humidity; and by reducing body odours.

2.3. Extent of Ventilation required and Ventilation Standards: In olden days, it was thought that the poisonous CO₂, released by inhabitants is mainly responsible for causing pollution in houses and buildings. It was also thought that CO₂ content increasing beyond 0.06% in the room, would cause very harmful effects. Accordingly, the ventilation standards were framed on limiting the CO₂ of the used up air to 0.06%, as against the normal content of 0.04% of fresh air. This purification standard of 0.06% of CO₂, means that the air gets contaminated when its CO₂ content increases from 0.04% to 0.06%. In other words, addition of 0.02% of CO₂ in the air by respiration will contaminate the air, which further means that the addition of 0.02 cum of CO₂, will contaminate the air of a room of 100 cum capacity. Moreover, since an adult person releases 17 litres (0.017 cum) of CO₂, per

hour, we can, conclude that 0.02 cum of CO_2 , will be released by an adult in $0.02/0.07 \times 60 \text{ min} = 70.6 \text{ minutes}$. Hence, an adult person, if kept in a closed room of 100 cum volume, will contaminate its air in 70.6 minutes. If we consider a room of an average size 10 ft x 10 ft x 10 ft, i.e. 1000 ft³-28 cum volume, we find that such a room of 28 cum capacity will be contaminated by a single adult in = 70.6 min. $x = 20 \text{ min}$.

3. SEWAGE DISPOSAL AND AIR POLLUTION ENGINEERING

Whereas, in fact, in these days, it has been established that CO_2 , contents up to 1% or so, can be easily withstood. Due to these reasons, the air requirement was considered much more in olden times than in modern days. The air requirement of as high a value as 50 cum per hour per person" was not considered infrequent in olden days. This requirement has, nowadays, not only been toned down to about 15-30 cum/hr, but rather the entire concept of ventilation has undergone a change. Now-a-days, it has been established that maximum air change is required not for keeping CO_2 , under control, but is to ensure proper heat dissipation and cooling of the human body, as explained below:

- The blood in the body carries the heat to fine capillaries near the skin, and from there, it dissipates into the atmosphere by conduction. Due to this, the temperature of the surrounding air rises, which sets up

the convection currents. Fresh air comes nearby, and carries away heat. If the rate of its passage is slow, the body feels discomfort; whereas if this passage is accelerated through fans, etc. more relief is secured.

- During summer season, the temperature difference between the body (at 37 °C) and the surrounding air, becomes very low, and the heat gradient becomes very flat, and hence the rate of conduction falls down. Mechanical ventilation then becomes most essential.
- It thus becomes evident that ventilation is mainly required to control the body heat, and not to overcome CO_2 alone. The rate of ventilation required for body cooling exceeds the rate required for removing other bad effects of occupancy, such as decrease of O_2 , increase of odours etc. Hence, the air changes are required and provided these days on the bases of body cooling alone, and not on the consideration of CO_2 .
- On this consideration and in actual practice, the fresh air is supplied at threat of 15 to 30 cum per hour per person, depending upon the type of building. When the number of occupants cannot be easily determined, the rate of air supply may be based upon the number of air changes to be provided.

Table 1

Requirements of Air Supply and Air Changes with Mechanical Ventilation

Sl. No.	Types of buildings	Air required per person per hour in cum.	No. of air charges required per hour.
1.	Kitchens	60	10 to 40
2.	Factories and Workshop; workshops with flumes closely occupied open type	30-40 20-30 15-30	20-30 6-8 1-4
3.	Hospitals;		

	operation theatres	15-40	10
	X- rooms	15-40	10
	Treatment rooms	15-40	6
	open ward	15-40	3
4.	Lavatories and lab.	30-40	6-12
5.	Assembly halls, crowded dinning places, public halls, lecture rooms, meeting rooms etc.	35-40	6-10
6.	Restaurants, shops and canteens.	30	6
7.	Schools, (classroom)	20-25	3-6
8.	Living rooms and bed rooms	15-25	2-5
9.	General offices and libraries	15-30	3

4. SYSTEMS OF VENTILATION

A good ventilation system should generally fulfil the following requirements: It should admit sufficient quantity of fresh air, and remove the requisite used up or vitiated air. Admitted air should be properly controlled with respect to its quantity as well as velocity of movement. The system should be capable of changing the old air thoroughly, without leaving any stagnant pockets in the room. Should avoid draughts, for which maximum permissible velocity of admitted air should not exceed 15 m/min i.e. 0.25 m/sec. The system should admit clean and humid air. The system should also be capable of controlling the temperature of admitted air. The ventilation systems can be broadly divided into two categories; viz. Natural ventilation; and artificial mechanical ventilation.

4.1. Natural Ventilation: Natural ventilation is based upon providing suitable openings in a room, at lower levels for admitting free atmospheric air, and also at upper levels for removing the warmer and lighter used-up air. Doors and windows near the floor level, thus, admit fresh air, and ventilators near the ceiling, take out the vitiated air from a room. In

order to ensure privacy of a room, windows are generally provided at about 0.75 to 0.9 m above the floor level, for admitting fresh outside air into the room. The size and the number of the windows provided will depend upon the size of the room, number of occupants, the purpose and use of the room, etc. Besides admitting fresh air, the windows help in admitting natural day light. On minimum side, a window area of 0.052 m² per person* should generally be provided, so as to ensure admission of at least 28 cum- (i.e. 1000 cft) of air per hour with a velocity not greater than 9 m/min*. Another recommendation is to provide about 1/10 to 1/15th of the floor area in the living rooms for windows. Every room should preferably be provided with at least 2 windows, and at least one of them should face open space or a veranda. Kitchens must be provided with more window area. Provision of deflectors (also called fan lights) of 30 cm height at the bottom or top of a window, opening inward, permits the ventilation of the room, even when windows are closed, as shown in Fig.

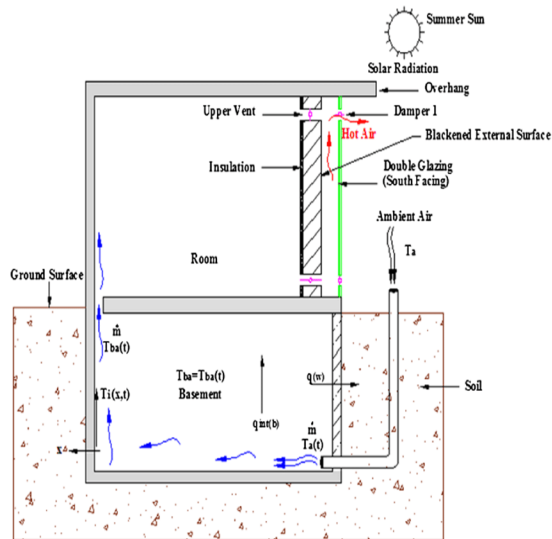


Fig 1: Natural Ventilation in Room

In hot summer months, during day time, hot outside air may be warmer than the inside room air, and the ventilators may then reverse their functions. In other words, the bottom openings may start letting out the room air, whereas the top openings may start admitting outside air to fill up the partial vacuum created thereby. The inside of room will, therefore, become worse, unless the admitted air is cooled down by some method. Khas curtains may, therefore, be hanged at the roof level ventilators to cool the air by evaporation. But during night time, when outside temperature falls, all windows and Ventilators may have to be kept open for allowing them to function in a normal manner.

4.2 Ridge Ventilator: In a hot and humid climate like that of India, natural ventilation fails to provide the requisite comfort, and hence artificial ventilation methods are adopted.

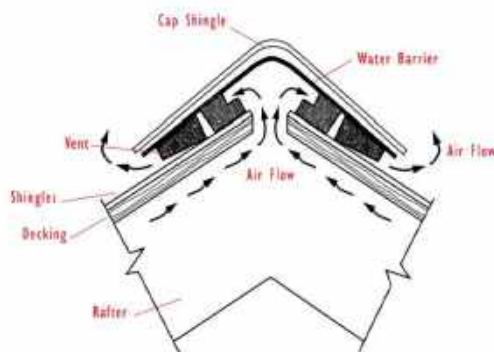


Fig 2: Ridge Ventilator

5. SEWAGE DISPOSAL AND AIR POLLUTION ENGINEERING

This system is simple and cheaper, but contains number of demerits, such as; there is no control on the quality of the incoming air. It can, hence, be installed only where outside air is not contaminated and overcrowded. It is also apt to cause draughts. In spite of these demerits, this system is largely used for kitchens, public halls, industrial plants, etc. In kitchens, the system helps in exhausting smokes and odours; in public halls, the system helps in exhausting out the ill effects of heavy occupancy; and in industrial plants, the system helps in exhausting out dusts and fumes, etc.

5.1 Ventilation of Buildings for Controlling Indoor Air Pollution: Serve us any useful purpose. In such conditions, it is necessary to completely control the temperature and quality of the outside air, before it is admitted into the room, and also to remove the heavy vitiated air at the optimum rates. All these problems have been solved in these modern days, by air-conditioning the buildings, in which all the doors, windows, and ventilators are kept closed. The air-conditioning may be defined as the process of controlling the temperature, humidity and distribution of air in a building, with simultaneously removing the dirt, bacteria and toxic matter from the air. Air-conditioning, thus, provides a comfortable and whole-some ventilation to the buildings. However, as the atmospheric conditions vary, the requirements of occupants also vary with respect to season. In other words, during summer season, an air-conditioning system will be required to produce cool air inside the building; and in winter season, it will be required to produce warmer air in the building.

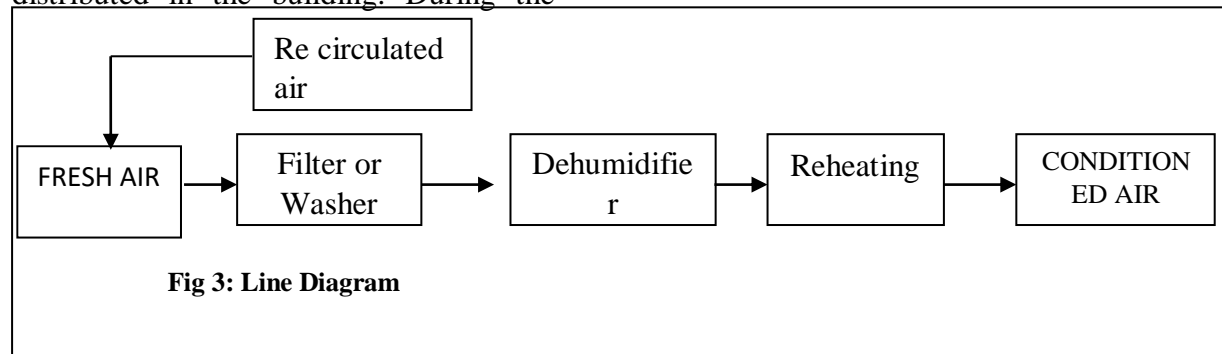
5.2. Summer Air-Conditioner: Atmospheric temperature is high, and the hot air has to be cooled before it can be distributed in the building. During the process of cooling, however, the humidity

of this air increases, because at lower temperatures with the same amount of moisture, the relative humidity increases. Hence, after cooling, it becomes necessary to reduce the humidity of this air, by drying it through dehumidifier. A dehumidifier is in the form of a hygroscopic substance like ammonia, calcium chloride, etc., or the air is cooled and dried through the process of condensation. The clean, cooled, and dried air is then finally forced out into the space to be conditioned. A line diagram of this system is shown-

5.2. Summer Air-Conditioner:

Atmospheric temperature is high, and the hot air has to be cooled before it can be distributed in the building. During the

process of cooling, however, the humidity of this air increases, because at lower temperatures with the same amount of moisture, the relative humidity increases. Hence, after cooling, it becomes necessary to reduce the humidity of this air, by drying it through dehumidifier. A dehumidifier is in the form of a hygroscopic substance like ammonia, calcium chloride, etc., or the air is cooled and dried through the process of condensation. The clean, cooled, and dried air is then finally forced out into the space to be conditioned. A line diagram of this system is shown-



5.3. Ventilation of Buildings for Controlling Indoor Air Pollution:

Individual air conditioning machines, called room air conditioners, are fitted on the windows of rooms; whereas, for larger spaces, central air-conditioning may be adopted. In a room air conditioner, the conditioned air comes out through a grill opening, as it is forced out by a fan. On the other hand, in central air conditioning, the conditioned air is produced by keeping the plant in one separate room, and distribution ducts are carried to individual rooms, and at various points in a big hall, for distributing the conditioned air, through fans and blowers. Recirculation of Air. During summer season, the temperature of room air is

lower than the temperature of the outside air. And since an air conditioner has to cool down the hot air, it should be economical for it to cool the room air rather than the outside atmospheric air, if it becomes available to it.

5.4. Room Air Purifiers: The air inside our houses and offices can be 10-300% more polluted than the outside air. Outdoor air pollution in fact, can easily enter our home, when the windows and doors are open; and even when they are closed, natural ventilation can bring in allergens and small particulates-under 2.5 micrometres, into our rooms. Pollen is a common indoor allergen released by trees, weeds and plants that can trigger allergy symptoms. Another indoor allergy is Dust, which contains dust mites,

outdoor minerals, and other particles that can trigger severe allergic reaction and asthma. Indoor pollutants can occur from cooking, cleaning and having a household pet. New indoor decorations and furnishings may also sometimes release gases and volatile organic compounds (VACS). To prevent bacteria and viruses from growing, the humidity levels of our homes should be 40-60%. A well humidified room makes the air more comfortable to breathe, and helps keep our skin free from drying out. In order to avoid contracting bad health effects of polluted indoor air, room air purifiers, of various sizes and makes, have now-a-days been released in the market, and are becoming popular for common use, particularly in a city like Delhi, where the outdoor air is excessively bad, almost throughout the winter months. The room air purifiers, which are commonly available at reasonable rates in the markets these days, are from: Companies like Atlanta, Philips, Kent, Godrej, Eureka Forbes, Hind ware, HSIIL Ltd. (making Moon bow brand air purifiers) etc; etc. Most of these room air purifiers work on the technology to suck and filter the room air through a series of filters, such as: (i) prefilter; (ii) HEPA filter; (iii) Activated carbon filter; (iv) UV lamp; and (v) Refreshing energizers.

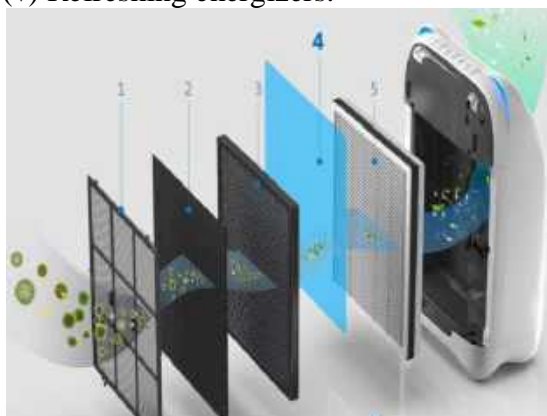


Fig 4: Five Stages Air Purification in a Typical Room Air Purifier.

The above indicated five stage purification process helps to capture indoor particulate pollutants and

carcinogenic ultra fine particles. The clean air obtained after passing the above filtration stages, is finally released from the purification process, air borne pollutants like dust, smoke, pollen, bacteria, viruses, and other particles as small as 0.3 microns are usually removed. Some of the designs do display real time values of PM 2.5, as existing in the room, prior to starting the unit as well as during its operation.

CONCLUSION

The various filters used in these purifiers evidently need regular cleaning and replacement, when needed. Some units and design do have an indicator to glow when such a cleaning or replacement is required.

The most important role of five stage filtration process is that HEPA filter, that removes micro-scope particles. It can usually remove 99.97% of particles larger than 0.3µm. Further to capture gases and odours, activated charcoal filter is used in conjunction.

To prevent bacteria and viruses from growing, the humidity levels of our homes should be 40-60%. A well humidified room makes the air more comfortable to breathe, and helps keep our skin free from drying out. In order to avoid contracting bad health effects of polluted indoor air, room air purifiers, of various sizes and makes, have now-a-days been released in the market, and are becoming popular for common use.

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Available online @ www.iaraindia.com
 RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal

ISSN: 2250-1940 (P) 2349-1647 (O)

Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)

Volume VIII, Issue 28

July-September 2020

Formally UGC Approved Journal (63185), © Author

AN EXPERIMENTAL STUDY ON DIFFERENT MATERIAL PROPERTIES REQUIRED FOR MAKING OF FLY ASH BRICK

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Abstract

Bricks are such an element which takes part an important role to construct a house. Usually, burnt clay bricks are using to meet the ambition but to do so, a large amount of soil is removing for the production of clay bricks. This paper reveals the material properties of fly ash bricks taking different proportions of fly-ash, gypsum, sand, quarry dust, lime and a fixed amount of cement. Different tests were conducted to find material properties i.e., moisture content, specific gravity, grain size distribution, consistency, bulking of sand, silt test, water absorption in the laboratory. Ingredients were being used to produce the bricks at four proportions of using fly-ash, gypsum, sand/stone dust, lime and small amount of cement replacing gypsum in three proportions. All the materials were tested before preparation of brick mould. Then the mortar was placed to a mold as per specification. ASTM code of practice was followed to conduct the tests of this research.

Keywords: Fly ash, Lime, Gypsum, Quarry dust, Sand, Cement, Material properties.

INTRODUCTION

In order to achieve the project objectives a series of tasks were identified and included literature reviews, collection of experiences from other research work, review of other state specifications, laboratory evaluation of fly ash brick samples and material properties. The fly ash bricks being lighter and stronger than ordinary burnt clay bricks can be easily used for the purposes of construction. Fly ash brick is a building material,

specifically masonry units, containing class C and class F fly ash and water. Fly ash is generally evaluated in cement and concrete production as an inexpensive pozzolanic blending material, Pei-wei et al. (2007). Gourav and Reddy (2018) tried to reveal the causes behind the clay-fly ash-gypsum-lime masonry. Cultrone and Sebastian (2008) conducted a research to develop strength of solid bricks using fly ash in five proportions. Henry et.al (2005) intended to provide a solution to the fly

ash disposal problem by utilizing the fly ash produced from different sources. The cement industry emits a huge amount of CO₂ along with high energy consumption produce cement. To reduce these effects, the pozzolanic materials such as fly ash may be used by replacing lime. In this current work the attempt has made toward find the optimum mix proportions so as to obtain highest compressive strength of latest fly-ash brick. These bricks made with fly-ash are prepared for different ratios of ingredients using hydride lime or slug lime and Gypsum/cement as binder material and 28 days compressive strengths are calculated. Obadakayaliet.al (2005) compared the properties of fly ash bricks to the clay bricks. The produced fly-ash bricks were not only 28% lighter than clay bricks although it possess 40MPa or higher compressive strength. Sieve analysis is carried out to determine the grain size distribution of the sand. Sand has been tested for its bulking properties and it was found that the volume of the sand has increased by 3% after 1 hour as well as 24 hours. Average moisture content of fly ash by oven dry method was 0.3. The consistency was determined using the Vicat apparatus. A mixture of 400 gm cement and 136 ml of water determined the initial and final setting time of the cement. Different proportions of materials are mixed together to prepare different grades of bricks and their strength is checked.

2. INGREDIENTS OF FLY ASH BRICK

Fly ash

Fly Ash is finely divided residue resulting from the combustion of powdered coal and transported by the flue gases and collected by electrostatic precipitator. ASTM broadly classify fly ash into two classes Class F: Fly ash normally produced by burning anthracite or bituminous coal, usually has less than 5% CaO. Class F fly ash has pozzolanic properties only. Class C Fly ash normally produced by burning lignite or sub-

bituminous coal. Some class C fly ash may have CaO content in excess of 10%.

Lime

Lime is an important binding material in building construction. It is basically Calcium oxide (CaO) in natural association with magnesium oxide (MgO). Lime reacts with fly ash at ordinary temperature and forms a compound possessing cementations properties.

Gypsum

Hydrated Calcium Sulphate is called Gypsum (CaSO₄: 2H₂O). Gypsum is a non- hydraulic binder occurring naturally as a soft crystalline rock or sand. Gypsum have a valuable properties like small bulk density, incombustibility, good sound absorbing capacity, good fire resistance, rapid drying and hardening with negligible shrinkage, superior surface finish, etc.

Quarry dust

It is residue taken from granite quarry. Due to excessive cost of transportation from natural sources locally available river sand is expensive. Also creates environmental problems of large-scale depletion of these sources. In such a case the Quarry rock dust can be an economic alternative to the river sand.

Sand

Optimum properties are achieved when selecting the most suitable raw material. The sand is mostly preferred from river, which is washed and should be with minimum 20% fines. Dust in sand increases the demand for water and cement, without adding to the properties. It also increases shrinkage.

Cement

Cement is a binder, a substance used in construction that sets and hardens and can bind other materials together. The most important types of cement are used as a component in the production of mortar in masonry, and of concrete, which is a combination of cement and an aggregate to form a strong building material.

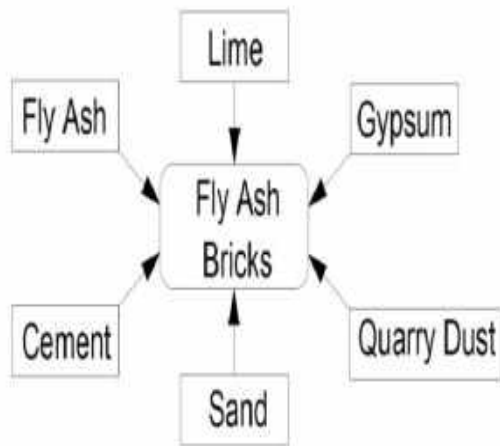


Figure 1: Flowchart representing the composition of Fly Ash brick

3. EXPERIMENT RESULT

Specific gravity of fly ash:

Determine the specific gravity of fly ash grains (G_s) using the following equation.

$$G_s = (W_2 - W_1) / \{(W_2 - W_1) - (W_3 - W_4)\}$$

Where,

W_1 = empty weight of pycnometer

W_2 = weight of pycnometer + oven dry fly ash

W_3 = weight of pycnometer + oven dry fly ash + water

W_4 = weight of pycnometer + water full

Here, $w_1 = 0.595\text{kg}$; $w_2 = 0.646\text{kg}$; $w_3 = 1.526\text{kg}$; $w_4 = 1.499\text{kg}$;

We know that

Specific gravity of fly ash

$$(G_s) = \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)}$$

$$G_s = (0.646 - 0.595) / \{(0.646 - 0.595) - (1.526 - 1.499)\}$$

$$G_s = 0.051 / (0.051 - 0.027)$$

$$G_s = 0.051\text{kg} / 0.024\text{kg}, G_s = 2.125.$$



Figure 2: Specific gravity test of fly ash

Moisture content of fly ash by oven dry method:

For many fly ash, the water content may be an extremely important index used for establishing the relationship between the way a fly ash behaves and its properties. The consistency of a fine-grained fly ash largely depends on its water content. The water content is also used in expressing the phase relationships of air, water, and solids in a given volume of fly ash. Calculated moisture content is described in Table 1.



Figure 3: Moisture content test of fly ash

Table 1

Observation and calculation of moisture content of fly ash

Container No.	Mass of empty container with lid (M_1), (KG)	Mass of the container with wet fly ash and lid (M_2) (KG)	Mass of the container with dry fly ash and lid (M_3) (KG)	Mass of Water M_w (LITRE)	Mass of fly ash M_s (KG)	Water Content $w = \left(\frac{M_w}{M_s}\right) \times 100$
W_1	0.0218	0.0788	0.0786	0.0002	0.0568	0.352
W_2	0.0226	0.0726	0.0724	0.0002	0.0498	0.402
W_3	0.0232	0.0820	0.0819	0.0001	0.0587	0.170

Determination of grain size distribution of fly ash by hydrometer analysis:

Take about 50g in case of clayey fly ash and 100g in case of sandy fly ash and weight it correctly to 0.1g.

Sodium hexa Meta phosphate (s.h.m.p.) = 33g

Sodium carbonate (s.c) = 07g

Take total materials (s.h.m.p. + s.c) = 40g solution

40g total materials with 1000ml water mixed goodly.

Then 1000ml mixed solution from we will take only 100ml solution.

Again 100ml solution with 50g fly ash materials mixed goodly.

This mixed 100ml + 50g solution put in 1000ml capacity glass jar.

Then 10ml + 50g solutions with distilled water add up to 250±2ml.



Figure 4: Observation and calculation of hydrometer Analysis (Fly ash)

Determination of consistency of cement:

Ordinary Portland cement (opc), grade 53 for star cement

Weight of cement taken (g) = 400 g

Initial percentage of water added to cement = 34%

Quantity of water added to cement = 136 ml

Table 2

Observation and calculation of consistency of cement

Sl. No.	Quantity Of Water Added (ml)	Depth Of Penetration (ml)
1	136	6

Determination of initial and final setting time of cement:

Weight of cement taken (g) = 400 g

Initial percentage of water added to cement = 35%

Quantity of water added to cement = 140 ml

Consistency of cement = 35%, Amount of water = $0.85p = (0.85 \times 140) \text{ ml} = 119 \text{ ml}$

Initial setting time = 87 min

Final setting time = 3 h 5min

Table 3
Observation of initial and final setting time of cement

Sl. No.	Quantity Of Water Added (ml)	Depth Of Penetration (ml)
1	140	7

Specific gravity of cement:

Determine the specific gravity of cement (G_s) using the following equation

$$G_s = \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)}$$

- W_1 = Empty weight of Pycnometer = 0.596 Kg
- W_2 = Weight of Pycnometer + Oven dry sand = 0.646 Kg
- W_3 = Weight of Pycnometer + Oven dry sand + Water = 1.537 Kg
- W_4 = Weight of Pycnometer + Water = 1.502 Kg

$$\begin{aligned} \text{Specific gravity of cement } (G_s) &= \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)} \\ &= \frac{(0.646 - 0.596)}{(0.646 - 0.596) - (1.537 - 1.502)} = 3.3 \end{aligned}$$

Specific gravity of sand:

Determine the specific gravity of sand (G_s) using the following equation

$$G_s = \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)}$$

- W_1 = Empty weight of Pycnometer = 0.596 Kg
- W_2 = Weight of Pycnometer + Oven dry sand = 0.795 Kg
- W_3 = Weight of Pycnometer + Oven dry sand + Water = 1.626 Kg
- W_4 = Weight of Pycnometer + Water = 1.502 Kg

$$\begin{aligned} \text{Specific gravity of sand } (G_s) &= \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)} \\ &= \frac{(0.795 - 0.596)}{(0.795 - 0.596) - (1.626 - 1.502)} = 2.7 \end{aligned}$$

Determination of grain size distribution of sand by sieve analysis:

Sieve analysis of sand determined by sieve set of size 4.75 mm, 2.36mm, 1.18mm, 600mic, 425mic, 300mic, 150mic, 75mic.

- Percentage of coarse sand (4.75mm – 2.36mm) = $(99 - 83.6)\% = 15.4\%$
- Percentage of medium sand (2.36mm – 0.425mm) = $(83.6 - 56.2)\% = 27.4\%$
- Percentage of fine sand (0.425mm – 0.075mm) = $(56.2 - 3)\% = 53.2\%$
- Percentage of silt clay fraction ($< 0.075\text{mm}$) = 3%

Table 4
Observation and calculation for grain size distribution of sand

IS Sieve Size	Diameter of Grain (mm)	Wt. Retained (g)	Cumulative Wt. Retained (g)	% Retained	% Finer Than
2.36 mm	2.36	77	82	16.4	83.6
1.18 mm	1.18	57	139	27.8	72.2
600 μ	.600	45	184	36.8	63.2
425 μ	.425	35	219	43.8	56.2
300 μ	.300	20	239	47.8	52.2
150 μ	.150	206	445	89	11
75 μ	.075	40	485	97	3

Determination of quantity of silt test of Fine aggregate sand:



Figure 5: Silt test of the sand

Determine the amount of the silt (in percentage) by volume in fine aggregates.

- Dissolve 2 pinches of salt in about 200ml of water in the measuring.
- Fill it with sand till the level is about 2cms from the top of the cylinder.
- Shake the cylinder rigorously and take the reading after 10mins and af

Table 5

Observation and calculation of Silt content in sand

Sl. No.	Volume of sample X (ml)	Volume of sample Y (ml)	% Silt content $= (X/Y) \times 100\%$
1	3	90	3.33

Bulking of sand:

At first we will take 200ml of sand 1.18mm sieve sand. Then 200ml dry sand within 250 ± 2 ml (1pc biker or jar) Water will add, then 20-30 minutes after setting and taking final result.

