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Innovative Initiative towards Financial Inclusion and Inclusive Growth in India: A Review of PRADHAN MANTRI JAN DHAN YOJANA

FALAK*

Abstract

Financial inclusion programs have turned into a basic piece of an economy which is required in immature and creating nations as well as in creating nations for manageable development. In India, one of the greatest advancement by NDA government is first social welfare scheme i.e. "Pradhan Mantri Jan Dhan Yojana (PMJDY)". It is a plan for extensive money related consideration propelled by the Prime Mininster of India, Mr. Narendra Modi on 28 August 2014. He had reported this plan on his first Independence Day Speech on 15 August 2014. This plan depends on "Sab Ka Sath Sab Ka Vikas" i.e. inclusive growth (comprehensive development). The main objective of this scheme is to ensure universal access to banking facilities with at least one basic bank account for every household. PMJDY is one of the effective money related consideration programs which are giving social and financial security to the denied area of populace.

Key words: PMDJY, financial inclusion, inclusive growth, development, sustainable growth

Introduction

India is changing from rustic India to advanced India with such huge numbers of activities by the focal administration of our nation. The activities like Make in India, Jan Dhan Yojna, Swatch Bharat, Demonetization of Currency are for the most part contributing for the development of Indian economy. India is recognized as quickest developing economy. One of the principle reasons that contribute for this is Digitalization. Today we are living in advanced time. Digitalization is the watchword that is heard in all aspects of the world and particularly it is the maxim of present India. We need to make our nation as Digital India. Our legislature is taking numerous activities to roll out this improvement effectively. Digitalization is the utilization of advances to give new incomes to the business and the nation all in all. Utilization of advanced innovations can be made in each type of association. Along these lines this is making India to end up quickest developing economy in the ongoing past. The quickly developing enterprises like programming, e-business, and pharmaceuticals are largely assuming the key part in the improvement of Indian economy. Be that as it may, this is material to just the individuals who can utilize the advanced advances and the money related administrations. In such manner the legislature of India focused on the idea of financial inclusion for the advantage of the considerable number of individuals of our nation. Financial inclusion is the way toward giving all the budgetary administrations at reasonable expenses to areas of distraught and low-wage fragments of the nation. However, to give the budgetary administrations every one of the general population ought to approach banks which demonstrates the requirement for financial

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balance for each Indian. Pradhan Manthri Jan Dhan Yojana is gone for this goal. That is to make each Indian a bank account holder.

The weaker area of the general public disregarded by the formal money related foundation to make enormous benefits which made hole between the segment and affected monetary financial development of the nation. Absence of mindfulness, low salary, and lack of education, neediness, and separation from branch, branch timings, inadmissible items and dialects are the principle explanation behind budgetary rejection. To fill the hole and bring them inside the umbrella of monetary framework should be possible by giving money related education, opening of branches in unbanked region, giving moderate budgetary item.

As of late India has been testing the created and creating nations in boosting the financial development. Nonetheless, lion's share of the region's populace transcendently rustic and beneath the neediness line populace still remains unbanked. Financial inclusion is a moderately new financial idea in India that intends to give banks at sensible expenses to the underprivileged, who may not generally know about or ready to manage the cost of these administrations.

Objectives of the Study

Following are the objectives of the study:

- To study the development of financial inclusion & Inclusive growth in India
- To study the implications and effectiveness of PMJDY
- To understand the threats for the success of PMJDY

Concept of Financial Inclusion

Financial inclusion has been a popular expression for the policymakers and governments for quite a while. Endeavors have been made by the policymakers and money related establishments to bring substantial segments of the provincial populace inside the banking system having understood that budgetary consideration is the quintessence of feasible monetary development and advancement in a nation like India. Inclusive growth winds up unimaginable without monetary incorporation. Without Financial Inclusion we can't consider monetary improvement on the grounds that an expansive piece of aggregate populace stays outside the development procedure. In spite of the fact that our nation's economy is developing at a one digit, still the development isn't comprehensive with the financial state of the general population in provincial regions exacerbating further. One of the regular explanations behind destitution is in effect fiscally avoided. Despite the fact that there are few individuals who are getting a charge out of a wide range of administrations from funds to net saving money, yet at the same time in our nation around 40% of individuals need access to even essential financial services like investment funds, credit and insurance facilities.

Financial Inclusion before PMJDY

In India, financial inclusion initially highlighted in 2005, when it was presented by K C Chakraborthy, the director of Indian Bank. Mangalam Village turned into the main town in India where all family units were given saving money offices. KYC Norms were casual for individuals planning to open records with yearly stores of not as much as Rs. 50,000.

Keeping in mind the end goal to guarantee financial inclusion different activities were taken up by RBI like Nationalization of Banks, Expansion of Banks branch arrange, Establishment and development of Co-operatives and RRBs, Introduction of PS loaning, Lead Bank Scheme, Formation of SHGs and State particular approach for Govt. supported plans to be advanced by SLBC (State Level Bankers Committee) and so on. General charge cards (GCCs) were issued to poor people and the impeded with a view to enable them to get to simple credit. RBI in the year January 2006, with the target of guaranteeing more noteworthy money related incorporation and expanding the out-reach of the saving money division, chose openly enthusiasm to empower the banks to utilize the administrations of NGOs/SHGs, MFIs and other Civil Society Organizations as delegates in giving monetary and managing an account benefits through utilization of "Business Facilitator and Business Correspondent Model". Enumeration 2011 assessed that out of 24.67 crore families in the nation, 14.48 crore (58.7%) family units approached managing an account administrations. Of the 16.78 crore country family units, 9.14 crore (54.46%) were availing bank facilities. Of the 7.89 crore urban families, 5.34 crore (67.68%) house-holds were availing bank facilities. In the year 2011, Banks secured 74,351 towns, with populace more than 2,000 (according to 2001 enumeration) with banking facilities under the "Swabhimaan" crusade with Business Correspondents. Anyway the program had an extremely constrained reach and effect. Open Sector Banks (PSBs) including RRBs have assessed that by31.05.2014, out of the 13.14 crore country families which were apportioned to them for scope, around 7.22 crore family units have been secured (5.94 crore revealed). It is assessed that 6 Crore families in country and 1.5 Crore in urban territory should be secured.

PMJDY- The Present Scenario of Financial Inclusion Progress & Implication

PMJDY was presented by Government of India on 28th August 2014 to guarantee extensive monetary inclusion of the considerable number of family units in the nation. PMJDY envisions universal access to banking services and products with at least one banking account for every household in the country. This plan came into a photo with a view to give complete and comprehensive growth.

Under the plan, account holders will be furnished zero-adjust financial balance with RuPay check card and in addition an incidental protection front of Rs 1 lakh. The individuals who open records by January 26, 2015 well beyond the Rs1 lakh mishap, they will be given life coverage front of Rs 30,000. A half year of opening of the financial balance, holders can profit Rs 5,000 overdraft office. With the introduction of new technology introduced by National Payments Corporation of India (NPCI), a person can transfer funds, check balance through a normal phone which was earlier limited only to smart phones. Mobile banking for the poor would be available through National Unified USSD Platform (NUUP) for which all banks and mobile companies have come together.

The PMJDY can be executed by mission mode, envisage affordable financial services to all citizens. It comprises six pillars:

- **Providing Basic Banking Account with Overdraft Facility & RuPay Debit Card to all household:** The effort would be to first cover all uncovered households with banking facilities by August, 2015, by opening basic bank accounts. Account holder would be provided a RuPay Debit Card. Facility of an overdraft to every basic banking account holder would be considered after satisfactory operation /credit history of six months.
- **Universal access to banking facility:** First aim of remove untouchability in financial sector. District has divided into sub service area catering to 1000 to 1500 household for access to basic banking facility by 14 August 2015.

- **Financial Literacy Program:** Financial literacy would be an integral part of the Mission in order to let the beneficiaries make best use of the financial services being made available to them.
- **Creation of Credit Guarantee Fund:** Creation of a Credit Guarantee Fund would be to cover the defaults in overdraft accounts.
- **Micro Insurance:** To provide micro- insurance to all willing and eligible persons by 14 August, 2018, and then on an ongoing basis.

Table 1: Pradhan Mantri Jan-Dhan Yojana (Beneficiaries as on 20/06/2018)
All figures in Crore

Bank Name/Type	Number of Beneficiaries at Rural/Semiurban Centre Bank Branches	Number of Beneficiaries at Urban Metro Centre Bank Branches	Number of Rural-urban Female Beneficiaries	Number of Total Beneficiaries	Deposit in Accounts (in crore)	Number of Rupay Debit Cards Issued to Beneficiaries
Public Sector Bank	13.84	11.88	13.48	25.72	64063.34	19.39
Regional Rural Banks	4.32	0.80	2.80	5.12	13714.55	3.69
Private Sector Banks	0.60	0.40	0.53	0.99	2213.89	0.92
Grand Total	18.76	13.08	16.81	31.83	79991.79	24.00

Source: www.pmjdy.gov.in

Threats to PMJDY

- There is big possibility of opening account under PMJDY from those who have account already. There is no check on the new account holder.
- Regarding debit card implementation there may be slow roll out, logistics issue and possibility of misuse.
- In rural area network of ATM is less so people are not well verged with use of ATM.
- No clarity if existing account holders would get 1 lakh accidental insurance coverage. It is also not cleared who is going to bear bill of insurance premium and cost to keep account running.
- Even the cost of overdraft facility, and thereafter non recovery, no clarity that is bearing loss.
- Creating new account is not a challenge but increasing transaction per account is a challenge. Existing saving accounts without *RuPay card* not to get other benefits
- Jan Dhan Yojana created Guinness record in the opening of accounts. But at the same time the dormancy rate is also high in these accounts when compared to other accounts.
- 22% of the people are maintaining zero balance accounts which ensure that the circulation of currency will be less.
- Number of people who opened account in this scheme and their share of using digital services in banks are truly less.

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- Most of the people are not still aware of the benefits of financial inclusion which is making them to be far from banking transactions.

Conclusion

"Pradhan Mantri Jan Dhan Yojana (PMJDY)" executed in extensive scale requires assurance and state of mind towards progress way. Extremely well stated, underlying driver is 'financial untouchability' to annihilate destitution. Managing a bank account and insurance coverage does not demand the person should be educated, it only required the basic knowledge which could be explained by anybody else. Financial Inclusion requires managed endeavors over numerous years and accentuation on quality as opposed to amount ought to be the need. Government should survey the speed at which it is as of now focusing to accomplish the objective of covering the entire India with ledgers. Surely with a firm plan and infrastructural system of establishment's dream of financial services for all can be acknowledged sooner rather than later. A striking advance in without a doubt required withstanding the warmth of financial down surge and battling neediness, and the PMJDY is unquestionably a decent battling system to check the destitution in India.

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An Implementation of Machine Learning As Intelligent Tool for Churn Prediction in Telecommunication Industry

Megha Gupta*
Dr. Anju Bhandari Gandhi**

Abstract
Churn Prediction plays a vital role in various domains like life insurance, banking and telecom industry. With the current advancement in Machine Learning and Artificial Intelligence, Churn Prediction is more realistic and accurate. It is very much essential for early stage detection of customers who are at high risk of leaving the company or services. This paper study, it is observed that decision tree model surpasses the neural network model in the prediction of churn and it is also easy to construct. Selecting the right combination of attributes and fixing the proper threshold values may produce more accurate results. Our method provides accurate predictions on both the level at which each player will leave the game and their accumulated playtime until that moment. Further, it is robust to different data distributions and applicable to a wide range of response variables, while also allowing for efficient parallelization of the algorithm. This makes our model well suited to perform real-time analyses of churners, even for games with millions of daily active users.
Keywords: churn prediction, Telecom Industry, Machine Learning

Introduction
Churn is one of the most important service aspects in the telecommunications industry. The broad definition of churn can be said as the actions of a customer's service is terminated either by the customer themselves or the service provider for violation of service agreements, [3]. However, the major and most often cause of churn is the customer due to non-satisfaction in the service by a provider or due to more enhanced affordable service by other service-provider. Churn prediction modelling systems serve as a means of understanding the customer's exact behaviour and work as an alert to the danger and timing of customer churn. The precision of the strategy used is considered essential to the achievement of any proactive retention intention. After all, if the decision maker cannot anticipate customer's intention to leave their company, there can be no proper decision taken concerning that customer. In this article, the main idea of this article is to classify churn and non-churn customers in Telecom Industry by using an efficient Ensemble based Classifiers. And also to make a comparative study of this Ensemble based Classifiers with more popular based Classifiers. This process will help the service provider to detect loyal customers and to maximize the profitability. The churn prediction model with risk labels (low, medium and high) are explained by considering the following steps. In the first step one should clearly define the business objectives, after knowing the objectives. It is very

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much essential to identify the parameters involved in the process. Later, a model has to be built and the same has to be tested to determine the risk labels. The entire process has been schematically presented in Fig 1. It is the most important for any company or serviceprovider to retain the customers rather than looking for the new customers.

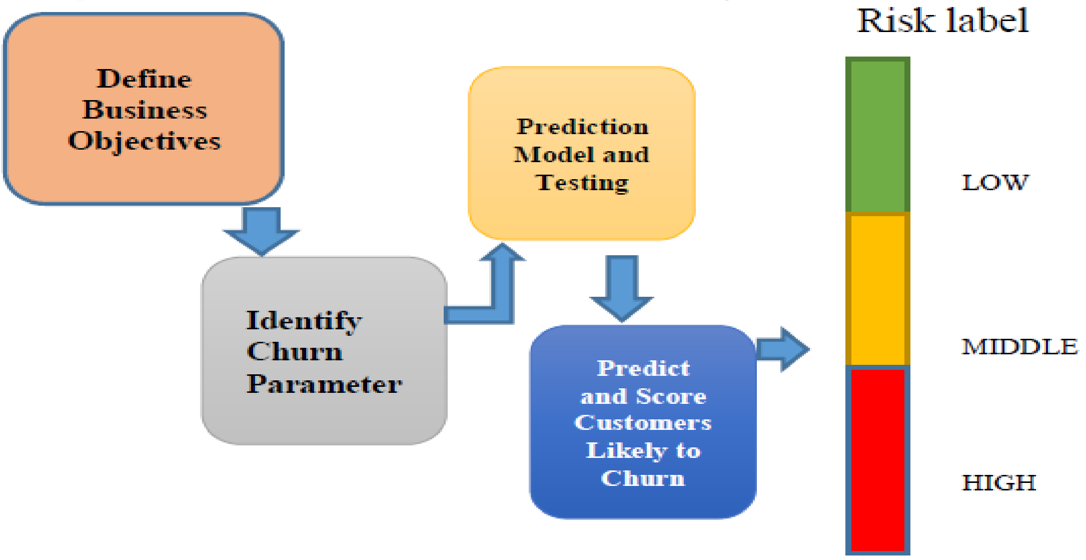

Fig. 1. Schematic of Churn Prediction Model

In telecom industries, both voice and data service customers are able to select a service-provider from a vast range of companies and have the freedom to switch the rights from one service provider to another whom they feel to be better. As the competition is fiercely increasing, the customers demand tailored products and almost best services at considerably lesser prices [6]. Many telecom companies deploy the retention strategies [7] to synchronize the services to keep customers for a longer tenure. As is the case, the churn reduction has become the number one business goal. In order to support telecommunications companies perform churn reduction,it is necessary to predict high risk customers and also to estimate their time of churn in order to incorporate their needs for preventing churning [8]. In general many data mining techniques [9], [10] are employed in predicting churn as there are closely related to sentiment analysis. The machine learning and meta-heuristic techniques [11] are greatly introduced as churn prediction methods.

Working Methodology

Rnnmachine Learningalgorithm

A Recurrent Neural Network (RNN) is a class of artificial neural network where connections between nodes form a directed graph along a sequence. This allows it to exhibit dynamic temporal behaviour for a time sequence. Unlike feedforward neural networks, RNNs can use their internal state (memory) to process sequences of inputs. The term "recurrent neural network" is used indiscriminately to refer to two broad classes of networks with a similar general structure, where one is finite impulse and the other is infinite impulse. Both classes of networks exhibit temporal dynamic behaviour. A finite impulse recurrent network is a directed acyclic graph that can be unrolled and replaced with a strictly feed forward neural network, while an infinite impulse recurrent network is a directed cyclic graph that cannot be unrolled. The promise of adding state to neural networks is that they will be able to explicitly learn and exploit context in sequence prediction problems, such as problems with an order or temporal component.

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RNNs stand out from other machine learning methods for their ability to learn and carry out complicated transformations of data over extended periods of time. Moreover, it is known that RNNs are Turing-Complete and therefore have the capacity to simulate arbitrary procedures, if properly wired.The capabilities of standard RNNs are extended to simplify the solution of algorithmic tasks. This enrichment is primarily via a large, addressable memory, so, by analogy to Turing's enrichment of finite-state machines by an infinite memory tape, and so dubbed "Neural Turing Machine" (NTM).Unlike a Turing machine, an NTM is a differentiable computer that can be trained by gradient descent, yielding a practical mechanism for learning programs. Every component of the architecture is differentiable, making it straightforward to train with gradient descent. This was achieved this by defining 'blurry' read-and-write operations that interact to a greater or lesser degree with all the elements in memory.

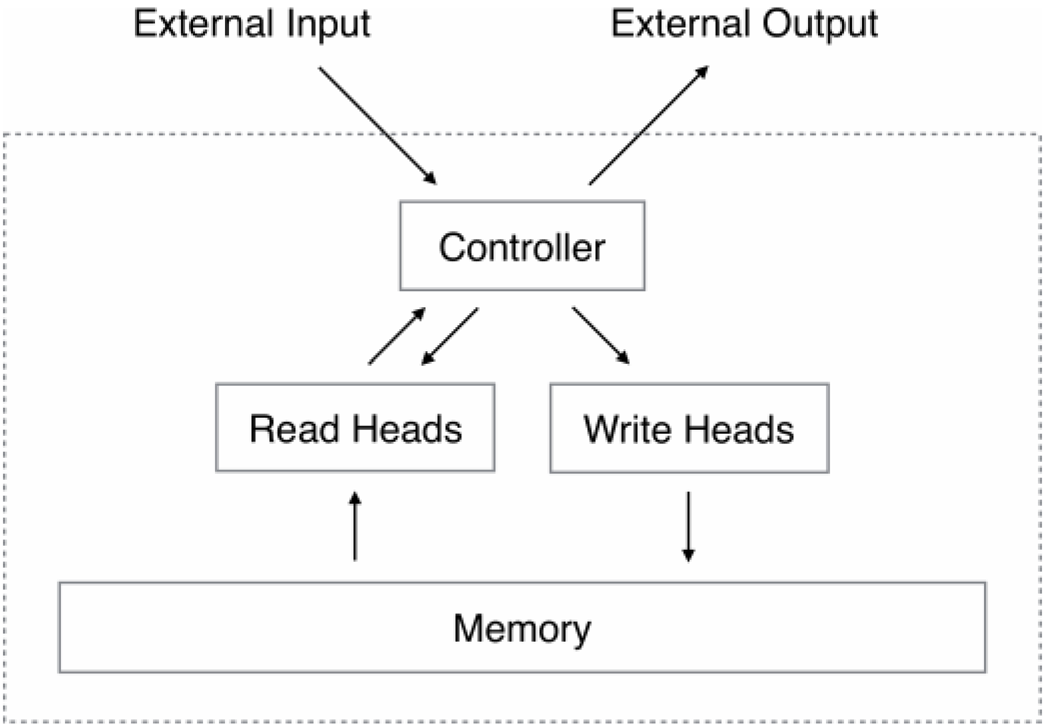

Fig 2. NTM Architecture is generically

Simulation and Results

Steps of Rnn Machine Learning Method

1. Download Comment from twitter.
2. Translate the text into untestable language using translator.
3. Preprocessing remove extra stop words.
4. RNNMachine Learning.
5. Chart
6. Check Machine Accuracy

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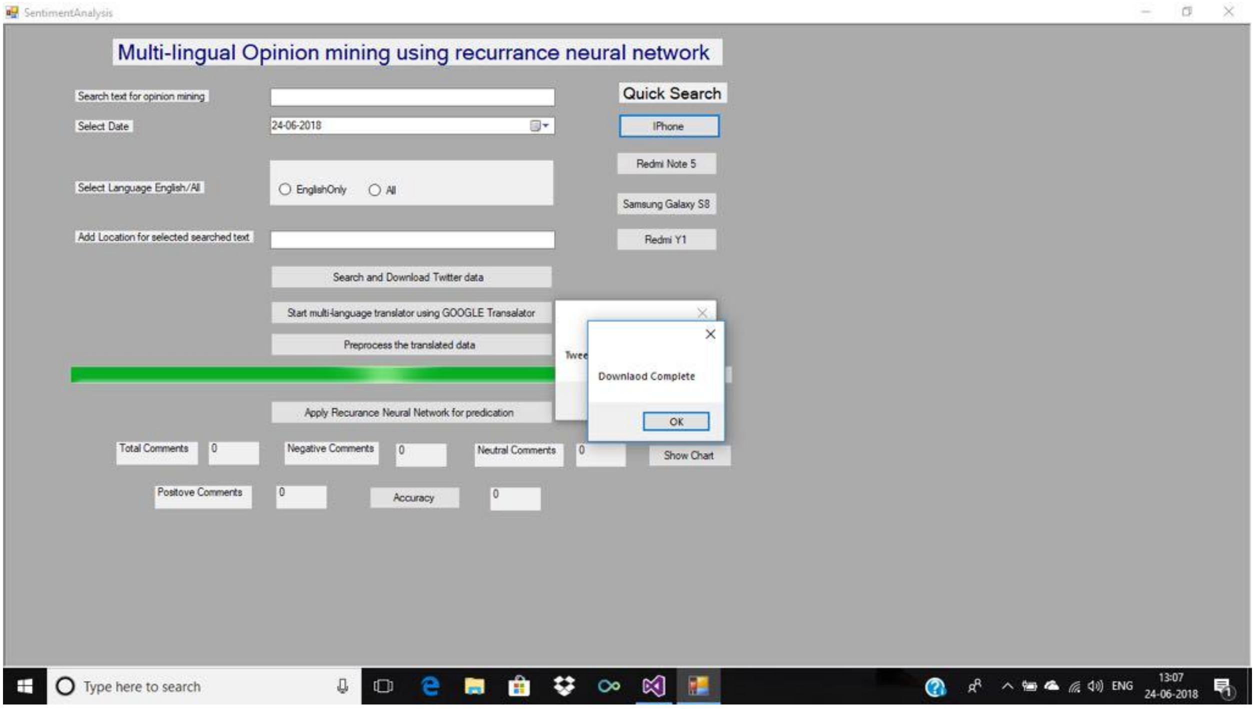

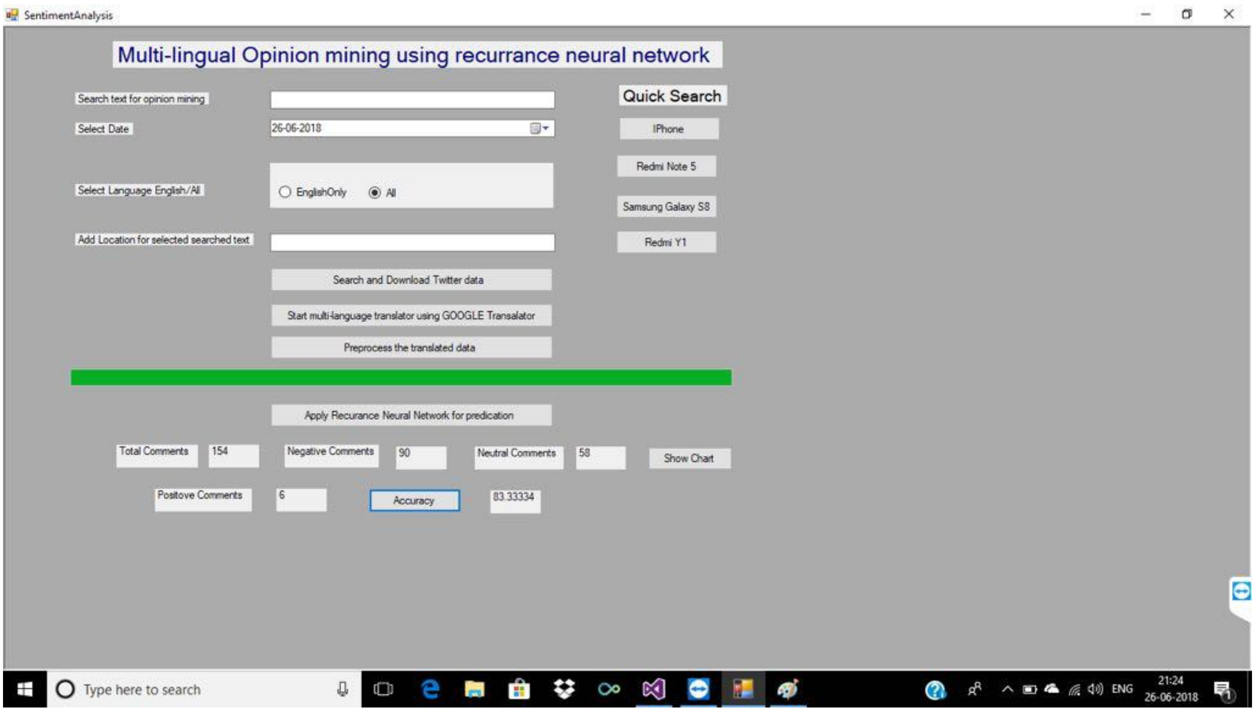

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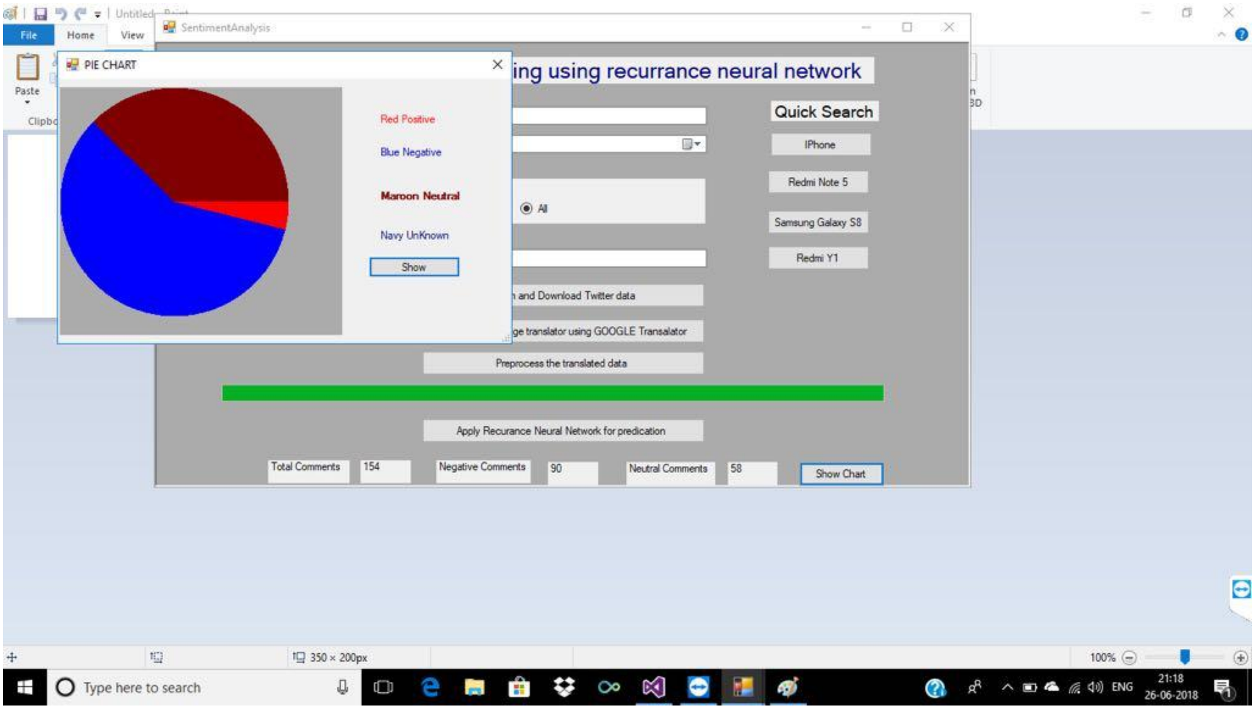

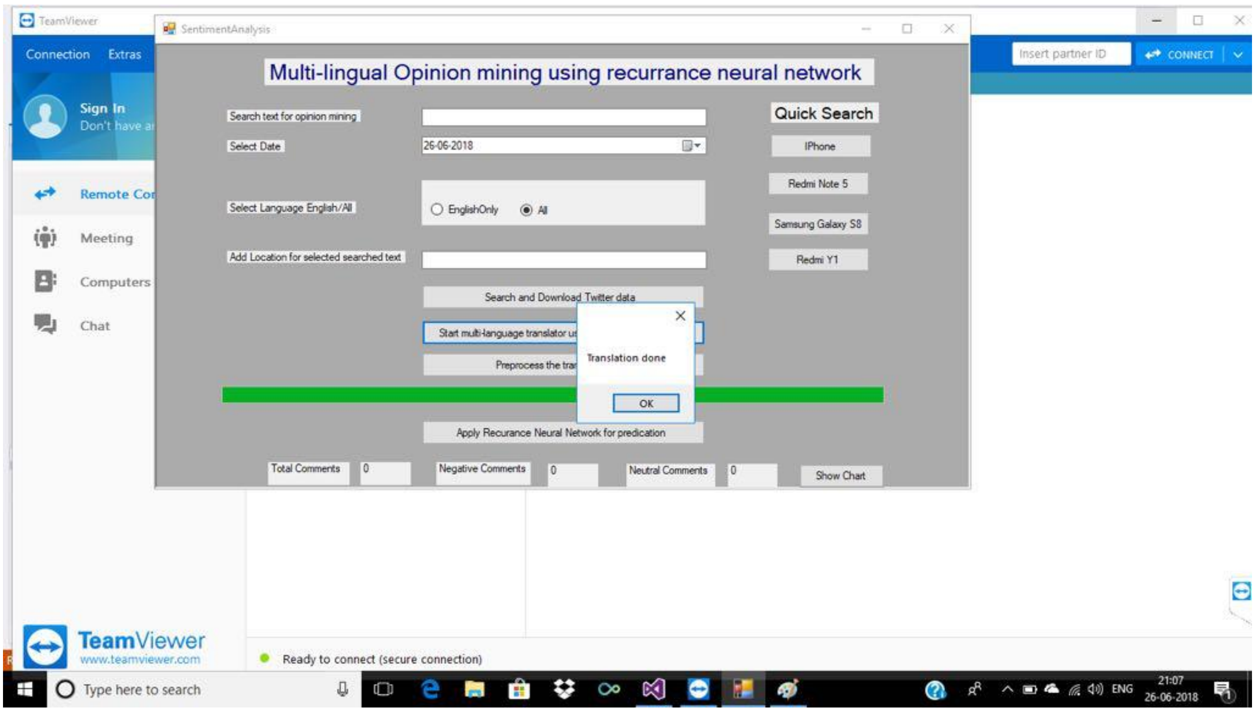

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Conclusion

In this paper, initially the problem of customer churnand the benefits of predicting churn in telecom industries are provided to enhance the objective of this paper. We have reviewed and analyzed some of the most important existing churn prediction RNN methods in detail and summarized them in the table above with the evaluated dataset details. The most important aspect of our review is that it focuses not only on predicting the churn accurately but also on the reasons for churn and the drawbacks of existing methods. The customer churn prediction is the aim of all these methodologies of which some used RNN methods based on machine learning algorithms while others through methods. This study might help organization what are the factors causing the employee leaving the organization and can take appropriate steps toimproving data pre-processing and feature selection methods.

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Effect of Wind Load on Elevated Water Tank of Intze Type: An Overview

Deepak[*]
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Abstract
Intensity of wind pressure along with elevation of the structure or with varying terrain category is the fundamental reason behind the wind caused catastrophe. Hence constructed structures must be prepared by the constructor keeping in mind the strength required in order to fight the impending disaster due to wind by thoroughly understanding the performance of the structure under wind load. Elevated water tank of Intze type is a typical structure which requires an investigation to understand the behavior of this structure under the action of wind force. In this study a review of various literatures on calculative analysis of water tank was carried to understand the performance of elevated water tank under the action of various horizontal forces like wind load.
Key Words: *Intze type tank, wind forces, Lateral displacement, STAAD-PRO, Wind Zones.*

1. Introduction

Water tanks are used to putting away water, the requirement for a water tank is nearly as old as human progress keeping in mind the end goal to give stockpiling of the water to use in numerous applications, water system, drinking water, fire concealment, agribusiness, rural cultivating, both for plants and animals, synthetic assembling, nourishment readiness and numerous different employments. Cost, shape, size and building materials utilized for developing water tanks are impacted by the limit of water tank. State of the water tank is an imperative plan parameter since nature and power of stresses depend on the state of the water tank. By and large, for a given limit, roundabout shape is favored in light of the fact that burdens are uniform and lower contrasted with different shapes. EWT (Elevated water tanks) is a huge extended water stockpiling holder developed to store water supply at a height enough to pressurize a water dispersion framework. In significant urban areas the key supply conspire is expanded through individual supply frameworks of foundations and mechanical homes for that raised tanks are an essential kind. These structures have a design that is particularly helpless against level powers because of the huge aggregate mass assembled at the highest point of slim supporting structure. The investigation of the various RCC water tanks built previously of varying height ranging from low to high uncover some kind of harm due to water pressure, wind pressure or earthquake. And failure of the essential life saver structure like EWT can brings about noteworthy situation after the event of failure, claiming human lives or other kind of setbacks and financial misfortune. Exploring the impacts of wind has been perceived as a vital advance to comprehend the common perils and its hazard to the general public over the long run. Most water supply frameworks in developing nations like India, in light of strengthened bond solid raised water tanks. The primary motivation behind this examination is to enhance the

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comprehension of the structural behavior and the material properties of the structural components of these tanks against horizontal forces, for instance, those caused by wind forces, needs exceptional consideration.

1.1 Operation of Water Tank

For the most part, water tank tower is one of the water storerooms to disperse clean water to certain territory effectively. It comprises of a raised tank that is bolstered by structure whether space structure (trusses) or strong structure. Water tank is masterminded by the measure of water required in the area. At specific places, the water tower was intended for stylish purposes and as a point of interest for specific spots. Certain water tanks are changed to elite or condo penthouse as living parlor. The statures of the pinnacle give the hydrostatic weight for the water source framework, and it is supplemented with a pump to pump-up water to the hoisted tower. The volume of supply and distance across of channeling give and support stream rate. Utilizing pump to disseminate water is expensive. In this way to lessen cost, pump is dynamic just to draw water up to lifted store amid low request and pressurized water amid crest period. The water tower diminishes the need for control utilization of cycling pumps extra reductions cost particularly on pump activity.

1.2 Types of Water Tanks

There are several types of water tank according to the shape, position with respect to ground level etc. From the position point of view and placement of tank, water tanks are divided into three classes. Those are,

a) Tanks resting on ground
b) Underground tanks
c) Overhead water tanks

From state of tank, water tanks might be named types. These are,

a) Circular tanks
b) Conical or channel formed tanks
c) Rectangular tanks
d) Intze compose
e) Spherical compose

1.3 Introduction to Water Tank Tower

1.3.1 Water Reservoir

There are two fundamental kinds of water stockpiling tank which is ground level tank and water tower. Water tower is superior to anything ground level due to weight that gives consistency in dissemination water. For water tower, the most useful component is the hoisted supply. The repository must be composed by the water necessity and weight required. Water tower comprises of water tank as supply and also a pole that should be composed with fundamental stature.

1.3.2 Definition of Water Tank Tower

By and large, water tank tower is one of the water storerooms to disseminate clean water to certain region proficiently. Water tank tower comprise of raised tank that is bolstered by structure whether space structure (trusses) or strong structure. Water tank tower is outlined by the measure of water required in the territory.

1.3.3 Operation of Water Tank Tower

The stature of tower not just gives the hydrostatic power for water supply framework, yet in addition its supplemented with a pump to pump-up water to the lifted pinnacle. The volume of store and measurement of channeling give and convey stream rate. Utilizing

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pump to disseminate water is exorbitant. Consequently to diminish cost, pump is dynamic just to draw water up to hoisted supply amid low request and pressurized water amid crest period. The water tower diminishes the prerequisite for the electrical utilization of cycling pumps extra reductions cost especially on pump task.

1.3.4 Types of Reinforced Concrete Water Tower

Although all reinforced concrete water towers may be basically the same in structural design, they can be in many forms depending on the purpose and environment. The size of tank depends on the amount of water to be stored, the height of tower depends on the pressure-head required, and the shape may depend on economics.

There are many types of shape especially in tank design such as cylindrical, polygonal or rectangular, or have more than one compartment.

1.4 Elevated water tank

Lifted fluid tanks and particularly the EWT are considered as essential city benefits in numerous urban areas. Their wellbeing execution amid solid breeze loads is of basic concern. They ought not bomb after breeze stack; to they can be used in meeting basic necessities as putting out flames and getting ready drinking water. The disappointment of these developments and the water dying down may cause certain dangers for the soundness of city in view of absence of water or trouble in putting out flame amid basic conditions. Numerous examinations focused on the breeze stack conduct, investigation, and plan of tanks, especially ground tanks. In the past breeze loads lifted tanks have been of the defenseless structures and their breeze stack conduct has not been advantageous being harmed. Hence, past breeze loads have demonstrated that because of disappointment of life saver structures, for example, hoisted tanks with inadequate breeze stack protection, firefighting and other crisis reaction endeavors can be thwarted.

1.5 Performance of Elevated Tanks

Wind stack insurance of fluid tanks is of impressive hugeness. Water putting away tanks ought to stay useful in the post wind stack period to ensure consumable water supply to wind stack influenced region and to provide food the need for battling. Mechanical fluid containing tanks may involve inflammable fluids and very harmful and these tanks must not lose their substance amid the breeze stack. Fluid putting away tanks is by and large of two sorts: hoisted tanks and ground bolstered tanks. Raised tanks are for the most part used for water supply plans and they could be bolstered on RCC shaft, steel or RCC casing, or stone work platform.

1.6 Intze type water tank

INTZ type water tank is one such water tank which has roundabout shape with a circular best and cone like chunk with round vault at the base. In this sort of water tank, the internal powers originating from the cone shaped chunk neutralize the outward powers originating from the base vault which result less weight on the solid base piece of the water tank. Because of lesser burdens, the thickness of the solid base chunk lessens and decreasing the measure of cement required which has coordinate impact on the cost of water tank.

1.7 Wind Load

Intensity of the wind is the principal reason for wind caused disaster to various structures, hence requires a comprehensive analysis of various structures under the action of wind load. Due to the height and shape of the water tank, Wind load becomes a critical load component while analyzing and designing water tank as it results in lateral displacement. Lateral Displacement in water tank due to wind load results in sloshing of water and additional vibrations. Hence there is a need to investigate the response of elevated water tank for various wind pressure in different terrain category.

2. Literature Review

In view of being critical element for storing large amount of water for an area, large number of studies on previous literature has been made for looking into various aspects of Intze tanks and comparing it with other alternative.

CHINTHA.RAVICHANDRA (2015) et al. exhibited that, Most of the time creator takes choice to consider either wind or quake stack for plan of organizing for Elevated Service Reservoir (ESR) in view of his experience; to spare a few figuring. This paper goes for giving administering load case to ESR i.e. regardless of whether wind or seismic tremor compel is representing. Seismic tremor investigation is accomplished in as indicated by IS 1893 Part I and II, Wind examination is finished in as per IS 875-1987 (Part III) and IS 875 draft (Part III). In this paper ESR of organizing tallness 12m is contemplated with ability changing from 20 m3 to 100 m3. Examination has been finished the use of SAP-2000.Three kinds of soil conditions, specifically delicate, medium, hard and seismic zones, Zone-II, Zone-III, Zone-IV and Zone V are considered. Wind investigation is improved the situation twist velocities of 39 m/s, 44 m/s, 47m/s and 50m/s. The outcomes have been exhibited as far as charts, indicating driving burden case for organizing outline [1].

Ali Akbar Qutubuddin Ali (2015) et al. presented that, This paper exhibits a dynamic investigation of raised water tanks upheld on the RC confined structure with various tank stockpiling limits. Impacts of hydrodynamic powers on tank dividers are ascertained. History of quake well known that it has instigated various misfortunes to the ways of life of individuals in its enthusiastic time, and also post-seismic tremor time have released people through as a result of harms caused to the overall population application administrations. Either in urban or provincial district broadened water tanks shapes a basic piece of water supply conspire, so its ability pre and post-quake remains similarly basic. These structures have overwhelming mass concentrated on the highest point of thin helping structure, thus, these structures are specifically inclined to even powers because of seismic tremors. The target paper is to perceive the dynamic conduct of lifted water tanks beneath tremor stacking the utilization of present-day Indian code IS 1893(component 2):2014. Parameters from the seismic investigation of raised water tanks and their assessment inside particular limits, for example, sloshing outcomes are computed, parallel solidness of body arranging has figured the utilization of most recent STAAD Pro V8i SS6 programming. Results express that there is more danger of demolition to the tanks with higher limits when contrasted with the tanks with bring down limits in a given zone [2].

KODE V. L. SWARUPA (2017) et al. presented that, Logical Wind is a basic load part while breaking down and planning water tank as it brings about flat dislodging. Flat displacement in water tank is due to twist outcomes in sloshing of water and further vibrations. One technique proposed toward this path is to receive water tanks with slanted legs. Thus the goal of the work is to comprehend the basic conduct of water tank subjected to twist with a straight and slanted leg. This postulation think about various water tanks with straight and willing legs for unique breeze enlivens to two hundred kmph utilizing STAAD Pro. From the impacts, the accompanying perceptions can be made. There is a Reduction of dislodging for Inclined Leg Water Tank by method for 11.1% when contrasted with Vertical Leg Water Tank for all breeze loads while no change was watched for relocation in the y-direction. There is a Reduction of around 29% removal was found in z way for Inclined Leg Water Tank in contrast with Vertical Leg Water Tank Subjected to indistinguishable breeze masses. There is a lessening of roughly 3 to 5% in axial push; Shear weight and Bending second end up found for Inclined Leg Water Tank when contrasted with Vertical Leg Water Tank Subjected to indistinguishable breeze masses. There is a Reduction of Torsion minute for Inclined Leg Water Tank through 18 to 24% for while in contrast with Vertical Leg Water Tank subjected to rise to twist stack There is a Reduction in Concrete Quantity for Inclined Leg Water Tank by methods for around 21 % when contrasted with Vertical Leg Water Tank Subjected to indistinguishable breeze stack [3].

Dr. Hirde Suchita K. (2011) et al. presented that, in areas with the over the top probability of catastrophic events, the capacity of help frameworks to oppose calamity related harms is a standout amongst the most basic structural building requesting circumstances. Raised water tanks are one of the most extreme imperative help structures. In this paper, an inside and out computational looks at has been completed to discover the execution of hoisted water tank underneath wind weight. Since these frameworks have extensive mass focused on the highest point of thin helping structure, these frameworks are particularly inclined to even powers due to wind. Limited component models of 240 hoisted water tanks have been examined. Raised water tanks are examined with different parameters to investigate the result of limit, the tallness of arranging, landscape classification, and wind zone. The finish of the ebb and flow think about should direct us to a superior comprehension of the execution of hoisted water tank with wind stack and more secure outline of such structure [4].