After 1hour result:

Volume of dry sand (H) = 200ml

Volume of saturated sand (h) = 194ml

Reduced volume of sand

$$(H - h) = (200 - 194) \text{ ml} = 6\text{ml}$$

Percentage of bulking = $((H-h)/H) \times 100$

$$= ((200-194)/200) \times 100 = 3\%$$

After 24 hours result:

Volume of dry sand (H) = 200ml

Volume of saturated sand (h) = 194ml

Reduced volume of sand

$$(H - h) = (200 - 194) \text{ ml} = 6\text{ml}$$

Percentage of bulking =

$$\begin{aligned} & ((H-h)/H) \times 100 \\ & = 3\% \end{aligned}$$



Figure 6: Laboratory set up for testing Bulking of sand

Specific gravity of hydride lime:

Determine the specific gravity of Hydride Lime (G_s) using the following equation

$$G_s = \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)}$$

- W_1 = Empty weight of Pycnometer = 0.5976 Kg
- W_2 = Weight of Pycnometer + Oven dry H.Lime = 0.6510 Kg
- W_3 = Weight of Pycnometer + Oven dry H.Lime + Water = 1.5350Kg
- W_4 = Weight of Pycnometer + Water = 1.5036 Kg

$$\begin{aligned} \text{Specific gravity of Hydride Lime } (G_s) &= \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)} \\ &= \frac{(0.6510 - 0.5976)}{(0.6510 - 0.5976) - (1.5350 - 1.5036)} \\ &= 2.427 \end{aligned}$$



Figure 7: Specific gravity test of hydride lime

Specific gravity of gypsum

Determine the specific gravity of gypsum (G_s) using the following equation

$$G_s = \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)}$$

- i. W_1 = Empty weight of Pycnometer = 0.5990 Kg
- ii. W_2 = Weight of Pycnometer + Oven dry gypsum = 0.6490 Kg
- iii. W_3 = Weight of Pycnometer + Oven dry gypsum + Water = 1.5370 Kg
- iv. W_4 = Weight of Pycnometer + Water = 1.5042 Kg

$$\begin{aligned} \text{Specific gravity of gypsum } (G_s) &= \frac{(W_2 - W_1)}{(W_2 - W_1) - (W_3 - W_4)} \\ &= \frac{(0.6490 - 0.5990)}{(0.6490 - 0.5990) - (1.5370 - 1.502)} = 2.7 \end{aligned}$$

4. CONCLUSION

Here is an attempt has been done to study the behavior of fly ash based bricks using the lime, gypsum, sand, cement and stone dust. The experimental investigation was carried out to find the optimum mix percentage of fly ash brick. Based on these materials required data can be obtained from the experimental study and concluded that, during preparation of Fly ash brick all material sample need to be examined. Fly ash bricks are prepared using seven different proportions. However the brick specimen of size 200mm x 100mm x 100mm were cast for different mix percentage of Flyash (45 to 60%), Gypsum (5%), Lime (10 to 20%), Quarry dust (25 to 40%), and cement (8 to 10%). Compressive strength were studied for different mix proportions. For different trial ratios it is observed that fly ash based bricks achieve more strength for slug lime than hydride lime even if using fifty percent of fly ash (further detail experiment result described in reference 7).

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Available online @ www.iaraindia.com
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 Volume VIII, Issue 28
 July-September 2020
 Formally UGC Approved Journal (63185), © Author

ANCHOR EFFECTS OF MONETARY POLICY RATES ON THE BANK'S PERFORMANCE

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Abstract

Financial sector reforms are happening continuously to contribute to economic growth and development. Mergers are taking place between banks, either public or private banks. Commercial banks play a significant role in controlling the price liquidity in the economy by collecting large numbers of small amounts and giving credit to those who are in need of money. The institute which regulates the banking system in India is the Reserve Bank of India, which is the central/apex bank of India. The central banks have quantitative instruments through which it regulates the money supply or price liquidity in the economy. When there is a change in the monetary policy rates, banks should adopt the new announced monetary policy rates in their performance. Central bank either choose expansionary or contractionary monetary policy according to the economic situation. The study concentrates on whether banks are getting affected by a regular change in monetary policy rates. The monetary policy committee will meet bi-monthly and decide to change the monetary policy rates or not. The alteration in monetary policy rates is directly applied of the banks in India. The study also concentrates on public and private sector banks in India. There are various performances of commercial banks like profitability, credit lending performance, financial performance, operating performance, and so on. Profitability performance of both public sector banks and private sector banks and their impact on a change in monetary policy rates. Coming to monetary policy rates Cash Reserve Ratio, Statutory Liquidity Ratio, Repo Rate, Reverse Repo Rate, Bank Rate are included as independent variables, and Profit After Tax is considered as a dependent variable. Regression analysis befits for this study to look for the impact on the profitability of commercial banks in India.

Keywords: Financial sector reforms, Reserve Bank of India, Commercial Banks, Monetary policy rates, Public sector banks, Private sector banks, Profitability.

INTRODUCTION Central Bank

India is one of the fastest-growing economies in the world, with a population of over 1.354 billion (Ministry of

Statistics and Programme Implementation & UN reports 2017-18). It is also stated as the seventh-largest nation in the world. India has become the hub for global investment. Various factors influence and

control the Indian economy. One of the significant factors is the RBI, which is also one of the oldest and most reputable institutions behind the success of our Indian economy. Control in Balance of Payment, FOREX reserve, capital and money market and other sectors of the India economy are all happening because of the strong backbone of the RBI.

The bank which governs the entire banking system, including the money market, is the Central bank. The main and primary function of the central bank is to assist the government in formulating economic policy, controlling the money market, and also bank credit. According to some bankers and economists, “a central bank is a bank whose essential duty is to maintain the stability of the monetary standard.”

“The central bank is a banking system in which a single bank has either a complete or a residual monopoly of note issue.”

-Decock

Monetary policy:

It is the process by which the monetary authority of the country, Usually the central bank regulates the money supply in the economy by its control over interest rates to sustain price stability and attain high economic growth. The objectives of monetary policy, which is governed by the central bank, i.e., The Reserve Bank of India, are to maintain price stability, full employment, economic growth, and Balance of Payment.

The monetary policies are of two types, and they are Expansionary and Contractionary policy. Expansionary monetary policy is when a central bank uses its tools to expand the economy by increasing the money supply and sinking interest rates, which increases aggregate demand, and that boosts economic growth as measured by GDP (Gross Domestic Product) in India. It helps during the time of recession. And Contractionary monetary policy is a set of tools that slow down the growth rate of the economy to

prevent it from stickiness; these tools include the credit flow in the marketplace, interest rate, and currency exchange. It helps during the time of inflation.

Commercial Banks

Commercial banks are indeed the most significant credit institutions in the economy in the business of lending and borrowing money and credit creation. Traditionally, commercial banks came into being for commercial purposes. The commencement of modern banking is the result of a commercial bank. Professor Roger defines that “the banks which deal with money and money’s worth with a view of earning a profit is known as a commercial bank.” The commercial banks have the primary objective to collect savings or idle money from the public by providing a specified rate of interest, and the same money is lent to the public at a higher rate of interest. The other objectives are to create awareness about savings amongst the people, to concentrate on profit maximisation, to expedite investment, to build capital through savings, to maintain economic stability, to extend service to customers, to assist the government for trade and business and socio-economic development, to extend assistance and suggestion to the government on economic issues.

“Bank is an institution that collects money from those who have in spare or who are saving it out of their income and offer this money out to those who require it.”

-Crowther

“A banker is one who, in the regular course of business, honours cheques drawn upon him by persons for and for whom he accepts money on the current account.”

-Professor Hart

Review of the operation of monetary policy instruments:

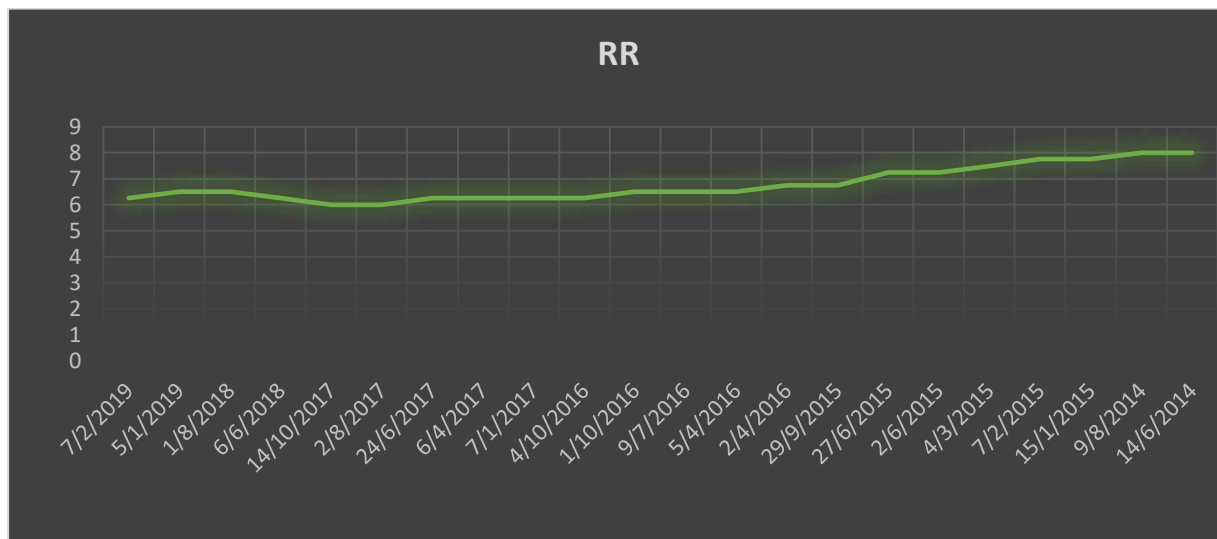
- **Repo Rate:** Repo rate is the interest rate at which RBI lends to its clients generally against

government securities. Reduction in the Repo rate helps the commercial banks to get money at a cheaper rate, and an increase in

the Repo rate discourages the commercial banks from getting money as the rate increases and becomes expensive.

Chart 1

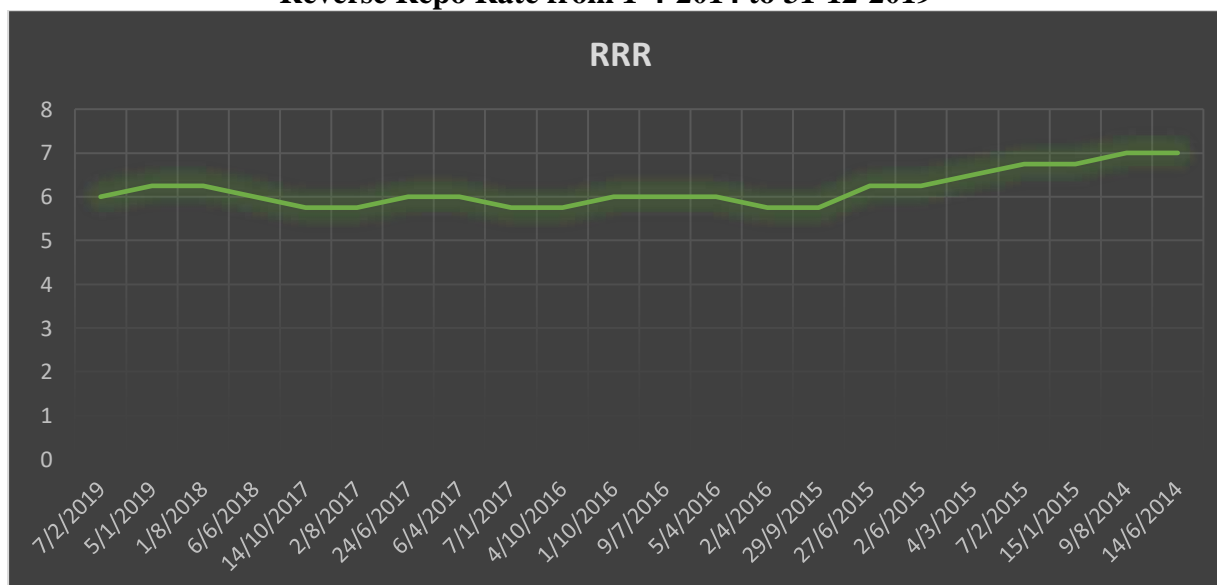
Repo Rate from 1-4-2014 to 31-12-2019



- **Reverse Repo Rate:** Reverse Repo Rate fixed by the monetary policy committee by which RBI borrows money from commercial banks. The increase in the Reverse Repo Rate will increase the cost of borrowing and lending of the banks, which will discourage the public from borrowing money and will encourage them to deposit.

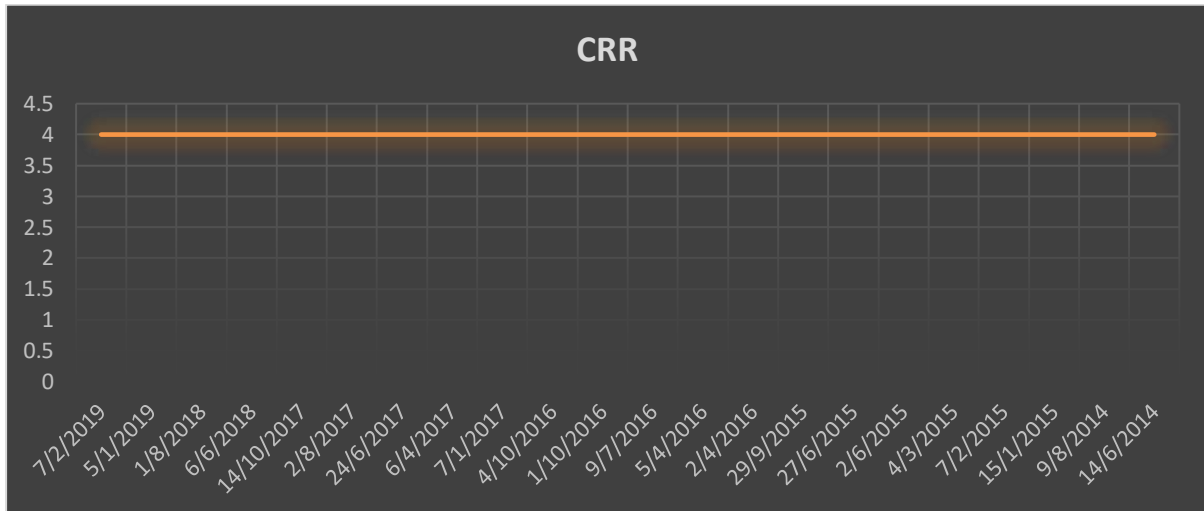
Chart 2

Reverse Repo Rate from 1-4-2014 to 31-12-2019



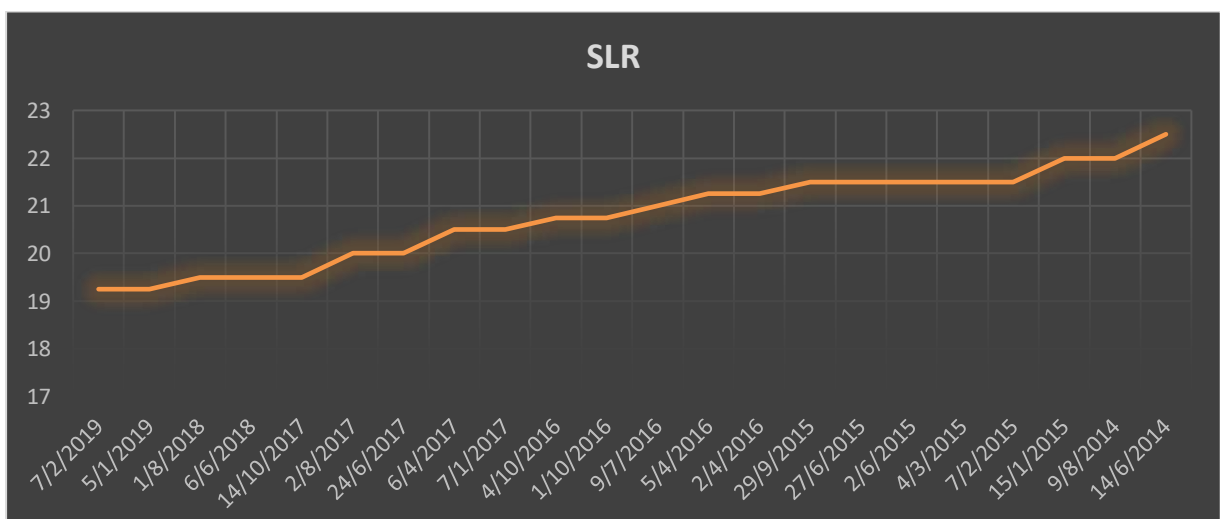
- **Cash Reserve Ratio:** The portion of the total bank's deposit mandated by the central bank to be preserved with the central bank in the form of cash, that portion is called cash reserve.

Chart 3
Cash Reserve Ratio from 1-4-2014 to 31-12-2019



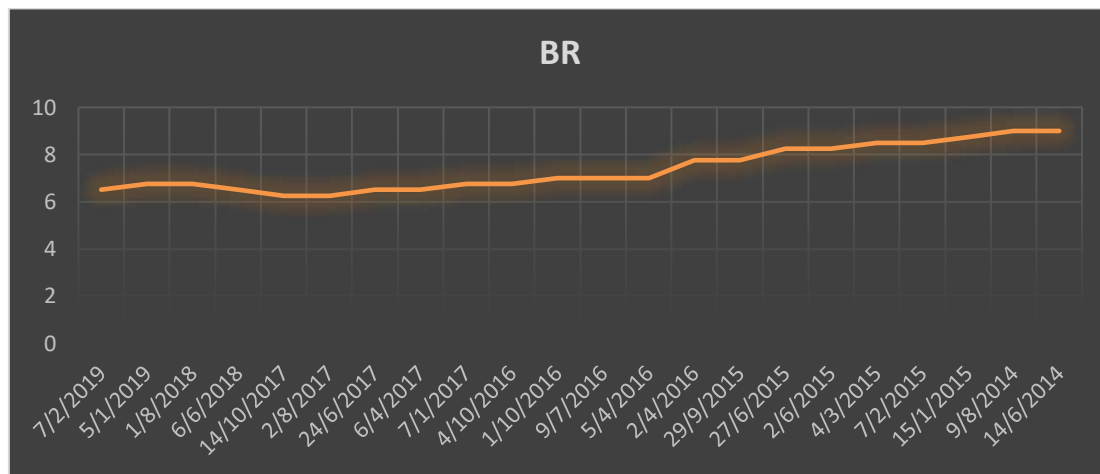
- **Statutory Liquidity Ratio:** The minimum reserve requirement that has to be preserved by the banks in India with itself. The percentage at which the banks maintain the minimum reserve is called Statutory Liquidity Ratio. The word 'statutory' says that retaining the reserve is mandatory and legally required.

Chart 4
Statutory Liquidity Ratio from 1-4-2014 to 31-12-2019



- **Bank Rate:** The Reserve Bank of India sets an interest rate (is also the lowest rate) at which it lends money to the banks in India. This rate affects the interest rates that are then charged to the customers by the banks.

Chart 5
Bank rate from 1-4-2014 to 31-12-2019



The monetary policy deals with the primary function of the supply of money in the market, observing that it should not cause the circumstances of inflation and recession. The RBI being the central authority of monetary policy uses tools to regulate the inflow and outflow of the money in the economy. Monetary policy plays a vital role in economic growth, and its instruments play an important role in adjusting the financial condition according to the current economic situation.

State Bank of India (SBI)

The State Bank of India is an Indian public sector banking and financial institution. It is a government corporation and also a regulatory authority, headquartered in Mumbai, Maharashtra. SBI has over 24000 branches in India. In the financial year 2012–13, the revenue of SBI was ₹2.005 trillion (US\$29 billion), out of which domestic operations contribution was 95.35% of revenue. Similarly, domestic operations contribution was 88.37% of total profits for the same financial year.

Under the Pradhan Mantri Jan Dhan Yojana regarding financial inclusion launched by Government in

August 2014, SBI held 11,300 camps and also opened around 3 million accounts by September, which included 2.1 million accounts in a rural sector and 1.57 million accounts in the urban region.

ICICI bank

ICICI (Industrial Credit and Investment Corporation of India) Bank Limited is

an Indian multinational banking and financial services company, having its headquarter in Mumbai, Maharashtra with its registered office in Vadodara, Gujarat. As of 2018, ICICI bank stands second largest bank in India in terms of assets and market capitalisation. It offers an extensive range of banking products and financial services for corporate and retail customers through a variety of distribution channels and specialised subsidiaries in the areas of investment banking, life, non-life insurance, venture capital and asset management. The bank has a vast network of 4882 plus branches along with 15,101 ATMs across India and has an existence in 17 countries including India. ICICI Bank offer products and services like online money transfer & tracking service, loans,

automated lockers, credit card, debit card and digital wallet.

Statement of the problem

The problem of the study is to identify how the profitability of the commercial bank will impact when there is a change in monetary policy rates. The monetary policy rates will change as and when required, according to the situation. But how the banks will react and face the rate change is a big question. Whenever the rate changes, the bank is the primary factor that is most affected, and how it will tackle the move is a big challenge. When there is a requirement of money to the economy, the rates will be reduced and vice versa.

Hence, the RBI should also take into consideration the effect of a rate change on commercial banks in India and take steps to implement the new rates. The banks should also get ready and take precautionary measures to safeguard from sudden rate changes in monetary policy.

Review of related literature

(Minakshl Malhotra and Glan Kaur 1992) The attempt has been made here to measure the impact of the various instruments of monetary policy on the profitability of the commercial banks quantitatively, and it resulted that the monetary policy has been contributing negatively to the burning topic about the declining profitability of the commercial banks in India.

(Rao 2006) The Reserve Bank would continue to keep a constant watch on the domestic and external situation. Monetary policy is guided by the objective of the provision of adequate liquidity to meet credit growth and support demand for investment in the economy while monitoring the movements carefully at the price level. The policy stance remains to be one of the favourites for a soft and flexible interest rate environment within the context of macroeconomic stability.

(Kaushal 2011) The policy changes impact the commercial banks' interest profitability, but when the policy tightens

its stance, commercial banks have enough flexibility to readjust their lending rates and deposit rates to narrow down the impact on its profitability due to hike in policy rates. Banks work in tandem to the monetary policy's stance to bring out the desired result in the economy.

(Abah 2015) The proxies used for monetary policy are the interest rate and money supply, while Profit before Tax was used as a representation of commercial banks' performance. The result showed a positive relationship between bank profit and monetary policy. The study recommends that interest rate policy should be taken care of by the monetary authority in a way that is welcoming to loan advancement in the country.

(Udeh 2015) Monetary policies being an external factor to the banks, the tools could act as a militating or mitigating factor in boosting banks' profitability. The way and manner these aspects are applied to banks vary from one country to the other and have a traceable relationship to the state of the particular country's economy. The study examined the impact of cash reserve ratio, liquidity rate, interest rate, and minimum rediscount rate on the profit before tax of zenith Bank Plc. It was found that a minimum rediscount rate had a great relationship with the profitability of Zenith Bank Plc. It also had a significant and positive impact on the profitability of the bank. The other factors did not have preferences considerable effect on the profitability of the bank.

(Claudio borio 2015) They found a positive relationship between the level of short-term rates and the slope of the yield curve ("interest rate structure," for short), on the one hand, and bank profitability - Return on Assets on the other. It suggests that the positive impact of the interest rate structure on net interest income dominates the negative one on loan loss provision and non-interest income. The findings of the study have inferences for long-term

rates being very low for very long periods. It is also expected to be temporary, as evaluation gains only have a one-off impact on profitability.

(Thanh Nhan Nguyen 2017) When there is a change in monetary policy, change directly affects the bank's profitability. They briefed that the banking profit's determinants also include Credit Growth and Liquidity, and also they are the primary internal drivers of banking profit. Moreover, the macroeconomic factors, including economic growth and inflation, are shown to have a significant influence on the banking system's performance.

Objective

The purpose of the study is to analyse and understand how the profitability of State Bank of India (Public sector bank) and ICICI bank (private sector bank) are getting affected by the change in monetary policy rates. The monetary policy rates are Cash Reserve Ratio, Statutory Liquidity Ratio, Bank Rate, Repo Rate and Reverse Repo Rate. And also to determine which sector's profitability (public sector or private sector) is getting affected more by the change in monetary policy rates.

Hypothesis

H_{A1}: Cash Reserve Ratio has a significant effect on the profitability of SBI and ICICI bank.

H_{A2}: Statutory Liquidity Ratio has a significant effect on the profitability of SBI and ICICI bank.

H_{A3}: Bank Rate has a significant effect on the profitability of SBI and ICICI bank.

H_{A4}: Repo Rate has a significant effect on the profitability of SBI and ICICI bank.

H_{A5}: Reverse Repo Rate has a significant effect on the profitability of SBI and ICICI bank.

EMPIRICAL STUDY

Cash Reserve Ratio, Statutory Liquidity Ratio, Bank Rate, Repo Rate and Reverse Repo Rate of monetary policy have been assumed to be independent variables in the regression equation to analyse the impact on profitability. The duration of the study is from April 2014 to March 2019, i.e., for five years. Thus the regression equation to be projected for the purpose takes the following form.

$$\text{Bank's Profit} = \beta_0 + \beta_1\text{CRR} + \beta_2\text{SLR} + \beta_3\text{BR} + \beta_4\text{RR} + \beta_5\text{RRR}$$

The results of the estimated regression equation are presented in Table 1 and Table 2.

Table 1
Estimation of regression of independent variables of SBI
(Regressed independently)

Intercept	SLR	BR	RR	RRR	R	R Square	D-W	f-stat
-77.403	3.923 (3.674)	—	—	—	0.905	0.818	3.263	13.495
-26.608	—	4.143 (2.795)	—	—	0.850	0.723	2.955	7.812
-37.072	—	—	6.041 (2.222)	—	0.789	0.622	1.762	4.936
-28.416	—	—	—	5.180 (1.251)	0.586	0.343	1.612	1.566

Information In the parentheses are the t values

Table 2
Estimation of regression of independent variables of ICICI bank.
(Regressed independently)

Intercept	SLR	BR	RR	RRR	R	R Square	D-W	f-stat
-105.445	5.851 (5.237)	—	—	—	0.949	0.901	1.936	27.421
-24.607	—	5.854 (2.245)	—	—	0.792	0.627	1.628	5.042
-25.511	—	—	6.073 (1.165)	—	0.558	0.311	1.173	1.356
-24.896	—	—	—	6.516 (1.050)	0.518	0.269	0.869	1.103

Information In the parentheses are the t values

In table-1, the correlation between the monetary policy rates and profitability of State Bank of India (public sector bank) is very high in case of statutory liquidity ratio, in descending order next comes bank rate and repo rates. However, the correlation of profitability of SBI and reverse repo rate is medium but not low. Even the R-square value of statutory liquidity ration is approximately 82 per cent (81.8%) which shows there is a strong significance relationship. The R-square value of bank rate and repo rate shows a significant impact on the profitability of the State Bank of India. Even the Durbin-Watson test says that the autocorrelation between statutory liquidity ratio and bank rate with the profitability of State Bank of India is negative, and the relation between repo rate and reverse repo rate with the profitability of State Bank of India is positive.

In table-2, the correlation of between the monetary policy rates and profitability of ICICI bank (private sector bank) is very high in case of statutory liquidity ratio, in descending order next comes bank rate and repo rates. However, the correlation of profitability of ICICI bank and reverse repo rate is medium but not low. Even the R-square value of statutory liquidity ration is ninety percent (90%) which shows there is a strong

significance relationship. The R-square value of bank rate and repo rate shows a significant impact on the profitability of the ICICI bank. Even the Durbin-Watson test says that the autocorrelation between statutory liquidity ratio and bank rate with the profitability of ICICI bank is negative, and the relation between repo rate and reverse repo rate with the profitability of State ICICI bank is positive.

When the impact on both SBI and ICICI bank are observed, the private sector bank (ICICI Bank) is responding fast when compared to the public sector bank (SBI). In the case of correlation, private bank's numbers are higher than public sector bank. Same in case of R-square and Durbin-Watson test, the private sector bank's are responding faster than public sector banks.