Mr. Vyankatesh (2017) et al. They broke down raised water tanks in unique stacking bolstered on the RC surrounded structure and urban shaft structure with the particular ability and situated in various seismic zones. History of seismic tremor surely understood demonstrates that it has accelerated a few misfortunes to the life of individuals in its enthusiastic time, and furthermore set up quake time need to permit people to endure in light of harms expedited to the general population application administrations. Either in the city or provincial areas enhanced water tanks frames a quintessential piece of water supply conspire, so its usefulness pre and post-seismic tremor remain correspondingly basic. These occasions affirmed that criticalness of helping machine is uncompromising for the extended tank in contrast with some other kind of tank harms caused are the after effects of the unacceptable plan of the supporting framework; wrong determination of the supporting framework, and so on. These frameworks have substantial mass focused on the zenith of restricted helping framework therefore those structures are chiefly inclined to flat powers due to earthquakes analysis in light of dynamic investigation of lifted water tanks with respect to the latest IS code accessible for fluid holding structures through Bureau of Indian Standards i.e. IS 1893 (Part 2): 2014. Correlation of extended tanks with special helping gadget, limits and seismic zones expresses that these parameters can likewise essentially change the seismic conduct of tanks [5].

Nitesh J Singh (2015) et al., they broke down Water Tanks outline that subjected to Live Load Dead Load and Seismic Load or Wind Load as indicated by IS codes of Practices. Greatest time's tanks are intended for Wind Forces and now not, in any case, checked for Earthquake Load assuming which the tanks will be protected underneath seismic powers once got ready for wind powers. In this have an investigation of wind Forces and Seismic Forces following up on an Intze Type Water tank for Indian conditions are the

examination. The result of the twist on the hoisted frameworks is of most elevated importance as Wind stream moves to the ground surface and makes loads at the status of the framework on the ground. The majority of the planners keeps in mind the breeze impact and disregards the seismic impact at the shape. The Indian Standard Code IS 875(Part-3) 2003 and IS 1893-2000 for Wind and Seismic impact is utilized as a part of this investigation. The Elevated Structure is intended for different Wind powers i.e. 39 m/s, 44 m/s, 47 m/s and 50 m/s and the same is cross-checked with various Seismic Zones i.e. Zone-II, Zone-III, Zone-IV, and Zone-V by 'Reaction Spectrum Method' and the most extreme administering condition from both the powers is additionally utilized for plan and examination of arranging.. Its saw from the examination that the Entire load, Entire minutes and Reinforcement in organizing i.e. Columns, Braces and additionally for Raft establishment shifts for Case-1, Case-2, Case-3 and Case-4 [6].
V. J. Ghadage (2015) et al. This paper exhibits day to day life, one cannot live without water. The lifted fluid store in the tank is the main putting away fitness used for residential or even business reason. The water must be put away and be accessible at whatever point required by group and industry. In this manner, there is an intense requirement for vast proficient and practical storerooms. At the point when a structure is based on soil, a portion of the components of the structure are in coordinate contact with the dirt. At the point when the heaps are connected to the structure, interior powers are created in both the structure and additionally in the soil. The expectation of this have examination is to secure the dirt shape exchange assessment of a water tank upheld through the arrangement of the section and propping [7].
Sai Kala Kondepudi (2015) et al. presented that, Water tanks are the capacity holders for putting away water. Hoisted water tanks are based in transit give needs the head with the goal that water will float beneath the impact of the gravity. The water tanks development work have a noteworthy priority as it utilized for drinking water for the huge populace from major urban communities to the lesser populace living in towns and towns. Colossal potential lifted Intze tanks are used to store a fluids assortment, e.g. water for drinking and fire, battling, oil, chemicals, and condensed gaseous petrol. A water tank is utilized to store to hold over the everyday prerequisites. Intze tank is a sort of hoisted water tank upheld on arranging. Intze tank is portrayed as the base part of round tank is provided in a level shape, so in the level base, the thickness and support are observed to be overwhelming. Assessment and Design of raised Intze water tank each physically and through the utilization of SAP2000 programming program. The give work bargains the format of hoisted INTZE kind water tank with 12m distance across with a capacity ability of 1000m3.Usually, water tank vaults are composed according to the code IS 3370-1987 in working pressure technique and the organizing (sections and pillars) is outlined according to IS 456-2000 in confine state approach. The fortification data for this characterize INTZE compose overhead water tank is given and the structure considers for essential breeze stack. Also, the extended Intze tank (fortified cement) is composed and thinks about for twist through using SAP2000software.Wind investigation of reinforced cement Intze tank is done at phenomenal organizing statures of the tank through accepting to be set in particular breeze zones in India of different territory classes. Distinctive parameters like breeze powers, relocations in view of twist powers at one of the kind statures of the water tank, region of metallic and so on, are looked at in changed breeze [8]

Ahmed Musa (2015) et al. presented that, Steel fluid stockpiling tanks inside the state of truncated cones are regularly used as regulation vessels for water conveyance or putting away compound substances. Various disappointments were recorded in the past couple of decades for metallic fluid tanks and storehouses underneath wind stacking. A steel cone-shaped tank vessel can have an unmistakably lesser thickness making it defenceless to locking beneath twist stacks specifically when they're not completely filled. In this examination, a breeze burrow weight investigates is executed on an extended funnel-shaped tank with the goal that you can assess the outside breeze weights when submerged in a limit layer. The tried tank setup speaks to mixed cone-shaped tanks wherein the cone is topped with a barrel. What's more, the effect of territory attention and twist speed on the weight esteems and wind powers are classed. The propose and rms weight coefficients are provided for phenomenal test occurrences further to the recommend and rms general drag powers which can be procured by means of incorporating the weight coefficient over the tank model's surface. Its found that the aggregate recommend and rms drag powers are very reliant on Reynolds wide assortment that is a normal for wind speed and that they have the greatest cost at mid-top for the diminishing barrel, at the best for the tapered component, and at the base for the upper round and hollow part [9].

B. Dean Kumar (2010) et al. presented that, Wind streams with respect to the surface of the ground and produces the stack on the frameworks status at the ground. The impact of the breeze on the structures is of prime significance. The vast majority of the creators remember the static effect of twist on the structure. In any case, for tall frameworks the breeze interfaces with the structure progressively. The Indian across the board code IS 875 (Part-3) 1987 offers with the breeze impacts at the structures. Water towers are basic structures from the purpose of the breeze impact. Towers of stature 16 m, 20 m, 24 m and 28 m are considered in the present investigation. Essential recurrence is calculated through methods for the system given in Indian general IS 1893-1984. In the calculation of basic recurrence conditions a,) Tank purge and b) Tank full of water are contemplated. It's found from the analysis that static weights are less in contrast with the ones given by means of the blast adequacy thing procedure (GEFM). Dynamic interchange in the midst of the fluctuating breeze perspective and the shape are considered in GEFM and comparable static breeze weights are developed. GEFM is more levelheaded and reasonable and suggested for wind stack plan of water towers [10].

Thorat Yogesh (2017) et al presented that, water tanks and Storage repositories are used to store water, oil-based goods, and fluid, equivalent some different fluids. The weight investigation of their tanks is set the indistinguishable of the compound idea of the item. All tanks are outlined as free frameworks from split to dismiss any spillage. This undertaking offers the entire evaluation of the layout of the dissolved securing structure.

This errand takes into reflection the diagram of the tank for the going with case underground Tank, tank lying on the ground and overhead water tank. The investigative arrangement has been made with Microsoft Excel sheet. The paper is utilized for the sheltered blueprint with the smallest cost of the tank and gives the in vogue relationship twist amidst plans versatile. Along these lines, the design of tank can be more noteworthy shoddy, standard and humble. Giving quickened water tanks on inclining floor is a significant customary and fascinating action. Powers upgrade on structure laying on slanting ground is additional basic than the ones laying on the levelled surface. Point by point considers is imperative if there should be an occurrence of the lifted stockpiling

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repository (ESR) which is outfitted on slanted surfaces. An extraordinary care needs to be taken for shuddering and breeze forces. Comparison of dissimilar to powers made in numerous individuals from a tank on the levelled surface and with developing slant for various statures has been completely contemplated. Hub compels, sheer drive and bowing minute are connected to not at all like auxiliary segments of tank wiz base bars, columns, and bracings. The present investigation objective of approximating the impact of inclining ground on the column and swaggers at not at all like supporting level. The balanced segment area for not at all like slants is assessed [11].

Asari Falguni P (2012) et al. They led explanatory research of the seismic reaction of lifted water tanks the using of friction damper. The RCC hoisted conduct water tank is examined with use of rubbing damper (FD). For FD machine, the major stage is to decide the slip load. In nonlinear dynamic inspect, the reaction of structure for 3 seismic tremor time history has been performed to gain the estimations of tower drift base shear and quickening Time Period. These qualities are contrasted and unique structure. Results of the lifted tank with FD are likened to the relating settled base tank plan and show which grating damper is successful in diminishing the pinnacle float, day and age, rooftop speeding up and base shear for the entire scope of tank limits. The acquired outcomes demonstrate that execution of Elevated water tank with FD is superior to without FD [12].

P. MUTHU VIJAY (2014) et al. presented that, the sloshing impacts in overhead fluid putting away tank. In such structure, the biggest mass gathered at the upper of thin supporting structure make the structure defenseless against flat powers such as because of seismic tremors. These examination inspirations for the most part on the reaction of the raised Intze tank to dynamic powers through both counterpart's static approach and limited segment study utilizing business programming. To scan, the plan parameters for seismic observe and furthermore the noteworthiness inside the sloshing impact thought all through the outline. Here a quickened Intze from water tank is composed and consider. The take a gander at is finished with 2 examples to be specific, tank full condition considering best the hydrostatic impacts and tank finish situation considering the sloshing impact making utilization of STAAD Pro. From the look at it's reasoned that to bear in mind the sloshing sway in conjunction with the effect of hydrodynamic weight on field mass of the tank sooner or later of the plan could be extremely critical in the seismic tremor vulnerable region. The outcomes finished from examinations are talked about reasoning about the centrality of the shape over the span of seismic activity [13].

Dhotre Chandrakala(2015) et al. studied about Substantial potential hoisted roundabout tanks are used to store a determination of fluids, for example, oil, chemicals, melted flammable gas and putting out fires and water for drinking. A water tank is used to store to hold over the day by day required. Intze tank is a sort of hoisted water tank bolstered on arranging round tanks is depicted as the most minimal bit of roundabout tank is give fit as a fiddle, Thus in the level base, the thickness and support are observed to be substantial. It establishes in ponder that the bearing limit developments for the comparative breeze speed volume of cement and amount of steel both are lessened. Likewise, they have noticed that if there should arise an occurrence of bearing soil limit five t/m2 and 10 t/m2 amount of cement and amount of metallic are so most elevated contrasted with various. Examination of divergent powers actuated in a few individuals from the tank on the levelled surface & with raised incline for different statures has been methodical analysis. Pivotal power, sheer drive and bowing minute are analyzed for various auxiliary segments of tank viz. base

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bars, sections, and bracings. The present see of those targets at assessing the impact of slanting ground on the section and supports at various propping levels. The streamlined segment area for disparate inclines is assessed [14]

Cherukupally Rajesh (2015) et al. presented that, in locales with most elevated catastrophic events likelihood, living ability frameworks to oppose fiasco related harms is a huge structural building challenge. Hoisted water tanks are important living structures. A sizeable computational investigation has been led to look the quickened general execution of water tank under breeze pressure. Since these structures have immense mass gathered at the upper of the thin supporting building, these structures are exceptionally vulnerable to even powers in view of wind. Limited variables models of 24 raised water tanks have been examined. Lifted water tanks are contemplated with various parameters to investigation the rooftop relocations, base minutes and base shears. Inquiry of the leaving study might lead us to a better comprehension of the raised water tank conduct under breeze stack and more secure outline of such structure [15].

MorVyankatesh K. (2017) et al. examined the hoisted water tanks subjected to dynamic stacking upheld on RC encircled development and urban shaft development with excellent limits and situated in uncommon seismic zones. Seismic tremor uncovers that it has caused several misfortunes to the general population living in its dynamic time, and furthermore post-quake time have given the human a chance to endure because of harms caused to people in general utility administrations. Either in rustic or urban locales lifted the water tanks frames fundamental piece of water supply design, Thus its usefulness post and pre seismic tremor remains similarly noteworthy. These occasions outline that hugeness of supporting framework is unbendable for the hoisted tank as compared to any different kind of the tank. Harms caused are the consequences of an unsatisfactory outline of supporting framework; wrong choice of supporting framework, and so forth. These developments have overwhelming mass accumulated at the best slim supporting framework in this manner these developments are especially powerless against level powers as a result of tremors. This paper displays the dynamic examination of lifted water tanks regarding the most recent IS code distributed for fluid holding structures by Bureau of Indian Standards i.e. IS 1893 (Part 2): 2014 raised comparison tanks with the divergent supporting framework, seismic zones expresses that these parameters can likewise significantly alter the seismic conduct of tanks [16].

Vikas Gahlawat (2015) et al. they analysis about plan of a steel cross-section tower utilized for control transmission framework below several groups of sidelong loads is finished. The pinnacle is examined under a few load mixtures& then the pinnacle is planned using IS 800:1984. Prior to the outlined procedure fitting site examination information and in addition Environmental effect evaluation information is gathered through suitable electronic and print media keeping in mind the end goal to design the planned procedure generally precisely. Spare in thought the uneven slant region territory (Shimla) suitable security plan component are mulled over all through the design. The non-direct inconsistencies each natural notwithstanding basic texture additionally are contemplated at some phase in the outline. The steel edges joined by riveting were chosen by to changing burden effects and capacities. The establishment indicating is chosen to keep in thought the geotechnical study information. The product device used in the technique is STAAD.Pro 2008. The heap figure was performed physically yet the investigation and outline results were accomplished thru STAAD.Pro 2008. At each step, the exertion is to give ideally safe plan alongside keeping the monetary contemplations [17].

Kulkarni Reshma (2015) et al. presented that, Dynamic examination of fluid containing tank is a difficult issue comprising liquid construction interaction. In light of numerical, logical and Experimental examinations spring-mass model are created to assess hydrodynamic powers. An analysis is made of divergent hydrodynamic powers following up on an intze tank. The tank is isolated in two masses Convective and Impulsive fluid mass and afterward examination for convective hydrodynamic powers and rash hydrodynamic powers [18].

Chirag N. Patel (2012) et al. presented that, the water tank is used considerably to store water, inflammable fluids, and other concoction mixes. For the most part, to offer water at colossal, tank is upheld on shaft or edge. The arranging with an unmarried line of segments situated immediately (vertical) close to the outskirts of circle or shaft is normally taken after for drawn-out water tanks to help the tank box. Aside from verticality of organizing, decreased (slanted) arranging likewise are used to help the tank territory. The reason for this paper is to capture the lead of expanded water tank with body and shaft compose decreased arranging in sidelong seismic tremor stacking the use of GSDMA manual line and programming SAP2000. The investigators had been check, the most dependable breadth of organizing relatively about the width of the holder, and discovered the effect of arranging player. The examination uncovers that cost of pivotal nervousness diminishes with development in decreasing of arranging notwithstanding blast in the breadth of staging. Optimum measurement of organizing to achieve the need of 'No Tension in the section' is with eighty% and 70% distance across of organizing in valuation with the holder width for casing and shaft compose organizing individually, as per slant of 6 [19].

Thalapathy.M (2016) et al. presented that, Capacity stores and water tanks are used to fluid oil, oil-based commodities, and comparable beverages and hold water. The power assessment of the stores is about the indistinguishable independent of the substance idea of the item. Each tank is planned as break loosened shape to evacuate any spillage. This wander offers the specific investigation of the outline of fluid keeping up structure the use of running weight approach. The task takes into consideration the outline of repository for the resulting examples: 1) Underground Tank, 2) Tank Resting on the ground and three) Overhead water tank. The systematic plan has been made with Microsoft Excel. The papers convey thought for safe design with an insignificant cost of the tank and supply the dressmaker relationship bend between format variable. In this way, the outline of the tank might be all the more ease, solid and simple. The paper empowers in know-how the outline logic for the protected and sensibly valued plan of the water tank [20].

G.P. Deshmukh (2015) et al. presented that, from the extremely unnerving investigations of a couple of seismic tremors, as Bhuj quake (2001) in India R.C.C enhanced water tanks were firmly broken or crumpled. This was maybe because of the absence of information with respect to the correct conduct of supporting arrangement of the tank because of the dynamic impact and furthermore because of the shameful geometrical race of organizing. The principal reason for this investigation is to secure the conduct of various organizing, underneath one of a kind stacking circumstances and reinforcing the customary sort of arranging, to give better general execution each through the quake. Comparable Static examination, for 5dissimilar supporting sorts structures, connected to the arranging of hoisted round water tank in district IV, is played out the use of STAAD Pro. Correlation of

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base story shear and nodal relocations of the field of ground water tank for exhaust, 1/2 filled and full circumstance is done. Eleven imitation are used for processing base shear and nodal removals Next computing base shear and nodal relocations of 11 designs for vacant, half of fill and full state of holder applying with various kinds of supporting framework in organizing then economy perspective venture examine propose such sort of propping which gives least base shear and additionally impressive dislodging for measure seismic tremor zones [21].

Ranjit Singh Lodhi (2014) et al. introduced that, Intze frame tank is by and large used overhead water tank in India. These tanks are outlined as in venture with May be: 3370, for example, Code of training for solid frameworks for capacity of drinks. BIS connected the overhauled rendition of IS 3370 later quite a while from its 1965 form in the 2009 year. By and by countless water tanks are utilized to disperse the water for open utility. In which a large portion of the water tanks were planned as per vintage IS Code: 3370-1965 without considering seismic tremor powers. The goal of this paper is to reveal insight into the refinement inside the format parameters of (an) intze water tanks without contemplating seismic tremor powers (b) intze water tanks outlined with quake powers. The main plan depends on Indian popular code: 3370-1965 and 2d design are fundamentally in view of Indian across the board code: 3370-2009 and draft code1893-Part 2, (2005) considering two mass modular i.e. hasty and convective mode technique. Intze tank bolstered on outline organizing is considered in the present examination [22].

Jay Lakhanakiya (2015) et al. presented that, this paper is a hydrodynamic assessment of Intze water tank and evaluation of the cost of the water tank for selective arranging circumstances like shaft and body kind. For this, the case of the water tank has outlined by arranged Excel worksheet. The hydrodynamic assessment is finished in exceed expectations worksheet. The arranging component is breaking down in programming program STAAD Pro. V8i and the plan have been performed in exceed expectations worksheet. The design of field transformed into taken indistinguishable for stand-out arranging in indistinguishable capacity. For outline compose supporting framework the even parallel write propping was considered at different levels. Here various parameters substitute is tank limit, an assortment of the segment, tallness of organizing, separating of propping, seismic tremor area, and soil compose. After the whole design, the amount of texture has been based upon which the costing of the water tank is executed the utilization of GWSSB-SOR (2013-14) [23].

Prasad S. Barve (2015) et al. presented that, Concerning investigation, as with regards to IS 1893:1984, arrangements were given considering water tank as the single certificate of opportunity device, while with regards to IS 1893:2002 (Part-2), imprudent and convective water heaps of field water are considered. In the overall investigate; endeavours are made to comprehend the direct of intze tank bolstered on round shaft, while its miles subjected to hydrodynamic strain. Different parametric examinations have been performed to observe the seriousness of hydrodynamic weight through fluctuate the tank limits, tallness to distance across a proportion of tube-shaped divider, distinctive seismic zones and soil write. It is watched that hydrodynamic weight isn't basic if there should arise an occurrence of intze tank [24].

Shilja Sureshkumar (2017) et al. presented that, Fluid stockpiling tanks are utilized to store diverse sort of materials, for example, water, oil and gas and so on. The Harmed tanks containing any perilous material cause ecological contamination. The disappointment of water tanks comes about extremely ruinous dangers on life and property. Seismic investigation of water tanks is crucial for fortifying the tank's execution and along these lines, harms can likewise be reducing. Seismic examination of water tanks is highly entangled due to the liquid structure cooperation of the framework. The liquid is separated by convective and indiscreet fluid mass in the tank, and each is conveyed roughly hydrodynamic strain on tank base and wall. Seismic vitality is exchanged to the liquid from ground because of development of tanks. Soil development cooperation is some other parameter which definitely affects tank's general execution. The collaboration of tank with encompassing soil structure will be extraordinary, in view of soil properties, for example, versatile properties, attachment, the edge of erosion and so forth. The reaction of raised tanks and ground bolstered tanks are extraordinary, in view of their help conditions gave. Compartment statures, geometry, soil thickness, styles of an establishment, damping parameter are a portion of the components impacting tank response underneath particular kinds of loadings. Varieties in the auxiliary execution of water tanks because of these elements are talked about in this paper in light of different literary works ponder [25].

Neeraj Tiwari (2015) et al. presented that, the customary investigation (non-collaboration examination) of overhead water tank accept that sections lay on unwavering backings. In truth, the structure is upheld by deformable soil strata which misshape inconsistently underneath the development of masses and along these lines causes redistribution of powers inside the added substances of an overhead water tank. In the overall work, 3-D collaboration assessment of intze kind water tank-liquid layered soil machine is done the utilization of ANSYS programming project to evaluate the essential worries in various parts of the tank and supporting layered soil mass. The result avoidances, Von-masseters, neural recurrence of the tank are figured and also analyze quickening by a method for Transient assessment under particular filling states of the intze tank. The intze tank, helping casing, premise and soil mass are considered to carry on as unmarried similarly invested basic unit for more sensible examination. The tank, establishment, and soil are thought to observe linear push strain dating. The regular recurrence of the tank is assessed for uncommon filling conditions and evaluation is made between the non-connection and association investigations [26].