Conclusion

The expectations are entirely satisfactory in the overall monetary and macroeconomic situations in India. The improvements are necessary for the financial sector reforms in India. On the other hand, the Reserve Bank of India would continue to keep a steady and strict watch on domestic and exterior situations. To regulate the liquidity, inflation, and movements in the price level, the Reserve Bank of India should also consider qualitative tools along with the quantitative tools. The qualitative tools

will not impact the profitability of commercial banks as it focuses only on credit ceiling and credit control. Hence, there will also be fewer fluctuations in the interest rate of commercial banks in India. The stance on the monetary policy continues to be one of the best preferences for a soft and flexible interest rate environment within the framework of macroeconomic strength.

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A STUDY ON PROBLEMS OF CLASSROOM INSTRUCTION AT PRIMARY LEVEL

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Abstract

The study aimed to identify the classroom Instruction related problems that faced by teachers in Primary School which is managed by the Surat Municipal Corporation. The samples of the study were 58 teachers from the primary school of Surat City. Researcher Collect the data by using Open Ended questionnaire and Data were analyzed by Content Analysis technique. As per findings teacher faces various type of problems like classroom discipline, there is no proper and necessary physical facility in various School, classroom environment, family problems of student, less time spent in classroom for teaching by teacher because of extra clerical work given by higher Authority, Recruitment of Teacher as per School requirement and teacher training related problems faced by the Teachers. Lack of teaching facilities, have a negative effect on the Instructional delivery to children with developmental disability. In many schools, big class sizes are also a very big barrier for quality instructional process for teachers.

Keywords: Classroom Instruction, questionnaire, disability, quality etc.

INTRODUCTION

Traditionally, teachers are encouraged to believe that the learning environment must be orderly and quiet. The classroom management and mastering order inside the classroom are the most important factors in educational process and basic requirements for all-round development of our students. The teacher is the most critical participant in an educational reform, particularly in one that touches on what goes on in the classrooms (Mundy, 2008). Education system is a global concern for all Societies. To achieve it, efficient and quality teaching-learning needs to be employed. Instructional process plays a

vital role in education system and helps to provide students with the necessary experiences, concrete or simulated and integrate prior experiences.

Instructional process can enrich teaching-learning settings by showing things that are far away, those that took place in the past, those that are minute to see, too large to bring to class, too complex to understand at first sight with explanations only, or things that cannot be seen, heard, or perceived by other channels. Due to rapid instructional changes, instructional technologies have become part and package of the teaching and learning process. Now a days Teachers find themselves with a lot of

content to cover within very a short time. Glavin (2002) states that the behavioral problems may appear as a result of inappropriate skills which students learn, choosing inappropriate time for learning, and the restricted learning opportunities offered to students.

There are many academic and behavioral problems regarding students that face teacher in the classroom and has a direct impact on the teaching – learning process such as: forgetting school tools, frequent absence, lack of attention, hyperactivity, inappropriate talk in the classroom, disobedience, aggressiveness, refused to do tasks and school works. The use of appropriate instructional process can help to decrease the problems related to classroom and develop various skills in our students without any hurdles.

The main purpose of teaching is to impart knowledge, information, values and skills to the student. The use of instructional technologies also promotes sharing of ideas, thoughts, feelings and knowledge. Now a days Teacher faces lots of problem as well as major challenges during classroom Teaching-learning process. If we want to improve our classroom teaching-learning process, then and then we get good or valuable educational system for our future that is our student. In this paper we will discuss about the problems faced by Primary teacher.

2. PURPOSE OF THE STUDY

1. To find out the problems faced by teacher during teaching learning process in primary school.

3. QUESTIONS OF THE STUDY

2. Which problems are faced by the Teachers in Classroom during Teaching-Learning Process in primary school?

4. IMPORTANCE OF THE STUDY

The researcher hopes that this study will serve school principals to identify the various types of problems regarding classroom instruction that faced by teachers in order to find solutions and decrease the effect of these problems on

the level of teacher participation as well as student achievement. It also serves the educational administrations to make decision to face the classroom problems through teacher training programs.

5. SAMPLE OF THE STUDY

In present study, researcher include 58 Teachers having experience of 10 years to 23 years in Primary School of Surat City. They were selected with the use of convenient sampling Technique.

6. TOOL OF THE STUDY

Researcher construct the open ended questionnaire for the Teachers. They write down their response in this questionnaire. Researcher also arrange the non-formal interview in group of Teachers.

7. DATA COLLECTION AND ANALYSIS

Questionnaire distributed to all Teachers who are taking part in CRC Training.

Qualitative data were collected and distributed regarding various challenges faced by teachers during Teaching Learning Process in Classroom.

8. FINDINGS

After the data analysis some problems found out which are as under:

1. Discipline related problems

Students are regularly irregular in class, they are coming in class within one or two day in a weak. Their Parents are not aware and also not interested to give proper education to their child because of their mentality or beliefs.

2. Physical facility in School

There are more than 60-70 student seating in 20 by 20 feet one class. Because of lack of spacing as well as classroom structure, T-L process are more affected and we don't get good result. So, Teacher can't do specific type of group activity in class for enrichment of quality of education.

3. Classroom Environment related problems

Students are not sincere because of their family discipline as well as society environment. Mental Level of these student is not developing that much enough. So, they don't interact in classroom during teaching learning process, result of that, instructional process is being one-way.

4. Student's Family Problems

Some intelligent students are not getting education because of their family problems. Whole day, Father is drinking and mother is working for their better future because of that they can't spare the time for them. Some students must earn for their family and therefore students don't get enough time to go to school as well as from their parents.

5. Extra clerical Work given by Higher Authority to Teacher

All teacher doesn't give more time to student for teaching learning after school timings. So, they do all administration work during school time there for they can't take the class and result of that Teaching -Learning process will disturb.

6. Recruitment of Teacher in enough number and format of Teacher Training.

Government policy (10% vacant seat) and recruitment process is very slow therefore, one teacher handled two or three class simultaneously and Teaching – Learning process will totally disturb in all standards. On the last Saturday of every month or as per given schedule they arrange CRC training and there is holiday in schools and result of this Teaching-Learning Process is totally stop on that day in all school of Gujarat.

7. The shortages of trained teachers on special- educational needs-professionals, as well as the lack of teaching facilities, have a negative effect on the Instructional delivery to children with developmental disability. In many schools, class sizes are

too big for teachers to facilitate quality learning.

9. RECOMMANDATIONS

In the light of the results of this study the researcher recommends the following:

1. Government recruit the qualified teacher in all schools within time and recruit clerical staff for extra work which is assigned to teacher during school time.
2. Education department provide necessary infrastructure like as classroom, urinal facility for boys and girls, drinking water facility, shades for Mid-day meal as well as teaching learning resources in school campus.
3. To increase cooperation between school teachers, administrations and the departments of education to reduce the academic problems that face teachers in the classroom.
4. To train teachers on how to deal with student behavioral problems, especially in classroom related problems and teachers to develop a number of school rules to discipline student behavior in the classroom, and in the school in order to find a comfortable physical environment for teaching and learning. They develop a positive relationship between teachers and students in school.
5. Perform similar studies in the future to identify the problems in the classroom from the students' point of view.

10. CONCLUSION

Teachers in this study expressed the need for reduced class sizes, recruitment of Teacher on permanent bases, create proper teaching- learning environment in class, motivations to teachers, and additional support services from the government for betterment of T-L process in Classroom and on that base we improve the level of our student as well as quality of education.

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AN ANALYTICAL STUDY ON WATER UTILIZATION PATTERN OF HOUSEHOLDS IN CHENNAI CITY

(With Special Reference to Teynampet Zone)

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Abstract

Water scarcity is an abstract concept to many and a stark reality for others. It is the result of myriad environmental, political, economic, and social forces. Due to geography, climate, engineering, regulation, and competition for resources, some regions seem relatively flush with freshwater, while others face drought and debilitating pollution. In much of the developing world, clean water is either hard to come by or a commodity that requires laborious work or significant currency to obtain. According to the United Nations, water use has grown at more than twice the rate of population increases in the last century. By 2025, an estimated 1.8 billion people will live in areas plagued by water scarcity, with two-thirds of the world's population living in water-stressed regions as a result of use, growth, and climate change.

Keywords: Water scarcity, house hold, Election commission, politics. Supply,

INTRODUCTION

“Life cannot exist without water in this world” as stated in the Thirukkural. Water is essential for life. The amount of drinking water required is variable which depends on physical activity, age, health issues, and environmental conditions. Water covers some 70% of the Earth's surface. Approximately 97.2% of it is saline, just 2.8% fresh. Potable water is available in almost all populated areas of the Earth, although it may be expensive, and the supply may not always be sustainable. According to UNICEF report

on Indian Water, there will be constant competition over water, between farming families and urban dwellers, environmental conservationists and industrialists, minorities living off natural resources and entrepreneurs seeking to commodify the resources base for commercial gain.

The water you drink today has likely been around in one form or another since dinosaurs roamed the Earth, hundreds of millions of years ago. While the amount of freshwater on the planet has fairly remained constant over time

continually recycled through the atmosphere and back into our cups the population has exploded. This means that every year competition for a clean, copious supply of water for drinking, cooking, bathing, and sustaining life intensifies.

The study focusses on the domestic utilization of water among households in Teynampet zone of Chennai City. Beyond analyzing the activity base water utilization, the paper examines the saving mechanisms adopted by the households in that study area.

Literature Review:

A. Murugesan, N. Bavana, C. Vijayakumar, T. Vignesha (2015) in his survey titled '*Drinking Water Supply and Demand Management in Chennai City – A Literature Survey*' gives a detail about the water scarcity, quality of water in Chennai city and supply and demand of the drinking water in Chennai city. They depicted the natural reasons and human cause in the scarcity of water problem in Chennai with the study of the 20 different journals in ground water source, water dearth and drinking water quality. They also explained the importance of water storage and awareness of rainwater harvesting.

S. Gayathridevi, T. Johnson, C. Vijayalakshmi (2017) in their article '*Water Management in Chennai– A Fuzzy Study*' discussed about the major factors which had caused the flood in Chennai city during December 2015. This article is made by using the fuzzy logic control to identify which of the factors have played major role in that flood. They also examined the present condition of pollution in Chennai and how they affected the water bodies and they provide some of the mathematical models by the fuzzy logic.

Tariq Ahmad Bhat (2014) in his study entitled '*An Analysis of Demand and Supply of Water in India*' provided the descriptive picture on the demand and

cause for demand of water in India. He has been found that the demand for water is increasing substantially due to increased population, growing urbanization and rapid industrialization. He describes that the supply of water is inadequate compared to its growing demand in agricultural and human need in day-to-day life. He also estimated in his study that more than 2.2 million people die each year from disease related to contaminated drinking water and poor sanitation.

S. Sethuram (2014) in his paper '*Case Study: Water Management Issues in Chennai, India*' describes water security, policy changes and to analyze the policies and adaptation strategies where the survey results implied that an increase in water use efficiency is much needed. In his study where there is a need to purchase of water for drinking and cooking makes the households for more expense and states that the current demand management programs are insufficient to support Chennai's population growth, management through conservation and efficiency needs further enhancement and dynamic action.

Dexter V. L. Hunt and Christopher D.F. Rogers (2014) in their paper titled as '*A Benchmarking System for Domestic Water Use*' introduces a new benchmarking system i.e., using band rating for measuring the water-use performance of a domestic water use in the UK and suggested that any band-rating is best aligned with overall potable mains water consumption. It influences of Demand-side and supply-side approaches were considered from where it was found that user behavior has an equally.

Objectives:

The following objectives have been intended in the present study. The following are the objectives of the research.

- To study the water saving mechanisms adopted by the households

- To find the proportion of amount disbursed for water consumption by the households in the study area.

Methodology:

Research study should be a broad for the purpose of analysis. The entire study relies upon primary data alone to opt the research strategy where, it will be used for the purpose of finding the consumption and utilization pattern of households in the city. The study has random sampling procedure for selection of households in the city of 472 households of Teynampet zone among fifteen zones which covers eighteen wards in Chennai corporation. The data are analyzed through SPSS software to find the results and where the Chi-square test is conducted for the study.

The study conducted on Teynampet zone which is one among the fifteen zones in the Chennai Corporation which lies in Latitude 13.05495°, Longitude 80.23922° and covering an area of 25.19 Sq.km. The study has done with a field visit for collecting the information through a questionnaire across the eighteen wards. The samples collected from the 472 households in the study area Teynampet zone

A Short Analysis on Activity based Water Utilization among the Households:

In the field study, the total respondents are about 472 households in the Teynampet zone of Chennai city. The households of 71% are not taking the tap water directly for drinking purpose. With some basic facts of the study area, the short descriptive analysis of data discussed below.

In the study, the households depend upon the metro water for their consumption where the households are consuming more water from the source of Common Water Shared Tanks where the metro water board brings the water through lorries or through inbuilt motor supply to the metro water tanks placed

near the dwelling units. This common water shared tanks accounts 45% and bore water stands next with 32% which are the major two water supply for households in their area. The other sources as indoor water tap is only 19% where all the households have their taps in the house and some of the households have well water supply of 4% in their residing areas.

The study area has the major source of drinking water as Packed Cane Water of 63% of households using it for daily drinking purposes. The households also using the piped water for their drinking of 30% which is relatively low as compared with packed cane water for their drinking purposes. A few people from the city are moving towards a refilling center to fill up their needs of drinking purposes which casts 7% among the other sources of drinking water. The people of the various wards are preferring their drinking water source is even in low earners, the source is fully on Packed cane water which is quite costly among other sources. Irrespective of their earnings, the people are using this type of source for their drinking purposes.

Households major water using appliances in their houses as namely Bath Tub, Water Heater, Washing Machine, Hand Basin, Flushing Toilet and Shower. From the field study, the households major water using appliances are Shower accounts 67.4% and Washing Machine 56.4% which uses more quantity of water for their daily use and the other appliances are Flushing Toilet is 43.%, Hand Basin 21.8%, Bath Tub 10.4% and Water Heater 4.7%. These appliances were using the amount of water comparatively less enough with other two appliances. This shows a water usage monitoring in households should be needed to control the usage of water according to their need as washing machine is the major utilization of water among the households where huge amount of water is needed irrespective of

their washing quantity of clothes. In the study there were the households of 71.4% says that there will be a less usage of water if clothes were washed manually where against 28.6% of people says that the less usage is not possible by manual washing.

Then, the household's usage of water based on their daily activity as Drinking, Cooking, Bathing, Laundering, Toilet Flushing, Vehicle Washing and Gardening. Among that activity based water usage, the households were using 76.1% for Bathing and 71% for Laundering which shows that high compares with other purposes as Vehicle washing, gardening and toilet flushing. The other major purposes are drinking and Cooking accounts 56.1% and 52.8% of households use water daily. In the field work, the household's states that their

daily purpose of water usage is for washing, drinking and cooking which are all their main purpose of consumption among the households, rather than the usage of other domestic purposes.

Analysis of Water Saving Mechanism adopted by the Households

Using Chi-Square test, the following test has conducted between kind of Housing Ownership residing in and Water Saving Mechanism adopted by the households in SPSS Software.

Hypothesis:

H₀: There is no statistically significant relationship between the housing ownership and the water saving mechanism adopted by the households.

H₁: There is statistically significant relationship between the housing ownership and the water saving mechanism adopted by the households.

Table 1.1:
Chi-Square Test – I
Housing Ownership and Water Saving Mechanism Cross tabulation

Housing Ownership		Water Saving Mechanism		Total
		Yes	No	
Own House	Count	148	74	222
	% within Housing Ownership	66.7%	33.3%	100.0%
	% within Water Saving Mechanism	58.7%	33.6%	47.0%
	% of Total	31.4%	15.7%	47.0%
Rent House	Count	84	136	220
	% within Housing Ownership	38.2%	61.8%	100.0%
	% within Water Saving Mechanism	33.3%	61.8%	46.6%
	% of Total	17.8%	28.8%	46.6%
Apartment House	Count	8	7	15
	% within Housing Ownership	53.3%	46.7%	100.0%
	% within Water Saving Mechanism	3.2%	3.2%	3.2%
	% of Total	1.7%	1.5%	3.2%
Slum Area	Count	12	3	15
	% within Housing Ownership	80.0%	20.0%	100.0%

Total	% within Water Saving Mechanism	4.8%	1.4%	3.2%
	% of Total	2.5%	0.6%	3.2%
	Count	252	220	472
	% within Housing Ownership	53.4%	46.6%	100.0%
	% within Water Saving Mechanism	100.0%	100.0%	100.0%
	% of Total	53.4%	46.6%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.441 ^a	3	.000
Likelihood Ratio	41.231	3	.000
Linear-by-Linear Association	8.037	1	.005
N of Valid Cases	472		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.99.

Interpretation: In the different kinds of housing residencies, the households were adopted different water saving measures. The people who are residing in own house about 66.7% of households are having water saving measures whereas 33.3% of the households does not have this measure. On accountably, the own house people of 47% have adopted water saving techniques as fitting a water saving shower head, water saving tap for wash basin, censored taps. Within the water saving mechanism, it ranks 58.7% between the housing residents.

People residing in rent house having 38.2% of the people with water saving measure as used water for gardening, toilet flushing and moping floor. The households of 61.8% are not aware about water saving mechanism in the houses. Relatively equal with the own house of overall weightage as 46.6% in determination of adoption of water saving measures. As the people residing in apartment houses say 53.3% of the people are aware about the water saving measures whereas 46.7% of the

households are not adopted the water saving appliances and water saving techniques among the households. In the slum areas, 80% of the households are aware about the water saving mechanism as against 20% of households are not aware about the water saving measures in their dwelling units. Overall weightage of apartment house and slum area residents are 3.2% each kind of housing ownership.

In overall, 53.4% of households are aware about the water saving measures by different housing residential units. 46.6% of households are not aware about the water saving mechanism in the study area.

Chi-Square Test Interpretation: For this Chi Square test, the calculated value (P value) is 40.441 with a degree of freedom (df) is 3, according to the table value with 0.05% significance the value is 0.0717. So, we are rejecting the null hypothesis (H_0) and accepting the alternative hypothesis (H_1) where the study has shown statistically significant relationship between the housing

ownership and the water saving mechanism adopted by the households.

Major Findings of the Study:

The major findings from the study are based on the responses of 472 households as follows,

- ◆ Households are preferring Packed Water for their drinking purposes irrespective of the other sources of the water supply.
- ◆ Metro water and Commonly Shared Tanks are the major source of use by the households.
- ◆ Majority of the households are using the water for bathing, laundering and cooking purposes.
- ◆ Households felt that the usage of water will be lesser if the clothes washed manually.
- ◆ 71% of households does not drink the Metro water directly even it is treated by the water board.
- ◆ Shower and Washing Machine are the two major appliances uses water in large quantity.
- ◆ 56.1% of households needs an improvement in the quality of water supplied through the water board.
- ◆ 59.7% of the households are felt that the water should be charged for the consumption purposes.
- ◆ Majority of the households irrespective of their efficiency, they are adopting water saving measures in their houses.
- ◆ Relatively a greater number of households are not aware about the problem of water scarcity in their area.
- ◆ 33.3% of the households are do not think about water should be saved for future or further purposes.
- ◆ Majority of the households as not yet adopted rain water harvesting mechanism in their houses where 44.9% of the people save rain water rarely

- ◆ Around 62.9% of the households gave priority of water for drinking purposes whereas 8.3% for cooking purposes.
- ◆ 28% of the households opted 'Moving to alternatives' if they are at water scarce periods irrespective of water availability at source.

Suggestions:

- * The households should be educated through some frequent measures about the water conservation even at micro levels. It will help the people to be aware of reuse of water.
- * Rainwater Harvesting is the best way to recharge the ground water. Among the people, the rainwater harvesting mechanisms should be reached and implemented to preserve water at least during monsoon seasons.
- * Government should take necessary steps to create awareness among the people during the scarcity of water. This could enable the people to understand about the scarcity level rather than telecasting the issue in the TV news rarely. It will encourage the people to use low quantity of water.

Conclusion:

A few domestic water saving mechanisms can be adopted to make a difference. Technical measures like changes in water supply, improving maintenance, using some water saving device, etc. can improve the present situation of water scarcity. Imposing some regulatory measures to prevent the misuse of water, will be helpful tool to conserve water. Quality of water bodies in the city is degrading rapidly. So, the problem of water shortage could be addressed by using best use of the available technologies and resources to conserve the existing water resources.

India is not a water deficit country, but due to negligence and lack of monitoring of water resources development, a few states in the country experience water scarcity. India has the

power to avoid this dark future if people act immediately: start conserving water, begin to harvest rainwater and regulate the usage of ground water.

SAVE WATER, SAVE EARTH

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Available online @ www.iaraindia.com
 RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal
 ISSN: 2250-1940 (P) 2349-1647 (O)
 Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)
 Volume VIII, Issue 28
 July-September 2020
 Formally UGC Approved Journal (63185), © Author

HORIZONTAL AND VERTICAL LINKAGES IN BLACK PEPPER VALUE CHAIN IN KERALA

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Abstract

The linkages of the black pepper farmers with different actors in the value chain were identified, including the vertical and horizontal linkages and the forward and backward linkages of the black pepper farmers. It is exposed that the formality and trust existed in the linkages is on the basis of the type of business relationship between the actors. The farmers revealed that they trust krishibhavan, NGOs, fellow farmers, cooperatives, and government administration and it shows that farmers had comparatively high trust with the supporting actors in the value chain than the major chain actors.

Keywords: Election, Election Commission, Electoral reforms, Democracy, Supreme Court.

INTRODUCTION

Agriculture value chain analysis is a comprehensive analysis to assist small holder producer of less developed and developing countries to stimulate economic growth of poor (Haggblade et al, 2012). UNIDO (2009) staff working paper on agro-value chain analysis and development made the concept of value chains in agriculture more explicit and precise. Accordingly, agro-value chain analysis can reveal “the need for enterprise development, enhancement of product quality and safety, quantitative measurement of value addition along the chain, promotion of coordinated linkages

among producers, processors and retailers, and the improvement of competitive position of individual enterprises in the marketplace”. The Global Value Chain (GVC) approach gives emphasize to the concept of ‘governance’, that is, the value chain operations are performed by the producers in the developing country, where the parameters for the products and processes are specified by the buyers’ right through the chain. Government agencies and international organizations are compelled to meet the compliance in quality, labour and environmental standards (Humphrey and Schmitz, 2001).

FAO (2007) observed that agricultural production in emerging economies does not reach consumers directly from the farm and the agricultural producers are integrated into value chains with forward linkages and backward linkages. Later, this observation was supported by UNIDO (2011) and stated that emerging economies are certainly linked to agro-processors and buyers through market transactions which may ultimately lessen the farmer rewards or increase the risks of producers, who have low bargaining power and skills.

1. Statement of the Problem

India, has lost the crown of leading producer and exporter of black pepper to Vietnam (IPC, 2015). It is true that value chain actors must comply with certain rules and regulations in the value chain. In the study an effort was made to identify the producer farmer's linkages with other actors in the value chain and to establish the motives for their business relationships. In most cases the actors intentionally connected together to gain benefits from linkages. That's why, it became inevitable to identify reasons for linkages, the formality of linkages and the level of trust among the value chain participants in linkages. Generally, linkages are of two types: Vertical linkages and Horizontal linkages. A vertical linkage explains the relationships between actors in the value chain in different levels and the horizontal linkages clarify the linkages among the actors at the same level of value chain.

2. Materials and Methods

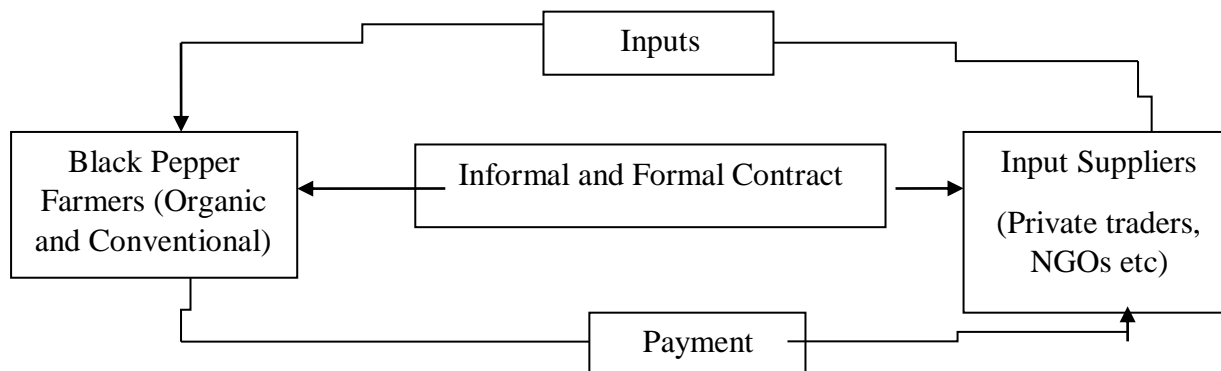
The study was confined to two districts in Kerala, Idukki and Wayanad districts, since these districts accounted for the first and second position under the area of Black Pepper cultivated in Kerala during 2016-17 and had the maximum share of about 51.4 per cent of the total production. The primary data was collected from 120 black pepper farmers (60 farmers each from Idukki and Wayanad districts) and the other important value chain actors were identified using snowball technique which included 70 private traders (including 38 hill produce dealers and 32 wholesalers) and three exporters. Furthermore, open end interviews were conducted with key informants in the value chain like Spices Board Officers, NABARD Officers, Agriculture Officers in Krishi Bhavans, Directors and staffs of NGOs, Managers of exporting companies and other service providers.

3. Vertical Linkages

i) Linkages between Farmers and Input Suppliers

It was identified that there exist a linkage between black pepper farmers and input suppliers in the value chain through informal and formal contract. The inputs such as pepper cuttings/planting materials, fertilizers and plant protection chemicals, organic manures were supplied through the input suppliers and they received cash payment for the inputs supplied to farmers. These linkages were found as simple, informal and loose (Fig.1).

Fig 1

Linkages between farmers and input suppliers**ii. Linkages between Farmers and Exporters (under NGOs)**

The linkages between black pepper farmers with NGOs were formal and to an extent it was found well documented by the NGOs officials. The prices for black pepper were offered to farmers on the basis of membership and the duration of their membership with the NGOs.

iii. Linkages between Farmers and Marketing Societies

Farmers has to submit an application to obtain membership from the marketing society, and so the relationship between farmers and the marketing society has identified as formal and all services accessible and offered to members were well documented.

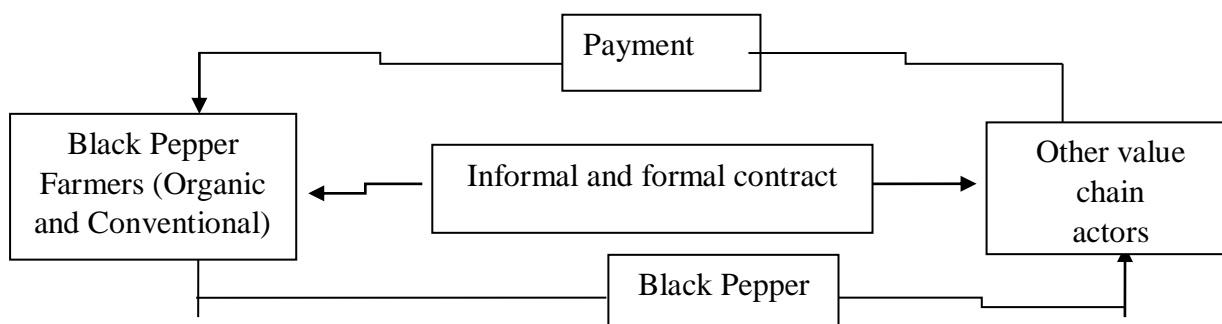
iv. Linkages between Farmers and Farmer Producer Co.

Shareholders (farmers) of the companies have a formal relationship with the companies, and the benefits and services enjoyed by the farmers were recorded and audited properly.

v. Linkages between Farmers and other value chain actors

Similar to the linkages between farmers and the input suppliers in Fig.4.16, the linkage between farmers and other (Fig. 2), were informal and oral contract, where the black pepper transmit from the farmers to hill produce dealers and in return the payment for equivalent value of the black pepper were received by the farmers. Mostly the payments were done in cash only.

Fig 2

Linkages between farmers and other value chain actors

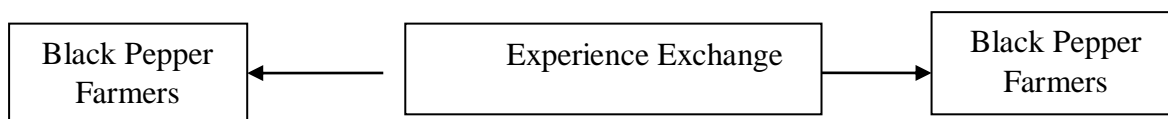
4. Horizontal Linkages

i) Linkages between black pepper farmers

In the black pepper value chain, the farmers accounted for performing the most important role that created original product in the value chain. In addition to vertical linkages between the farmers and

input suppliers/hill produce dealers/wholesalers and exporters, there were horizontal linkages among farmers, mainly for the exchange and sharing of experiences of black pepper cultivation, farm management, harvesting and marketing (**Fig 3**).

Fig 3. Linkages between black pepper farmers



5. Farmer's linkages with other value actors

In addition to the vertical and horizontal linkages, the linkages in production can be classified into backward linkages and forward linkage or another classification as upstream and downstream linkages. Backward linkages in the black pepper value chain refers to linkages of the farm to the non-farm sector which supplies agricultural inputs like planting materials, agrochemicals, organic inputs etc. for production in farm. Forward linkages represent the non-farm sector which has the linkages in distribution and processing of agricultural outputs. When the relationship between the seller and buyer in a value chain shaped quickly when they meet on the spot, aims to make a transaction or to give or take a benefit can be considered as a short term linkage, whereas actors in the value chain prefer to transact with other actors repeatedly for a long time is considered as long term linkage.

Among the identified value chain actors in the value chain, the input suppliers represented the important backward linkage of farmers, while the hill produce dealers, wholesalers, exporters, etc were having the forward linkages to farmers. The business relationship of the two parties in a value chain, the reason/purpose of the linkage, level of formality in linkages and level of

Trust in linkages) were obtained from the black farmers.

Input Suppliers in the study area supplies both fertilizers, pesticides and organic manures to black pepper cultivation and the linkages of farmers in Idukki (73.3 per cent) had long term relationship with input suppliers and 88.3 per cent of farmers in Wayanad district also had long term relationship with input suppliers.

Cent percent of farmers in Idukki and Wayanad districts were linked with Hill Produce Dealers, while a 45 per cent of farmers in Idukki district and 21.6 per cent of farmers in Wayanad district were having short term linkages with hill produce dealers and the remaining farmers in the sample agreed that their period of linkage was long term. Being one of the major actor who procures black pepper directly from farmers and sells it to wholesalers after taking their share of margin in the business, majority of conventional farmers in these districts prefer to sell to the hill produce dealers in their locality than to the wholesaler at a distant place. Wholesalers are located mostly in the town area and it became less accessible for the farmers in rural area. The farmers from Idukki district alone had linkage with linkage with wholesalers directly.

A non-profit organization or voluntary citizen's group and their role in the production of organic pepper and

other agriculture products cannot be ignored. In Idukki and Wayanad district the presence of NGOs are very prominent, in popularising organic farming by giving adequate support in providing agriculture inputs and advisory services. Farmers in Idukki district (56.7 percent) and farmers in Wayanad district (48.3 percent) has long term direct linkage with NGOs. Exporters were the convincing player in the value chain who sold black pepper and processed value added products like white pepper and green pepper. Here, 33.3 percent of farmers in Idukki district and 48.3 percent of farmers in Wayanad district has long term direct linkage with exporters, through the NGOs.

Registered company, undertake spice trade including black pepper, supplies agriculture inputs and advisory services to farmers, process and export value added products. Long term relationship was found between six black pepper farmers and registered company in Idukki District.

Cooperatives in the study area were not limited to marketing cooperatives alone, Cooperative banks were also engaged in supplying agricultural inputs to the farmers other than agricultural credit and an inevitable actor in the black pepper value chain. Farmers had a long term relationship with cooperatives and they enter into a contract for becoming a member in cooperatives. Secondly, 85 percent of the farmers in Idukki district and cent per cent farmers in Wayanad district had linkage with cooperatives in the locality, where the linkages of farmers with Spices Board and KAU Research Station/KVKs were found very little.

The analysis exhibited that there exist cent percent linkage between farmers and fellow farmers, farmers and hill produce dealers, farmers and commercial banks, farmers and krishibhavan and farmers and local administration.

6. Conclusion

Value chain governance comprises of government regulatory frameworks enforced, contracts between value chain participants to even the unwritten “norms” that determines the participants in the market. It is noticed that the participants in black pepper value chain also have to follow certain informal rules other than the formal rules enacted by the rule setting authorities. Delay in getting permission at Government offices as an important informal rule that affected the exporters, while down grading of the black pepper to reduce the price purposefully by the dealers was revealed by the farmers. Thus the farmer get less price than the market price which shows that the black pepper farmers are more affected by the informal rather than the formal rules imposed over them.

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SPIRITUAL AND DEMOCRATIC FUNCTIONS: AN ANALYSIS OF MUHAMMAD IQBAL AND SAYYIDABUL 'ALA MAWDUDI

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Abstract

To purify the inward-self is an incumbent duty of the followers of Islam. This practice enables the Muslim to enjoin what is good and to prohibit the wrongdoings thus fulfilling of the most important Qurānic formulas. The spiritual and democratic function refers to the fact that people who reside in a society must always scrutinize, through their proper conscience, the approaches and policies of their devout and spiritual leaders. Muḥammad Iqbāl (1877-1938) and Sayyid Abul 'Alā Mawdūdī (1903-1979) have enlightened on both spirituality and democracy in their distinctive genre. For Iqbāl, the life of human is originally spiritual in nature while for Mawdūdī, it is a harmony administered by the religion. According to Iqbāl, humanity desires a spiritual scrutiny of the universe, of human advancement and rudimentary morals and ethics of an inclusive significance thus directing the maturation of human society on the basis of spirituality. A proponent of Islamic nationalism, Muḥammad Iqbāl is of the viewpoint that the Islamic civilization is based on Tauḥīd (Oneness of God). Its essence will give birth to parity, coherence and liberty. Mawdūdī, on his part, tries to safeguard the spiritual principles in his concept of Theo-Democracy and illustrates his concern for the requirement of a spiritual instrument to the political power.

Keywords: *Inward-Self, Spiritual and Democratic Function, Muḥammad Iqbāl, Sayyid Abul 'Alā Mawdūdī*

INTRODUCTION

The Islamic spirituality is a deep pragmatic reminder to the creation about its cause of existence, genuineness and eventual terminus. It is the unambiguous upshot of the kind of intellectual progress that occurs when a believer mulls over Allah and His creation. Spirituality is the inexorable reference to Allah and confirming that whatever we plan to do, it

is to be executed with the purpose to seek His pleasure. The program of spirituality is to alter the adverse qualities and conducts of the believers. The lack of spiritual training, however, turns the character of man into a savage nature thus opening the doors of invitation for the penetration of vices and chicaneries. When discussing about spirituality, it is important to note that man treads on the

successful path only when his inner-self is purified. The purification of the soul strengthens the faith, and a strong faith defeats Satan in his treacherous tactics to beguile the minds of the believers. With the presence of a spiritual growth, man can search for the correct missions and objectives of life. On the other part, democracy is a system of government that centers its acceptability on the involvement of the masses. A durable society is the one which upholds its power and governs itself by itself, via the leaders who are to look after the welfare of people and answerable before them.

A democratic system functions successfully only when the positive traits of spirituality are inculcated. In the current practical context, true spirituality boosts up democracy, but democracy can also pulverize spirituality. The spiritual faculty prevents man from developing an egoistic nature and paves the way for political authority to serve for the betterment of its subjects. The instillation of spiritual principles such as altruism and bravery in political democracy can counterbalance the mammoth power of well-heeled benefits to inspire strategies and measures and equipose the cynicism and apathy of much of the population.

Unfortunately, there exists many countries in the world which are democratic just only for namesake. The common citizens are longing to witness a spiritually based democracy accompanied by moral and ethical principles. They expect to visualize a selfless democratic system which can open various doors of opportunities for every faction of the society. The mass demands a kind of political scope that communicates with their inner most ideals and principles as human beings, a better intellect of community and a sublime objective as a nation, which provides them an excellent acuity of public life and assistance to the mutual good instead of calling only to voracity and crave for power.

The purpose of governing a democratic system with spiritual abilities is to eradicate impartialities and establish kindness and prosperity. Jim Wallis, an American political activist, in his book titled as *God's Politics*, states that it is not about the question of whether God favors us, but instead, we should be asking if we are on the side of God and whether we are making use of our spiritual principles to promote generosity, righteousness and harmony.

The dimension of spirituality is rectitude. A democratic system based on spirituality signifies that we are not left on our own to deal with our issues, as support and assistance are perpetually obtainable from greater elements when it is demanded for. Democracy makes provision for the dedicated vessel to grasp and nurture the progress of the people. In other words, the democratic principle recognizes the impending probabilities and enables its growth thus providing the common population the optimum liberty to evolve. It lauds comprehensiveness, relations, the process of listening and compassionateness.

The Democratic Culture in Islam

Islam is a religion which propagates the peak values of harmony, human rights, freedom of speech and belief, impartiality, isonomy and democracy. Any society which maintains and puts into practice these principles is Islamic in nature. Many intellectuals opionate that Shūra (Mutual Consultation) is the Qurānic asseveration of democracy. A divine directive, it refers to the discussions and debates that occur at assemblies or meetings (Majālis). These gatherings were in action during the time of Prophet Muḥammad which clearly demonstrates that he taught the early converts the Islamic democratic culture. In Islam, the victor is the one who undoubtedly believes in the Unity of Allah and the Day of Resurrection; the one who is actively involved in propagating good and prohibiting evils,

maintains the prodigious ethics of harmony, impartiality and freedom of choice, fears Allah and submits to Him only. These were the traits that transformed the believers during the period of Prophet Muḥammad and gave birth to a valiant democratic state among them. Besides, it is important to know that equality exists also between races and cultures, men and women and between different religions as well.

The Qurān defines Muslim society as that where individuals are attached to Allah, offer their prayers, whose matters are by consultation among them, and from whose provisions they donate. Shūra, in a way, is a kind of direct democracy in which every individual is his or her own representative and involves decisions taken by the majority and its applicability by all the believers of the Islamic Faith. As long as the nature of managing the affairs is prosperous, the opponents have full freedom of belief and expression. Democracy, on the other hand, also involves the process of accountability. A genuine Islamic society is the one which is run through the executives and who shall be accountable to their people, which is a Qurānic injunction as well.

Prophet Muḥammad established the first Islamic state in Madinah and taught the Companions (peace be upon them) the proper notion of governance and administration. That is the reason why he chose nobody to be the ruler after him. However, after the demise of the Prophet, the democratic Islamic state witnessed a drastic change in political leadership. State was turned into empire thus leading the political democratic nature to mark its end.

Spiritual Democracy

Muḥammad Iqbāl (1877/ 1294 A.H -1938/ 1357 A.H) was one of the greatest seers of humanity of all times. He was deeply involved in the cultural, intellectual and political reconstruction of the Muslim world. Being a multi-dimensional personality, he was

considered as one of the most eminent and influential figures of the 20th century. While focusing on the concept of democracy, Muḥammad Iqbāl was both a critic and proponent. Critical was the view that western democracy does not consist of a collective applicability of its values and therefore, there is a lack of faith which detaches it from other connected universals. Class war is the outcome of western democracy. He believes that secular democracy exploits the poor in the interest of the rich. Hence, according to him, such kind of democracy can never develop a comprehensive and best nature. Iqbāl believes in Islamic democracy, in which there is justice and consensus.

The origin of Islamic democracy is found in the Qurān and Prophetic Traditions, with all its rudiments and criteria. Democratic spirit, Iqbāl says, must pervade in all spheres of life, literature and culture to integrate and discipline the nation. Democracy is attached with the total code of life (Islam) and hence, Iqbāl lays emphasis and urges the Muslim community to return to the primeval purity of Islam, since the reason behind the current breakdown of the Muslim world is the abandonment of the Islamic teachings.

Muḥammad Iqbāl provides a clear-cut elucidation regarding democracy. Though he prefers it, yet he finds some demerits in it because he felt that it was more a methodology than an ideology. He advances his own annotations and coined to a new nomenclature called *spiritual democracy*, which is on the basis of Qurānic injunction. According to him, spiritual democracy refers to a democracy in which everything is perceived and administered by the laws of Allah. However, in the democracy of the west, people are sovereign. Therefore, in the spiritual democracy of Iqbal, Allah alone is Sovereign and there exists no scope of denial in this absolute fact.

Muhammad Iqbal admired novelties. When democracy was emerged as a governmental system, he stretched his arms to give it a warm welcome, having in mind that this novel system might be consisting of a helpful nature to allay the anguishes of the browbeaten and oppressed people. Nevertheless, Iqbal, within a short span of time, realized that the western democracy showed its defective nature thus lambasting it by noticing that people are counted instead of weighted. It is a material-based concept in which no ingredient of personality development is found thus eschewing the spiritual fact. According to Iqbal, humanity needs the following three elements in today's era:

1. Spiritual analysis of the universe.
2. Spiritual emancipation of humanity.
3. Universal elementary values for the development of a spiritual society.

Iqbal, in his spiritual democracy, explains that the Muslims of today must be given the liberty to appreciate his position and restructure his social life based on ultimate values, which will turn on the green signal to indicate the fact that spiritual democracy is the eventual objective of Islamic Faith. In a nutshell, Iqbal is a promoter of spiritual democracy and an opposer of the western democracy to some extent. Spiritual democracy, as per the view of Iqbal, provides an optimum of liberty and fairness to his potentials and abilities. According to Iqbal, the secular democracy is a cataclysmic, impartial and treacherous weapon operating in the name of colonialism and capitalism. He points out the causes for the moral and cultural decadence of the Eastern people and the West, who cannot digest the unveiling of truths. Iqbal opposes the European democracy because there is segregation of state and religion, thus turning it into an unspiritual and deceitful nature and is shaped by the capitalists for their own sinister strategies. In brief, it can be said

that Iqbal criticized only the demerits of democracy. He was in favour of adopting only those democratic principles which was in accordance to the concept of democracy in the Islamic Faith. He rejected the non spiritual and worldly ideas of democracy and classified spiritual democracy to be the successful system of government which paves the way for the application of the Qurānic injunction of enjoining decency and prohibit indecency.

Theo-Democracy

Sayyid Abul 'Alā Mawdūdī (1903/1321 A.H – 1979/1399 A.H) was a prominent Pakistani Journalist, Theologist and Promoter of Islam in the 20th century Indo-Pak Subcontinent. He was the first Muslim scholar, who coined a new term, *Theo-Democracy*, to connote that texts of the Qurān and Ḥadīth are binding, and other than the texts, are open to discussion, deliberations and even dissent. Furthermore, Mawdūdī states that there is no barrier between spiritual and secular life. He opposes the western concepts of nationalism and secularism because they are imperial constructions and therefore has no seat in Islam. He also states that the western theocracy is dissimilar to Islamic theocracy. The theocracy of Europe allows the religious scholars to set the laws and associate them with God. Mawdūdī categorically lambastes it, terming it to be an evil state instead of theocracy. Whereas, Theo- democracy, he says, is to be found in the hands of the Muslims and those people who govern according to the primary sources of Sharī'ah. Thus, the Theo-democracy of Mawdūdī indicates that sovereignty belongs to Allah only and to implement His Divine laws is incumbent.

The aim of establishing an Islamic state is to advance a comprehensive system of social impartiality for its citizens. The organs of the state – executive, legislature and judiciary – should operate with equal power shared among them and nobody, comprising the Head of State, is to be

above the law, that is, the judiciary. Both the executive and legislator will be formed according to the opinions of the citizens after consultations. However, in the affairs where guidelines are absent in the Islamic laws, such matters would be sorted out through mutual consultation (Shūra). This will ultimately make the government democratic. The most important point is that in Theo-democracy, no religious faction nor the general believers of the Islamic Faith can change the Divine laws.

According to Mawdūdī, the government is the most powerful and effective factor which influences the social life, culture and morality. The best way to end this strife and purify the life of evil is to eradicate all nefarious states and substitute them with those which theoretically and pragmatically rule on pietistic values and incorruptible ideologies. The aim of Jihād is to replace un-Islamic governmental systems with the Islamic governance. Mawdūdī advocates that the position of a man who is selected to govern the state affairs is nothing than that all the believers must delegate their allegiance to him for the functioning of the administration. He is answerable to both God and his subjects. While discussing about democracy, he opines that all believers of the Islamic faith have an equal involvement in the political matters, but the main criterion remains that there should not be any transgression of the Sharī'ah, which signifies a theocracy.

Mawdūdī favors *Ijtihād* (Independent Interpretation). He says that matters relating to administration and others, if not found in Sharī'ah, would be resolved only with the consensus of the believers. However, he says, if the requirement is needed to interpret the Islamic Laws, this would be fulfilled only by all those Muslims who have acquired the ability of interpretation. This statement gives a clear indication that the

democratic ethics of consultation do verily advocate democracy.

Regarding the term *خِلاَفَة* (Vicegerency) Mawdūdī has referred to the Qurān and says that *خِلاَفَة* means the state rule yet bearing in mind that Sovereignty belongs to Allah only. He says that the concept of *أُولِيَا الْأَمْرِ* (those who hold power) is for those who govern the collective affairs of the believers and therefore deserve obedience as long as they do not breach the Islamic rules and regulations.

Conclusion

Comparing the views of both intellectuals, it is found that Muḥammad Iqbāl opposed only the flawed elements of western democracy whereas Mawdūdī denies secular democracy and prefers Theo-democracy. Having said that, both Iqbāl and Mawdūdī are in favor of a ruler who does not breach the Islamic laws in his governance. This indeed leads one to conclude that not contravening the divine commandments requires spiritual traits. When man purifies his inner-self, he comes under the shelter of Allah, thus strengthening his faith and distancing him from sins. He recognizes the dissimilarities between legal and illegal means and therefore, is capable to propagate kindness and prohibit evilness. A leader having these spiritual qualities indicates his God-consciousness and the fear of Allah is instilled in his heart, which prevents him from committing social injustices and acknowledges the realization to work for betterment of the people.

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Available online @ www.iaraindia.com
RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal

ISSN: 2250-1940 (P) 2349-1647 (O)

Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)

Volume VIII, Issue 28

July-September 2020

Formally UGC Approved Journal (63185), © Author

A STUDY ON HR PROGRAMS SUCH AS SELECTION, TRAINING AND TRANSFERS ON PERFORMANCE APPRAISAL WITH REFERENCE TO IT SECTOR

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Abstract

Researcher started the study with statement of the problem as It is further worth noting that while much is known about the PAS and Training in the IT sector, studies of issues 12 associated with PAS and training in IT sector are rarely found. The existing studies in this relation have taken a general human resource management (HRM) focus creating a gap on issues such as the effect of training on employee performance.

This study will contribute in minimizing this gap in the literature and thereby establish the basis to understanding of some aspects of human resource management in general and training in particular in IT sector.

Keywords: Human Resource Management, performance appraisal, IT sector, balanced mutual fund; schemes of mutual funds.

1. INTRODUCTION

Bearing in mind that human resources are the intellectual property of the firm, employees prove to be a good source of gaining competitive advantage (Houger 2006), and training is the only way of developing organizational intellectual property through building employees competencies. In order to

succeed. Organizations have to obtain and utilize human resources effectively. Organizations, therefore, need to design its human resource management in ways that fit into the organization's structure as this it will make the organizations achieve their goals and objectives. Moreover, it is also important for organizations to assist their workforce in obtaining the necessary skills needed and, increase commitment.

The management of human resources in Africa in general and Uganda in particular is rather challenging as most organizations have difficulties finding proper human resources. This may partly be a result of the different kinds of problems, for example, political instability, corruption, bureaucracy, poor infrastructure, low levels of education and purchasing power, diseases and famine known to prevail in the African business context (Kamoche 2002, 994 – 995).

Performance appraisal:

Employee performance is defined as the outcome or contribution of employees to make them attain goals (Herbert, John & Lee 2000) while performance may be used to define what an organization has accomplished with respect to the process, results, relevance and success Uganda National Development Program (1995). Afshan et al. (2012) define performance as the achievement of specific tasks measured against predetermined or identified standards of accuracy, completeness, cost and speed. Employee performance can be manifested in improvement in production, easiness in using the new technology, highly motivated workers.

Performance appraisal is a process that is carried out to enable both the individual and the organization to analyze, examine and evaluate the performance of specified objectives over a period of time. This process can take up formal and informal forms (McCourt & Eldridge 2003, 209). The purposes of performance appraisal have been classified into two groups that is the developmental and administrative purposes. The developmental purposes of performance appraisal include providing performance feedback, identifying individual strengths/weaknesses, recognizing individual performance, assisting in goal identification, evaluating goal achievement identifying individual training needs, determining organizational training needs, improving communication

and allowing employees to discuss concerns. On the other hand, administrative Under the developmental purposes are purposes of performance appraisal include but are not limited to documenting personal decisions, determining promotion candidates, determining transfers and assignments, identifying poor performance, deciding layoffs, validating selection criteria, meeting legal requirements to mention a few.

2. RESEARCH METHODOLOGY

2.1 Statement of problem

Despite the increasing effects on training of organizational employees by organizations, there is still Performance appraisal System has limited impact on human resource development issues in IT sector and increasing concerns from organizational clients towards low quality services in the IT sector.

It is further worth noting that while much is known about the PAS and Training in the IT sector, studies of issues 12 associated with PAS and training in IT sector are rarely found.

The existing studies in this relation have taken a general human resource management (HRM) focus creating a gap on issues such as the effect of training on employee performance.

This study will contribute in minimizing this gap in the literature and thereby establish the basis to understanding of some aspects of human resource management in general and training in particular in IT sector.

2.2 Objective of the study

1. To understand the performance appraisal system followed by the organisation.
2. To understand individual goal.
3. To identify the factors that influence the appraisal system.
4. To suggest measures to improve performance of an employee.

2.3 Need of the study

The changing concepts of performance appraisal necessities the

process active, interactive and efficient of situation the needs of administration today.

2.4 Scope of the study

- a) It gives the detail information of how performance appraisal method is practiced in the organization and how employees view it.
- b) The analysis gives the clear picture of how much employee are benefited with performance appraisal.
- c) It list out high performers and low performers and it also gives information about the rewards given in the company.

2.5 Methodology

The value of any research design lies in its methodology which is way to systematically solve research problems.

2.6 Research design

- Descriptive study is based on survey method and was adopted for the purpose of conducting the research.
- A descriptive study attempt to obtain a complete and accurate description of a research situation

Primary Data: Primary data are those that are collected afresh and for the first time which is original in character. Primary data for this study was collected with the help of open-ended questionnaire.

Secondary Data: Secondary data are the data that have already been collected and compiled for another purpose. Secondary data for this study was collected from company reports, reference books, past records, internet and journals.

Sampling Techniques

The process of drawing sample from a large population is called a sampling. Select the sample size and those samples will have the same composition and characteristics as the population. A simple random sampling method has been used in order to arrive at a sample.

Sampling size

A sample size of 100 employees has been selected from different

departments of the organization

Statistical tools used for analysis

Chi Square is used as a major statistical tool for analysis of the data.

Where, H₀: Null Hypothesis

H₁: Alternative Hypothesis

3. LITERATURE REVIEW

In the real world, organizational growth and development is affected by a number of factors. In light with the present research during the development of organizations, employee training plays a vital role in improving performance as well as increasing productivity. This in turn leads to placing organizations in the better positions to face competition and stay at the top.

This therefore implies an existence of a significant difference between the organizations that train their employees and organizations that do not. Existing literature presents evidence of an existence of obvious effects of training and development on employee performance. Some studies have proceeded by looking at performance in terms of employee performance in particular (Purcell, Kinnie & Hutchinson 2003; Harrison 2000) while others have extended to a general outlook of organizational performance (Guest 1997; Swart et al. 2005).

In one way or another, the two are related in the sense that employee performance is a function of organizational performance since employee performance influences general organizational performance. In relation to the above, Wright & Geroy (2001) note that employee competencies change through effective training programs.

It therefore not only improves the overall performance of the employees to effectively perform their current jobs but also enhances the knowledge, skills an attitude of the workers necessary for the future job, thus contributing to superior organizational performance.

The significant relationship that the research elicits between the selected HRM practices and employees performance is in support of the various similar studies. In view of the forgoing work in the areas of job satisfaction and

G. V. Vijayasri (2013) observes the relationship of the Indian economy and Information Technology industry along with Government promotion policies regarding IT industry. The study shows that the IT Industry has to play major role to the industrial verticals such as railways, airways, sea- network that have smooth functioning with IT Industry. The paper also looks back in to the years 1992-2001 where the phenomenal growth of industry services was marked over 50%. With the support of IT policies IT sector has provided 2.9 million jobs directly and 8.9 million jobs indirectly to the nation. Yet, IT sector has some challenges to face like insufficient subsidy, mistargeting and Government scares resources of the Indian IT industry and the rapid growth of 50,000 graduate engineers are in the queue of seeking employment in IT Industry in India every year.

Natarajan Ganesh (2012) carries out that the all economies are passing through difficult times but IT industry has clear opportunity of the three million people by their reinforce skills and deliver maximum value of the industry. The financial services of JP Morgan and Barclays companies had bad impact on worlds companies but Indian IT industry has shown its good prospects in the area of Cloud computing, mobility, enterprises, social media and big data.. Foundation leadership (NASSCOM) Provide strong new initiatives in the field of IT industry in India.

4. DATA ANALYSIS AND INTERPRETATION

Table 1
Technique of performance appraisal in the organisation.

Sl. No	Particulars	No of respondents	Percentage
1.	Ranking	100	100
2.	Self appraisal	0	0
3.	Graphic rating scale	0	0
4.	Any other	0	0
Total		100	100

Analysis

The above table shows that 100% ranking method is used for the technique of performance appraisal in the organisation and not the other methods.

Interpretation

From the review of the respondents it is easy for employees to understand the ranking technique than any other technique.

Table 2
Hindrances to performance appraisal due to internal factors

Sl.No	Particulars	No of respondents	Particulars
1.	Yes	35	35
2.	No	65	65
Total		100	100

Interpretation

The majority of respondents says it can be interpreted that most of the employees are comfortable with the internal environment.

Table 3
Performance appraisal in improving the performance on the job

Sl. No	Particulars	No of respondents	Percentage
1.	Great extent	0	0
2.	Some extent	80	80
3.	Less extent	20	20
4.	No extent	0	0
Total		100	100

Analysis

The respondents rate 80% for some extent and 20% for less extent in improving the performance on the job.

Interpretation

From the above analysis it can be inferred that improving the quality of performance appraisal technique leads to improve the performance of an employee on the job.

Table 4
Performance appraisal in the job satisfaction.

Sl. No	Particulars	No of respondents	Percentage
1.	Yes	32	32
2.	No	68	68
Total		100	100

Analysis

68 percent of respondents says no to the performance appraisal in the job satisfaction does not occur and 32 percent says yes and agrees to it.

Interpretation

The majority of the respondents says No because they are satisfied with

the job at lesser extent. Hence the better involvement in the work leads to the job satisfaction no matter whatever system the organisation uses.

Table 5
Feedback on performance appraisal helps in designing training and development programmes.

Sl.No	Particulars	No of respondents	Percentage
1.	Yes	13	13
2.	No	87	87
Total		100	100

Analysis

The individuals respond 87% on No and feedback is not necessary for everyone and 13% says Yes and is needed.

Interpretation

From the above analysis there is no effective communication between poorly rated employees and employment.

Table 6
Assessment of performance during the period of performance appraisal

Sl.No	Particulars	No of respondents	Percentage
1.	Yes	93	93
2.	No	7	7
Total		100	100

Analysis

93 percent of the respondents say Yes and 7 percent says No for the evaluation of performance appraisal.

Interpretation

The majority of respondents chosen Yes, as the employee's

performance is measured during the performance appraisal period.