MorVyankatesh K (2016) et al. presented that, dynamic examination of raised water tanks upheld on RC encircled structure with various tank stockpiling limits. Impacts of hydrodynamic powers on tank dividers are ascertained. seismic tremor uncovers that it has made a few misfortunes the human life in its dynamic time, and furthermore post-quake time have given the human a chance to endure because of harms caused to general society utility administrations. Either in urban or rustic areas expanded water tanks printed material urgent piece of water convey conspire, so its usefulness pre and post-tremor remain comparably basic. These frameworks have substantial mass gathered at the highest point of thin supporting structure henceforth those structures are particularly in danger of flat powers due to tremors. Parameters from the seismic assessment of expanded water tanks and their assessment inside unique limits together with sloshing results are computed, horizontal solidness of body organizing is figured the utilization of present-day STAAD Pro V8i SS6 programming program. Results express that there is more risk of annihilation to the tanks with higher limits when contrasted with the tanks with bringing down limits in a given zone [27].

Bugatha Adilakshmi (2016) et al. presented that, overhead tanks and Storage archives are utilized to keep water. Each tank is made out of part free structures to discard any spillage. In this wander, working weight methodology is used to diagram an INTZE tank and Elements of the INTZE tank are created by restricting state system. When in doubt, for a given point of confinement, a circuitous shape is supported in light of the way that tensions are uniform and lower diverged from various shapes. Smaller tensions suggest diminished measures of the material imperative for improvement that chops down the advancement cost of water tanks. The key focus of this paper is to give best measures of the required measure of bond and steel for a given water holding limit. Setting up the arrangement, estimation, costing, examination of frameworks and cost connection of yield outlines for various information sources are fused into this report [28].

GAREANE A. I. ALGREANE et al. presented that, Investigation of hydrodynamic shape which includes raised solid water tank is truly mind-boggling when contrasted and distinctive structures. As appropriately as unique liquid shape interchange (FSI) plays an imperative consequence for this many-sided quality for which thinks about shows arrangement through utilizing exceptional methods. This paper manages the dynamic leadership of expanded solid water tank with circumstance indiscreet burdens setups. Six reproductions were mimicked to choose the impacts of hasty mass mode. Reproduction of the styles transformed into finished in 3-dimensional limited detail technique by means of LUSAS FEA 14.1. A simulated ground movement e.g. disapproved with an objective reaction range that created through dissimilar investigators has been delivered in accordance with Vanmarcke and Gasparini process. The mass of rash mode has been procured with regards to Eurocode-8. The results of time for the incautious method of loosened vibration and the response (time history) of the hub at the most noteworthy level of the tank have been then as contrasted and included mass system [29].

3. Conclusions

The review of the literatures uncovers that a lot of investigative research work has been done to investigate the convenience and adequacy of intze sorts of tanks in water containing tank. Following conclusions can be drawn from the survey of the writing:-

- Horizontal Displacement in water tank due to wind is critical as they result in sloshing of water and additional displacement.
- There is a need to investigate various methods to minimize this horizontal displacement.
- One method proposed in this direction is to adopt water tanks with different configuration of legs of staging.
- A comparative analysis on water tank having straight and inclined leg can be carried out in order to understand the structural behaviour of water tank subjected to wind with.

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Role of 'Habit' In Building Customer Loyalty

Dr. Smitha Sambrani*

Abstract

Numerous studies have been studied in identifying the factors for customer loyalty. Though role of 'habit' has not been studied as the sole factor for customer loyalty. In this busy life where there is no work life balance, customers rarely have time to browse for new online portals or new physical stores. The nuclear families have rendered the parents as very busy either taking care of kids or being busy at office. This study would like to focus on the role of habit in building customer loyalty.

Keywords: *Habit, Work life balance, nuclear families, customer loyalty*

Introduction

The American Journal of Psychology (1903) defines a "habit, from the standpoint of psychology, [as] a more or less fixed way of thinking, willing, or feeling acquired through previous repetition of a mental experience." Habitual behaviour is overlooked by persons while doing their daily routines, as they are not self analysed. Habits are mandatory for forming new behaviours. Old habits are hard to break because of the neural pathways where repeated behavioural patterns are imprinted. The same way the new habits are possible to form through repetition.

The repeated behaviours in a consistent context, leads to incremental increase in the link between the context and the action, there by the behaviour become automatic in that context. The lack of awareness, lack of efficiency, unintentionality and uncontrollability are the features of automatic behaviour.

Customer loyalty has a positive relation to customer satisfaction; satisfied customers consistently support the brands that meet their needs. The products and services are exclusively brought by the loyal customers and they are resistant to switch to competitors firm.

The consistent effort of Firm to deliver the same product at same rate of success every time is Brand Loyalty. Organizations retain their customers by giving exclusive attention to customer service, finally increasing customer loyalty. The loyal customers are rewarded with loyalty programs and rewards for carrying repeated business with them.

Review of Literature

In established competitive markets, many researches on the "normal" patterns of loyalty indicate that achieving great advantages through the launch of a loyalty program is difficult. The differential gains due to loyalty programmes will be quickly eroded by competitive forces.

The managers would estimate the cost (development, marketing and on-going costs) of a loyalty program before introducing it and a comparison is done between costs & realistic benefits of the program. The studies contend that loyalty program should improve the value-proposition of the product or service and support organization success even in stiff market competition. The loyalty programs motivates the customers ready for the next purchase of a product and also support organizations offensive and defensive marketing

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strategy. This research study suggests that the customer loyalty programs directly improves value proposition of the product/service and neutralize a competitor's program, may be worthwhile.

This article presents important findings in the context of customer loyalty with to customer behaviour and attitude. Marketers can adopted two-tiered rewards structure which serves to understand, build and sustain the loyalty programs (Kumar & Shah, 2004)

Customers usually have a churning behaviour depending on the low cost and discounts offered by the competitor, to gain back the customer new best offers have to promote. The customers returned are called customers second lifetime (SLT) behavior, and it is different from the customer's first lifetime (FLT) behavior, which is the relationship before the customer first churned.

It has been proven in this study that every customer has the propensity to churn. However, we found that some customers are unlikely to leave for the same reason if the company repaired the issues that caused the FLT churn. This is especially true in the case of service issues that lead to defection.(Kumar, Leszkiewicz, & Christodoulopoulou, Are you back for good or still shopping around? Investigating customers' repeat churn behaviour, 2018)

The authors apply the theory of habit to customer behavior in the context of a large customer data set of a national retailer. The findings underscore the need for managers to consider customer habits beyond repeat purchases, take stock of customers' habit measures before implementing policy changes, and leverage the habit measures (as compared with using only traditional behavioral measures) to strategically allocate resources at the customer level to maximize customer and firm profits.

Implementing the Theory of Habit to the Practice of Marketing Prior literature (e.g., Ailawadi, Lehmann, and Neslin 2001) as well as marketplace evidence (e.g., Mattioli 2013) has reported the fallacy of marketing policy shifts in the context of major firms such as Procter & Gamble and J.C. Penney. In both cases, the respective firms decided to move away from their current practice of frequent promotions while grossly underestimating their customers' promotion habits. The policy shift alienated customers instead of influencing the behavioral change that both firms had hoped for. Predictably, financial performance was adversely affected before both firms eventually reversed their decisions.The extent to which different habits are prevalent across customers of a firm and their impact on the respective firm's performance can vary across firms and industries. Depending on the prevalence as well as the relative magnitude of customer habits, firms can make better-informed decisions about marketing policy changes. Similarly, a relatively large number of customers with a low-margin purchase habit should prompt the firm to revisit its pricing policy.

Alternatively, firms may selectively alter their marketing practice for customers on an individual basis with the objective of breaking adverse habits (e.g., returns, low-margin purchasing), as discussed in Shah et al. (2012) and practiced by several firms in the context of serial returners (Kerr 2013). In essence, knowledge of customers' habits can enable managers to make important strategic decisions. This is because unlike conventional behavioral measures, a habit measure represents the prolonged tendency of a customer to consistently repeat past behavior with financial implications for the firm. Profiling Habitual Customers Who are the habitual customers? The firm could then strategically invest in developing customer relationships (through marketing) with customers who exhibit a relatively high proneness of forming a purchase and/or promotion purchase habit

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while choosing not to invest in customers who exhibit a relatively high proneness of forming a return or low-margin purchase habit(Shah, Kumar, & Hannah Kim, 2014)
Not all repeat purchases are created equal. The repeat purchases may be due to attitudinal loyalty (positive reaction toward a brand) and habit (automaticity triggered by non-brand-related contextual cues).The loyalty literature and habit research study, suggest the two drivers of repeat purchase and also examines the affect on consumer response to cross-selling promotions.A specific promotional design is identified in this study that works better for habitual consumers than for attitudinal loyalty. The study also forewarns that negative consequences on consumer behaviour will be resulted when these two underlying drivers are ignored (Liu-Thompkins & Tam, 2013)
Customer attitude and repeat patronage association defines the Customer loyalty. Social norms and situational factors mediate this relationship. Attitude antecedents Cognitive, affective, and cognitive are contributing to loyalty, along with perceptual, motivational and behavioural consequences. Implications for research and for the management of loyalty are derived.(Dick, 1994)

Research Methodology

A convenient sampling method was used for this study. The observation period was from January 2018 to March 2018, during which period 150 unique customers were interviewed. The basic questions were asked to the customers about their in-store and online purchase details (e.g., time of purchase, store location, purchase amount, number of items purchased). Customer characteristics (e.g., age, income, education level, hobbies, shopping behavior). Given the objective of the empirical analyses (analyzing customers' habits over time), we selected customers with at least one purchase in the past and dropped the remaining first time customers from the analyses. We finalized 88 customers' data which was found to be suitable for our study. The demographics of the customers are

Objectives:

To analyze the relationship between customer loyalty and habit

Hypothesis

Ho1: To study if there is any association of habit and customer loyalty

Data Analysis

Hypothesis Testing
Demographics

Table 4.1
AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-30	19	21.6	21.6	21.6
	31-40	37	42.0	42.0	63.6
	41-50	29	33.0	33.0	96.6
	51-60	3	3.4	3.4	100.0
	Total	88	100.0	100.0	

The maximum numbers of respondents are in the age group of 31-40 with percentage of 42%

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Table 4.2
GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	63	71.6	71.6	71.6
	Female	25	28.4	28.4	100.0
	Total	88	100.0	100.0	

The males are dominant at 71.6%

Table 4.3
MARITALSTATUS MARITAL STATUS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	68	77.3	77.3	77.3
	unmarried	20	22.7	22.7	100.0
	Total	88	100.0	100.0	

Married people are at 77.3% compared to unmarried of 22.7%.

Table 4.4
EDUCATIONALQUALIFICATION EDUCATIONAL QUALIFICATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Graduate	50	56.8	56.8	56.8
	Post Graduate	37	42.0	42.0	98.9
	Other	1	1.1	1.1	100.0
	Total	88	100.0	100.0	

The education profile of the respondents is as above. The maximum percentages of respondents are graduates at 56.8%.

Table 4.5
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Habit1	88	1.00	5.00	4.3295	1.09041
Habit2	88	1.00	5.00	4.3409	1.06011
Habit3	88	1.00	5.00	4.3523	1.09376
Habit4	88	1.00	5.00	4.2614	1.14966
CustomerLoyalty 1	88	1.00	5.00	4.2727	1.17177
CustomerLoyalty 2	88	1.00	5.00	4.2955	1.11581
CustomerLoyalty 3	88	1.00	5.00	4.0909	1.31862
CustomerLoyalty 4	88	1.00	5.00	4.3182	1.11979
CustomerLoyalty 5	88	1.00	5.00	3.0114	1.41010
Valid N (listwise)	88				

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The above are the descriptive statistics for the two variables. The minimum and maximum values for all the items are 1 and 5 respectively. If you observe the mean and standard deviation you will see that there is little deviation seen at approximately around 1.
A chi-square test is done to test the association between habit and customer loyalty.

Table 4.6
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	538.673[a]	224	.000
Likelihood Ratio	133.756	224	1.000
Linear-by-Linear Association	30.753	1	.000
N of Valid Cases	88		

a. 253 cells (99.2%) have expected count less than 5. The minimum expected count is .01.

The test statistic is 538.673. Since the P value is 0.00<0.05 we reject the null hypothesis and suggest that there is a strong association between habit and customer loyalty.

Conclusion

The study was conducted using 88 respondent reviews using a standard questionnaire. It has been noted that the customer loyalty exists just out of habit for a few customers. The reasons identified in this study are lack of time, poor work life balance, nuclear family setting and also a comfort level. Thus habit should be explored by the marketers and be used as one of the core factors for building customer loyalty based on the demographic profile of the respondents. The above study shows that there is a strong association of habit with customer loyalty. Habit forming can be an excellent precursor for repurchase intention of the customer. Thus the marketers should identify the habits of customers such as habit of customer who buys during sales, habit of customer who buys due to promotions, etc. This identification can help marketers to make a better suggestion to the customer which can result in purchasing behaviour.

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Overview of Ethiopian Economy and Manufacturing Sector

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Shewit kinfe**

Abstract
This paper attempts to assess the overall economic performance of Ethiopia by examining the pattern of gross domestic product (GDP) and the contribution of the three major industrial classifications towards the GDP over the study period between 2005/06 and 2014/15. Accordingly, the overall economic growth has been highly linked with the performance of the agriculture sector in the past years, but recently the industry and service sector have been increasing their contribution share to the GDP. Even though the annual average contribution share of agriculture sector declined throughout the study period, still the agriculture sector is the dominant economy in Ethiopia within the 10 years study period. It constitutes the highest annual average share contribution to GDP which is 45.63% over the study period, followed by service sector 43.11% and industrial sector 11.54 %. Generally, Ethiopian GDP grew by an average of 10.5 % per annum over the ten years period, which makes Ethiopia to be ranked as one of the five fast growing economies in the world. Furthermore, this paper assesses the development and current status of the manufacturing sector. The manufacturing sector in Ethiopia is still at its infancy stage. As compared with the agriculture and service industry, the manufacturing sector has a limited share in terms of production, employment, and exports as well as the contribution of the manufacturing sector to GDP was only 5%, which is very low even in comparison to the sub-Saharan African countries average. The total number of large and medium scale manufacturing industries reported in 2013/14 was 2,758 and around 304,764 persons were engaged in all the manufacturing industries. Manufacturing of food products and beverages consists the largest number of establishments (27%) of the total number manufacturing industries, as well as it contributes the largest portion (38.9%) of the total value added by manufacturing industries to the national account of the country. Moreover, Manufacturing of Fabricated Metal Products hold the largest share (20%) of the total persons engaged in the manufacturing industries. Additionally, majority of the manufacturing industries reported a shortage of raw material supplies, shortage of electricity and access to finance as their major problems.
Keywords: Industrial classification, GDP, Manufacturing, Ethiopia

1. Overview of Ethiopian Economy

Ethiopia is one of the Sub-Saharan countries situated at the Horn of Africa. Ethiopia is a Federal Democratic Republic with nine regional states and two city administrations. Ethiopia is a multi-ethnic country with more than 83 languages. The main languages are Amharic (official government language), Oromiffa and Tigringna. Christianity and Islam are the main religions. Ethiopia is rich in human and natural resources with a large amount of arable land, a huge livestock population, a diverse climate, a variety of crop species and in some regions abundant water and wildlife. Ethiopia is the second most populated

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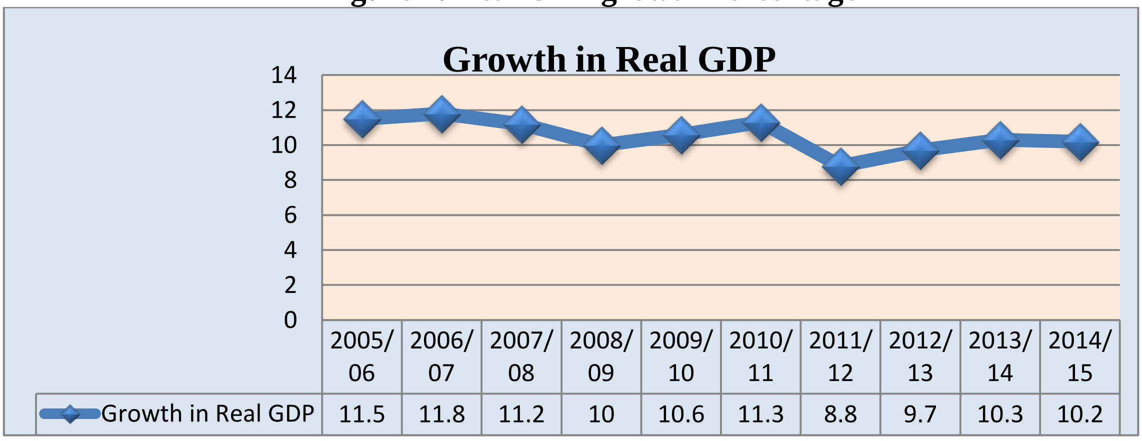
country in Africa, after Nigeria with an estimated population of more than 89.1 million people in 2014/15 with a total area of 1,104,300 km^2(1 million km^2 land and 1,104,300km^2water) (Bezabih ,2004; Bal et al., 2014 and NBE, 2014/15).

Ethiopia, one of the world's oldest civilizations, is still one of the poorest countries in the world. On the other hand, the Ethiopian economy has experienced strong and broad-based growth over the past decade. Ethiopia has achieved a significant and sustained economic growth over the past decade; hence the International Monetary Fund (IMF) ranks Ethiopia as among the five fastest growing economies in the world with an average real GDP growth of 10.8% per annum AACCSA, 2014).

Ethiopian government launched a five-year Growth and Transformation Plan (GTP) in 2009/10 with an ambition to attain a lower-middle-income status by 2020. Hence, under the plan GTP I (2010-2015) the manufacturing sector is identified as one of the key productive sectors of the economy that can prompt economic growth and development because of its massive potential for wealth creation, employment generation and poverty alleviation (Shiferaw,2017).

The Ethiopian economy is largely based on the agriculture sector. That is, the overall economic growth has been highly linked with the performance of the agriculture sector, but recently the industry and service sector have been increasing their contribution share to the GDP.

Figure 1: Real GDP growth Percentage



Source: Own compilation based on NBE annual reports of 2012/13 and 2014/15.

The above Figure 3.1 reveals the growth pattern of real gross domestic product (GDP) between the period of 2005/06 and 2014/15 and accordingly Ethiopian GDP grew by an average of 10.5 % per annum over the ten years period. The highest GDP growth was recorded in the year 2006/07(11.8%), whereas the lowest was recorded in the year 2011/12 which is 8.8%. During the year 2012/13, the real GDP revealed a significant growth of 9.7 % which was 8.8% in the year 2011/12. Generally, over the past decade the average annual gross domestic product (GDP) growth of Ethiopia is almost double as compared to the 5.6% forecast for sub-Saharan Africa countries (NBA, 2014/15).

As it can be seen from the below figure 3.2, the major contribution share to the GDP till the year 2010/11 was mainly from the agriculture sector, but from 2010/11 onward the service sector took the highest percentage share contribution to the GDP growth. The annual average contribution share of agriculture sectors declined throughout the study period and the highest share to GDP was recorded in the year 2005/06 and the lowest was

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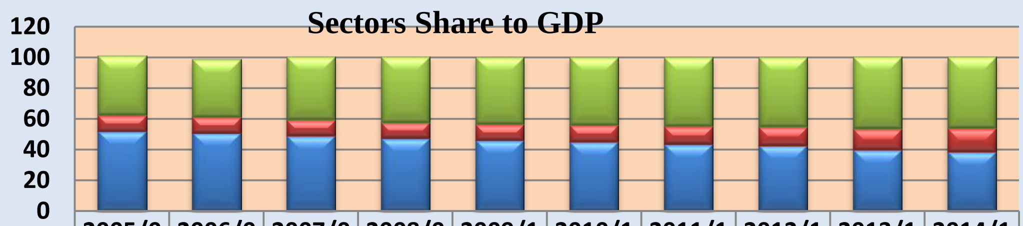
recorded in the year 2014/15. On the other hand, the service sectors have shown an increase trend in the same period.

Figure 2: Sectors share contribution in Ethiopia's GDP

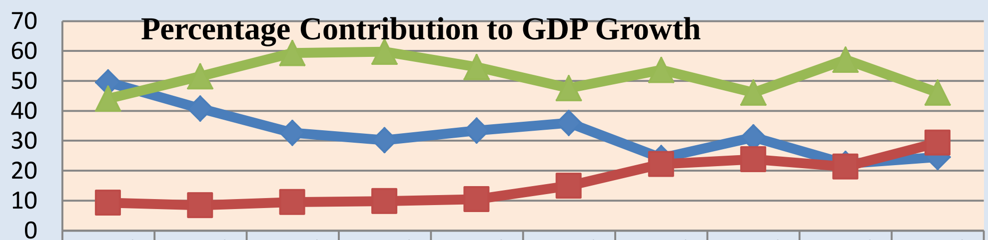


	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Services	38.4	37.6	41.3	42.8	43.8	44.1	44.9	45	46.6	46.6
Industry	10.6	10.4	10.3	10.2	10.3	10.7	11.5	12.4	13.8	15.2
Agriculture	52	50.9	49.1	47.5	46.2	45.3	43.7	42.7	40.1	38.8

Source: Own compilation based on NBE annual reports of 2012/13 and 2014/15.