Table 7

Performance appraisal provides realistic assessment of the performance of the individual.

Sl no	Particulars	No of respondents	Percentage
1.	Strongly agree	10	10
2.	Agree	13	13
3.	Neither agree nor disagree	0	0
4.	Disagree	10	10
5.	Strongly disagree	17	17
Total		100	100

Analysis

77 percent of the respondents do not agree and 23 percent agree for providing realistic assessment of performance of the individual.

Interpretation by χ^2

H0 : Performance appraisal does not provides realistic approach.

H1: Performance appraisal provides realistic approach.

Parameters	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Total
Realistic assessment of individual	10	13	0	60	17	100

Computation of χ^2

Given : no of categories=5

N= total frequencies

= 10+13+0+60+17=100

E= N/5=100/5=20

Particulars	O	E	O-E	(O-E) ²	((O-E) ²)/E
1.	10	20	-10	100	5
2.	13	20	-7	49	2.45
3.	0	20	-20	400	20
4.	60	20	40	1600	80
5.	17	20	-3	9	0.45
Total					107.9

O= observed frequency

DF(V)=5-1=4

χ^2 (0.05) table value(9.488) < χ^2 of calculated value=107.9

Inference:

Since the calculated value is greater than the table value it is significant that the difference between observed and expected frequencies is significant and cannot be attributed to chance of fluctuation. Hence H0 is rejected at 5% level of significance and concluded that performance appraisal provides realistic assessment of the performance of the individual

Table 8

Performance appraisal to improve relationship between employee and reporting officer.

Sl.No	Particulars	No of respondents	Percentage
1.	Yes	9	9
2.	No	91	91
Total		100	100

Analysis

The above graph reveals that 91% of respondents say No and 9% says Yes it

helps to improve the relationship between employee and reporting officer.

Interpretation

From the above analysis performance appraisal system leads to better relationships between communication between employee and reporting officer.

Table 9

Comments and suggestions during appraisal to be considered.

Sl. No	Particulars	No of respondents	Percentage
1.	Yes	100	100
2.	No	0	0
Total		100	100

Analysis

The above graph reveals that 100% of respondents say Yes. The comments should be considered during the appraisal.

Interpretation

From the above analysis we can interpret that, comments and suggestions should be considered so that there will be good interaction between the employees and management which is helpful for further performance appraisal system.

Table 10

Appraisal system was unfair o employees anytime.

Sl. No	Particulars	No of respondents	Percentage
1.	Yes	37	37
2.	No	63	63
Total		100	100

Analysis

The above graph reveals that 63% of respondents does not experience the

unfair of performance appraisal anytime and 37% of respondents said Yes.

Interpretation

From the above analysis it can be revealed that, employees have clearly understood that performance appraisal process and thus prevents the misunderstanding between employees and management.

Table 11

Role played by the appraiser in the process of appraisal.

Sl. No	Particulars	No of respondents	Percentage
1.	Supportive role	77	77
2.	Counseling role	0	0
3.	Motive role	5	5
4.	All the above	18	18
5.	None	0	0
Total		100	100

Analysis

The above graph reveals that 77% of respondents said that role played by the appraiser in the appraisal system is supportive role, and 5% is motive role and 18% of respondents said all the above roles.

Interpretation

From the above analysis it can be interpreted that the supporting role played by the appraiser encourage the employees to perform better

5. Findings

1. Most of the employees think that Performance appraisal is needed to improve performance rather than to reduce grievances, to maintain work force, to improve personnel skill, et c.
2. Most of the respondent agrees that performance appraisal is helpful to reach the objectives, win co-

operation, improve personnel skills and also helps to come out of personnel difficulties for individual and organizational development.

3. Promotion is based on appraisal system.
4. Superiors play an important role for appraising the individual.
5. Most of the respondent agrees that performance appraisal system helps to identify the strength and weakness of the employee and performance rating is helpful for the management to provide employee conflicts.
6. Performance appraisal helps to training and development and to determine needs of training,

5.1 Suggestion

1. The reporting officer should communicate the ratings of the performance appraisal of employee personally.
2. The reporting officer should counsel the employees so that he or she can improve the weakness in their performance.
3. The reporting officer should motivate the employee's very often so that they can perform better.

CONCLUSION

Performance appraisal are one of the most effective supervisory tool to communicate expectations, provide feedback, plan work, acknowledge contribution and helps employees gain the skill to be successful and improves two way communication in organization. The appraisal format should be practical and simple. The appraisal system has to be reliable, consistent and should include both objective and subjective ratings. The process should be participatory and open. It should be linked with rewards. Feed back is important part of appraisal and has to be timely impersonal and noticeable. It should be noted that an appraisal system can be effective only if it's accepted by employees and if management is fully accepted.

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A REVIEW ON: 3D PRINTING IN PHARMACEUTICAL TECHNOLOGY

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Abstract

The 3D PRINTING technology has paid attention towards medical devices industry and pharmaceutical industry due to its applications on various platforms in health care industry. 3D printing is using computer- aided design to plan fast prototyping. The technology allows easy process drug combinations that are required and tailored dosing. It becomes one of the most new and beneficial tools serving as a technology of good manufacturing of developed dosage forms, tissue engineering and disease modeling. It is a valuable strategy to overcome some challenges of conventional pharmaceutical processes. The recent introduction of the first FDA approved 3D-printed drug has fulfilled interest in 3D printing technology, which is set for revolutionize the healthcare. Since the use, the rapid prototyping (RP) technology has evolved to such an extent that it is currently being used in a wide range of applications including in tissue engineering, dentistry, construction, automotive and aerospace.

Keywords: 3D printing, Novel drug delivery, personalized medicine.

1. INTRODUCTION

3D printing plays an important role in multiple active ingredient dosage forms, where the formulation can be a single blend or a multi-layer printed tablets having a sustained release properties. This reduces the frequency and number of dosage form units consumed by the patient on a daily routine. 3D printing technology has a great potential in an individualized dosage form concept i.e the polypill concept^[1] This brings about the possibility of all the

drugs required for the therapy into a single dosage form unit. Three-dimensional printing is a technology which uses computer aided drafting technology to produce three dimensional objects by layering material onto a substrate.

3DP can be used throughout the drug development process, starting from preclinical development and clinical trials, to the medical care. When compared to the manufacturing process of conventional pharmaceutical product, it

has a lot of advantages like high production rates due to its fast operating systems; ability to achieve high drug-loading with much desired precision and accuracy especially for potent drugs that are applied in small doses; reduction of material wastage which can save in the cost of production and agreeable to broad types of pharmaceutical active ingredients that include poorly water-soluble, peptides and proteins, as well as drug with narrow therapeutic windows.^[2]

An action or process of manufacturing of objects through the depositing of a material using a print head, nozzle, and or another printer technology. In this technique 3D model are used for preparing the parts in the process of joining materials layer by layer. In novel drug delivery system 3D printing are used for viable tablet production. These tablets are manufactured in such a way that are capable of satisfying regulatory tests and matching the standards of commercial tablets.^[3]

HISTORY

Additive manufacturing fabricating methods of 3D plastic model with photo hardening polymer were invented by Hideo Kodama of Nagoya Municipal Industrial Research Institute; here the UV exposure area is controlled by scanning fibre transmitter or mask pattern.^[4] In 1984, Check Hull of 3D systems corporation developed a prototype systems based on a process as a systems based on a process known as Stereo lithography. The team of umbrella was gaining additive manufacturing and wider currency in the decade of the 2000's. This technique in field of pharmaceuticals was in practise by inkjet printing a binder solution was passed on powder bed, therefore binding the particles together was given the credit to the semi-liquid binding solution. The process was continuously repeated until the final desired structure was obtained. This first happened in the early 90's at the

MIT (Massachusetts Institute Technology).^[5]

In 1989, S. Scott Crump, a patent was filed on another 3D printing technology: fused deposition modeling, where a extruded polymer filaments heated into a semi-liquid state were extruded through a heated nozzle and deposited on a build platform layer and layer to harden. Inkjet printing was the method used to manufacture Spritam (levetiracetam) tablets for oral use, the first 3D printed drug approved by the Food and Drug Administration (FDA) in 2016 by Aprelia Pharmaceuticals. 3D printing is more advanced in the fields of automobile, aerospace, biomedical and tissue engineering than in the pharmaceutical industry where it is in its initial phase. FDA encourages the development of advanced manufacturing technologies, including 3D printing, using risk-based approaches.^[6]

STEPS INVOLVED IN A 3D PRINTED DOSAGE FORM

Pharmaceutical product is designed in three dimensions with computer aided design. Converting the Design into a machine readable format or a Data which describes the external surface of the 3D dosage form. The computer program then Divides this surface into several different printable layers and transfers those layer and layer to the machine.^[7, 8]

Advantages Delivery of 3D Printed Drug

- High drug loading ability when compared to conventional dosage forms.
- Accurate and precise dosing of potent drugs which are administered at small doses.
- Due to lesser material cost of production reduces.
- Suitable drug delivery for difficult to formulate active ingredients like poor water solubility, drugs with narrow therapeutic window.

- Medication can be tailored to a patient in particular based on variation in genetics, differences in ethnic, age, gender and the environment.
- In case of multi drug therapy with multiple dosing regimen, treatment can be customized to improve patient adherence.

3D PRINTING TECHNOLOGIES

3D printing or additive manufacturing is a highly pleasing or attractive technology that produces 3-dimensional objects by constructing layers of the used material under the control of computer software. It has established its ways in engineering and also in non-medical practices, and also in the automobile industries. It has an ability to produce complex shapes and geometries remains one of its major advantages in manufacturing. Recently its applications in medical devices, implants, tissue regeneration and pharmaceutical dosage forms etc. have been demonstrated with a wave of enthusiasm and its potential in personalized medicine.^[9,10]

Types of 3D printing

1. Polypill concept

The concept of “polypill” refers to a single tablet that involves the combination of many drugs. This concept is mainly beneficial for geriatric population, as patients of this age are categorized to multiple disorders and hence multiple therapy is being suggested.^[11, 12] This technology has been realized through the research in which five different active pharmaceutical ingredients with different release profiles have been formulated or made in a single 3D dosage form. Three drugs namely (pravastatin, at enolol, and ramipril) has to be printed in the extended release compartment. The drugs were physically separated by a permeable membrane of hydrophobic cellulose acetate. An immediate release compartment containing hydrochlorothiazide and

aspirin were deposited on top of the extended release compartment.^[13,14] The tablets used to illustrate that concept to put in or add something an osmotic pump with the drug captopril and sustained release compartments with the drugs nifedipine and glipizide. The room temperature extrusion process used to print the formulations used excipients commonly employed in the pharmaceutical industry. The combination of medicines such as nifedipine and glipizide could potentially be used to treat diabetics suffering from hypertension.^[15, 16]

2. Inkjet Printing

In the inkjet printing an approach to a personalized medicine begins from the technique of computer-operated inkjet printing and includes use of inkjet printers. The practicing was done for pharmaceutical use by the replacing the ink with pharmaceutical solutions containing drugs and normal paper with edible sheets known as substrates. Dose changes are done by changing the number of layers printed in a given area or altering the area to be printed. The drug and excipients are designed in a ratio such that it has a potential or a power to print as microdots on an edible substrate.^[17, 18] The two main printing types used under inkjet printing are thermal inkjet printers and piezoelectric inkjet printers. Printing-based inkjet systems consists of two types of techniques: continuous inkjet printing and drop on-demand printing. In continuous inkjet printing, the liquid ink is passed through an orifice of 50-80 μm diameters which has a continuous ink flow. The liquid is made to flow and break into drops at a specific range of speed and size at regular time period using a piezoelectric crystal. These parameters are made in control by creating an electrostatic field.^[19] Thus, the droplets are charged and are separated by “droplets of guard” to minimize the electrostatic repulsion between them. The electrostatic field that is being created

directs the charged droplets to the substrate. The drop-on-demand technique contains multiple heads (100–1000) and can use two types of translators, namely a thermal head or a piezoelectric crystal. The thermal head can be used only for volatile liquids, whereas the piezoelectric covers a wide range of liquids.^[20, 21]

3. Fused Deposition Modelling (FDM)

Fused deposition modelling (FDM) is commonly used technique in 3D printing and also known as fused filament fabrication (FFF), in this the materials are soften or melted by heat to create objects during printing. FDM 3D printing helps in manufacturing of delayed release print lets without an outer enteric coating, and also helps to provide personalised dose medicines.^[22,23] FDM 3D printing however, indicates several drawbacks of the system such as lack of suitable polymers, slow and often incomplete drug release the reason is the drug remain trapped in the polymers and the miscibility of the drug and additives with the polymers used was not evaluated.^[24]

4. Drop-on-powder deposition

Due to the mixture of powder (bed) and binder (ink) they make a solid structure in a layer-wise manner. They allow the elimination of remaining volatile solvents for the stability of the final product Powder particle sticks due to the ink binder and results for the solidification.^[25,26] Powder topology and material reactivity by binder are the main two characteristics of powder in the drop on powder deposition.

5. Drop-on-drop deposition

In a drop-on-drop deposition method, around 20 dissimilar loading geometrical shaped formulations fixed with nano carriers can be possible which offers a higher drug.^[27] Polyethylene glycol [PEG] droplets of Ibuprofen were printed by Elele and co-workers. They then swallowed the material into a porous

substrate which is formed by HPMC. The three-dimensional dosage form were created by superposition; the freeze-drying method was used to make a cellulosic derivative substrate and thus the three-dimensional printing was not used to make a final structure. To make a 3D printing PLA (polylactic acid) and PLGA polys(lactic-co-glycolic acid) are used in various methods such as drop-on-drop deposition, inkjet printing technique.^[28,29]

6. Nozzle-based deposition systems

In Nozzle-based deposition systems mixing of drugs, polymers and other solid elements takes place prior to 3D printing. Direct writing is done, and computer-controlled manufacturing methods are used that place ink direct through a nozzle to create a 3D pattern layer-bilayer with controlled composition and designing.^[30,31] Such systems may basically be divided into processes based on material melting and also on processes without material melting. Various methods have been suggested in bioengineering applications, and very few have been used in the pharmaceuticals field. An attention has been paid to SFF techniques based on pressure-assisted micro syringes (PAM) and hot-melt printing (HMP), also in free-melting and melting material processes.^[32,33] The PAM printing method is based on removing a viscous semi-liquid material from a syringe to create a desired 3D shape. The process can be done in a continuous flow at room temperature. The dispenser is normally based on a pressured-air piston.

7. Laser-based writing systems

This method was the first that commercially presented SFF (solid freeform fabrication) techniques and developed in 1986. In the field of bioengineering, they are heavily reviewed and used. To make a model, prototypes, patterns, and production parts using a photochemical process with the help of printing technology in the form of Stereolithography [SLA].^[34,35] This

research came into existence during the 1970s, but the term was coined by Chuck Hull in 1984 when he patented his process, which was granted in year 1986. Stereolithography is a material which is used to make a medical model, and computer hardware and other sides. Which are very costly due to their property.^[36]

8. Hot melt extrusion

Hot melt extrusion is the process of melting polymer as well as drug at high temperature and the pressure is applied to the instrument continuously for the purpose of blending. It is a continuous manufacturing process that includes several operations such as feeding, heating, mixing as well as shaping. In recent years, it has been proved that Hot Melt Extrusion have an ability to improve the solubility and bioavailability of poorly soluble drugs.^[37,38]

9. Extrusion 3D Printing

Extrusion is the commonly and the simplest 3D printing technique that can be used. In this technique the material is removed from the automated nozzle on to the substrate and it does not require any higher support material. The materials that can be removed are molten polymers, suspensions, semisolids, pastes.^[39]

10. Selective Laser Sintering

Selective laser sintering is a quick manufacturing process which is based upon the use of powder coated metal additives, this process is generally used for rapid prototyping. And also for scanning and aligning particles in predetermined sizes and shapes of the layers a continuous laser beam are also used as heating source. The geometry of the scanned layers corresponds to various sections of the models established by Computer-aided design or from files produced by stereolithography. After scanning of the first layer the scanning of second layer is continued which is placed over the first, the process is continued from the bottom to the top until the product is complete.^[40] The small

particles are fused of plastic, metal, ceramic or glass powders into a mass that has the desired three dimensional shapes, this technology uses high power laser. Scanning the cross section or layers generated by 3D modeling program on the surface of powder bed, laser selectively fused the powdered material so that the powder bed is lowered by one layer of thickness.^[41] Then a new layer of material is put into practice on top and this process is continued until the object is completed.

RISK ASSESSMENT DURING 3D PRINTING PROCESS

Risk identification is an important tool to prevent failure of quality control parameters like appearance, content uniformity, assay etc. Identification of risk involves through analysis of the process and process variables to assure that a quality product is being manufactured. Such a critical assessment was done by Norman et al. When a given printer is unable to print a given design, software control should be employed or used.

- Variability or changes in layer thickness has to be controlled by real – time layer thickness monitoring.
- Improper layering due to environmental conditions should be dealt with controlling the temperature and humidity of the manufacturing area.
- Inaccurate position during printing can be stopped by monitoring print head height and print head speed.
- Uneven layers can be avoided by checking powder water content and powder particle size distribution.
- Print head clogging can be prevented by ensuring particle size distribution and monitoring inkjet flow.
- Inconsistency in agglomeration or binding can be due to variations or

changes in surface tension or binder viscosity.

Major obstacles of polymeric 3D printed technology

Since the incorporation of 3D printing technology in pharmaceutical products is nowadays widely used in scientific communities, various numbers of polymers are used to verify the best probability of 3D printed optimized products. However, regulatory approval from USFDA remains of great concern to commercialize 3D printed products for human use. Major drawback of the 3D printed formulation filaments were also made in high temperature which might lead to instability for certain thermolabile drugs incorporating in 3D printed films. But this problem can be resolved by incorporating nano formulations of the drug in melted polymer, which results into Thermo protection of the drug. Another significant drawback is lower availabilities of fused deposition modeling (FDM); which could help in preparation of solid orals. The suitability & compatibility of polymers with FDM is a big concern in 3D printing technology. Since 3D printed formulations are mostly personalized in nature, hence it become very difficult to standardize the formulations.^[42]

3D printing in pharmaceuticals

As per United States Government Accountability Office (GAO), 3D printing makes 3D objectives from digital models, and its aim are to produce by layer by layer process. 3D printing is gaining and increasing attention in pharmaceutical formulation as they produce different dosage form in various shapes, sizes & release various features. 3D printing technology overcomes some challenges in conventional pharmaceutical preparation. Traditional pharmaceutical preparation involves milling, mixing, granulation, compression which may result in drug loading, drug release, drug stability and also in dosage form stability.

3D printing is necessary in pharmaceuticals for personalized dosing such as availability in variable dose, targeted therapy, orphan drug, and also needed to adjust dose based on diagnostic response. 3D printing medicines are entering into the pharmaceutical market as they are potential to achieve personalized treatments of each and every patient. Personalized treatment is design by taking into consideration patient age, weight, pharmacogenetics and pharmacokinetic characteristics. Ex: Imagine there is an older patient who will have prescribed polypill per day but he forgot to take, it is solved by taking a single pill, if suddenly the patient will have serious problem and don't have time to go to the doctor or any specialized he has the facility to produce his required medicament by 3D printer. The variability is worldwide problem when treating patients having different medical history with varieties of customs & necessities. This variability has been accepted as part of the therapeutic process all over the year, but now a day's new technologies for the optimization of treatments according to population subgroups, that are based on pharmacogenetics and pharmacokinetic profile. Pharmacokinetic features such as weight & age are necessary to dose adjustment to achieve the desired therapeutic effect.^[43] Polymedicated patients have the risk of side effect, which can be minimized by intake of a single pill containing all the drugs required for the patient. This single pill can be produced by 3D printing technology. In this way 3D printing enters into the drug therapy. We have reached an era in pharmaceutical field whereby "one size does not fit all". Science medication should be individual i.e patient to patient. FDA approval 3D printing of drug product was given in August 2015. The Food and Drug Administration agency (FDA) granted the approval of Spritam, the first 3D printed tablet i.e for the treatment of epileptic seizures.^[44]

Application of 3D printed drug Commercially available 3D printed drugs

Spritam is marked by Aprelia Pharmaceuticals using the Zip Dose technique based on powder bed fusion. Spritam made by the layer-by-layer production system. The pharmacological efficacy of Spritam was found to be equivalent to conventional tablets. The great improvement is the solubilization time of Spritam was significantly reduced due to its porous and soluble matrix composition.^[45]

Personalized topical treatment devices

Nose-shaped masks, loaded with salicylic acid, used for anti-acne treatments, have been developed in a short and efficient manner. The face of the patient was scanned and the taken image was projected to the autocad program, through which the nose section was selected. FDM and SLA, to determine which one was more favourable in terms of engineering, the morphological characteristics of the object, drug release, and the stability during printing. SLA was the most accurate technology for mask manufacture.^[46,47]

3D Printing for cancer treatment

Chemotherapy has widely applied in cancer treatment but chemotherapy can cause side effect. Chemotherapeutic drugs have poor solubility in aqueous media; thus, they are administering through a different route. Currently, the construction of patches loaded with 5-fluorouracil, poly (lactic-co-glycolic) acid, and PCL have been effectively printed and implanted directly into pancreatic cancer.^[47,48, 49]

3D printed polypill

The concept polypill allows the combination of several drugs in a single personalized tablet. It provides benefits over a poly medicated patient such as elder person. Numerous polypills using 3D extrusion printing have been successfully made and are used.^[50,51]

FUTURE PROSPECTIVES

The future and development of pharmaceutical progress is represented by 3D printed drug manufacturing technology. 3D printing plays an vital and efficient role in the field of personalized medicine. It is used in modify nutritional products, organ, and drugs. Industries along with all society prefer 3D printing as a method for manufacturing medicine & healthcare product. 3D printing helps in the manufacturing of medications with continued research. Drug manufacturing and distribution is a costly process in the pharmaceutical industry. 3D printing tablet production is done within the clinic, local pharmacies or even in the patient home.^[52,53]

Personalized medicines for which 3D printing technologies could find huge interest, is based on the biomolecules, which is more sensitive (e.g. solvent, temp, agitation) than familiar chemical entities. Personalized medicine will be a new option in the pharmaceutical field. It will reach new levels of possibility & pharmacist will be trained for this particular application of 3D printing. Most common medication become available in this way, patient will be able to reduce their medication load to one polypill per day, which will produce patient compliance.^[54]

3D printing technologies can make changes in pharmacy practice by allowing individualized medication and tailored specifically to each patient, although technical and regulatory hurdles remain. However, freeform fabrication methods are generally associated with 3D printing.^[55,56] In the area of biomanufacturing, these processes are mostly in use. The main agenda of discussion was to discuss the various methods possibly applicable in pharmaceuticals.

These are progressive and fast growing techniques that can be used in 3D printing for customized drug delivery systems. 3D printing approach was used

to prepare the tablet firstly by Aprelia Pharmaceuticals in 2015 and accepted with FDA. 3D printing technique with ultraviolet (UV) curing was and is used by GlaxoSmithKline to formulate tablet for treatment of Parkinson's disease. They have the capability to change the pharmaceutical industry.^[57,58,59]

In near future 3D printing approach will be utilized in many ways such as in fabrication and engineer various novel dosage forms, achieve optimized drug release profiles, develop new excipients, avoid incompatibilities between multiple drugs, drug dosage forms, supporting delivery, limit degradation of biological molecules or helping to research cures.

CHALLENGES IN 3D PRINTING TECHNOLOGY

3D printing technology showed promising and efficient results in drug delivery applications, the technology is still under the developing stage. Hence it undergoes and faces many challenges such as optimization process, improving performance of device for versatile use, selections of appropriate excipients, post treatment method, etc., to improve the performance of an 3D printed products and to expand the application range in novel drug delivery systems.^[60] Apart from the cost of developing new formulations or re-designing existing formulations through 3DP, the built-in flexibility may be a major source of liability from safety point of view. And to achieve quality 3DP products, many important parameters need to be optimized like printing rate, printing passes, line velocity of the print head, interval time between two printing layer, distance between the nozzles and the powder layer, etc.^[61,62,63]

CONCLUSION

3D printing has become a useful for the pharmaceutical sector, leading to personalized medicine focuses on the patient's needs and effectiveness. 3D Printing technology is emerging as a new

horizon for advanced drug delivery with built-in flexibility that is well suited for personalized/customized medication. 3D Printing technology will change or modify the pharmaceutical manufacturing style and formulation techniques.

However, to ensure that 3D printed medicines have the same efficacy, safety, and stability as the pharmaceuticals that are manufactured by the Pharmaceutical Industry there have been a significant barrier. Regarding the establishment of guidelines, laws, quality systems and safety as well as use and consumption of 3D printed medicines, it is a great challenge for the regulatory authorities entailing great obstacles, given the traditional requirements by the pharmaceutical sector. The FDA guidance entitled "Technical Considerations for Additive Manufactured Devices" provides the FDA's initial thinking on technical considerations associated with the processes, and recommendations for testing and findings for devices that include at least one additive manufacturing invention step.

In the near future 3D printing approach will be utilized to fabricate and engineer various novel dosage forms. Although commercial production of such novel dosage forms is still challenging; developing personalized medication, optimized drug release from dosage form, compacting or avoiding drug-drug incompatibilities, protection of biomolecules during manufacture, construction of multiple drug dosage form and multiple release dosage forms will be taken to a new era through 3D printing technology. The significance of 3D Printing technology in pharmaceutical sector is rising predictably.

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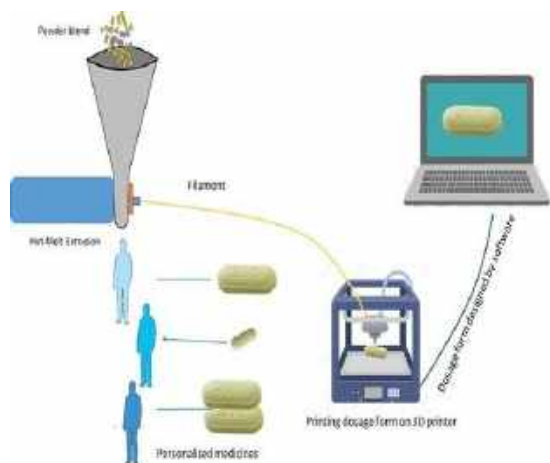


Fig1: 3D printing with Hot Melt Extrusion for Drug Delivery Systems



Fig 2: 3D Printing Technologies

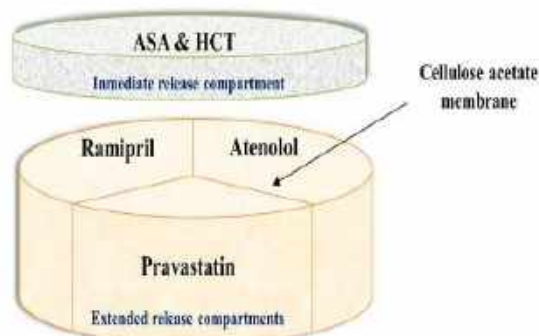


Fig 3: 3D Printed polypill

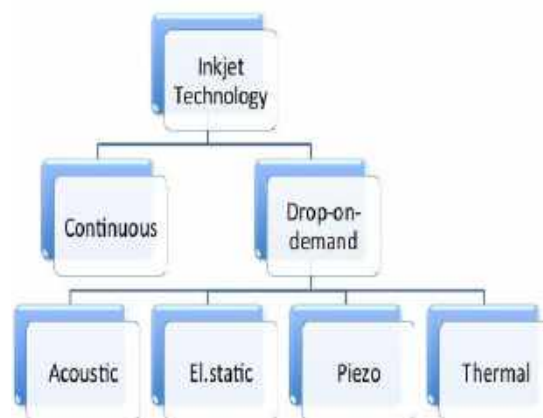


Fig 4: Types of Inkjet Technology

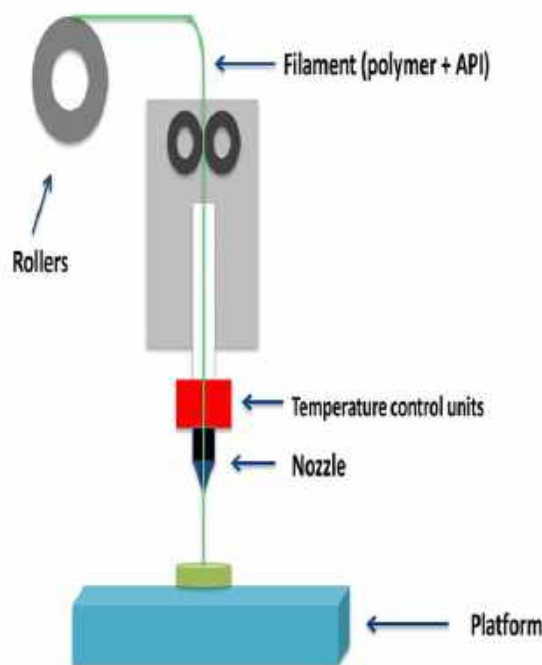


Fig 5: Fused Deposition Modelling (FDM) Printing Systems

Available online @ www.iaraindia.com
 RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal
 ISSN: 2250-1940 (P) 2349-1647 (O)
 Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)
 Volume VIII, Issue 28
 July-September 2020
 Formally UGC Approved Journal (63185), © Author

AN ANALYSIS OF INVESTORS PERCEPTION TOWARDS MUTUAL FUNDS

(A STUDY MADE FOR SELECTED INVESTORS IN MYSORE CITY)

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Abstract

Day by day Indian financial market is becoming competitive and the supply of various financial instruments needs to be in equilibrium to the demand perspectives of the investors. The prime drive of any investment is to get maximum return with a minimum risk and mutual funds provide the opportunity for the investors. The research provides an insight into the types of risks which exist in a mutual fund scheme. The data was collected from mutual fund investors as well as non-mutual fund investors of this industry. The research focuses on the relationship between investment decision and factors like liquidity, financial awareness, and demography. It was found low risk funds and liquidity of fund scheme is having impact on the investor's perception for investing in the mutual fund.

Mutual funds act as a medium for retail investors to invest their savings in the professional funds management system, irrespective of the sum invested. It enables masses to enter the Indian Financial Market with much more ease. Indian Mutual Funds industry is growing rapidly which is reflected with the growth in assets under management under various AMC's year on year. Investment in mutual funds is less risky when compared to investment in equities market. Less risk combined with moderate returns and professional management act as a magnet for the risk averse investors to invest their savings in the financial markets.

Keywords: Mutual Fund, Financial Markets, Investors, savings, Liquidity..

1. INTRODUCTION

World domination largely depends upon economy and technological development of a country which requires huge all kind resources. To mobilize these resources in order to meet out the diversified fund requirement for overall growth and global economic competition

central banks as the apex body and wide spectrum of financial intermediaries have come into existence across the world. Efforts to achieve these internal and external objectives, government has drastically and dramatically adopted and implemented policies and procedures of liberalization, privatization, and

globalization which resulted high degree of competition in Indian economy and created unexplored opportunities to all players with new high breed diversified product range and operational efficiency. In order to strengthening the efforts GOI & regulator of mutual fund industry requires effective and efficient execution of adopted strategy for financial liberalization.

It is noted that the mutual funds industry in India has also attained maturity and has grown dramatically over the last twenty years which can be assessed by the quantum of secondary trading and variety of funds offered by the issuers. Due to its stupendous growth mutual fund industry is socially bound to be transparent in quality of financial reporting; and is subject to a large amount of research which ethically contributes to our knowledge and provides appropriate answers to the everlasting issues like performance measurement, style, managers' compensation. Some issues however remain obscure and need attention to learn their peculiarity and develop ultimate solution as well. It is found that in India the concept of a socially responsible fund and schemes especially focusing upon the clientele in select age group are not common and investors are largely unknown to such type of financial instruments which are also known as ethical funds and aims to cater the need of a population segment with personal ethical codes under certain predetermined amount of risk.

It is been observed that under the ages of globalization demand for finance has grown many fold and fueled the capital market. With flood of new and high breed financial instrument in market it became necessary to understand the meaning, use, importance and benefit of mutual fund which are also known as Investment Trust, Investment Company, Money Fund etc. In general, the term mutual denote that all gains or losses

resulting from the investment accrue to all the investment in proportion to their subscription.

2. LITERATURE REVIEW

D. Rajasekar (2018) The study was conducted with a sample size of 150 respondent by using the Statistical tools like percentage analysis, chi square, weighted average, with an objective to know about the investor's perception on their profile, income, savings pattern, investment patterns and their personality criteria. The study was concluded by taking into consideration various parameters involved in investors decision making keeping in mind investors perception towards mutual fund investment.

RasheedHaroon, Qadeer Abdul (2012) in their study investigates the performance of survivorship biased twenty five open ended mutual fund schemes in Pakistan and managers ability of stock selection and also measured the diversification. The study revealed that overall performance of the funds remains best as compare to market but mismanagement observed in mutual fund industry during the study period .Further study also revealed that portfolio was not completely diversified and contains unsystematic risk.

Nishant Patel (2011) In his study examined fund sensitivity to the market fluctuations in term of Beta and found that the risk and return of mutual funds schemes were not in conformity with their stated investment objectives further sample schemes were not found to be adequately diversified.

KunduAbhijit (2009) In his study examines the fund manager's ability to outperform the market and to appraise the schemes in the context of ex-post risk, return and diversification and found that over 'the period' mutual fund schemes on an average have failed to outperform the market even after taking a risk higher than that of the market and concluded that fund manager though have succeeded to some

extent on the diversification front, but failed to earn significant positive returns by selecting miss valued securities in their portfolios.

Singh and Jha (2009) conducted a study on awareness & acceptability of mutual funds and found that consumers basically prefer mutual fund due to return potential, liquidity and safety and they were not totally aware about the systematic investment plan. The invertors' will also consider various factors before investing in mutual fund.

Anand and Murugaiah (2008) in their study examined the components and sources of investment performance in order to attribute it to specific activities of Indian fund managers by using Fama's methodology and revealed the fact that the mutual funds failed in expectations to compensate the investors for the additional risk taken by them. The study also observed that from the selectivity, expected market risk and market return factors have shown closer correlation with the fund return.

Guha (2008) in his study found the "Style Benchmarks" of each of its sample of equity funds as optimum exposure to 11 passive asset class indexes. Further the study also revealed the relative performance of the funds with respect to their style benchmarks and found that the funds never been able to beat their style benchmarks on the average.

Agarwal (2007) in his study provides an overview of mutual fund performance in emerging markets and analyzed prevailing pricing mechanism, their size and asset allocation.

Desigan et al (2006) conducted a study on women investors' ' perception towards investment and found that women investors' ' basically are indecisive in investing in mutual funds due to various reasons like lack of knowledge about the investment protection and their various investment procedures, market fluctuations, various

risks associated with investment, assessment of investment and redressal of grievances regarding their various investment related problems. Savings is a habit specially embodied into women. Even in the past, when women mainly depended on their spouses' income, they used to save to meet emergencies as well as for future activities. In those days, women did not have any awareness about various investment outlets. But as time passed, the scenario has totally changed.

Ramamurthy and Reddy (2005) conducted a study to analyze recent trends in the mutual fund industry and draw a conclusion that the main benefits for small investors' due to efficient management, diversification of investment, easy administration, nice return potential, liquidity, transparency, flexibility, affordability, wide range of choices and a proper regulation governed by SEBI. The study also analyzed about recent trends in mutual fund industry like various exit and entry policies of mutual fund companies, various schemes related to real estate, commodity, bullion and precious metals, entering of banking sector in mutual fund, buying and selling of mutual funds through online.

Anand and Murugaiah (2004) had studied various strategic issues related to the marketing of financial services. They found that recently this type of industry requires new strategies to survive and for operation. For surviving they have to adopt new marketing strategies and tactics that enable them to capture maximum opportunities with the lowest risks in order to enable them to survive and meet the competition from various market players globally.

3. RESEARCH OBJECTIVES

- 1) To understand the concept of Mutual Fund.
- 2) To study investor's perception relating to liquidity and investment decision.

- 3) To study the financial awareness of mutual fund investment
- 4) To study the effect of gender difference on investment decision.

4. RESEARCH METHODOLOGY

Research Design: This research study is an analytical and descriptive research. It is related to the investment towards mutual funds in India. **Sample Size:** Primary source of data collection is used for present study with the sample size of 200 respondents in Mysore city. Chi square analysis was carried out to test the hypothesis.

Testing of Hypothesis: The study is based on the formulation of the following Null Hypothesis:

H₁₀ = There is association between liquidity factors and investment decision in mutual funds.

H₂₀ = There is direct relationship between financial awareness level and investment behavior in mutual fund.

H₃₀ = There is association between gender and investment decision in mutual fund.

5. DATA ANALYSIS & INTERPRETATION:

Table 5.1

Liquidity Factors and Mutual Fund Investment Decision

Category	Very Important	Neutral	Not so Important	Total
Individual	75	10	5	90
NRIs	30	8	2	40
Corporate	55	12	3	70
Total	160	30	10	200

H₁₀ = There is association between liquidity factors and investment decision in mutual funds.

Interpretation: Table value of chi square at .05 level of significance with df 4 is 9.49 and our calculated value 2.56 which is less than table value. Hence the

hypothesis is accepted. It proves that there is a relationship between liquidity of mutual funds and investments in mutual funds.

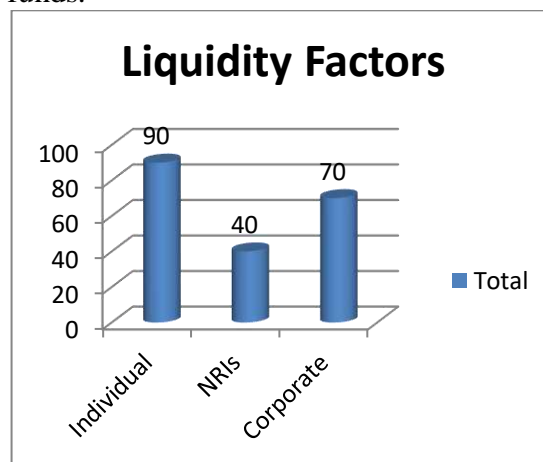
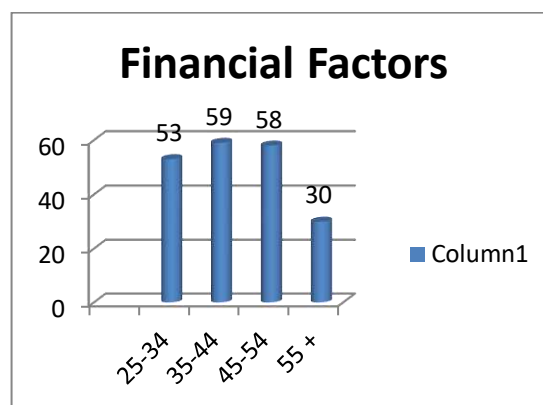


Table 5.2

Financial Factors and Mutual Fund Investment Decision

Age	Financial Awareness		Total
	Yes	No	
25-34	35	18	53
35-44	43	16	59
45-54	40	18	58
55 +	22	8	30
Total	140	60	200



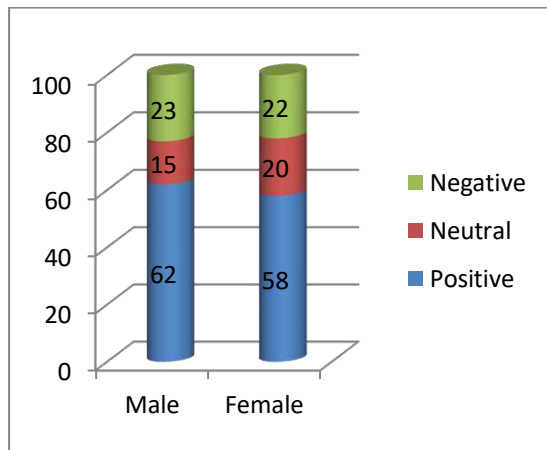
H₂₀ = There is direct relationship between financial awareness level and investment behavior in mutual fund.

As, calculated value of Chi square is less than Table value, our hypothesis holds true. Thus acceptance of the hypothesis proves that there is a direct relationship between the financial awareness and mutual fund investment by customers.

Table 5.3

Gender and Mutual Fund Investment

Category	Positive	Neutral	Negative	Total
Male	68	15	23	100
Female	52	20	22	100
Total	120	35	45	200



H₃₀= There is an association between gender and investment decision in mutual fund.

Interpretation:

The Table value of chi square at 5 percent level of significance with degrees of freedom 2 is 5.99 and our calculated value is 0.97. As, calculated value of Chi square is less than Table value, our hypothesis holds true. Thus, the acceptance of the hypothesis proves that there is a direct relationship between the gender and mutual fund investment by them.

6. FINDINGS:

The Study was aimed at identifying the level of attitude towards the mutual funds.

The study

Shows that out of respondents

- The low risk funds attract the investors in mutual fund schemes.
- Males are more interested in mutual fund investments than the females.
- The youths and the elderly people are less aware about the mutual fund information.
- The mutual fund investors consider the liquidity of fund schemes as also an important factor for investment in such.

7. SUGGESTIONS

- Mutual fund has been focused as an investment avenue in past few years only. The financial growth and stability of an economy plays a vital role in this area.
- Gradually educated citizens are gaining the knowledge of saving and investment cycle and its effects in an economy. Many have opted for SIP. But still there are some lacking in our economy especially in the field of mutual fund investment criteria. Many people still hesitate to enter to this field.
- The research paper implies the various areas on which this industry has to struggle. The various target group, their awareness and financial literacy, their age group and gender differences play a vital role to upgrade the mutual fund industry.
- The age groups of people also affect their investment decisions. But mutual fund actually is the simplest and easiest technique of return generation. It is more convenient for senior citizens as they remain dependent on others in various aspects.

8. CONCLUSION:

The study shows that most of respondents are still confused about the mutual funds and have not formed any attitude towards the mutual fund for investment purpose. It has been observed that most of the respondents having lack of awareness about the various function of mutual funds. Moreover, as far as the demographic factors are concerned, gender, income and level of education have significantly influence the investors' attitude towards mutual funds.

Mutual fund industry has still to struggle to gain more investors. Financial literacy among females and youths will definitely bring a huge success to this industry. For that reason the government is looking to provide financial studies in school level. Adults who are already mutual fund investors should not withdraw from the same as they attain experience in the field. In Indian market where financial instruments are capturing almost every unit of society, mutual fund industry has a great scope if it gives more attention to some factors which will ultimately lead to satisfaction of investors which will help the mutual fund industry to boom up. The organization to boost the mutual fund investment company shall educate the public to the benefits of mutual funds through the advertisement, publicity campaigns having stall exhibition.

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AN EMPIRICAL STUDY ON CONSUMER RIGHTS AND RESPONSIBILITIES – SOME REFLECTIONS

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Abstract

Consumers, worldwide are demanding value for money in the form of quantity and quality of goods and services. Though there is a drastic change and improvement in the quality, availability and better services consumers are still victim of the unscrupulous and exploitative practices. Consumers need to be conscious while making purchases. Knowing their rights, exercising the rights is the fundamental responsibility of the consumers is the prerequisites of the conscious buying or hassle free purchases. An attempt is made to analyze the consumers in the Mysore district, both in rural and urban area. The primary data is collected from 350 consumers to analyze the rights of the consumers when they buy in the retail shops and to check whether there is a difference in their behaviour and exercising the rights while buying products in the retail shops. The cautious purchases may save them from by being cheated by the fake advertisements and products.

Keywords: Consumers, consumer rights, consumer responsibilities, quality, fake

1. INTRODUCTION

There is no doubt that, today's consumers are getting better quality products and services, but the fact of life is that consumer is too busy to exercise their rights and responsibilities. Due to the change in the life style and increased employment opportunities, double income, affordable prices lead to more opportunity for shopping more and more. India's increased consumer exploitation could be attributed to the lack of education, poverty, illiteracy, lack of information, traditional outlook of Indians to suffer in silence and their ignorance of the available legal remedies in such cases. In India, the need for consumer protection

is vital in view of the ever increasing exploitation of consumers

According to Frederick Webster- "Consumer buying behaviour is all psychological, social and physical behaviour of potential customers as they become aware of, evaluate, purchase, consume and tell other people about products and services." Especially in today's competitive world. It also helps when customers will buy more from retail and online shops. Their buying behaviour is one of the elements which must be understood for a better view about the customer profile.

The responsibilities of the consume under consumer protection act are

1. Consumer should exercise his right

2. Cautious consumer/ do not buy blindly
3. Filing complaint for the redressal of genuine grievances
4. Consumer must be quality conscious
5. Advertisements often exaggerate/beware of false advertisements
6. Don't forget to get receipt and guarantee /warranty card

The conscious buying behaviour includes, checking for the source of the advertisements to avoid fake advertisements, not buying in hurry, verifying the product specification, quality conscious, asking for the bills, asking for guarantee and warranty cards . Consumer have right to ask for the above if it is not provided to them while buying.

LITERATURE REVIEW

Kishtwaria.J et.al (2004) stated that consumer is no longer considered as King of the market in this contemporary society. Consumers are vulnerable against mal practices. Substandard goods, unsatisfactory services are few examples. However, consumer has every right to reject any product or services if found unsatisfied with the quality standards.

Serene Shekhar, Santosh Ahlawat & Surabhi Singh (2009) stated that the progress of any country could be associated with the level of awareness of the consumer. With the greater thrust of liberalization, globalization and privatization along with information technology and media exposure, the change in the consumer has changed radically.

Chandra A.K. (2011) described The Consumer Protection Act, 1986, as one of the socio-economic legislation which is compensatory in nature. This act is enacted for protecting the interests of the consumers. This act provides comprehensive statutory measures for curbing unfair business practices, for protecting consumer interest, and for promoting consumerism. However, the

effectiveness is found to impact the companies serving consumers.

Krishnakumar.B & Sakthiventhan.S (2012) stated that Consumer protection is a key concept of consumerism. Every consumer has the rights to ask the manufacturers towards their purchased products. The findings of the study stated that rural respondents are lacking with their heights and responsibility. They should be educated and trained towards their own welfare.

Dr. Singh Jasbir, Nayak & Bala Kiran (2014) emphasized that consumer protection has to be considered as an integral part of socio economic development. It is found widespread there were evident business transactions with unfair practices curbing consumer interest.

Rekha Rani&Arun Kumar (2014) found that a large proportion of consumers do not have any knowledge of consumer's rights. Majority of the consumers who possess knowledge about their rights but due to hesitation and ignorance do not take action against unfair trade practices of sellers.

Ishwar Mittal (2017) found that consumers' ignorance was posing the challenge for proper implementation of consumer act. Among the 16 prominent consumer protection legislations presented, nearly one fourth consumers were fully aware of these legislations. Nearly one third consumers were partially aware and slightly more than one third consumers never heard about these legislations.

Natarajan.R et.al (2018) specified that consumer rights are the rights given to a consumer to protect him from being cheated by unscrupulous traders and service providers. Consumer rights are designed to ensure fair trade competition, free flow of truthful information in the market place and may provide additional protections for the weak and those unable to take care of themselves.

OBJECTIVES OF THE STUDY

1. To analyze the demographic characteristics of the consumers
2. To analyze the awareness of consumers rights and practice while buying

RESEARCH METHODOLOGY

The descriptive and explorative study is conducted to analyze the buying habits of the consumers. The primary data collected from 350 consumers in Mysore district and analyzed using SPSS software. The structured questionnaire is used to elicit data from the consumers of both urban and rural areas of Mysore district. The five point likert scale is consists of statements are measured very rare buyers to frequent buyers. The data is analyzed using mean, standard deviation. One way ANOVAs is used for testing of hypothesis.

DATA ANALYSIS AND INTERPRETATION

Primary data is collected from 350 respondents to analyze the awareness of consumers' rights and practice while buying. Demography of the consumers is presented in the below table:

Table 1
Demography of consumers

Particular	Sub category	Frequenc y	Percentag e
Gender	Male	190	54.3
	Female	160	45.7
	Total	350	100
Age	18-25 Years	191	54.6
	25-35	75	21.4
	35-45	52	14.9
	45-55	22	6.3
	55 yrs and above	10	2.9
	Total	350	100
Marital Status	Married	134	38.3
	Unmarried	216	61.7
	Total	350	100
Qualificatio n	SSLC	30	8.6
	PUC	52	14.9

	Degree	117	33.4
	Professiona l Degree	114	32.6
	PG	37	10.6
	Total	350	100
Occupation	SSLC	30	8.6
	PUC	52	14.9
	Degree	117	33.4
	Professiona l Degree	114	32.6
	PG	37	10.6
	Total	350	100
Monthly Income	Below 15000	200	57.1
	15000-30000	91	26.0
	30000-45000	44	12.6
	Above 45000	15	4.3
	Total	350	100

Source: Primary Data

Out of 350 consumers, 54.3 Percent are male and 45.7 Percent are female. Out of them 38.3 Percent married 61.7 Percent unmarried, the majority (54.6%) of the consumers belongs to the age group of 18-25 years, 21.4 Percent belongs to the age group of 25-35years, 14.9 Percent belongs to 35-45 years, 2.9 Percent are above 55 years.

57.1 Percent belongs to the monthly income below Rs.15,000 , 26 Percent belongs to the income Rs15,000-30,000 , 12.6 Percent belongs to income range of Rs.30,000-45,000 and 4.3 Percent belongs to the income above Rs.45,000. Majority of the respondents are students followed by consumers working in private company who are degree and professional degree holders.

The rights excercised are categorised as the variables which can depict the influence by the advertsiments,the qualitative facts communicated ,the pre checks , verifications prior to arriving ate purchasing decisions , quality consciouness and righteosness to obtain

the bills of purchase as well its guarantee/ warrantee details .

Following hypothesis are framed to analyze the awareness of consumers' rights and practice while buying.

Hypothesis of the study:

H₀: There is no significant difference in exercising the rights of consumers

H₁: There is a significant difference in exercising the rights of consumers

Table 2								
Are your buying decisions influenced by advertisement								
	Very Rare	Rare	neutral	Occasionally	Always	Total	Mean	SD
F	32	150	94	51	23	350	2.67	1.05
%	9.1	42.9	26.9	14.6	6.6	100		
Do you rely on the facts depicted in the advertisements								
F	47	113	125	50	15	350	2.64	1.02
%	13.4	32.3	35.7	14.3	4.3	100		
Do you buy in hurry								
F	75	108	82	53	32	350	2.60	1.23
%	21.4	30.9	23.4	15.1	9.1	100		
Do you verify product specifications while buying								
F	27	69	82	62	110	350	3.45	1.32
%	7.7	19.7	23.4	17.7	31.4	100		
Are you quality conscious								
F	9	55	66	67	153	350	3.86	1.21
%	2.6	15.7	18.9	19.1	43.7	100		
Do you ask or get receipt/ cash bill on purchase								
F	16	69	62	66	137	350	3.68	1.29
%	4.6	19.7	17.7	18.9	39.1	100		
Do you ask guarantee/ warrantee card on purchase								
F	16	69	62	66	137	350	3.58	2.84
%	4.6	19.7	17.7	18.9	39.1	100		

The above table 2 shows that the majority of the customers are quality conscious ,exercise their right to obtain Cash receipt/ cash bill for the purchase, followed by the awareness regarding guarantee/ warrantee card. On the other hand the customers are not influenced by the advertisements and do not rely on the facts depicted in the advertisements. The customers do not buy in a hurry and they are in dilemma to verify product specifications while buying. Though

majorities are exercising the rights, the consumers who are not cannot be ignored.

From the above analysis it is evident that, 21.2 Percent consumers, buying because they are influenced by the advertisements, 18.6 Percent rely on the facts depicted in the advertisements, 24.2 Percent consumers buy in hurry which leads to the exploitation. Also it is seen from the analysis that, 27.4 Percent consumers do not verify the product on purchase. 18.3 Percent consumers are not

quality conscious, 24.3 Percent consumers do not ask for receipt or cash

bill on their purchase also the guarantee/warrantee card on purchase.

Table 3 One way ANOVA						
	SS	df	MS	F	P	Conclusion
Between:	642.929	6	107.155	45.15	0.000	H(0):Rejected H(1): Accepted
Within:	5,797.845	2,443	2.373			
Total:	6,440.775	2,449				

Source: Primary Data

Table 3 shows that, H(0) is rejected and H(1) is accepted which means, there is a significant difference among the Buying habits of consumers. The ANOVA supports that the Buying habits of consumers differs significantly.

SUGGESTIONS AND CONCLUSION

It is found from the study that, there is a significant difference among the consumers in exercising their rights and responsibilities. Some are conscious and some are ignorant about their rights so they are prone to get cheated. Some of the basic things such as, going through the specifications of the product and quality, brand conscious and getting the bills as physical evidence are important elements of the buying process. Though there are quality standards, laws to protect consumers, without consumers participation, government alone cannot protect consumers from defective products, fake advertisements, It is important to conduct more awareness programs to educate the consumers and motivate them to exercise their rights. However the more responsibility is on the alertness of consumer to exercise their rights.

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Available online @ www.iaraindia.com
 RESEARCH EXPLORER-A Blind Review & Refereed Quarterly International Journal

ISSN: 2250-1940 (P) 2349-1647 (O)

Impact Factor: 3.655 (CIF), 2.78 (IRJIF), 2.62 (NAAS)

Volume VIII, Issue 28

July-September 2020

Formally UGC Approved Journal (63185), © Author

A COMPREHENSIVE COMPARATIVE STUDY BETWEEN HOWRAH BRIDGE AND SECOND HOOGHLY BRIDGE

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Abstract

The Howrah Bridge and Second Hooghly Bridge has been serving the city of Kolkata in conjunction with each other by allowing the city to be well connected with the rest of the state and indeed the rest of the country. The bridges by themselves, the former being of balanced- cantilever form and the latter being cable-stayed, are marvels of bridge engineering with each being built in very different eras with tremendous variation in the technology that had been employed, all to serve the one purpose of improving communication and traffic conditions by releasing some of the volume exerted on each due to daily movement. The main issue of this research is to make a comparative review of the two bridges, mainly from strict technical points of views and also from the social and economic factors that arise out of them. The structural configurations, foundation characteristics, construction techniques and maintenance issues have been extensively discussed. Relevant statistical facts relating to traffic volume on the bridges and illustrations have been provided as and when required to verify some of the facts that has been discussed.

Keywords: balanced-cantilever, bridge engineering, cable-stayed, construction techniques, foundations, structural configurations, traffic volume

A committee was appointed in 1855-56 by the then British Government to oversee the possibilities of constructing a bridge across the Hooghly River in the face of ever increasing water traffic in the

city of the then Calcutta (now Kolkata) . However, it was only in 1868 that it was decided that a bridge should be constructed and a newly allotted trust should be vested with that responsibility. The Calcutta Port

Trust was thus created in 1870, and the Legislative department of the then Government of Bengal passed the Howrah Bridge Act in the year 1871 under the Bengal Act IX of 1871.

Eventually a contract was signed with Sir Bradford Le lie to construct a pontoon bridge, and work initiated, the different parts being constructed in England and sent to Calcutta to be assembled together. Despite suffering many hiccups and problems along the way, the pontoon bridge was completed in 1874, at a total cost of ₹ 2.2 million, and opened to traffic on 17 October of that year. The bridge was then 465.7 m long and 18.9 ft. wide, with 2.14 m wide pavements on either side. In its early days, the bridge was used to be periodically unfastened to allow steamers and other marine vehicles to pass through. Before 1906, the bridge was used to be undone for the passage of vessels during daytime only, but since June of that year it started opening at night for all vessels except ocean steamers, which were required to pass through during day- time. However the bridge started to prove inefficient to caterto the rapidly increasing load, and the Port Commissioners started making plans for a new improved bridge in 1905.