The above figure 3.2 also revealed that the industry sector share contribution to the GDP remained small as compared to the other sectors and the contribution was relatively constant till the year 2010/11, but from the year 2010/11 onwards it showed an increase trend and registered its highest contribution 15.2% in the year 2014/15. Still the agriculture sector is the dominant economy in Ethiopia. It constitutes the highest annual average share contribution to GDP which is 45.63% over the study period (2005/06-2014/15), followed by service sector 43.11% and industrial sector 11.54 %.

Figure 3: Sectors percentage contribution to Ethiopia's GDP growth



	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Agriculture	49.5	40.8	32.7	30.2	33.4	36	24.2	31.2	22.3	24.5
Industry	9.3	8.4	9.5	9.8	10.5	15	22.2	23.8	21.3	29.4
Services	44.1	51.5	59.3	59.8	54.6	47.6	53.7	46.1	57.1	46.1

Source: Own compilation based on NBE annual reports of 2012/13 and 2014/15.

As it can be seen from the above figure 3.3, the agriculture sector showed a relatively decrease trend to the percentage growth of GDP within the study period. The agriculture sector contributed 49.5% to the overall economic growth during the year 2005/06 but it decreased its contribution to 24.5% during the year 2014/15. On the other hand, the industry sector showed an increase trend and it contributed 9.3% to the GDP growth in year 2005/06 and raised its contribution to 29.4% during the year 2014/15. Despite its rapid growth of the industry sector relative to agriculture and service sectors, the share contribution of the industrial sector in GDP was very low.

As it can be also seen from the above figure 3.3, the service sector showed a relatively constant trend to GDP growth percentage and it contributed 44.1% during the year 2005/06

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and showed a relatively small raise during the year 2014/15, which is 46.1%. Despite it's the relatively constant growth as compared with the agriculture and service sector, it becomes the dominant sector in Ethiopian economy since it overtook the agricultural sector in the year 2010/11.

Despite such rapid economic growth, the pace of structural transformation has been slow. Ethiopia's structure of output has shown a shift from agriculture to services. In 2014/15, the respective shares of the services and agriculture sectors to GDP was 46.6 per cent and 38.8 per cent (see Figure 2). However, Ethiopia's industrial sector which includes construction, manufacturing, mining, and utilities subsectors remained underdeveloped and contributed only about 15.2 % of GDP and out of which the contribution of the manufacturing sector to GDP is only 5%.

The contribution of the three major sectors namely; agriculture, service and industrial sectors for the period of (2005/06-2014/15) to GDP and GDP growth of the country in a more detail way are presented in the table 3.1 below.

Table 4: Sectoral Contributions to GDP and GDP Growth

Items		Year									
		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Sector	**Agriculture**	144.8	158.5	170.3	181.2	195.0	212.5	222.9	238.7	251.8	267.9
	Industry	29.3	32.1	35.4	38.8	43.0	49.8	58.3	69.1	86.5	105.2
	Services	106.9	123.3	143.1	163.2	184.7	207.2	229.1	251.8	292.5	322.2
Total		278.5	311.3	346.7	381.7	421.8	469.4	510.3	559.6	630.8	695.3
Less FISIM		1.6	1.8	2.4	2.7	2.9	3.2	2.9	3.1	3.7	4.3
Real GDP		277.0	309.7	344.3	378.9	418.9	466.2	507.4	556.5	627.1	691.0
Growth in Real GDP		11.5	11.8	11.2	10.0	10.6	11.3	8.8	9.7	10.3	10.2
Real GDP per capita		4.0	4.3	4.6	4.9	5.3	5.8	6.1	6.6	7.2	7.8
Growth in Real GDP per capita		8.8	8.1	7.5	7.3	7.8	8.7	6.2	7.0	7.5.0	7.6
Mid-year population (in millions)		70.0	72.4	74.9	76.8	78.8	80.7	82.7	84.8	87.0	89.1
Share in GDP (in %)	Agriculture	52.0	50.9	49.1	47.5	46.2	45.3	43.7	42.7	40.1	38.8
	Industry	10.6	10.4	10.3	10.2	10.3	10.7	11.5	12.4	13.8	15.2
	Services	38.4	37.6	41.3	42.8	43.8	44.1	44.9	45.0	46.6	46.6
Agriculture	Absolute Growth	11.0	9.5	7.4	6.4	7.6	9.0	4.9	7.1	5.4	6.4
	Contribution to GDP growth	5.7	4.8	3.7	3.0	3.5	4.1	2.1	3.0	2.3	2.5
	Contribution in percent	49.5	40.8	32.7	30.2	33.4	36	24.2	31.2	22.3	24.5

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Industry	Absolute Growth	10.2	9.6	10.3	9.6	10.8	15.0	17.1	18.5	17.1	21.6
	Contribution to GDP growth	1.1	1.0	1.1	1.0	1.1	1.7	2.0	2.3	2.2	3.0
	Contribution in percent	9.3	8.4	9.5	9.8	10.5	15.0	22.2	23.8	21.3	29.4
Services	Absolute Growth	13.2	15.3	16.1	14.0	13.2	12.2	10.6	9.9	13.0	10.2
	Contribution to GDP growth	5.1	6.1	6.6	6.0	5.8	5.4	4.7	4.5	5.9	4.7
	Contribution in percent	44.1	51.5	59.3	59.8	54.6	47.6	53.7	46.1	57.1	46.1

(In Billions of Birr)

Source: NBE annual reports of 2012/13 and 2014/15.

2. Overview of Ethiopian Manufacturing Sector

2.1. Development of Manufacturing Sector

Ethiopia is the oldest independent country located in the horn of Africa and one of the oldest countries in the world. Due to the archaeological findings and historical buildings, Ethiopia is being considered as the cradle of both mankind and civilization. But the history of modern industrialization in Ethiopia has begun in the early 20th century following Ethio-Djibouti railways construction. According to Befekadu et.al., (2000), the development of manufacturing sector in Ethiopia is believed to have benefited from the industrial skills of foreigners from Armenia, Italy, Greece and India, who had begun settling in the country sine Ethio-Djibouti Railway construction in 1897.

Until the 1991 the current government (EPRDF) took power, Ethiopia had been under the rule of two regimes for the last 6 decades; under imperial regime for more than 4 decades (1930-1974) and then under the Socialist militaristic rule (dergue) for nearly two decades (1975-1991). Here the researcher, discussed industrial policy and development, particularly the manufacturing sector of the three regimes and further more the current status of the manufacturing sector are also discussed separately.

The imperial regime (1930-1974)

Industrial Planning in Ethiopia has begun during the Imperial regime, when a ten year industrial strategy (1945-1955) was elaborated to investigate the country's resources, economic problems and to draft an aid package for its development in collaboration USA as a mutual aid agreement in 1943. This was followed by a formal five-year development plan which was launched in 1957 during the Imperial Government of Ethiopia with the major objective of laying foundation for an economic take-off. (Getnet and Admit, 2005).

According to World Bank (1985) report, during the imperial regime Ethiopia implemented three consecutive five-year development plans (1958-1962, 1963-1967 and 1969-1974) that stimulated the industrial growth of the country. The implementation of the successive development plan helped to diversify the economy of the country and attracted foreign investors that boost the manufacturing sector by encouraging agro-industrial activity and industries that substitutes imported consumer goods. Generally during the imperial period, the manufacturing sector was dominated by Import-substituting and labor intensive light industries and foreign ownership.

The Dergue regime (1974–1991)

After the fall dawn of the imperial regime, Dergue regime was came to power with socialist ideology and nationalized most of the privately owned large and medium scale manufacturing industries. Furthermore, the dergue government banned ownership of private firms in some sectors (particularly in large scale manufacturing), imposed a ceiling on capital investment on others sectors, and introduced various rules and regulations that discouraged private investment in the manufacturing sector and the market (MEDaC, 1999). During these periods the development of the private sector particularly the manufacturing sector was hindered and private sector was allowed only to engage in small-scale industries and handicraft activities.

During the first four years of the dergue regime (1975 -1978), economy of the country in all sectors became deteriorated and exhibited a sharp decline in the productivity of the manufacturing sector and there were no any industrialization development policy setup to uplift the economy. But at the end of 1978, the dergue government established a series of annual development campaign plan, which is characterized as a short term plan, with the aim of rehabilitating economy of the country by improving the productivity through enhancing the low utilization capacity of the industry (Getnet and Admit, 2005).

During the year 1994, the dergue regime established a comprehensive long term industrial development plan, known as the Ten-Year Perspective Plan (TYPP) for the period 1985-1994. The main aim of the state-led industrialization development plan was to give more emphasis on the import substitution industries (World Bank, 1985).

EPRDF regime (Post -1991)

After the current government (EPRDF) came to power in 1991, the government introduced a renewal on the political and economic ideology of the country and began to open its doors to the world economy and lifted most of the restrictions imposed by its predecessor and promotes a market-led economic policy.

The first ten years of the EPRDF regime (1991-99), the government undertook extensive reforms to reverse the command economy towards the market economy by adopting a structural adjustment program (SAP) under the sponsorship of IMF and WB by dividing in to three phases. The main objective of the structural adjustment program was to transform the overall incentive development of the country by supporting the privatization process of selected public industries, encouraging the expansion of the private sector investments and diversification of exports and output structure in favor of manufactured items and thereby assuring stable macro-economic environment (ICC, 2004).

In 1993, the current government adopted an overall development strategy known as Agricultural Development-Led Industrialization (ADLI). The main objective of this broad development vision is to build up linkages between agriculture and industry to eradicate poverty by improving agricultural productivity (included provision of fertilizers, improved seeds and promotion of improved agricultural technologies to smallholder farmers), promoting private commercial farms and thereby reconstructing the manufacturing sector to utilize the anticipated increase in agricultural output (Lulit et al., 2010).

Moreover the government designed a comprehensive industrial development strategy (IDS) in 2002/03. The main premise of the strategy is promotion of industries particularly the manufacturing sector that have strong linkages with other sectors of the economy, especially with the agricultural sector (i.e. agro-processing) and that are labour-intensive. Due to the strong government commitment to industrial development and transformation

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which particularly recognizes the importance of a healthy and competitive manufacturing sector, the industrial development strategy (IDS) was implemented in to action by the successive development plans and various sub-sector strategies such as:

- Sustainable Development and Poverty Reduction Program (SDPRP) 2002/03-2004/05,
- Plan of Action for Sustainable Development and Eradication of Poverty (PASDEP) 2005/06-2009/10, and
- Growth and Transformation Plan (GTP) 2010/11-2014/15.

The strategy was focused on the selected manufacturing activities such as textiles (garment industry), meat, leather and leather products, which generate substantial stimulus for the economy on relation of their strong linkages with the domestic economy particularly with agriculture sector, and in which Ethiopia has a relatively high degree of comparative advantage (Bienen & Ciuriak, 2015).

Industrial policy is a very important and challenged issue, especially for developing countries/low-income countries. Countries like Ethiopia need proactive policies to master the transition from low-productivity resourced-based to more productive and knowledge-based activity. Generally, in the industrial development strategy (IDS) the government identifies priority areas and mechanisms of intervention to accelerate the development of the industrial sector The strategy recognized the important role of private sector as the engine of transformation as well as the proactive role of the state as a developmental state to support and guide the private sector in terms of creating marketing networks, offering technological access, and infrastructure development (Yusuf et al., 2013).

Today, Ethiopia is seen as an emerging market and one of the most vibrant economies of the world. Ethiopia has embarked on a transformational journey of becoming a low middle-income carbon-neutral economy by 2025. The current policy response for industrialization through the State's active role has benefitted from the country's long- held tradition and experience of planning over several decades, evident since 2010/11 with the launch of the growth and transformation plan (GTP) (Kim, 2015).

Shiferaw (2017) points out that that after suffering economic stagnation for most of the 1970s and 1980s; its economy began to grow in the mid-1990s. During the last decade it has become one of the fastest growing economies in the world with an average gross domestic product (GDP) growth rate of about 10% per annum. According to the ambitious five-year Growth and Transformation Plan (GTP) that the Ethiopian government rolled out in 2010, Ethiopia aims to attain a lower-middle-income status by 2020.

The below table 3.2, summarizes the basic features of the industrial policies that had been followed in comparison of the three regimes namely; Imperial period (pre-1974), Dergue regime (1975-91) and the current EPRDF regime (post-1992).

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Table 5: The Ethiopian industrial policy and development phases

	Imperial period (pre-1974)	The Dergue regime (1975-91)	The EPRDF regime (post-1992)
Guiding policy/vision	Market-oriented	Command economy	Market-oriented
Public/private role	Private-led	State-led	Private-led but also strong state role
Ownership structure	Dominance of foreign-owned enterprises	Dominance of public-owned enterprise	Dominance of domestic private-owned enterprises
Target industries	Import-substituting and labour-intensive industries (e.g. textile, food, cement)	Import-substituting and labour-intensive industries but also basic industries	Export-oriented & labour-intensive industries (e.g. Textile, leather, agro-processing, cement)
Envisaged key player	Foreign investment	Public sector investment	Domestic private sector
Policy instruments	Protection of domestic market through high tariff and banning of certain imports Provision of economic incentives (tax holidays, remission of indirect tax on capital goods etc.) & preferential credit scheme	Protection of domestic market through high tariff and quantitative restrictions Financing, subsidizing, and ensuring monopoly power for the state- owned enterprises	Direct support for selected export sectors through capacity building and other means Provision of economic incentives (tax holidays, remission of indirect tax on capital goods etc.) & preferential credit scheme
Government role	Infrastructure & human resource development and ownership of selective industries	Mainly government ownership	Infrastructure & human resource development, ownership of selective industries, and capacity Building of the private sector

Source: Gebreeyesus (2013)

The above table 3.2, revealed that both the imperial period (pre-1974) and the current government (EPRDF) are characterized as a market oriented economy, but their difference is, the imperial period was characterized by the Dominance of foreign- owned enterprises while the current government (post-1992) is characterized by the dominance of domestic private-owned enterprises with a strong state role in the economy, furthermore the policy during the imperial regime targeted import-substituting industries whereas the current government gives more emphasis on Export-oriented industries (like Textile, leather, agro- processing and etc).

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2.2. The Current Status of Ethiopian Manufacturing Sector

Since 1991 the current government liberalized the economy, the country realized a remarkable economy growth. Despite the remarkable efforts made and the economic growth achieved, the Ethiopian economy remains beleaguered by structural problems. The manufacturing sector in Ethiopia is still at its infancy. As compared with the agriculture and service industry, the manufacturing sector has a limited share in terms of production, employment, and exports. Thus, the Ethiopian economy needs a more dynamic growth so that it can reduce its dependence on the fragile, rainfall dependent, and climate change that highly exposed the agricultural sector (AACCSA, 2014).

Table 6: Number of establishments, Persons Engaged and Value Added in the National Account of Medium and Large Manufacturing Sector, Public and Private

Sub-Sector Group	Number of Establishments		Total	Number of persons	Value added in the national account at market price (In'000 Birr)
	Regions (including diredawa)	Addis Ababa			
Manufacture of Food Products and Beverages	515	238	753	59,415	18,460,726
Manufacture of Tobacco Products	-	1	1	993	568,921
Manufacture of Textiles	45	24	69	57,044	817,565
Manufacture of Wearing Apparel, Except Fur Apparel	9	22	31	7,126	620,408
Tanning And Dressing of Leather; Manufacture Of Footwear, Luggage and Handbags	61	79	140	18,918	2,920,207
Manufacture of Wood and af Products of Wood And Cork, Except Furniture	80	16	96	3,543	69,997
Manufacture of Paper, Paper Products and Printing	51	96	147	13,329	1,680,265
Manufacture of Chemicals and Chemical Products	68	58	126	15,594	3,976,093
Manufacture of Rubber and Plastic Products	81	72	153	18,091	3,517,326
Manufacture of Other Non-Metallic Mineral Products	572	97	669	30,178	7,593,082
Manufacture of Basic Iron and Steel	25	13	38	3,520	1,393,182
Manufacture of Fabricated Metal Products Except Machinery and Equipment	105	68	173	61,706	3,253,317
Manufacture of Machinery and Equipment N.E.C.	12	9	21	1,970	316,466
Manufacture of Motor Vehicles,Trailers & Semi-Trailers	6	3	9	4,502	1,176,128
Manufacture of Furniture	227	105	332	8,835	1,131,656
TOTAL	**1,857**	**901**	**2,758**	**304,764**	**47,495,339**

Source: CSA 2015 report

As it can be seen from the above table 3.3, the total number of large and medium scale manufacturing industries reported in 2013/14 was 2,758. From the total manufacturing industries about 33% of them were located in capital city Addis Ababa and the remaining 67% were located in the nine regional states including Dire-Dawa (which is considered as the second city administrations). With in the manufacturing sector, food products and beverages consists the largest number of establishments(753 establishments), that is 27% of the manufacturing industries, fell in the category of food products and beverages followed by non-metallic mineral products with more than 24% and the furniture industry with more than 12%.

The above table 3.3 also revealed the number of persons engaged in the manufacturing industries; accordingly around 304,764 persons were engaged in all the manufacturing industries surveyed in the year 2013/14. Manufacturing of Fabricated Metal Products sub-sectors hold the largest share of the total persons engaged in the manufacturing industries which accounts 20%, followed by Food and beverage manufacturing which accounts more than 19% and manufacture of Textile products accounts for more than 18%.

The above table 3.3 also shows the distribution of value added in the national account concept at a market price by sub-sector industrial groups. Value added in the national account concept at a market price is defined as the difference between the gross value of production and industrial and non-industrial costs. It is revealed that food and beverages manufacturing industry contributes 38.9 % of the value added by manufacturing industries to the national account of the country, followed by the non - metallic mineral products manufacturing industry (15.9%) and chemicals and chemical products manufacturing industry (8.3%).

Furthermore, according to the report of CSA (2015), majority of the manufacturing industries reported shortage of supply of raw materials as a first problem for not being fully operated and also they disclosed that shortage of electricity, water supply and absence of market demand are the other obstacles for not being fully operated. The total number of manufacturing industries has show an increase trend within the five years period from 2,172 establishments in 2009/2010 to 2,758 establishments in 2013/14. This increment trend of manufacturing establishments has evidently shown in the manufacture of food products and beverages, manufacture of footwear, manufacture of chemicals and chemical products and non –metallic mineral products.

According to the primary survey conducted in 2012/2013 by AACCSA (2014), revealed that out of the total 270 manufacturers interviewed about 62% of them reported that domestic banks are their major sources of finance, followed by own saving (16.8%), foreign investment/partners (9.5%) and domestic capital market (5.7% each). The performance of the sector has been affected by low productivity of workers and use of obsolete technologies which is attributed to the poor state of physical infrastructure, limited access to finance, limited research and development, poor institutional framework, and inadequate managerial technical skills.

According to Seid, Taffesse, & Ali (2015) point out that manufacturing firms also rely heavily on imported raw materials, which generally does not play to their advantage given the limited availability of foreign exchange and lack of access to adequate credit. Additionally, Analytical work carried out in 2011 on Africa's manufacturing experience, in comparison to China and Vietnam, access to finance is a critical constraint in improving competitiveness and accelerating growth in selected manufacturing sectors in Ethiopia

(World Bank, 2012). Moreover, according to Geiger & Moller (2015), access to finance is also the most critical problem of the top 10 Business Environment Constraints in Ethiopia.

3. Conclusion

As observed above, since 1991 the current government liberalized the economy and implementing different industrial policy and other development plans, the country realized a remarkable economy growth. Despite the remarkable efforts made and the economic growth achieved, the Ethiopian economy remains beleaguered by structural problems. In another words, despite its rapid growth of the industry sector relative to agriculture and service sectors, the share contribution of the industrial sector in GDP was very low. Ethiopia's industrial sector which includes construction, manufacturing, mining and utilities subsectors remained underdeveloped and contributed only about 15.2 % of GDP between a period of 2005/06 and 2014/15. The contribution of the manufacturing subsector to GDP was only 5%, which is very low even in comparison to the sub-Saharan Africa average.

Since the Ethiopian government has taken different policy measures and incentives under a well-coordinated industrial strategy to convert the manufacturing sector in Ethiopia into an engine of growth and strengthen its forward and backward with the agriculture and service sectors to ensure sustainable growth and thereby realizing the national vision of becoming a low middle-income country by 2025, but still the rain-fed agriculture sector of Ethiopia continues to play a dominant role in the current structure of the Ethiopian economy and this dependence on rainfall makes the country vulnerable to climate-related shocks.

To secure a rapid growth and sustain a development in Ethiopia, a thoughtful structural change in favor of the manufacturing sector is must. Therefore, to achieved the predetermine objective of the country, the government (usually the policy makers) and development partners should re-focus on the development and related challenges of the manufacturing sector. Furthermore, many reports indicated that access to finance is one of the critical problem faced by the sector. Thus, the government should work towards the development of a special financial scheme that benefits the manufacturing sector by integrating with the financial institutions as well as with the government itself.

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A Study of Human Resource Planning Dimensions in Public and Private Sector Banks in Indore

Dr. Deepti Bajpai Kukrety*

Abstract

Banking is a service industry and is always seen as "People's Business". As key to the soundness The Indian Banking System not only relies on technological advancement, customer satisfaction, product innovation and capital generation but more significantly rests with Human Resource Management. In the need to take the sector to greater heights and excellence not only domestically but globally, human capital plays a major role.
Attracting and retaining the right people is a necessity in the present banking scenario as customer expectations are increasing, technological advancements are at an all high and competition is never ending and cut throat. Banks need to have quality human resource in the adequate quantity.
There is an urgent need to integrate Human Resource Planning with business development, business process re-engineering plans and technological advancements in The Banking Sector. If the full potential of human resource and of banking needs to be attained then Human Resource Planning deserves to be the top priority. The future of banking therefore, rests on Human Resource Planning.
Key Words: Human Resource Planning, Public and Private Sector Commercial Banks.