The main issue of this research is to make a comparative review of the two bridges, mainly from strict technical points of views and also from the social and economic factors that arise out of them. The structural configurations, foundation characteristics, construction techniques and maintenance issues have been extensively discussed. Relevant statistical facts relating to traffic volume on the bridges and illustrations have been provided as and when required to verify some of the facts that has been discussed

The process of construction of the bridge was initially stalled due to the

World War I, although the bridge was partially renewed in 1917 and 1927. In 1921, the 'Mukherjee Committee', an elite group of engineers headed by Sir R.N. Mukherjee, Sir Clement Hindley, Chairman of Calcutta Port Trust and Mr. J. McGlashan, Chief Engineer, was formed. They referred the matter to Sir Basil Mott, who proposed the construction of a single span arch bridge. In 1922 the New Howrah Bridge Commission was set up, to which the Mukherjee Committee submitted its report. In 1926 the New Howrah Bridge Act passed. In 1930 the Goode Committee was formed, comprising Mr. S.W. Goode as President, Mr. S.N. Mallick, and Mr. W.H. Thompson, to investigate and report on the advisability of constructing a pier bridge between Calcutta and Howrah. Based on their recommendation, M/s. Rendel, Palmer and Tritton were asked to consider the construction of a suspension bridge of a particular design prepared by their chief draftsman Mr. Walton. On basis of the report, a global tender was floated, and although the lowest bid came from a German company, due to the imminent World War II and Germany's possible participation in it, it wasn't given the contract, and instead the British firm Cleveland Bridge & Engineering Company was entrusted with the bridge construction in 1935. The same year the New Howrah Bridge Act was amended, and construction of the bridge started the next year. When commissioned in 1943, it was the 3rd longest cantilever bridge in the world. It has since been surpassed by three more bridges, making it currently the sixth longest cantilever bridge in the world. Population and commercial activity grew rapidly after India gained independence in August 1947. The only link across the Hooghly River at that time was the Howrah Bridge,

which was subject to much traffic congestion, with over 85,000 vehicles every day, much higher than the design capacity. This made it imperative that another bridge be built in order to connect Kolkata with the other major cities of India via the National Highways, which mostly emanated.

The foundation stone for the Second Hooghly Bridge, also known as Vidyasagar Setu, was laid on 20 May 1972. The bridge took more than 22 years to complete and cost Indian ₹ 3.88 billion. Construction was actually stalled for seven years out of that 22 year period. Work on the cable-stayed bridge started with the construction of the well curb on the Calcutta bank end on 3 July 1979, and when commissioned on October 10, 1992, it became the longest span bridge of this type in the world. At that time it was the first cable-stayed bridge in India, the largest in Asia and the third largest in the world.

2. COMPARATIVE REVIEW

Together with the Howrah Bridge, the Second Hooghly Bridge vehemently increased connectivity of Kolkata with other parts of West Bengal and India. Road traffic became easier in many portions of the city leading to the improvement of economic and social factors. The bridge themselves provided employment opportunities to a widespread percentage of population.

The two bridges, made to serve almost a similar purpose, are varied in a lot of respect. Constructional and architectural differences are huge, so are the nature and volume of traffic carried by each. The main aim of this research article is to point out the differences that exist within the structure and how it affects the purpose of construction in general and from the technical point of view,

and finally make suitable comparisons between the two. The different aspects studied have been listed below in sequence.

Architectural Features

❖ Technically, Howrah Bridge is a Suspension type Balanced Cantilever Bridge, with a central span 457.2 m between centers of main towers and a suspended span of 171.9 m. The main towers are 85.344 m high above the monoliths and 23.2 m apart at the top. The anchor arms are 99.1 m each, while the cantilever arms are 142.7 m each. The bridge deck hangs from panel points in the lower chord of the main trusses with 39 pairs of hangers.

The roads way beyond the towers are supported from ground, leaving the anchor arms free from deck load. The deck system includes cross girders suspended between the pairs of hangers by a pinned connection. Six rows of longitudinal stringer girders are arranged between cross girders. Floor beams are supported transversally on top of the stringers, while they themselves supporting a continuous pressed steel troughing system surfaced with concrete. The longitudinal expansion and lateral sway movement of the deck are taken care of by expansion and articulation joints. There are two main expansion joints, one at each interface between the suspended span and the cantilever arms, and there are others at the towers and at the interface of the steel and concrete structures at both approaches. There are total 8 articulation joints, 3 at each of the cantilever arms and 1 each in the suspended portion. These joints divide the bridge into segments with vertical pin connection between them to facilitate rotational movements of the deck. The bridge deck has longitudinal ruling gradient

of 1 in 40 from either end, joined by a vertical curve of radius 4000 ft. The cross gradient of deck is 1 in 48 between kerbs.

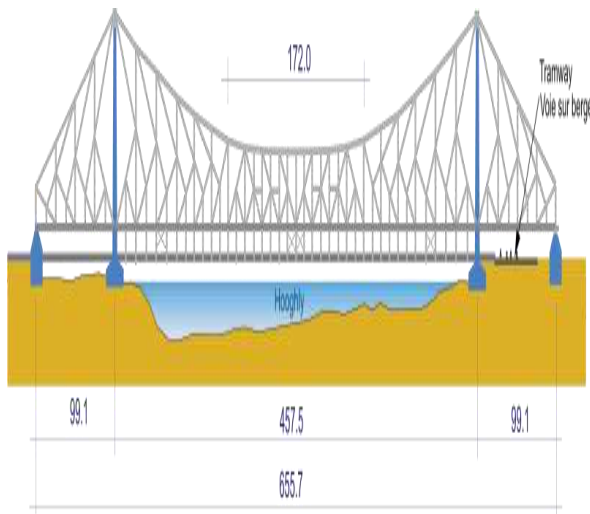


Figure 1. Schematic Elevation of Howrah Bridge

Vidyasagar Setu is a cable-stayed bridge, with 121 cables in a fan arrangement, built using steel pylons 127.62 metres (418.7 ft) high. With a total length of 823 metres (2,700 ft), Vidyasagar Setu is the longest cable-stayed bridge in India and one of the longest in Asia. The deck is made of composite steel-reinforced concrete with two carriageways. The total width of the bridge is 35 metres (115 ft), with 3 lanes in each direction and 1.2 metres (3 ft 11 in)-wide footpath on each side. The deck over the main span is 457.20 metres (1,500.0 ft) long. The two side spans are supported by parallel wire cables and are 182.88 metres (600.0 ft) long. Vidyasagar Setu is a toll bridge with free bicycle lanes. It has capacity to handle more than 85,000 vehicles in a day. The bridge was designed by Schlaich Bergermann & Partner, and checked by Freeman Fox & Partners and Bharat Bhari Udyog Nigam Limited. Construction was carried out by the consortium of Braithwaite, Burn and Jessop (BBJ). The Hooghly River Bridge Commission (HRBC) was responsible for the commissioning operations of the bridge.



Figure 2. View of Second Hooghly Bridge, as seen from Howrah Bridge.

Construction Technique

❖ The Howrah Bridge does not have nuts and bolts, but was formed by riveting the whole structure. It required 26,500 tons of steel, out of which 23,000 tons of high-tensile alloy steel, known as Tiscrom, were supplied by Tata Steel. The main tower was constructed with single monolith caissons of dimensions 55.31 x 24.8 m with 21 shafts, each 6.25 m². The fabrication was done by Braithwaite, Burn & Jessop Construction Company at four different shops in Kolkata. The two anchor- age caissons were each 16.4 m by 8.2 m, with two wells 4.9 m square. The caissons were so designed that the working chambers within the shafts could be temporarily enclosed by steel diaphragms to allow work under compressed air if required. The caisson at Kolkata side was set at 31.41 m and that at Howrah side at 26.53 m below ground level.

One night, during the process of grabbing out the dirt to enable the caisson to move, the ground below it gave way, and the entire mass subsided two feet, shaking the ground with an impact so intense that the seismograph a Kidderpore registered it as an

earthquake and a temple on the shore was destroyed, although it was subsequently rebuilt. While muck was being cleared, numerous varieties of objects were brought up, including anchors, grappling irons, cannons, cannon balls, brass vessels, and coins dating back to the East India Company.

The job of sinking the caissons was carried out 24 hours a day at a rate of a foot or more per day. The caissons were sunk through soft river deposits to stiff yellow clay 26.5 m below ground level. The accuracy of sinking the huge caissons was extremely precise, within 50–75 mm of the true position. After penetrating 2.1 m into clay, all shafts were plugged with concrete after individual dewatering, with some 5 m of backfilling in adjacent shafts. The main piers on the Howrah side were sunk by open wheel dredging, while those on the Kolkata side required compressed air to counter running sand. The air pressure maintained was about 40 lbs per square inch (2.8 bar), which required about 500 workers to be employed. Whenever excessively soft soil was encountered, the shafts symmetrical to the caisson axes were left unexcavated to allow strict control. In very stiff clays, a large number of the internal wells were completely undercut, allowing the whole weight of the caisson to be carried by the outside skin friction and the bearing under the external wall. Skin friction on the outside of the monolith walls was anticipated at 29 kN/m² while loads on the cutting edge in clay overlying the founding stratum reached 100 tons/m. The work on the foundation was completed on November 1938.

By the end of 1940, the erection of the cantilevered arms was commenced and was completed in mid-summer of 1941. The two halves of the suspended span, each 282 feet (86 m) long and weighing 2,000 tons were built in December 1941. The bridge was erected by commencing at the two

anchor spans and advancing towards the center, with the use of creeper cranes moving along the upper chord. 16 hydraulic jacks, each of which had an 800-ton capacity, were pressed into service to join the two halves of the suspended span.

The entire project cost 25 million (£2,463,887). The project was a pioneer in bridge construction, particularly in India, but the government did not have a formal opening of the bridge due to fears of attacks by Japanese planes fighting the Allied Powers. Japan had attacked the United States at Pearl Harbor on December 7, 1941. The first vehicle to use the bridge was a solitary tram.



Figure 3. Howrah Bridge under construction

The design of the Second Hooghly Bridge differs slightly from other bridges, which are of live load composite construction. The difference is in the dead load design concept adopted for this bridge and concreting of the side spans done with support provided by the intermediate trestle. The deck is designed with a grid structure of girders. One set of girders are at the end and another set in the middle, which are braced by girders spaced on an average at 4.2 metres (14 ft) centre to centre.

Deck erection cranes on trestle supports, designed for about 450 MT load of the deck grid, with heights varying from 24 m to 30 m, were used to erect the two side spans. The trestles were supported by raft foundations on the Calcutta side and on large diameter

pile foundations on the Howrah side, which were on the river.

The structural steel used in the bridge weighs about 13,200 tonnes. The pylons, which are 128 metres (420 ft) in height, are designed as free standing portals. They are provided with two cross portal members, one at the bottom and another at the top, below the pylon head. The deck is connected to the end piers by bolts embedded in the chambers of the piers. Pylons made of 4×4m (13×13ft) steel boxes of riveted construction were raised on the two side spans of the bridge; one set is on the Calcutta side and the other is on the Howrah side. The six pylons on the Calcutta side of the bridge were installed using 75 MT and 50 MT cranes, while on the Howrah end, a single 50 MT crane was used. Anchorage of the pylon with the base of piers was affected through Dywidag rods, duly anchored in the piers.

Cables were erected from the four pylon heads with the help of 32 MT hoist frames. The hoist frames were mounted on top of each pylon. Sheave blocks, winches and snatch blocks were used to facilitate the lifting, and cables inside the pylons were stressed with jacks. Pressure grouting was performed to fill the voids between the wire and the high-density polyethylene (HDPE) tubes. A two tonne tower crane, fixed inside the pylons, lifted the cables into position. In order to stress the cable inside pylon head, special jacks were imported from Vermac, Bangkok together with pulling strand and male/female strand sockets. The jacks were installed inside the pylon heads at four locations with the help of a 2 MT capacity tower crane fitted at pylon head.

The cables were manufactured at Usha Martin Industries, Ranchi and transported to site via special low bed trailers reeled in drums and then using the unreeling stand were un-reeled at site over the approach deck. The cables were lifted by the main hoist. To ensure the proper inclination of the cables at deck and pylon head locations, the cables were guided by the saddle fixed both at the anchor points of main girders and pylon head.

The main span was erected from both sides as cantilever erection with the help of desk erection crane. The erecting cables from the pylon head held the cantilever grid as the construction proceeded. Since the design was based on the philosophy of dead load composite, the concreting of the deck slab followed the four panels of steel work.

With the cantilever erection of the deck grid supported by cables, temporary bracings were erected for the lateral stability of the deck. The sequence of erection was repeated till the erection of panel 30 when it was necessary to hold deck piers 1 and 4 to prevent against uplift. To prevent that, four holding down cables in each cable plane, each cable tensioned at 555 MT to produce a vertical compression on the bearings, were provided at piers 1 and 4. Watering and dewatering of wells at piers 2 and 3 supporting the pylons were done in order to assess the settlement of the piers with the total load of the bridge.

Maurer Söhne expansion joints were provided to allow for 400 millimeters (16 in) horizontal expansion at the free ends. Fixed end slab seal type expansion joints 115 millimeters (4.5 in) were used for horizontal expansion of the joints. Other essential components provided in the bridge structure are the handrails, lightning arresters, crash barriers, gas service support structures, telephone and electric lines, lifts in the pylons, and a

maintenance gantry.



Figure 4. The mid-portion of the deck of the Second Hooghly Bridge being constructed, vividly showing some of the high capacity cranes used

Traffic Volume

The Howrah Bridge serves as the gateway to Kolkata, connecting it to the Howrah Station, which is one of the four intercity train stations serving Howrah and Kolkata. As such, it carries the near entirety of the traffic to and from the station, taking its average daily traffic close to nearly 1.5 million pedestrians and 1 million vehicles. In 1946 a census was taken to take a count of the daily traffic, it amounted to 27,400 vehicles, 121,100 pedestrians and 2,997 cattle. The bulk of the vehicular traffic comes from buses and cars. Prior to 1993 the bridge used to carry trams also. From 1993 the tram services on the bridge were discontinued to curtail the increased load of vehicles on the bridge. However the bridge still continues to carry much more than the expected load based on which it was designed and constructed. A 2007 report revealed that nearly 90,000 vehicles were plying on the bridge daily (15,000 of which were goods-carrying), though its load-bearing capacity is only 60,000. One of the main reasons of overloading was that although vehicles carrying up to 15 tonnes are allowed on the structure,

vehicles with 12-18 wheels and carrying load up to 25 tonnes often plied on it. 31 May 2007 onwards, overload trucks were banned from plying on the bridge, and were redirected to the Vidyasagar Setu instead. The road is flanked by footpaths of width 15 feet, and they swarm with pedestrians.

The following traffic volume data charts show the flow of traffic on an average week day (8AM to 8 PM) along Howrah Bridge over the period of 40 years from 1959 to 1999.

Chart 1

Share of various types of Fast-moving Heavy Vehicles along Howrah Bridge.

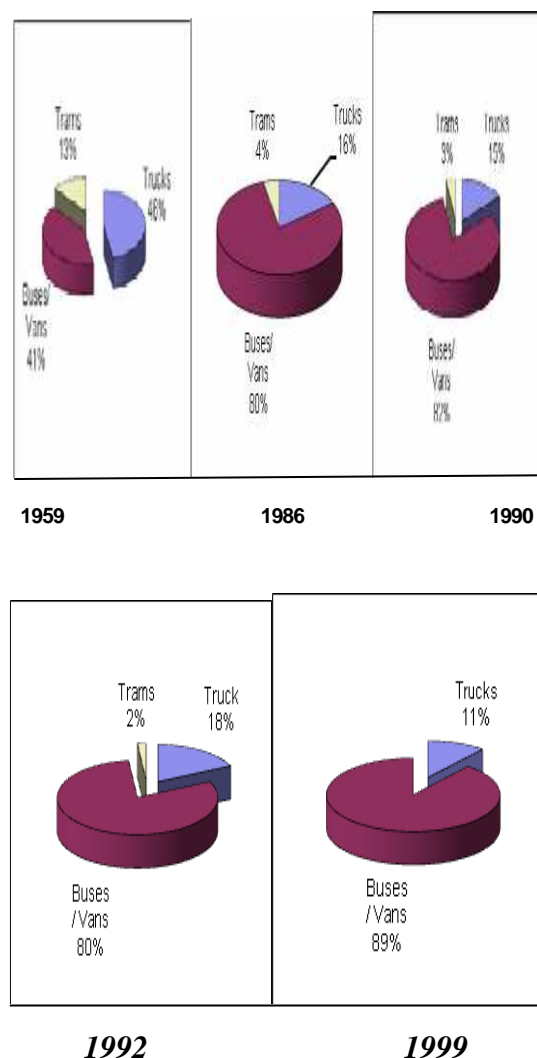
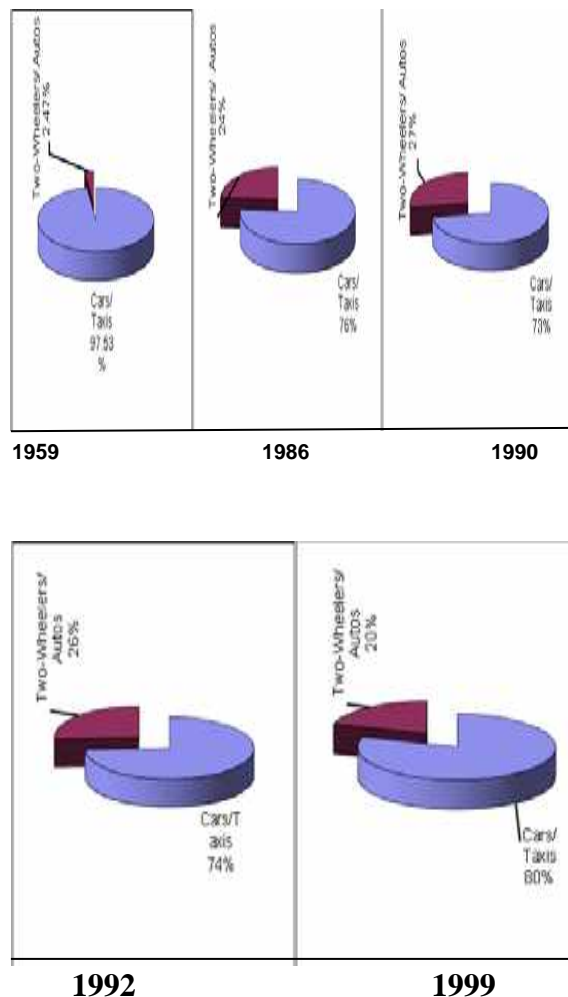


Table 2. Share of various types of Fast-moving Light Vehicles along Howrah Bridge.



Over the years, several accidents have occurred on the Second Hooghly Bridge resulting in traffic congestion, and sometimes closure of the bridge for a few hours. To relieve the heavy traffic congestion at the entry to the bridge, the Hooghly River Bridge Commissioners (HRBC) plan to build two one-way-exit and entry-ramps. These are planned with a semi-circular layout in the form of side wings, which will facilitate easy flow of traffic, before the toll plaza, on roads leading to the Howrah railway station. There are also plans to improve the lighting on the bridge by installing LED lamps and search lights covering the four pylons, the bridge spans, cables and under-deck. An electronic toll collection system is scheduled to be introduced by

2014, to help improve the flow of traffic across the bridge.

The traffic projections for the bridge at the planning stage have not been achieved. A traffic survey carried out for a week during June 2012 recorded traffic of 29,000 vehicles over the bridge in comparison to a projected 85,000. A survey conducted during the same period in June 2012 indicated a figure of 31,865 vehicles, though it is reported by the concerned traffic and transportation engineer that the rate of increase in traffic has been one percent per year on the basis of traffic surveys carried out from time of commissioning of the bridge. The drop noticed that year could be because the survey was carried out at the height of monsoon and this can be a purely seasonal phenomenon. There could, however, be other reasons behind the drop in traffic. Also, the Vivekananda (Bally) Bridge too is in working condition, so the number of vehicles using Vidyasagar Setu may have come down. The survey has been conducted annually ever since the bridge was commissioned. It is usually done in winter, but in 2012, the department wanted to know the situation during the monsoon.

Maintenance Issues

The Kolkata Port Trust is the primary organization entrusted with the maintenance of the Howrah Bridge. The bridge has been subject to damage from vehicles due to rash driving, and corrosion due to atmospheric conditions and biological wastes throughout the years. On October 2008, 6 high-tech surveillance cameras were placed to monitor the entire 705-metre-long and 30-metre-wide structure from the control room. Two of the cameras were placed under the floor of the bridge to track the movement of barges, steamers and boats on the river, while the other four were fixed to the first layer of beams, one at each end and two in the middle, to monitor

vehicle movements and potential human traffic. This was in re- tort to the extensive damage caused to the bridge from collisions with vehicles over the years, so that compensation could be claimed from the wrongdoers.

Corrosion, a major problem, has mainly been caused by bird droppings and human spitting. An investigation in 2003 revealed that as a result of prolonged chemical reaction caused by continuous collection of bird excreta, several joints and parts of the bridge were damaged. As an immediate measure, the Kolkata Port Trust engaged contractors to regularly clean the bird droppings, at an annual expense of 500,000. In 2004, KPT spent 6.5 million to paint the entirety of 2.2 million sq. m of the bridge. Two coats of Aluminium paint, with a primer of Zinc chromate before that, was applied on the bridge, re- quiring a total of 26,500 liters of paint.

Human spitting is another major factor for corrosion of the bridge. A technical inspection by Port Trust officials in 2011 revealed that spitting had reduced the thickness of the steel hoods protecting the pillars from six to less than three milli- meters since 2007. The hoods are of paramount importance the hangers need them at the base to prevent water seeping into the junction of the cross- girders and hangers, and damage to the hoods can jeopardize the safety of the bridge. Kolkata Port Trust announced that it will spend 2 million on covering the base of the steel pillars with fibre glass casing to prevent spit from corroding them.

On 24 June 2005, a private cargo vessel M V Mani, belong- ing to the Ganges Water Transport Pvt. Ltd, while trying to pass under the bridge during high tide, had its funnel stuck underneath for three hours, causing substantial damage worth about 15 million to the stringer and longitudinal girder of the bridge. Some of the 40 cross-girders were

also broken. Two of four trolley guides, bolted and welded with the girders, were extensively damaged. Nearly 350 of 700 metres of the track were twisted beyond repair. The damage was so severe that KPT requested help from Rendall-Palmer & Tritton Limited, the original consultant on the bridge from UK. KPT also con- tacted SAIL to provide 'matching steel' used during its con- struction in 1943, for the repairs. For the repair costing around Rs5 million, about 8 tons of steel was used. The repairs were completed in early 2006.

The outer casing of the cables that hold Vidyasagar Setu together is in urgent requirement of maintenance after around two decades of bearing the load of heavy traffic, as a recent report has suggested. A team comprising specialists in differ- ent fields such as cables, bearings and bridge structure recent- ly submitted its report to the Hooghly River Bridge Commis- sioners (HRBC), an autonomous body responsible for the showpiece structure's upkeep.

HRBC had commissioned the report after an internal re- view revealed that maintenance work conducted could be bet- ter than what had previously being taking place. There had been some problems in the absence of a detailed, long-term maintenance manual. So a team was formed to look into properly maintaining the bridge which included representa- tives from the Civil Engineering Department of Bengal Engi- neering and Science University, officials of Consulting Engi- neering Services, and a bearing manufacturing company.

HRBC has fallen back on Schlaich Bergermann & Partner, the German company that designed Vidyasagar Setu, to sug- gest a maintenance plan based on the technical report sent to its Stuttgart headquarters. Experts said the condition of the outer casing of the cables was crucial to maintaining the stabl- ity of the bridge. Those used in the bridge are all specially

made steel cables and each lies embedded in anti-corrosive material. An outer casing of high-density polyethylene pipes ensures the cables are not exposed to the elements.

Sources said some of the cables' outer casing had developed cracks because of natural wear and tear and exposure to sun and rain. There have also been sporadic incidents of trucks hitting the base of the cable anchorage. As has so far been the case, it has been mostly patchwork repairs such as welding the parts of the pier close to the base of the deck slab, where they remain anchored. The top section has largely remained unattended, as claimed by senior officials of the investigative teams.

The inspection report probed into the maintenance of specific parts of the bridge, including the girders, pier caps, expansion joints, decks, crash barriers and drainage, which mentions that some of the bearings need to be replaced. The underbelly of some of the deck slabs on the approach to the bridge need repairs too.

CONCLUSION

Thus, to conclude this theoretical discussion, we can obviously state the importance these two bridges hold in lieu of the city of Kolkata and its surrounding areas. They are of paramount importance for the city to function efficiently as communication itself is a cornerstone on which Kolkata and Howrah are based. They add beauty to the Kolkata skyline and attract huge number of tourists to the city which keeps it ticking from an economic and commercial point of view. Thus it is really necessary to understand the requirements of these bridges and maintain their viability to serve the population of the region.

Structurally, both are marvels and are epitomes of uniqueness in architecture and design. The volume of construction work that needed to be done to erect these monumental structures is worth studying and was great engineering challenges for the builders. The engineering study of Howrah Bridge and Second Hooghly Bridge thus provide ground for engineers to go on and build similar types of structures all over the world. Though balanced-cantilever bridges are generally not built these days due to the huge amount of material and time requirement, it still is worth studying from the durability concept of bridges and provides areas where maintenance techniques can be developed. On the other hand, Second Hooghly Bridge is relatively modern in terms of the design considerations. The materials required were lot lesser than the Howrah Bridge and hence is an ideal example for other cities to build bridges to cater for huge amount of vehicular population.

Thus, if we see from all these different aspects, it is worth studying about these bridges in intricate details, an earnest and petite example being this discussion.

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UNDERSTANDING FISH FOR FOOD SECURITY AND TRADE

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Abstract

Ensuring food security is an issue of vital importance for the developing countries particularly in India. Fisheries sector plays an important role for food security and nutrition by providing food and livelihood for a large section of population. Also, it plays pivotal role directly and indirectly for the development of nation. The FAO world conference in 1984 also ensured that fish is an important part of daily diets and most traded food commodity. We have to understand how fish is ensuring food security and trade of the nation. From this background, this paper tried to understand the importance of fish for food security and trade in India.

Keywords: Food security, Fish production, Marine fish export trade

Introduction

Food security is a basic human right and it is also one of the most essential indicators of sustainable human development. The UN Millennium Declaration in 2000 set the Millennium Development Goals (MDGs), the first of which is to halve poverty and hunger by 2015. It has been the major challenge facing developing country like India. However, according to the World Human Development Index 2017, India HDI is 131 out of 188 countries. International Food Policy Research Institute (IFPRI, 2017) said India rank

is 100th out of 119 countries in the Global Hunger Index list. This level of vulnerability corresponds to indices of 'food security' in public discourses on nutrition and health. In this background food security is considered as important one. Food security can be achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for leading an active and healthy life. Physical and economic access to nutritious food and safe drinking water are very important for all people. Pazhani

(2006) article describes the various types of failures of fishermen in becoming very poor which had happened due to Amartya Sen's food entitlement approach. It is very interesting to know that entitlement failure is one of the reasons for food security. People often fail to eat enough nutritious food only because they do not have sufficient purchasing power, hence creates problem of food insecurity. Population has been increasing very fast at global level at the same level have to be ensured food availability and accessibility to all. Rao et al. (2006) pointed out that fish is a very good source of protein and our nutritional requirement can be fully met by fish food and this is not difficult because fish production can be trebled or quadrupled by either culturing or exploiting from the seas. There will be no starvation of deaths in India and in the world in future, if all of them consume fish. Fish provides good food security and it prevents starvation deaths provided if fish is distributed to the entire region. This article emphasizes the importance of fish for food security and trade in India. Nasurudeen et al. (2006)

concludes that inequality in the consumption of calories, protein and fats between states as well as income classes given by the Gini coefficient indicating the state wise disparity in calorie intake declined by about 16 % for the urban population indicating an increased inequality in the calorie consumption in case of urban population in different states in India. From this paper one can understand that inequality of nutritional insecurity situation exists in almost all states. It is known that aquaculture has been one of the fastest growing food production sectors in the world. India stand second place in the aquaculture production in globe. Table -1 shows the capture fisheries and aquaculture production and consumption in the top five ranked aquaculture producer's country. Among these, India is in second place in terms of global rank of aquaculture production. At the same time, per year per capita fish consumption is 5.2 kg per head. It is very low compared to other countries. From this, it can be understood that there is wide gap between production and consumption of fish in India.

Table - 1

Capture fisheries and aquaculture production, together with fish consumption in the top five ranked aquaculture producers.

Country listed by rank of aquaculture production	Capture production	Aquaculture production	Global rank capture	Global rank aquaculture	Capture as % aquaculture	Annual capture growth (1990-2011) %	Annual Aquaculture growth (1990-2011) %	Fish consumed (kg/head/yr(2011))
China	15.8	38.6	1	1	41	4.2	8.9	33.5
India	4.3	4.6	5	2	94	2.1	7.4	5.2
Vietnam	2.5	2.8	10	3	88	5.7	14.7	33.6
Indonesia	5.7	2.7	3	4	210	4.0	8.4	28.9
Bangladesh	1.6	1.5	15	5	105	4.4	10.4	19.7

Source: www.fao.org/3/a-i3963e.pdf

2. Objectives and Methodology

The prime purpose of the paper is to understand fish for food security and trade in India. The present study is based on Secondary data. The data were collected from books, journals, government reports and internet sources. In this paper, authors used the statistical tools such as Least Squares Estimators for forecasting and simple regression models.

3. Analysis and discussion

3.1. Economic Importance of Fisheries Sector in India

Fish is a vital source of food for all social groups in all countries. In India, the fisheries and aquaculture sector plays an important role for food production, providing nutritional security to the food basket, contributing to the agricultural export and engaging about fourteen

million people in different activities. We need to understand the significance of fisheries sector in Indian economy. According to National Fisheries Development Board (2016), constituting about 6.3 % of the global fish production, the sector contributes to 1.1 % of the GDP and 5.15% of the agriculture GDP. The total fish production of 10.07 million metric tonnes presently has 65 % contribution from the inland sector and nearly the same from culture fisheries. Fish and fish products have presently emerged as the largest group in agricultural exports of India, with 10.51 lakh tones in terms of quantity and Rs.33,442 crores in value. The given below table - 2 describes about Indian fisheries.

Table - 2

Fishery sector in India

Global Position	3 rd in Fisheries and 2 nd in Agriculture
Contribution of fisheries to GDP (%)	1.07
Contribution to agricultural GDP (%)	5.15
Per capita Fish Availability (Kg)	9.0
Annual expenditure earnings (Rs. in crore)	33,441.61
Employment in sector (million)	14.0

Source: www.nfdp.gov.in/about - Indian-fisheries.htm

Chand, Rameset.al (2013) concludes that improving incomes is not a panacea for the undernourishment and malnourishment problem in India. There is a strong need to create awareness about adequate intake of energy and protein and bring attitudinal change to raise energy and protein intake and adopt lifestyle to digest higher energy and protein. India is rich country in terms of natural resources but have to be utilize properly. In this aspect, fish and fisheries products are an important source of both macro and micro - nutrients for humans. Globally fish

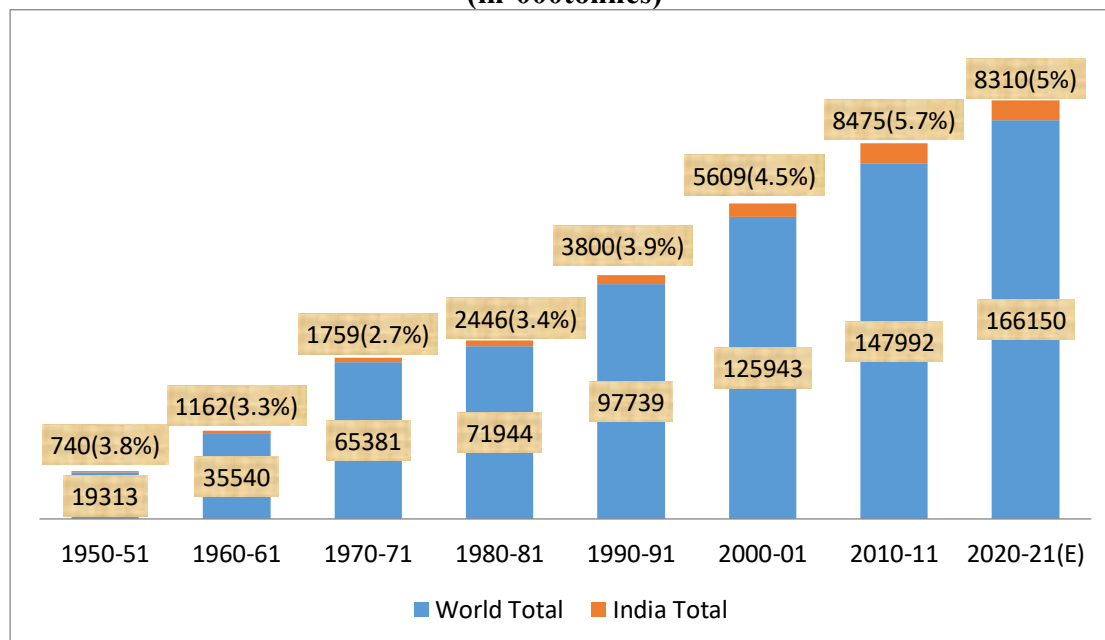
accounts for about 17 % of animal protein intake. The contribution of fish production and export in global level has been increasing since 1980's.

Sustainable agricultural development is more important in developing country particularly in India. Sustainable agricultural development, including the essential contribution of the fisheries sector, has become of utmost importance, both to ensure adequate supplies of food at affordable prices, and as the main source of economic and social progress for the rural poor and fishing

communities. The given below the figure - 1 shows contribution of India to world

fish production.

Figure - 1
Contribution of India to World Fish Production
(in '000 tonnes)



Source: Hand Book on Fisheries Statistics (2014), Govt. of India; E for expected value

In 2010-11, the contribution of fish in world fish production was 8475 tonnes, it means 5.7 % share in global level. Expected production will be in 2020-21 at 8310 million tones. So, Government of India has to take necessary steps to increase fish production in the next decades.

We have to consider two important things for sustainable development. One is

population growth and another one is food production particularly fish production. India is the second largest population country in the world. In India, large population will create a large demand for food consumption. In this situation, we need to increase agriculture production such as cereals, pulses and fish production for precautionary motive.

Table - 3
Population growth, Agriculture Production and Fish Production in India

Year	Population (in millions)	Decadal Growth Rate	GDP at factor cost (at constant prices in crore)	Output of food grains (Million Tonnes)	Fish production (in '000 tonnes)	Decadal Growth Rate
1950-51	361	-	224,786	50.80	752	-
1960-61	439	21.6	329,825	82.00	1160	54.2
1970-71	548	24.8	474,131	108.40	1756	51.4
1980-81	683	24.6	641,921	129.60	2442	39.1
1990-91	846	23.8	1,083,572	176.40	3836	57.1
2000-01	1,028.7	21.6	1,864,300	196.80	5656	47.4
2010-11	1,210.2	17.6	4,493,743	218.20	8231	45.5
2020-21(E)	1,305.8	7.9	3,656,791	251.68	8192	-0.4

Source: India's Census report 2011 and Hand book on fisheries statistics 2014, Govt. of India

The above table-3 presents the India's population growth, GDP, food grain production, and fish production since 1950-51. The population has been increasing continuously from 1950. In terms of GDP and food grain productions have been increasing high at the same time fish production has not increased that much level. The trend line shows the negative growth rate at -0.4 in 2020.

Table – 4
Fish production trends in India
(‘000 tonnes)

Year	Marine (%)	Inland (%)	Total
1950-51	534(71)	218(29)	752
1960-61	880(76)	280(24)	1160
1970-71	1086(62)	670(38)	1756
1980-81	1555(64)	887(36)	2442
1990-91	2300(60)	1536(40)	3836
2000-01	2811(50)	2845(50)	5656
2010-11	3250(39)	4981(61)	8231
2020-21(E)	3663(45)	4529(55)	8192

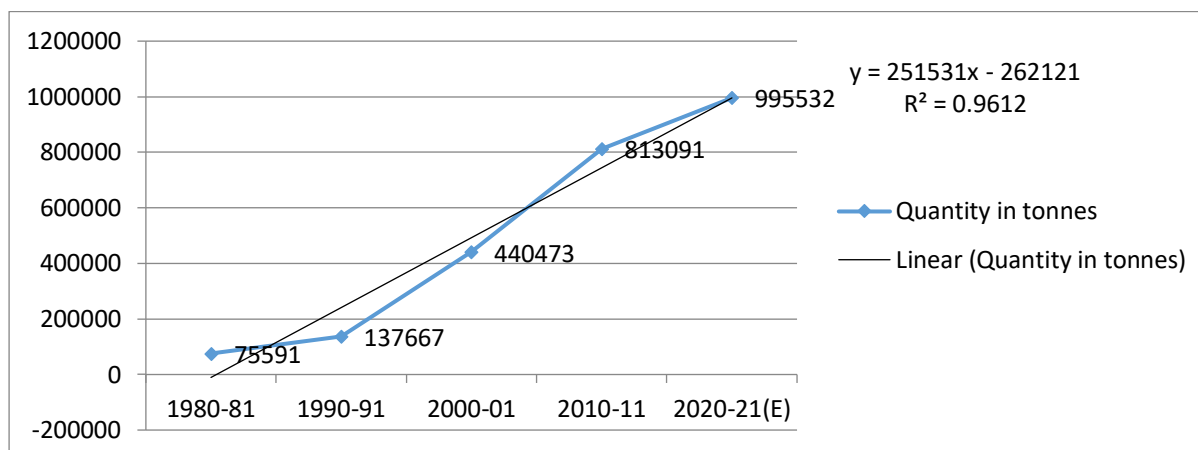
Source: Hand book on Fisheries Statistics, GOI Percentage in parenthesis

In fish production in India, Inland and marine fish production plays significant role. The percentage contribution of inland fish production in the total fish production of 29 % during the year of 1950-51 and has increased to 61% in the year of 2010-2011. There are many reasons for declining marine fish production like as overfishing, Using high efficient technology, etc. Due to natural resource degradation, marine fish production has been declining. Apart from the natural resource degradation climate change is one of the major reasons for declining fish production. These reasons may be altering fish demand and supply in Indian fisheries. Fish and fish products

from India plays a significant role for providing employment opportunities and food security in the world. During the past decades from 1950 to 2010 the Indian fisheries and aquaculture has witnessed improvements using new technology and farming methods. From the above table, it is obvious that the contribution of inland fish production is higher than marine fish production. According to Meenakumari, deputy director general (fisheries) of the Indian Council of Agricultural Research (ICAR), the stagnation of marine fishing is the result of irresponsible fishing and over-exploitation of coastal marine resources. Even tiny and underdeveloped fish, which ought not to be caught, are spared. There are no restrictions on the number of fishing vessels that can operate in the oceans. As a result, too many fishing boats scout for increasingly meager resources.

Fish and fish products export play a great role in foreign trade. As mentioned earlier it has the largest group in agricultural exports of India, with 10.51 lakh tones in terms of quantity and Rs.33,442 crores in value. The given figure-2 shows increasing steadily the trend in export of marine products since 1980. Given the simple linear regression model describes the relationship between the year and export of marine fisheries products. It has positive relationship between the variables and it's coefficient of determination (R^2) value is 0.961 (Figure-2). The value is close to 1. It means that this model explained and predicts well and high linear relationship between two variables.

Figure-2
Trend in Export of Marine Products since 1980



As far as the export of marine products is considered, it has been increasing and has considerable contribution of GDP and foreign trade. In future also, it will have significant role. In this situation, the Central and State government should give more importance for fish production, distribution for sustainable food security in India.

4. Conclusion

Food security is one of the human rights and it has been becoming political, social and economic dimensions at the national, regional and global levels. As the good statement given by FAO in 1984, “fish is an important part of daily diets in many countries and provides nearly one quarter of the world’s supply of animal protein and...in many countries fisheries are important sources of employment, income and foreign exchange”. There is no doubt in that fish food can improve the food security of India. It may be directly or indirectly ensure food security, trade and development of the country. Hence, Central and State Government should give more importance to Fisheries sector. In the current increasing population condition, experts estimate the world will need to double food production by 2050,

and those same experts say fish are the answer.

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DEMOGRAPHIC PROFILE OF DISTRIBUTION OF MSME IN INDIA

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Abstract

Economic development depends on industrial growth of the country which consists of production, consumption, distribution, utilisation and employment. Therefore, economic policies of the country mainly concentrate with aim to promote industrial development in a phased manner. Essentially the micro small and medium scale enterprises are generally comprised of those industries which manufacture, produce and render services with the help of small machines and less manpower. This paper made an attempt to explore the demographic profile of MSME in India.

Keywords: MSME , production, consumption, distribution, utilisation , labour-intensive, Manufacturing enterprises , Service enterprises

INTRODUCTION

The small industries are the salvation of the economy, especially in developing countries like India. These industries are generally labour-intensive, and hence they play an important role in the creation of employment. Small industries are a crucial sector of the economy both from a financial and social point of view, as they help with the per capita income and resource utilisation in the economy. This paper made an attempt to explore the demographic profile of MSME in India.

MICRO SMALL AND MEDIUM ENTERPRISES (MSME)

MSME stands for Micro, Small, and Medium Enterprises. In accordance with the Micro, Small, and Medium Enterprises Development (MSMED) Act in 2006, the enterprises are classified into two divisions.

1. **Manufacturing enterprises** – engaged in the manufacturing or production of goods in any industry
2. **Service enterprises** – engaged in providing or rendering services

MSME – NEW DEFINITION

Revised Classification applicable w.e.f 1st July 2020			
Composite Criteria: Investment in Plant & Machinery/equipment and Annual Turnover			
Classification	Micro	Small	Medium
Manufacturing Enterprises and Enterprises rendering Services	Investment in Plant and Machinery or Equipment: Not more than Rs.1 crore and Annual Turnover ; not more than Rs. 5 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover ; not more than Rs. 50 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover ; not more than Rs. 250 crore

Source: MSME Report 2019-20

CHARACTERISTICS OF MSME

Ownership: MSME generally are under single ownership. So it can either be a sole proprietorship or sometimes a partnership.

Management: Generally both the management and the control is with the owner/owners. Hence the owner is actively involved in the day-to-day activities of the business.

Labour Intensive: MSME dependence on technology is pretty limited. Hence they tend to use labour and manpower for their production activities.

Flexibility: MSME are more adaptable to their changing business environment. So in case of amendments or unexpected developments, they are flexible enough to adapt and carry on, unlike large industries.

Limited Reach: MSME have a restricted zone of operations. Hence, they can meet their local and regional demand.

Resources utilisation: They use local and readily available resources which help the economy fully utilise natural resources with minimum wastage.

REVIEW OF LITERATURE

Singh et al. (2012) analyzed the performance of SSI in India and focused on policy changes which have opened new opportunities for this sector. This study concluded that SSI sector has made good progress in terms of number of SSI

units, production and employment levels. The study recommended the emergence of technology development and strengthening of financial infrastructure to boost SSI and to achieve growth target.

Sudhansu Sekhar Nanda(2016), The MSMEs contributes extensively to the country's manufacturing output, employment and exports and is accredited with generating the highest employment growth as well as accounting for a major share of industrial production and exports. The labour intensity of the MSME sector is much higher than that of large enterprises. MSMEs comprise more than 80 per cent of total enterprises in most of the economies.

Kankipati, Ajay & Shaik, Meervali & Ramesh, & Shekar., (2017). Entrepreneurship generally speaking refers to the overall course of action undertaken by an owner in starting and managing his enterprise for profit. Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. MSME provides to promote skill development to increase productivity and providing accessible credit through government sponsored agency exclusively to MSME is essential to increase productivity and contribution to economic growth.

Subramanian, Sp Mathiraj & Balasundari, Mrs & Sarojadevi, R. (2018). Ping countries for its significant contribution in gratifying various socioeconomic objectives such as higher growth of employment, output, promotion of exports and fostering entrepreneurship. They play a crucial role in the industrial development of any country. This sector even assumes greater importance now as the country moves towards a faster and inclusive growth agenda. It is concluded that this sector contributes significantly to manufacturing output, employment, exports of the country.

Paramasivan C, Mari Selvam P (2013), Micro, small and medium enterprises are powerful segment of the industrial development of a country. These sectors performed well with multidimensional aspects of the socio-economic aspects. Growth and progress of MSME in India is an emerging aspects which directly associated with the sustainable development in the country. This article is focused on the Progress and Performance of Micro, Small and Medium Enterprises in India with reference to MSME in of India.

Table 1
Distribution of Enterprises category wise
(Numbers in Lakh)

Sector	Micro	Small	Medium	Total	Share (%)
Rural	324.09	0.78	0.01	324.88	51
Urban	306.43	2.53	0.04	309.00	49
Total	630.52	3.31	0.05	633.88	100

Source: MSME Report 2019-20

Table no. 3 shows that Distribution of enterprises category wise there are 633.88 lakhs of MSME in India as on 31st March 2019 of which 630.52 lakhs belongs to micro 3.31 lakhs to small and 0.05 lakhs belongs to medium enterprises.

The table shows that Distribution of enterprises category wise there are 324.88 lakhs of MSME in Rural sector as on 31st March 2019 of which 324.09 lakhs belongs to micro 0.78 lakhs to small

and 0.01 lakhs belongs to medium enterprises.

The table shows that Distribution of enterprises category wise there are 309.00 lakhs of MSME in Urban sector as on 31st March 2019 of which 306.43 lakhs belongs to micro 3.31 lakhs to small and 0.05 lakhs belongs to medium enterprises.

Chart 1
Distribution of Enterprises category wise

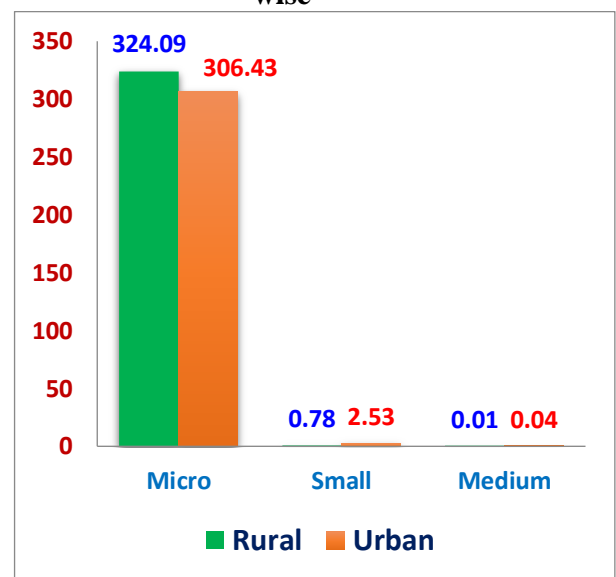


Table 2
Percentage Distribution of Enterprises
in Rural and Urban Areas
(Male / Female ownership category wise)

Sector	Male	Female
Rural	77.76	22.24
Urban	81.58	18.42
All	79.63	20.37

Source: MSME Report 2019-20

Table no. 4 shows that percentage distribution of enterprises in rural and urban areas (male and female ownership category wise) as regards the ownership category of MSME in India 79.63 percent of MSME owned by male and the remaining 20.37 percent of the MSME owned by Female. In Rural sector 77.76 percent of MSME owned by male and 22.24 percent by female. In urban sector

81.58 percent of MSME owned by male and 18.42 percent female.

Chart 2

Percentage Distribution of Enterprises in Rural and Urban Areas

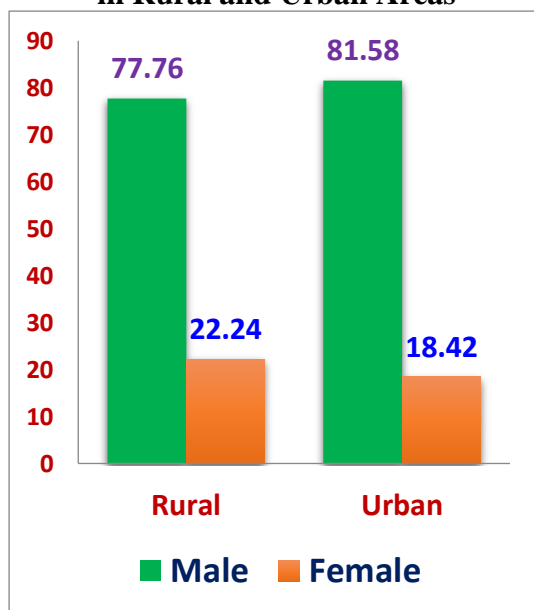


Table 3

Percentage Distribution of Enterprises by Male / Female Owners

Category	Male	Female
Micro	79.56	20.44
Small	94.74	5.26
Medium	97.33	2.67
All	79.63	20.37

Source: MSME Report 2019-20

Table no. 5 shows that Percentage distribution of enterprises by Male and female owners, as regards Micro units 79.56 percent of MSME owned by male and 20.44 percent owned by female. The table shows that Percentage distribution of enterprises by Male and female owners, as regards Small units 94.74 percent of MSME owned by male and 5.26 percent owned by female. The table shows that Percentage distribution of enterprises by Male and female owners, as regards Medium units 97.33 percent of MSME owned by male and 2.67 percent owned by female. On the whole 79.63 percent of MSME owned by male and 20.37 percent by female.

Chart 3

Percentage Distribution of Enterprises by Male / Female Owners

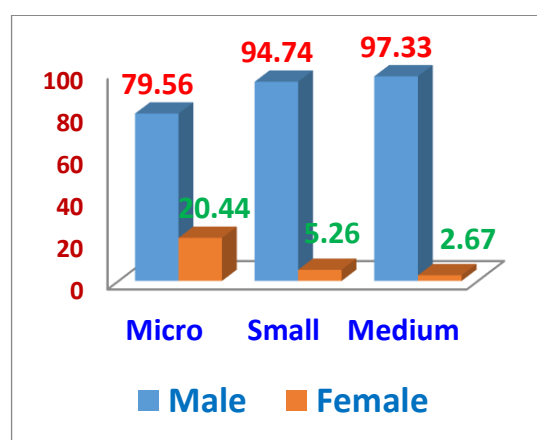


Table 4

Percentage Distribution of Enterprises by Social Group of Owners

Sector	SC	ST	OBC	Others	Not known
Rural	15.37	6.70	51.59	25.62	0.72
Urban	9.45	1.43	47.80	40.46	0.86
All	12.45	4.10	49.72	32.95	0.79

Source: MSME Report 2019-20

Table No. 6 indicates that percentage distribution of enterprises by social group owners. In rural 15.37 Percent of MSME owned by SC, 6.70 percent of MSME owned by ST, 51.59 percent of MSME owned by OBC, 25.62 percent of MSME owned by others and 0.72 percent of MSME Owned by not known. In Urban 9.45 Percent of MSME owned by SC, 1.43 percent of MSME owned by ST, 47.80 percent of MSME owned by OBC, 40.46 percent of MSME owned by others and 0.86 percent of MSME Owned by not known. On the whole, 12.45 percent of MSME owned by SC, 4.10 percent by ST, 49.12 percent by OBC, 32.95 percent by others and 0.79 percent by not known.

Chart 4
Percentage Distribution of Enterprises
by Social Group of Owners

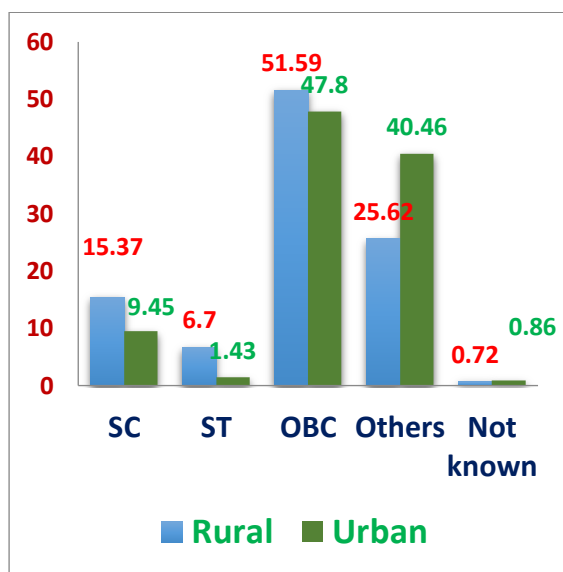


Table 5
Percentage Distribution of Enterprises
by Social Category Wise

Sector	SC	ST	OBC	Others	Not known
Micro	12.48	4.11	49.83	32.79	0.79
Small	5.50	1.65	29.64	62.82	0.39
Medium	0.00	1.09	23.85	70.80	4.27
All	12.45	4.10	49.72	32.95	0.79

Source: MSME Report 2019-20

Table No. 7 Shows that percentage distribution of enterprises by social category wise, as regards Micro units, 12.48 percent of units owned by SC, 4.11 percent owned by ST, 49.83 percent owned by OBC, 32.79 percent owned by others and 0.79 percent owned by not known. As regards Small units, 5.50 percent of units owned by SC, 1.65 percent owned by ST, 29.64 percent owned by OBC, 62.82 percent owned by others and 0.39 percent owned by not known. As regards Medium units, Zero percent of units owned by SC, 1.09 percent owned by ST, 23.85 percent owned by OBC, 70.80 percent owned by others and 4.27 percent owned by not known. On the whole, 12.45 percent of the MSME owned by SC, 4.10 percent of

MSME owned by ST, 49.72 percent of MSME owned by OBC, 32.95 percent of MSME owned by others and 0.79 percent of MSME owned by not Known.

Chart 5
Percentage Distribution of Enterprises
by Social Category Wise

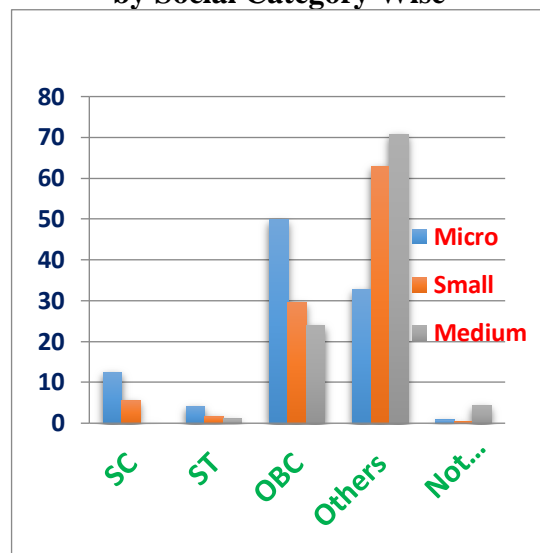


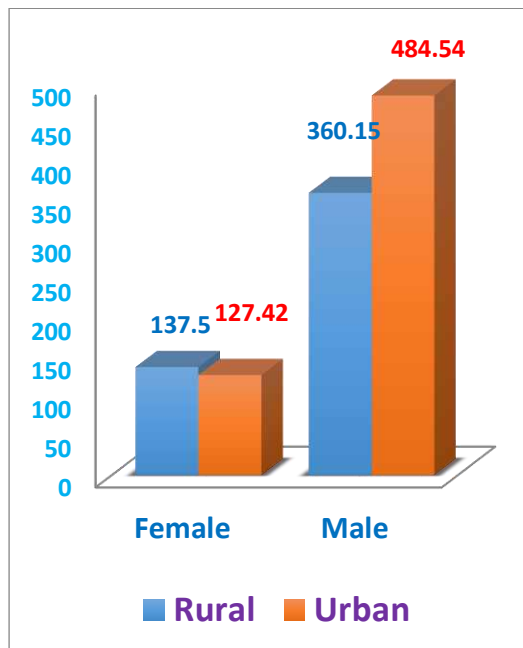
Table 6
Sectoral distribution of workers in
male and female category (in lakh)

Sector	Female	Male	Total	Share (%)
Rural	137.50	360.15	497.78	45
Urban	127.42	484.54	612.10	55
Total	264.92	844.68	1109.89	100

Source: MSME Report 2019-20

Table no. 10 indicates that sectoral distribution of workers in male and female category, in rural there are 137.50 lakhs female workers and 360.15 lakhs male workers in MSME sector. In urban there are 127.42 lakhs female workers and 484.54 lakhs male workers in MSME sector. In total there are 264.92 lakhs female workers and 844.68 lakhs male workers. Percentage of rural workers amounted to 45 percent and urban workers amounted to 55 percent in the MSME sectors.

Chart 6
Sectoral distribution of workers in male and female category (in lakh)



CONCLUSION

Micro Small and medium enterprises are the backbones of the Indian economy which provides employment, income generation and effective utilization of local resources. The majority of the MSME is traditional foundation with community-based with the help of a particular family or social group. Ownership of these industries is mostly by a male who belongs to business communities occupied conventionally. The demographic profile of MSME clearly indicates that socially weaker sections people in the country are owned very less number of MSME that too they owned only micro industries which are community-based sectors. It is concluded that there is a need for promotion of MSME sectors among the socially weaker section people through financial, technical and marketing support.

ACKNOWLEDGEMENT

This article is to be published and financial assistance covered under ICSSR under the scheme of IMPRESS.

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