Introduction

The rapid changes in the banking landscape especially the concentration on technology driven banking from an environment that was completely manual in nature has lead to a common platform of technology in banking, in this scenario the quality of human resource and its planning will be the differential factor. Human Resource Planning therefore, assumes great importance and requires the immediate attention of Indian Banks. New age banking no longer rests on innovative products and meeting customer expectations, it hinges on the quality of manpower.
Human Resource Planning in organizations was traditionally focused on ideology of right person for the right job at the right time as the business environment was certain and stable. The emphasis of Human Resource planning was therefore on short term planning. However, the circumstances under which banks are working now have changed completely. The Indian banking sector is now working under increased environmental instability, technological reliance, demographic shifts, heightened domestic and international competition. Therefore, a well made and implemented Human Resource planning plan can ensure the competitiveness, growth and success of banks. A well made and implemented human resource plan is capable of dealing with both organizational objectives as well as is adaptable to external environment.
A successful Human Resource Planning Plan (MPP) can provide a firm foundation for an effective Human Resource System, especially in a sector like banking. As banking is a service driven sector, the success of a Human Resource Planning Plan has a direct implication on the quality of services provided. A successful, systematic and scientific

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Human Resource Planning Plan sets the stage for rightful use and utilization of personnel and aids in identification of gaps in skills. On the other hand, an unbalanced Human Resource Planning Plan will result in an uneven distribution of Human Resource which will have noticeable effects on service and costs.

Review of Literature

The current era is **the golden age of workforce planning**, although some firm have been doing workforce planning since early 1960's, it has take centre stage and has **become the hottest topic on the planet** as per Sullivan, 2002a**.** Since the early 1960's Human Resource Planning has proved to be an important management instrument to arrange and organize the skills of workforce says Gill, 1996.However, the recent buzz around workforce planning is marred by the difficulty in implementing the workforce planning plan as described by HR practioners and as such continues to be **one of today's greatest business challenges** as per Laabs, 1996.

Wang, 2005explains that the aim of Human Resource Planning is "to provide the right (required) number of the right (qualified) personnel at the right (specified) time at the minimum cost"

According to Mathis and Jackson, 2004Human Resource Planning is the process of identifying and analyzing the need for the availability of human resource for an organization so that it can meet its desired objectives. Rothwell and Sredl, 2000stress that Human Resource Planning helps in converting organizational plans at different levels into human resource plans that steer the acquirement, utilization and development of human capital and assets, Ibekwe, 1984 says that the personnel working in an organization are jointly known as Human Resource of the organization. They could be skilled, unskilled, of various grades and planning to make sure that the right person for the right job is available at the right time, this is known as Human Resource planning. Quinn, 1983 observes that Human Resource Planning is essentially a decision- making process that involves three activities: recognizing and obtaining the right people, possessing the right skills, keeping them inspired to accomplish high levels of performance and building a communicable link between the organizational goals and Human Resource Planning activities. Screwvalla, 1988 states that if organizations wish to survive and grow, then Human Resource Planning needs to occupy the highest concern in terms of endeavor and spending.

Jackson and Schular, 1990 researched that the traditional approach of Human Resource Planning implemented by organizations focused on the right person for the right job at the right time. This approach was very helpful as business conditions were stable and less likely to change. Human Resource Planning was therefore, short- term and based on the needs of the line management. However, dynamic environment, shifts in demographics, cut-throat competition both domestically and internationally, focus on technology are ushering in a change in the way Human Resource Planning is done. The nature of planning is now dependent on the team work of line management and planner. There is a growing acceptance in organizations that the success of Human Resource Planning rests on both short-term and long-term plans.

Objective of the Study

To study the dimensions associated with Human Resource Planning in commercial public and private sector banks in Indore

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Research Methodology

The study is exploratory in nature aimed to study the dimensions associated with of Human Resource Planning in commercial banks both public and private sector in Indore. The present study will help to grasp how Human Resource Planning can be utilized to attain competitive edge by banks. It is important for both public and private sector banks to achieve persistent competitive advantage not only in short-run but also in the long-run. Banking is a service industry with huge demand for educated, knowledgeable, skilled and competent employees on which the future of this sector rests.

A standardized tool was administered on each subject of the sample. The tool was common for both public and private sector banks and was divided into five parts, each part representing one dimension of Human ResourcePlanning. The first part dealt with Human ResourcePlanning itself and consisted of 21 questions. The second aspect encompassed Recruitment and selection and included 14 questions. The third portion contained personal assessment and comprised of 6 questions. The fourth component was career planning and accounted for 5 questions. The fifth and last element constituted Training and involved 7 questions.

The public sector banks included State Bank of India and its associates, Punjab National Bank, Central bank of India, Canara bank, UCO bank and Bank of Baroda. The private sector banks were represented by ING Vysya bank, HDFC, IndusInd bank, HSBC and ICICI.

Results and Interpretation

The data collected for the objective of the study was analyzed with the help of ANOVA.

The results of ANOVA for Human ResourcePlanning are presented below:

Table 1: Group Statistics

	Category of Bank	N	Mean	Standard Deviation	Std. Error Mean
Human ResourcePlanning is an important activity for an organization.	Public Sector	200	4.77	.456	.032
	Private Sector	200	4.51	.891	.063

Table 1gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **4.77**, with a standard deviation of **0.456** when **Human Resource Planning is an important activity for an organization** is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **4.51**, with a standard deviation of **0.891** when **Human Resource Planning is an important activity for an organization** is concerned. The last column gives the standard error of the mean for each of the two groups.

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Table 2: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Human Resource Planning is an important activity for an organization.	Between Groups	6.760	1	6.760	13.493	.000
	Within Groups	199.400	398	.501		
	Total	206.160	399			

H01: There is no significant difference between public and private sector banks regarding the importance of Human Resource Planning is not accepted.
Table 2 reveals that public and private sector banks differ in their perception of the importance of Human Resource Planning. $F(1, 398) = 13.493$, $p < .05$, therefore, $H_{01}$is not accepted.

Table 3: Group Statistics

	Category of Bank	N	Mean	Std. Deviation	Std. Error Mean
Bank has a formal Human ResourcePlanning system.	Public Sector	200	3.84	.855	.060
	Private Sector	200	4.02	.877	.062

Table 3 gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **3.84**, with a standard deviation of **0.855** when **bank has a formal Human Resource Planning system** is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **4.02**, with a standard deviation of **0.877** when **bank has a formal Human Resource Planning system** is concerned. The last column gives the standard error of the mean for each of the two groups.

Table 4: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Bank has a formal Human Resource Planning system.	Between Groups	3.240	1	3.240	4.320	.038
	Within Groups	298.510	398	.750		
	Total	301.750	399			

H_{02}: There is no significant difference between public and private sector banks with respect to a formal Human Resource Planning system.

Table 4 reveals that public and private sector banks differ significantly with respect to a formal Human Resource Planning system $F(1, 398) = 4.320$, $p < .05$, therefore H_{02} is not accepted.

Table 5: Group Statistics					
	Category of Bank	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Top management supports the process of Human Resource Planning.	Public Sector	200	3.95	.873	.062
	Private Sector	200	4.12	.738	.052

Table 5 gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **3.95**, with a standard deviation of **0.873** when **top management supports the process of Human Resource Planning** is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **4.12**, with a standard deviation of **0.738** when **top management supports the process of Human Resource Planning** is concerned. The last column gives the standard error of the mean for each of the two groups.

H_{03}: There is no significant difference of a top management support in the process of Human Resource Planning system in public and private sector banks.

Table 6: ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Top management supports the process of Human Resource Planning.	Between Groups	2.723	1	2.723	4.170	.042
	Within Groups	259.855	398	.653		
	Total	262.577	399			

Table 6 finds that top management supports in the process of Human ResourcePlanning in public and private sector banks. $F(,398) = 4.170$, $p< .05$, Therefore, $H_{03}$is not accepted.

Table 7: Group Statistics					
	Category of Bank	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Human Resource Planning is conducted due to diversity in the organization.	Public Sector	200	3.49	.868	.061
	Private Sector	200	3.78	.978	.069

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The Table 7 gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **3.49**, with a standard deviation of **0.868** when **Human Resource Planning is conducted due to diversity in the organization** is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **3.78**, with a standard deviation of **0.978** when **Human Resource planning is conducted due to diversity in the organization** is concerned. The last column gives the standard error of the mean for each of the two groups.

Table 8: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Human ResourcePlanning is conducted due to diversity in the organization.	Between Groups	8.702	1	8.702	10.179	.002
	Within Groups	340.275	398	.855		
	Total	348.977	399			

H_{04}: There is no significant difference of diversity in the organization on Human Resource Planning in public and private sector banks.
Table 8 shows that there is significant effect of diversity in the organization on Human Resource Planning in public and private sector banks. $F(1, 398) = 10.179$., $p < .05$, therefore $H_{04}$is not accepted.

Table 9: Group Statistics

	Category of Bank	N	Mean	Std. Deviation	Std. Error Mean
Internal and external sources are considered in Human ResourcePlanning.	Public Sector	200	3.67	.870	.062
	Private Sector	200	4.07	.783	.055

The above table 9 gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **3.67**, with a standard deviation of **0.870** when **internal and external sources are considered in Human Resource Planning** is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **4.07**, with a standard deviation of **0.783** when **internal and external sources are considered in Human Resource Planning** is concerned. The last column gives the standard error of the mean for each of the two groups.

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Table 10: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Internal and external sources are considered in Human Resource Planning.	Between Groups	16.000	1	16.000	23.351	.000
	Within Groups	272.710	398	.685		
	Total	288.710	399			

H_{05}: There is no significant difference with regards to consideration of internal and external sources in Human Resource Planning in public and private sector banks.
Table 10 shows that there is a significant effect of consideration **internal and external sources are considered in Human Resource planning** in both Public and Private Sector Banks. $F(1, 398) = 23.351$., $p < .05$, therefore $H_{05}$is not accepted.

Table 11: Group Statistics

	Category of Bank	N	Mean	Std. Deviation	Std. Error Mean
Adequate pool of employees is provided after the Human Resource Planning process is completed.	Public Sector	200	3.33	.935	.066
	Private Sector	200	3.62	1.097	.078

Table 11 gives the descriptive statistics for each of the two groups (as defined by the grouping variable.) There are 200 respondents taken from Public Sector Bank (N), and they have, on average, **3.33**, with a standard deviation of **0.935** when **adequate pool of employees is provided after the Human Resource Planning process is completed**, is concerned. There are 200 respondents taken from Private Sector Bank (N), and they have, on average, **3.62**, with a standard deviation of **1.097** when **adequate pool of employees is provided after the Human Resource Planning process is completed** is concerned. The last column gives the standard error of the mean for each of the two groups.

Table 12: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Adequate pool of employees is provided after the Human Resourceplanning process is completed.	Between Groups	8.410	1	8.410	8.100	.005
	Within Groups	413.230	398	1.038		
	Total	421.640	399			

H_{06}: There is no significant difference in adequate pool of employees provided after the Human Resource Planning process is completed in public and private sector banks.
Table 12shows that private and public sector banks differ in providing adequate pool of employees after the Human Resource Planning process. $F(1, 398) = 8.100$, $p < .05$, therefore H_{06} is not accepted.

Result and Discussion

The paper aims to study the dimensions associated with Human Resource Planning in public and private sector banks in Indore. Hypotheses were tested using ANOVA.
Table 2 reveals that public and private sector banks differ in their perception of the importance of Human Resource Planning. $F(1, 398) = 13.493$, $p < .05$.Table 4 reveals that public and private sector banks differ significantly with respect to a formal Human Resource Planning system $F(1, 398) = 4.320$, $p < .05$.Table 6 finds that top management supports in the process of Human Resource Planning in public and private sector banks. F (, 398) = 4.170, $p < .05$respect to a formal Human Resource Planning system $F(1, 398) = 4.320$, $p < .05$.Table 8 shows that there is significant effect of diversity in the organization on Human Resource Planning in public and private sector banks. $F(1, 398) = 10.179$., $p < .05$, therefore H04 .Table 12 shows that private and public sector banks differ in providing adequate pool of employees after the Human Resource Planning process. $F(1, 398) = 8.100$, $p < .05$.
The results of the study show that Human Resource planning is an important activity of an organization in both public and private sector banks, which is in line with the study conducted by (Anyim, Mba and Ekwoaba, 2012) HRP is a primary and most essential, activity of the HRM function. Its basic objective is toensure that the right quality and quantity of human resource is available when and where desired. The application of HRP is often seen differently in the private and the public sectors despite both sectors acknowledging the role of managing people as an important source of success (Absar & Mahmood, 2011; Kumara& Mishra, 2011; Parry, Kelliher, Mills and Tyson, 2005).HRP is a central human resource management (HRM) process (Jacobson, 2010).
The study shows through its results that both public and private sector banks have a formal Human Resource Planning system which is supported by (Steven, 2001) when he says that recognizing and strengthening an organization's Human Resource Planning system and strategy is crucial for survival.(Ogunrinde, 2001) examined that when Human Resource Planning is implemented in organizations they tend to perform better than organizations where Human Resource Planning is not implemented.(Edgar & Geare, 2004) in their study in New Zealand found that HRM activities are influenced by factors such as demography, especially age, gender and ethnicity which explains the dimension of our study that Human Resource planning is conducted due to diversity in organizations in public and private sector banks.(Sinclair, 2004) stated in his study that Economic fluctuations have important repercussions for HRP. Demographic factor influence HRM activities and policies (Norma- Major & Gooden, 2012) which explain the dimension of this study that Internal and external sources are considered in Human Resource Planning in public and private sector banks.

Conclusion

The findings of the study contribute towards better understanding of the dimensions that contribute to Human Resource Planning in commercial public and private sector banks in Indore. Effective and formal Human Resource Planning along with the support of top

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management is crucial for the survival and growth of banks. Banking sector is labor intensive and a proper and well thought out Human Resource Planning system can propel banks to contribute even more towards the benefit of the Indian economy.

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A Conceptual Study on Employee Satisfaction and Its Determinants

Vinay Ojha*
Dr Gyanesh Kumar Sinha**

Abstract
The research paper aims to discuss the concept of employee satisfaction, factors or determinants of employee satisfaction, and benefits or outcomes of employee satisfaction. The study is conceptual in nature, and purely based on the past literature. Researchers have gone through various research papers, published and unpublished reports and the books on human resource management to extract the literature available on the employee satisfaction. Employee satisfaction is important for an organization as the overall performance of an organization depends on the satisfaction level of its employees. Satisfied employees do their work efficiently, and provide better customer services, which in turn leads to increased productivity, high level of quality, and optimum utilization of organizational resources. Employee satisfaction and retention are positively related to each other. Employee satisfaction leads to low level of employee turnover and absenteeism also. Satisfied employees wish to work with an organization for long term period and also help in doing positive word of mouth marketing for the company.
Keywords: Employee satisfaction, Job satisfaction, Working Environment, Employee Retention, Job Commitment, and Job Performance.

Introduction

Employee satisfaction can be defined as the satisfaction of employee towards their job, towards the organization and towards the various aspects related to job. Employee satisfaction is a term which is comprehensive in nature. Employees who are satisfied with their job but not with the working environment, or not with the attitude of management or policies of the company will not be considered as satisfied employee. Employee satisfaction is a broader term which includes the satisfaction towards the job, job profile, job features, working environment, working conditions, types of people working in the organization, culture of the organization, management behavior, policies of the company, financial and non-financial benefits of the job, and various other aspects related to job. Recruiting the efficient and skilled employees in an organization is not enough, it is also important to make them satisfied and happy with their jobs. Employee satisfaction is important to measure as the job dissatisfaction may convert the efficiency of the employees into inefficiency. Employee satisfaction ensures that the employees are happy with their jobs and they are able to fulfil their needs at workplaces and in their personal life also. Employee satisfaction is the measure to know the ability of an organization to meet the needs of the employees related to working environment in the best possible manner. Needs of the employees can be related to the working conditions, co-workers, leaders, supervision, growth opportunities and work itself etc. employee satisfaction plays a crucial

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role in achieving the quality of services. Loveman (1998), discussed the relationship between employee satisfaction, customer loyalty and financial performance of an organization. Employee satisfaction ensures better customer services and increases in customer loyalty due to the better service quality and which in turn increases the profitability of the company. Thus, financial performance of an organization depends on the employee satisfaction.

Spector (1997), employee satisfaction can be defined as the satisfaction of an employee towards his job, and the liking for his job.

Locke (1976), explained the concept of employee satisfaction as a positive attitude of employees towards their job, an emotional state that gives pleasures to the employees while doing their job or performing a task.

Thus, it can be said that the primary goal of an organization should be employee satisfaction because employee satisfaction directly affects the productivity, profitability, service quality, employee retention rate, absenteeism, and employee turnover ratio.

Objectives of the study

The objective of the study was to do a review of the employee satisfaction, factors which affect the employee satisfaction and the theories based on the concept of job satisfaction evolved in past.

Research methodology

The study is conceptual in nature, and purely based on the past literature. Researchers have gone through various research papers, published and unpublished reports and the books on human resource management to extract the literature available on the employee satisfaction.

Determinants of Employee Satisfaction

Employee satisfaction is dependent in nature. It depends on various factors. Researchers have discussed various factors which directly or indirectly influence the satisfaction level of employees in an organization. Some of the important factors or determinants of employee satisfaction have been discussed in detail as following:

1. **Salary/Wages/Compensation:** The most important factor which effects the employees' satisfaction is salary, wages or compensation. If the salary is as per the norms of the industry, competitive and enough to fulfill the basic needs of the employees then the satisfaction level of the employees will be high and vice versa. The financial value of the hard work put by an employee in completion of his job is the main factor that influences his satisfaction level towards the job (Sharma and Sindhu, 2015, Sharma and Mani, 2012).
2. **Fringe Benefits:** Fringe benefits are the financial benefits other than salary or wages. If an employee gets the salary plus various other fringe benefits than the satisfaction level of employees will be higher towards their job (Morgan, 2014).
3. **Medical Facilities/Medical Insurance:** Now a day, the medical facilities are very costly, and the employees wish to get the free medical insurance for employee and their family members from the organization or the organization should reimburse the medical expenses of the employees and their family members in addition to the salary or compensation. Medical insurance or medical facilities are the extra benefits that an organization can provide to its employees in order to increase the level of employees' satisfaction (Arora, 2017).

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4. **Training:** Training is considered as an important determinant of employee satisfaction. Training can be provided at various stages such as; induction training to make a newly recruit employee aware about the organization and its rules or policies. Induction training helps new employees to learn about their job profile and work. Training to existing employees helps in increasing the knowledge of employees about a new concept, technology, new methods, or new processes or to refresh their knowledge about existing methods, or technologies used in the organization (Sharma and Sindhu, 2015). Training adds value to employees and increases their worth in the market and makes them competitive. Thus, training facilities available in an organization can make employees highly satisfied towards their job.
5. **Growth and Development Opportunities:** Growth and development opportunities provided by an organization to its employees highly influence the level of employees' satisfaction. If an employee perceives huge growth prospective in his organization, then his satisfaction level will be high or vice versa. (Sharma and Mani, 2012), researchers have stated that employees are ready to work with an organization for long term which provides high growth and development opportunities even if they receive less salary or wages.
6. **Interpersonal Relationship:** Interpersonal relationship is the relationship of an employee with his colleagues, supervisors, subordinates, and management. Healthy and friendly relationships at workplace create the interest of employees to do their work efficiently and increase their satisfaction towards their job (Sindhu and Sharma, 2014).
7. **Quality of Supervision:** Quality of supervision is an important factor while measuring the employee satisfaction. The quality of supervision, behavior of supervisor, relationship with supervisor, skills and knowledge of supervisor, and communication with the supervisor all have a bearing on the employees' satisfaction (Sindhu and Sharma, 2014).
8. **Performance Appraisal:** Performance appraisal plays an important role in employees' satisfaction. Employee satisfaction is higher in the organizations which conducts performance appraisal on regular basis and without biasness, provides feedback to employees about their performance and conducts training to improve the performance of employees (Sharma and Sindhu, 2015).
9. **Participation in Decision Making:** Employees feel themselves as an important part of organization if they have a right to take part in decision making process. They may come with creative and innovative ideas and will not show resistance during implementation of any policy or rules, which has been framed after considering their suggestions. Thus, the employees' satisfaction will be higher if the employees have a right to participate in decision making process (Nair, 2015).
10. **Attitude of Management:** Attitude of management also influences the level of employees' satisfaction in an organization. If management shows positive attitude, empathy and do friendly behavior towards the employees then the satisfaction level of employees will be higher. Concern of management towards the problems of employees and equal treatment to all employees, leads to high level of employees' satisfaction (Gomathi, 2014).
11. **Grievances and Complaints Handling Mechanism:** If the employees feel that they will be heard in case of any misconduct, and organizations follow a proper mechanism to handle the complaints and grievances of the employees, then the satisfaction level of

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employees will be higher towards their job. Safe and secure working environment helps in increasing the satisfaction of employees towards their job (Gomathi, 2014).

12. **Transparency in the Promotion/Transfer Policy:** Transparency in the promotion and transfer policies increases the level of corporate integrity and also helps in increasing the employees' satisfaction also. Employees get assured that their performance will be measured in a transparent manner, without bias and they will get promotion and transfer on the basis of their work performance only (Nair, 2015).
13. **Working Environment:** Working environment have a direct effect on the employees' satisfaction. Working environment includes the physical conditions of the work such as; hygiene, cleanliness, water facility, canteen facility, restrooms, availability of equipment or tools, safety measures at workplace, ventilation, lightening etc. Employees' satisfaction will be high in those organizations where employees are satisfied with the working environment (Sindhu and Sharma, 2014).
14. **Job Related Factors:** Job profile, and features/aspects of job ae vital factors to measure the employees' satisfaction. If the job is monotonous in nature, require no creativity or not as per the qualifications of the employee, then the satisfaction level of employees will be less towards their job and vice versa (Sharma and Mani, 2012).
15. **Recognition or Status:** If an employee feels proud to work in an organization, to do a particular job in the society, then the satisfaction level of employee will be higher towards their job. The job which helps in increasing the social status of an individual will give more satisfaction. If an organization gives reward to the employees for their good performance or recognize the performance or achievements of employees, employees' satisfaction will be higher in that organization (Sharma and Sindhu, 2015).

Thus, overall it can be said that there are various factors which affects the satisfaction level of employees either directly or indirectly. All the factors discussed above are related to the organizations or workplaces. Besides these factors, there are some personal factors also which can affect the employee satisfaction such as; family environment, marital status of the employees, dependent members in the family, etc.

Benefits of Employee Satisfaction

This section discusses the benefits of employee satisfaction both to an individual and to the organization.

1. **Employee Satisfaction and Job Performance:** Researchers have found a positive and significant relationship between employee satisfaction and job performance. Job performance of an employee is directly affected by the level of satisfaction towards a job. If a person is highly satisfied towards his job, then he will work enthusiastically, perform his job more efficiently and put creative and innovative ideas in his day to day working. Employee satisfaction helps in creating a positive attitude of employees towards their job. When employees are satisfied with their job, they start loving their job profile, and take their job seriously and try to do work not as a duty but as their passion (Jain, 2016).
2. **Employee Satisfaction and Organizational Performance:** Employee satisfaction and organizational performance are positively related to each other. The overall performance of an organization depends on the performance of its employees. Human resource is the only organizational resource which gives movement to the all other resources such as; money, material, or machine. Thus, the performance of an organization depends on the efficiency and effectiveness of its employees. If the

employees of an organization are highly satisfied they will perform their job effectively and efficiently and always work to achieve the common goal of the organization (Sharma and Sindhu, 2015).

3. **Employee Satisfaction and Organizational Commitment:** The employees who are satisfied with their jobs are found to be highly committed towards their jobs and their organizations. Organizational commitment is the output of employee satisfaction. High level of employee satisfaction, higher will be the organization commitment. If the organizations start working for increasing the employee satisfaction, employees will start showing high organizational commitment. Thus, it can be said that organizational commitment has born out of employee satisfaction. High level of organizational commitment leads to higher organizational performance (Jain, 2016).
4. **Employee Satisfaction and Service Quality:** Researchers have found positive and significant relationship between employee satisfaction and service quality. The employees, who are satisfied with their job, do their work with greater efficiency and provide better customer services (Antonvoa, 2016). The quality of the services will be high because ultimately these are the employees who provide the services and if they are satisfied they will provide better services and show more empathy towards customers. A satisfied employee tries to build long term relationships with the customers.
5. **Employee Satisfaction and Customer Satisfaction:** Researchers have found a positive and significant relationship between employee satisfaction and customer satisfaction. If the level of employee satisfaction is high then the customer satisfaction will also be high and vice versa. Customer satisfaction gets affected by the quality of services provided by the employees of an organization (Homburg and Stock, 2004). If the employees are satisfied they will treat the customers very well and will provide better service quality which leads to higher customer satisfaction. If the employees are satisfied they will share positive words with the potential customers and customers on the recommendation of the employees make purchases and it also increases the customer satisfaction (Sharma and Mani, 2012).
6. **Employee Satisfaction and Corporate Image:** Employees of an organization plays an important role in creating a positive and sustained corporate image in the market. The organizations which keep their employees satisfied enjoy positive corporate image in the market. Highly satisfied employee always shares their positive experiences with the customers and the general public. They do word of mouth marketing for their organizations and which help in creating a positive corporate image in the market. Even the employees of other organizations, also get motivated due to the better experiences of the existing employees of an organization that shows the positive corporate image in market. Thus, employee satisfaction is another way to build a positive corporate image among the potential employees also (Jhajharia and Gupta, 2015).
7. **Employee Satisfaction and Occupational Stress:** Employee satisfaction helps in reducing the occupational or workplace stress among the employees. (Antonvoa, 2016 & Sharma, 2015), researchers have found a negative and significant relationship between occupational stress and employee satisfaction. High level of occupational stress leads to low level of employee satisfaction or high employee satisfaction shows the low level of stress at workplaces. Thus, employee satisfaction helps in reducing

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occupational stress and which will lead to wellbeing and good health of the employees. Employees with good health and low level of stress are able to work efficiently and effectively.

8. **Employee Satisfaction and Organizational Peace:** Employee satisfaction and organizational peace both are interred related. Organizational peace shows the lack of organizational conflicts and organizational conflicts will be less; if an organization provides good working environment to its employees and keep its employees happy and fully satisfied with their job. Thus, employee satisfaction ensures organizational peace and low level of organizational conflicts. Organizational peace leads to high level of organizational performance (Sharma, 2015).
9. **Absenteeism and Employees' Turnover Rate:** Researchers have found a negative relationship between employees' absenteeism & employees' turnover rate and employee satisfaction. Employees who are not satisfied with their job become irregular and tries to avoid doing job. Even the employees think of changing or switching jobs when they are not satisfied with their jobs. The cost of absenteeism and employee turnover has a negative impact on the organizational performance. Organizations have to bear the cost of recruitment, loss of production hours due to high absenteeism ratio thus, employee satisfaction helps in retaining the skilled and talented employees in the organizations for long term (Sharma, 2015, Jain, 2016).
10. **Employee Satisfaction and Productivity:** Researchers have found a positive relationship between employee satisfaction and productivity. Employee satisfaction leads to high job performance, high organizational commitment, low cost on recruitment, few organizational conflicts, lack of occupational stress, high customer satisfaction and better service quality; all these factors leads to overall increase in the productivity of the organization and also increase in the productivity of employees (Jhajharia and Gupta, 2015).

Thus, overall it can be said that employee satisfaction plays a crucial role in the performance of an organization. Employee satisfaction is the result of investment by the organizations in improving their working environment and various aspects of job. Investment by the organizations in increasing the satisfaction level of employees, gives return in the form of high level of job performance, low absenteeism, high productivity, organizational peace, efficient, creative and effective workforce etc.

Relationship between job commitment, job involvement, employees' absenteeism, employees' turnover and job satisfaction

Anshu (2015) developed a theoretical model to show the relationship between organizational commitment and job satisfaction among employees working in the management and technical institutes of developing countries. The researcher stated that job satisfaction is the important factor to be focused by the management as, the cost of recruitment and selection of new faculties is very high and the employees' turnover also affects the students learning process. The satisfied employees remain in the institute for long term and shows higher level of organizational commitment. Job satisfaction and organizational commitment has a strong positive association with each other. Job satisfaction lead to organizational commitment and low absenteeism and higher retention rates of employees in the institutes. Silman (2014) conducted a study to measure the relationship between work engagement and work-related basic need satisfaction among employees. The sample size of the study was 203 employees from various Universities of

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Turkey. Researcher had used the *Work-Related Basic Need Satisfaction Scale* in order to measure the work related basic need satisfaction among employees and the *Turkish Form of Utrecht Work Engagement Scale* in order to measure the work engagement among employees. Researcher had used three types of basic work-related needs namely; need of autonomy, relatedness and competence. The level of satisfaction of employees towards these need determine the level of their work engagement. It was found from the study that need satisfaction and work engagement are positively related to each other. The employees whose work-related basic needs are satisfied by the management are found to be more engaged in their job. The level of adaptation and participation is also found to be high in those employees whose work-related basics needs are satisfied.

Conclusion

Thus, overall it can be concluded that employee satisfaction is the satisfaction of an employee towards his job, towards the working environment, towards the job conditions, management attitude, supervisor, leadership style, behavior of supervisor, knowledge and skill level of supervisors, participation in decision making process, interpersonal relationships, relationship with supervisors, co-workers, subordinates, superiors, policies of the company, rules, regulations, code of ethics, code of conduct, culture, communication, working hours, training facilities, career growth and development opportunities, and other factors. Employee satisfaction is important for an organization as the overall performance of an organization depends on the satisfaction level of its employees. Satisfied employees do their work efficiently, and provide better customer services, which in turn leads to increased productivity, high level of quality, and optimum utilization of organizational resources. Employee satisfaction and retention are positively related to each other. Employee satisfaction leads to low level of employee turnover and absenteeism also. Satisfied employees wish to work with an organization for long term period and also help in doing positive word of mouth marketing for the company. Employee satisfaction helps in achieving the individual goals of the company with high level of efficiency. Thus, it can be said that employee satisfaction is one of the important issue before the companies. Employee satisfaction my take the organization towards the success while dissatisfaction of employees may take an organization towards fall. The profits or sales, productivity, performance of the organization largely depends on the satisfaction level of employees. Employee satisfaction gets affected by both the internal and external factors. Internal factors are related to organizations and external factors are related to the personal life of employees. Organizational related factors can be improved by the companies to increase the employee satisfaction while personal factors of employees are beyond the control of the organizations.

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Structural Behaviour of Hexagrid and Diagrid Structural Systems in Multi Storey Buildings

Preeti*
Ass. Professor Mr. Durgesh Nandan Verma**

Abstract

More recently, the diagrid structural system with tubular behaviour is being employed as structurally efficient as well as architecturally satisfying structural system for tall buildings. Perimeter diagonals act as a facade, which governs the aesthetics of the building to a great degree. In order to improve the efficient of tube-type structures in tall buildings, a new structural system called Hexagrid (Beehive) is introduced in this paper. In the hexagrid structure system, almost all the conventional vertical columns are eliminated. Hexagrid structural system consists of Hexagrid perimeter which is made up of a network of multi-storey tall hex-angulated truss system. Hexagrid is formed by intersecting the diagonal and horizontal components. The project is focused to horizontal hexagrid pattern which aims to investigate the optimal angle and a topology of diagonal members in a hexagrid frame using finite element analysis and to study the structural properties of hexagonal structures so as to compare their potential efficiency with the conventional systems. This effect can be better appreciated by analyzing the results in terms of interstorey drift, time period and displacement.

Key words: Hexagrid, Diagrid, Displacements profile, Structural systems

1. Introduction

In nature, bees have a fascinating, meticulous way of forming their beehives, which serve as their homes, their protection and their source of life.

There is nothing new under the Sky. This does not mean that everything has been built already but that the principle behind the design already exists. By examining structures in nature we can see where the principle exists and see how these principles are incorporated in structures today. One thing we have to keep in mind when comparing natural and manmade structures is that nature uses live materials while a man uses inert ones and the two do not always behave in the same manner.

The beehive's internal structure is a densely packedmatrix of hexagonal cells called a honeycomb. The beesuse the cells to store food, and to house the "brood". Thehexagonal shape perfectly distributes and disperses theexternal man-made or environmental forces thus protectingits contents. The hexagon also allows simple expandabilityby adding hexagon segments to the perimeter ofthe honeycomb. The simplicity of the hexagonal shapecreates an incredibly strong and smart designs which providesgreat stability and security for the bees.

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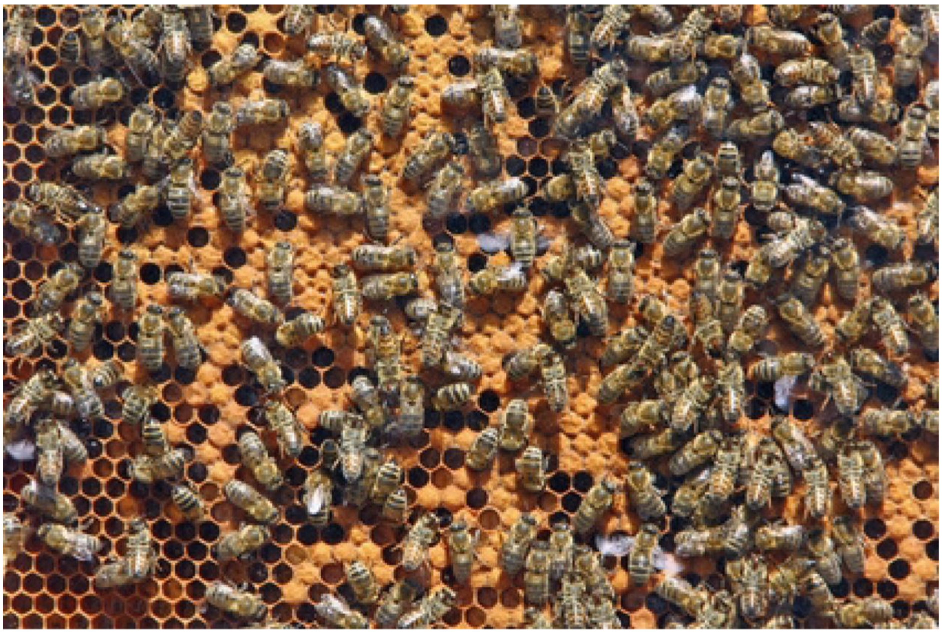

Fig. 1: The beehive's internal structure

The Hexagrid structural system recently evolved, rarely executed is inspired by the 'Beehive' (one of the stable structure of nature). This structural system is made by arranging several hexagons of height equal to story height in a unique way as in Beehive.

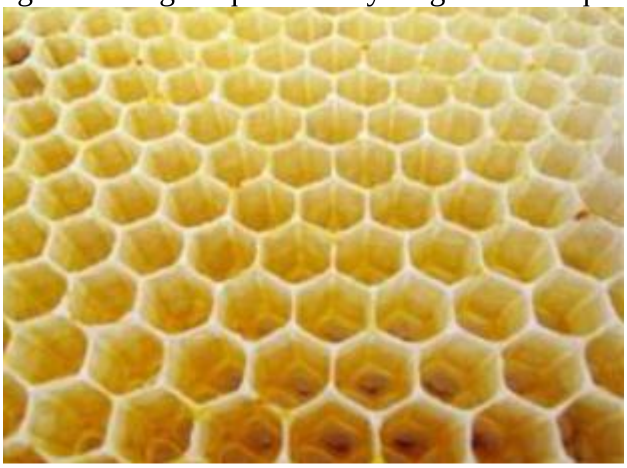

Fig. 2: Hexagrid System

Hexagrid system rests on a regular polygon with six elements system. This system has an advantage of uniform distribution of stresses in itself due to uniform angle of 120 degree between any two elements but has disadvantage of very less lateral stiffness.

2. Literature Review

Akshat and Gurpreet Singh (2018) reviewed research published on the structural performance of diagrid system. A first step toward a systematic and comprehensive study is that regular patterns are compared to alternative geometrical configurations, obtained by changing the angle of diagonals (variable-angle, VA) as well as by changing the number of diagonal (variable-density, VD) along the building height. Further it discusses about the different diagrid patterns generated and designed for an assumed building; and how the resulting diagrid structures are assessed under gravity and wind loads and various performance parameters are evaluated on the basis of the analyses results. Md. Arman

(2018) analysed the performance of high-rise buildings, it is especially important that an effective modelling technique be involved because of the complexity of the real structural behaviour and the difficulties of full scale measurement. The lateral performance of multi-storey buildings under different loading conditions is greatly influenced by various parameters such as structural stiffness and base to height ratio of the building. Optimization and refinement of such performance has become the focus as well as the constraint for structural engineers in their design practice.Avnish Kumar Rai & Rashmi Sakalle (2017) analysed a regular eleven storey RCC building with plan size 16 m × 16 m located in seismic zone V & III is considered for analysis. STAAD. Pro software is used for modelling and analysis of structural. Seismic zone is considered as per IS 1893(Part 1): 2002. The Comparison between the diagrid and conventional building analysis results presented in terms of a node to node displacement, bending moment, storey drift, shear forces, an area of reinforcement, and additionally the economical aspect.Kona Narayana Reddy and Dr. E. Arunakanthi (2017) studied on the Oblique columns of different shapes in high rise building. In this work a high rise building with Normal Columns & with different locations of Oblique columns is considered for analysis. In this paper, response spectrum & Linear Static analysis were executed combined with a Numerical Building Model by this program, which were also compared following the analysis results. The results of the analysis on the axial forces, Base shear, Time period, Storey drift and Displacements are compared. The results are presented in tabular and graphical form. The results on the displacement are checked with serviceability conditions and are compared and presented in tabular form.

Ravi Sorathiya and Prof. Pradeep Pandey (2017) presented a stiffness-based design methodology for determining preliminary member sizes of RCC diagrid structures for tall buildings. A G+24, G+36, G+48, G+60 storey RCC building with plan size 18 m × 18 m located in surat wind and seismic is considered for analysis. STAAD.Pro software is used for modelling and analysis of structural members. All structural members are designed as per IS 456:2000 and load combinations of seismic forces are considered as per IS 1893(Part 1): 2002. Comparison of analysis results in terms of beam displacement, Storey Drift, Bending Moment. This cause economical design of diagrid structure compared to conventional structure.Harshada A. Naik (2017) presented the literature review of different authors on behaviour of diagrid structures under wind loading and seismic loading to understand the performance of diagrid structures. This study gives good indications on parameters in terms of time-period, top-storey displacement, inter-storey drift and storey shear.Viraj Baile (2017) analysed a 36-storeyed diagrid building, simple frame building and a building with various bracing systems have been modelled and analysed. The bracing systems are X-type, V-type and Inverted V- type. The positions of the bracings have also been varied. A total of 15 buildings have been modelled and analysed to compare which system performs better a lateral load resisting system. The modelling and analysis has been performed on ETABS. The dynamic analysis is performed by using Response Spectrum Method. All the loadings and the checks are provided as per Indian Standards.

3. Structural Models

A regular floor plan of 30 m x 30 m is considered in both buildings. Storey height is 3m. The design dead load and live load are 5 KN/m^2 and 4 KN/m^2 respectively. Exterior wall load is taken negligible in both the buildings. Both the building frames are analysed for seismic zone IV. Seismic parameters are taken as per Indian code IS 1893 (Part 1): 2002.

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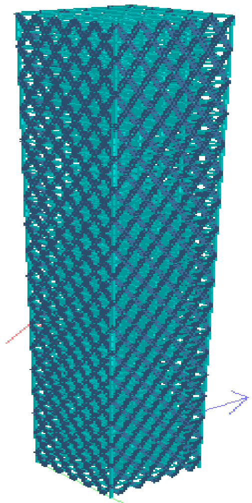
Table 3.1: Geometry and load consideration

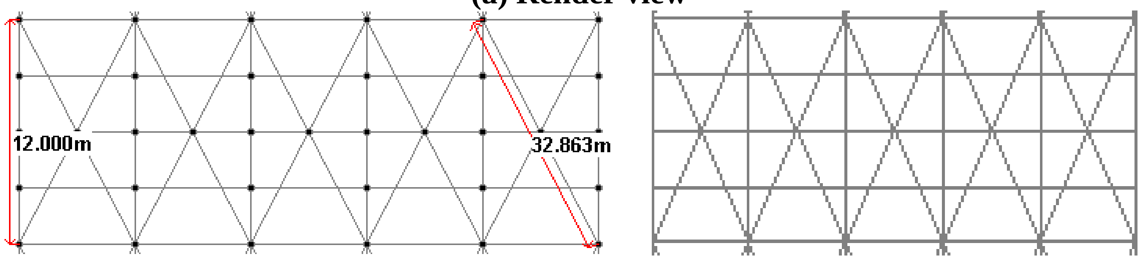
Type of structure	Residential building (G+69)
Plan dimension	30 x 30 m
Total height of building	210 m
Height of each storey	3 m
Diagrid section	Steel section
Seismic load (as per IS code 1893 part-1)	Zone IV
Dead load (5 KN/m^2)	875- part 1
Live load (4 KN/m^2)	875- part 2
Thickness of slab	150 mm
Beam size	200 x 400 mm
Column size	400 x 400 mm

4. Generation of Building Models

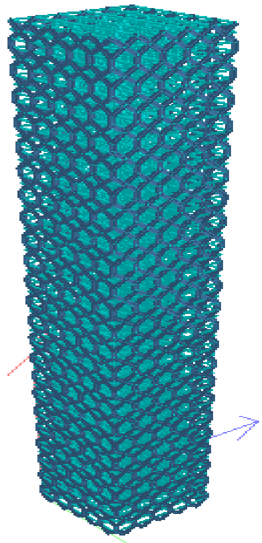
The diagrid structure is composed of diagonal members and hexagrid structure is composed of diagonal and vertical members have been modelled in staad pro. The pattern and size of hexagrid and diagrid was used as a study parameter. To examine the structural behaviour of tall buildings with a diagrid and hexagrid system, 210 m high, 70 storey buildings were designed.



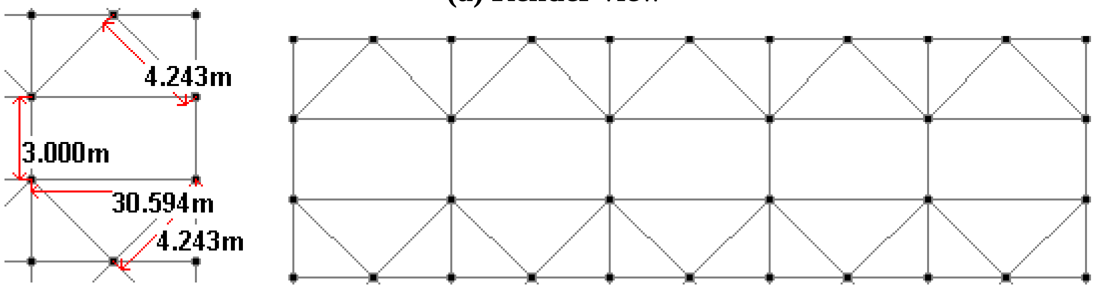
(a) Render view



(b) Size and pattern
Fig. 3: Diagrid system



(a) Render view



(b) Size and pattern

Fig. 4: Hexagrid system

5. Results and Discussion

5.1 Support Reaction

Magnitude of support reaction for various models has been plotted in figure number 5, it is determined that in this comparative study maximum support reaction is in diagrid system whereas hexagrid systemshows minimum support reaction value.

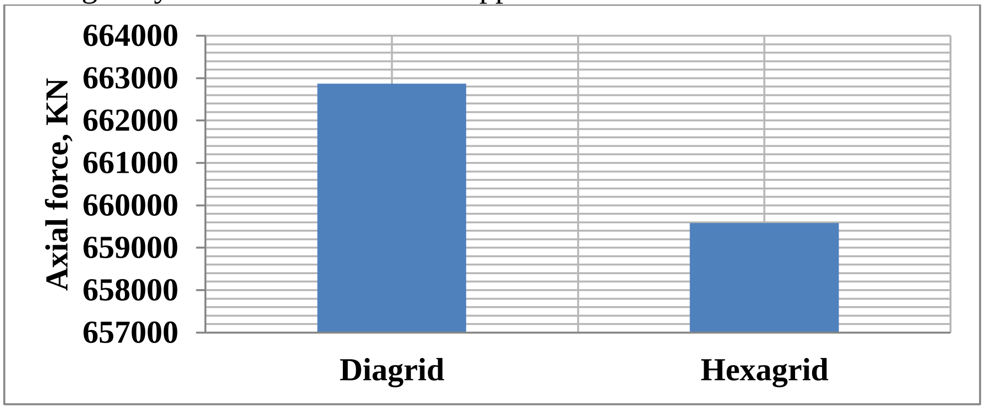


Fig. 5: Axial force

5.2 Shear Force

Magnitude of shear force for various models has been plotted in figure number 6, it is determined that in this comparative study maximum shear force is in diagrid system

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whereas hexagrid system shows minimum shear force value which results in balanced structure

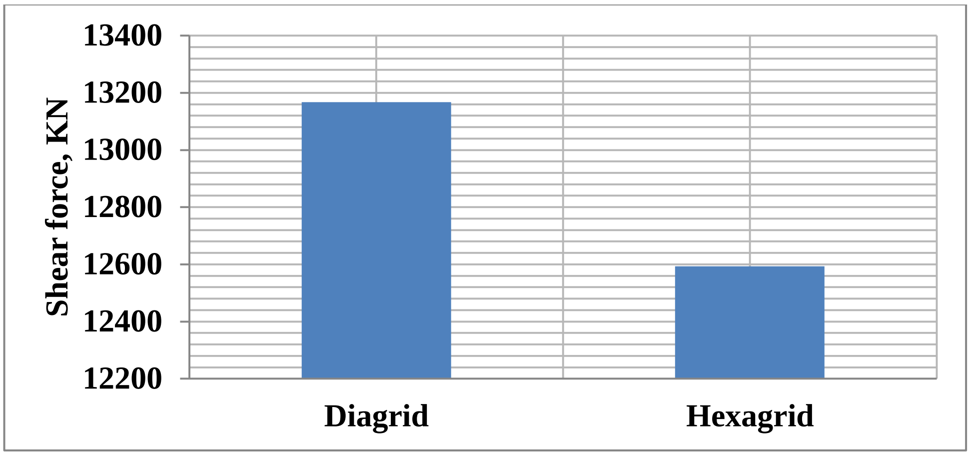

Fig. 6: Shear force comparison

5.3 Bending Moment

Magnitude of bending moment for various models has been plotted in figure number 7, it is determined that in this comparative study maximum bending moment is in hexagrid system whereas diagrid shows minimum bending moment value which results in balanced section.

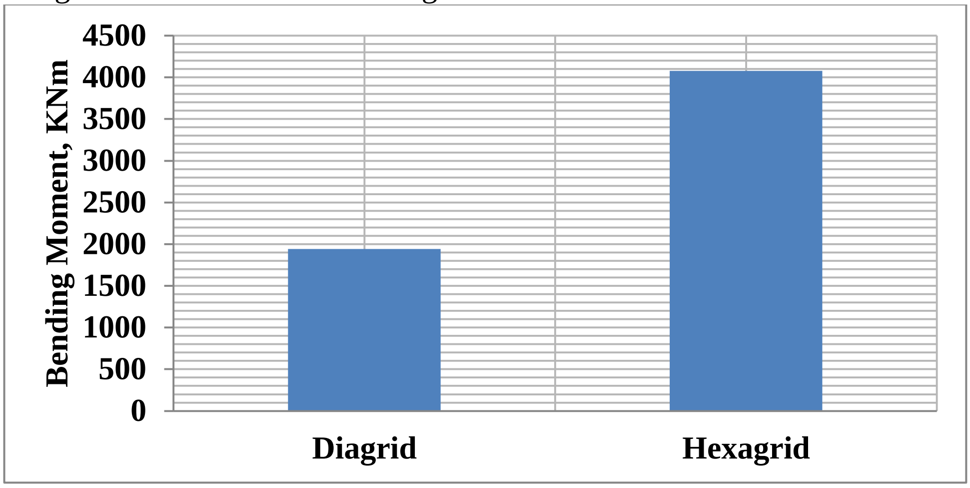

Fig. 7: Bending moment comparison

5.4 Deflection

Magnitude of maximum displacement for various models has been plotted in figure number 8, below it is determined that deflection is maximum in hexagrid systemwhereas minimum in diagrid which indicates that hexagrid systemwill require more supports as compared to diagrid system.

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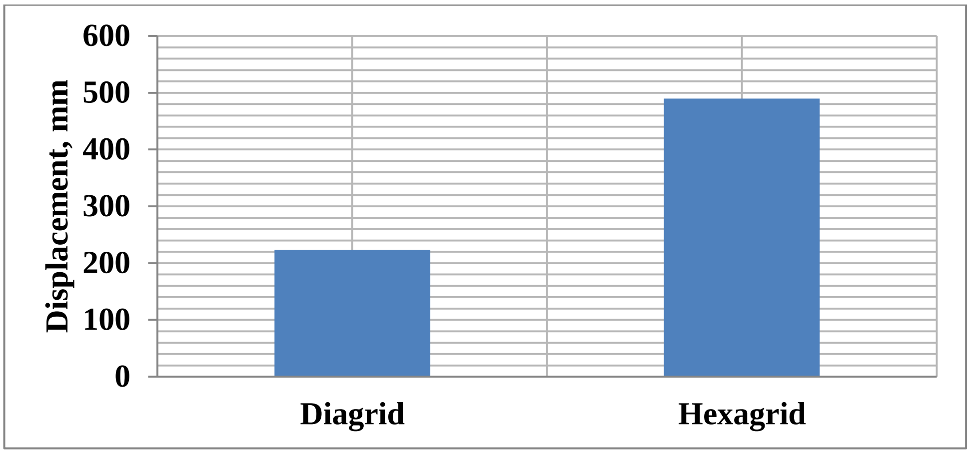

Fig. 8: Displacement comparison

5.5 Concrete Take Off

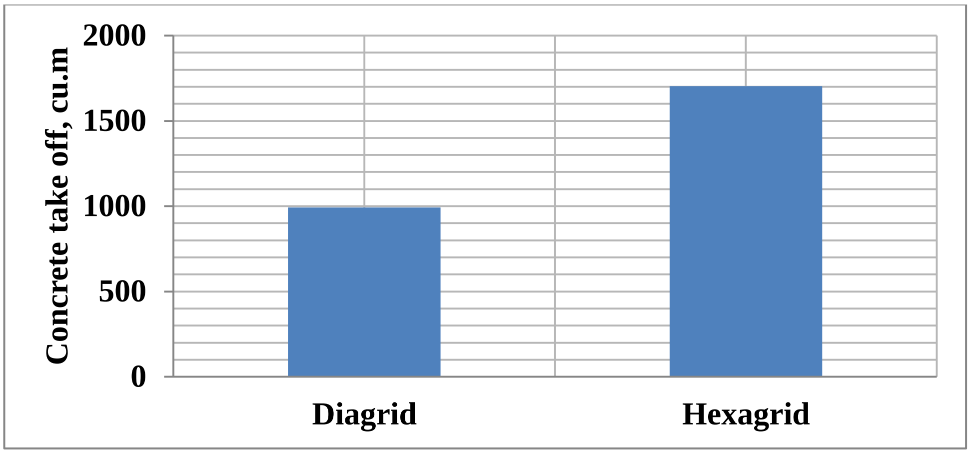

Fig. 5.5: Concrete comparison

As shown in above chart amount of concrete in a hexagrid system will be comparatively higher than diagrid structure as outer R.C.C. columns are replaced by steel sections in diagrid frame. So the concrete consumption in two cases for the hexagrid system is much higher than the diagrid frame which makes the hexagrid system more costly than the diagrid frame.

5.6 Steel Take Off

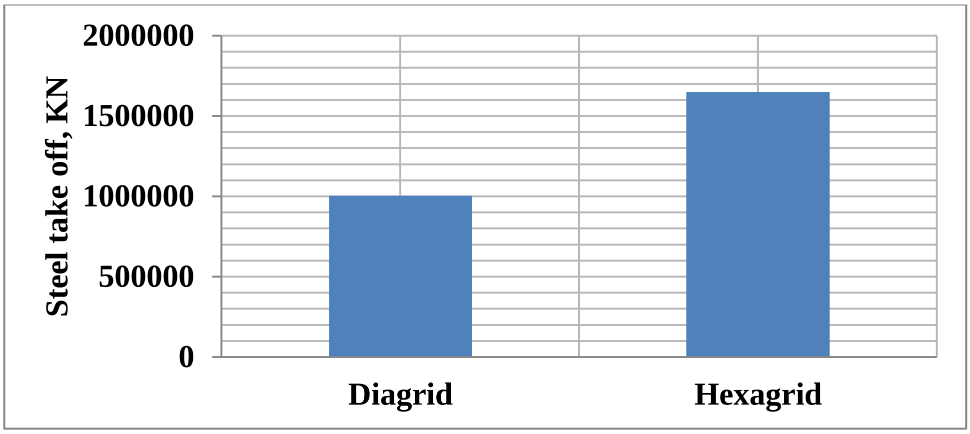

Fig. 9: Steel take off comparison

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As shown in figure above it is clearly determined that as outer column are removed by diagrid system it manages bending moment properly that reinforcement requirement including steel for diagrid is comparatively less than bare frame. The overall cost for the diagrid is reduces which makes it more economical than the hexagrid system.

6. Conclusion

The following points are concluded fromabove study about diagrid and hexagridstructure.

1. Study shows that diagrid structure decreases bending moment which in results decreases reinforcement requirement.
2. It shows that lateral displacement can be minimized by using diagrids.
3. Although volume of concrete used in building is different, but diagrid shows more economical in terms of steel used. Diagrid building saves about 33.21% steel without affecting the structural efficiency.
4. Due to diagonal columns on its periphery, diagrid shows better resistance to lateral loads and due to this, inner columns get relaxed and carry only gravity loads. While in conventional building both inner and outer column are designed for both gravity and lateral loads.
5. A significant decrease of bending moment in interior columns of diagrid building is found in comparison to conventional building.
6. The use of diagrids significantly decreases the maximum shear force and maximum bending moment in internal and perimeter beams. The sign of maximum bending moment also changes in perimeter beams of diagrid building.
7. The diagrid configuration provides a reduction in the span of perimeter beams at alternate floors, hence reducing the beam forces at alternate floors.
8. So from results and comparison with conventional building, one can adopt hexagrid structure for better lateral load resistance and this becomes important for seismic zone IV

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Artificial Intelligence : Artificial Neural Network

Ritika Goyal*

Abstract
In this paper we discuss about a neural network is, in essence, an attempt to simulate the brain. Neural network theory revolves around the idea that certain key properties of biological neurons can be extracted and applied to simulations, thus creating a simulated (and very much simplified) brain. The first important thing to understand then is that the components of an artificial neural network are an attempt to recreate the computing potential of the brain. The second important thing to understand, however, is that no one has ever claimed to simulate anything as complex as an actual brain. Whereas the human brain is estimated to have something on the order of ten to a hundred billion neurons, a typical artificial neural network (ANN) is not likely to have more than 1,000 artificial neurons. Hence the Artificial Neural Network is needed in the present scenario. Such a system can recognize speech, face scanning and detecting voice, capable of scanning and detecting of fingerprints etc. This would result in enhancing the system's privacy and security. This research paper is a subject written after thorough study of the subject Artificial Intelligence in Neural Network.
Keywords: *Artificial Neural Network, Neuron, Biological Neuron*

Introduction

An artificial neuron network (ANN) is a computational model based on the structure and functions of biological neural networks. Information that flows through the network affects the structure of the ANN because a neural network changes - or learns, in a sense - based on that input and output. ANNs are considered nonlinear statistical data modeling tools where the complex relationships between inputs and outputs are modeled or patterns are found. An ANN has several advantages but one of the most recognized of these is the fact that it can actually learn from observing data sets. In this way, ANN is used as a random function approximation tool. These types of tools help estimate the most cost-effective and ideal methods for arriving at solutions while defining computing functions or distributions. ANN takes data samples rather than entire data sets to arrive at solutions, which saves both time and money. ANNs are considered fairly simple mathematical models to enhance existing data analysis technologies. ANNs have three layers that are interconnected. The first layer consists of input neurons. Those neurons send data on to the second layer, which in turn sends the output neurons to the third layer.

Artificial Neural Networks and Structure

The structure of a neural network also referred to as its '**architecture**' or '**topology**'. It consists of the number of layers, Elementary units. It also consists of Interconchangend Weight adjustment mechanism. The choice of the structure determines the results which are going to obtain. It is the most critical part of the implementation of a neural network.The simplest structure is the one in which units distributes in two layers: An **input layer** and an **output layer**. Each unit in the input layer has a single input and a single

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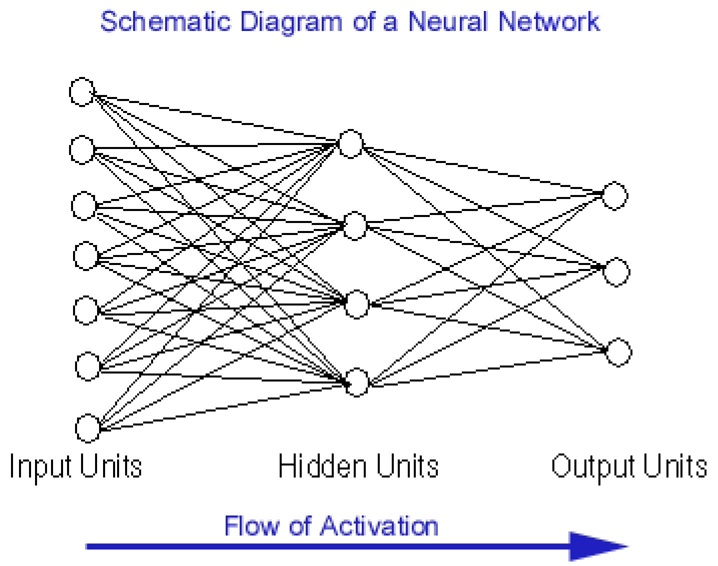
output which is equal to the input. The output unit has all the units of the input layer connected to its input, with a combination function and a transfer function. There may be more than 1 output unit. In this case, resulting model is a linear or logistic regression. This is depending on whether transfer function is linear or logistic. The weights of the network are regression coefficients. By adding 1 or more hidden layers between the input and output layers and units in this layer the predictive power of neural network increases. But a number of hidden layers should be as small as possible. This ensures that neural network does not store all information from learning set but can generalize it to avoid overfitting. Overfitting can occur. It occurs when weights make the system learn details of learning set instead of discovering structures. This happens when size of learning set is too small in relation to the complexity of the model.A hidden layer is present or not, the output layer of the network can sometimes have many units, when there are many classes to predict.

Armed with these three concepts: Connection Strength, Inhibition/Excitation, and the Transfer Function, we can now look at how artificial neural nets are constructed. In theory, an artificial neuron (often called a 'node') captures all the important elements of a biological one. Nodes are connected to each other and the strength of that connection is normally given a numeric value between -1.0 for maximum inhibition, to +1.0 for maximum excitation. All values between the two are acceptable, with higher magnitude values indicating stronger connection strength. The transfer function in artificial neurons whether in a computer simulation, or actual microchips wired together is typically built right into the nodes' design.



Perhaps the most significant difference between artificial and biological neural nets is their organization. While many types of artificial neural nets exist, most are organized according to the same basic structure (see diagram). There are three components to this organization: a set of input nodes, one or more layers of 'hidden' nodes, and a set of output nodes. The input nodes take in information, and are akin to sensory organs. Whether the information is in the form of a digitised picture, or a series of stock values, or just about any other form that can be numerically expressed, this is where the net gets its initial data. The information is supplied as activation values, that is, each node is given a number, higher numbers representing greater activation. This is just like human neurons except that rather than conveying their activation level by firing more frequently, as biological neurons do, artificial neurons indicate activation by passing this activation value to connected nodes. After receiving this initial activation, information is then passed through the network. Connection strengths, inhibition/excitation conditions, and transfer functions determine how much of the activation value is passed on to the next

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node. Each node sums the activation values it receives, arrives at its own activation value, and then passes that along to the next nodes in the network (after modifying its activation level according to its transfer function). Thus the activation flows through the net in one direction, from input nodes, through the hidden layers, until eventually the output nodes are activated. If a network is properly trained, this output should reflect the input in some meaningful way. For instance, gender recognition net might be presented with a picture of a man or woman at its input nodes and must set an output node to 0.0 if the picture depicts a man or 1.0 for a woman. In this way, the network communicates its knowledge to the outside world.

Applications of Neural Networks

A Simple Neuron

An artificial neuron is a device with many inputs and one output (Figure 3). The neuron has two modes of operation; the training mode and the using mode. In the training mode, the neuron can be trained to fire (or not), for particular input patterns. In the using mode, when a taught input pattern is detected at the input, its associated output becomes the current output. If the input pat-tern does not belong in the taught list of input patterns, the firing rule is used to determine whether to fire or not.

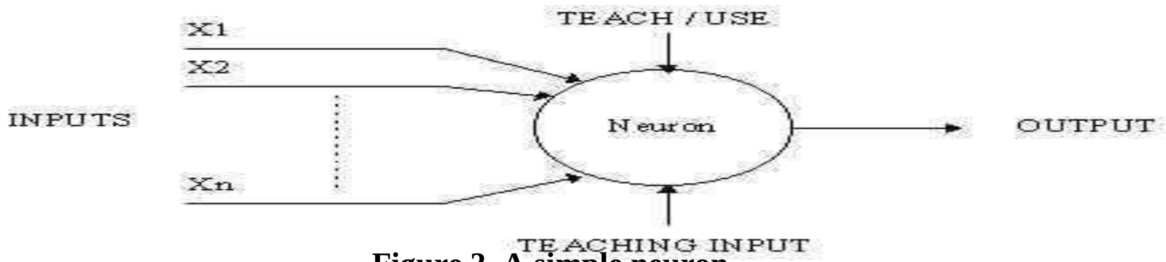

Figure 3. A simple neuron

Firing Rules

The firing rule is an important concept in neural networks and accounts for their high flexibility. A firing rule determines how one calculates whether a neuron should fire for any input pattern. It relates to all the input patterns, not only the ones on which the node was trained. The firing rule gives the neuron a sense of similarity and enables it to respond 'sensibly' to patterns not seen dur-ing training.

Neural Networks in Practice

Neural networks have broad applicability to real world business problems. In fact, they have al-ready been successfully applied in many industries. Since neural networks are best at identifying patterns or trends in data, they are well suited for prediction or forecasting needs including:

1. sales forecasting,
2. industrial process control
3. customer research

Neural Networks and Its Application in Engineering

1. Data validation
2. Risk management.

ANN are also used in the following specific paradigms: recognition of speakers in communica-tions; diagnosis of hepatitis; undersea mine detection; texture analysis; three-dimensional object recognition; hand-written word recognition; and facial recognition

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Advantages and Disadvantages of Neural Networks

Let us see few advantages and disadvantages of neural networks:

1. Neural networks perform well with **linear** and **nonlinear** data but a common criticism of neural networks, particularly in robotics, is that they require a large diversity of training for real-world operation. This is so because any learning machine needs sufficient representative examples in order to capture the underlying structure that allows it to generalize to new cases.
2. Neural networks works even if one or few units fail to respond to network but to implement large and effective software neural networks, much processing and storage resources need to be committed. While the brain has hardware tailored to the task of processing signals through a graph of neurons, simulating even a most simplified form on **Von Neumann technology** may compel a neural network designer to fill millions of database rows for its connections – which can consume vast amounts of computer memory and hard disk space.
3. Neural network learns from the analyzed data and does not require to reprogramming but they are referred to as black box” models, and provide very little insight into what these models really do. The user just needs to feed it input and watch it train and await the output.

Benefits of neural networks

Neural networks have the ability to learn organically. That is the outputs from a neural network aren’t completely limited by the inputs; artificial neural networks can generalise inputs, making them valuable for pattern recognition systems.They can also find shortcuts to achieve computationally intensive answers. Artificial neural networks can infer relations between data points, rather than expecting for records in a data source to be unambiguously connected.They can also be fault tolerant. When neural networks are scaled over multiple systems, they can route around missing nodes that can’t communicate. In addition to routing around parts of a network that no longer functions, artificial neural networks can recreate data by inference and help determine non-functioning nodes. This is useful for self-diagnosis and debugging of a network.

Conculsion

AI is an extremely powerful and exciting field. It’s only going to become more important and ubiquitous moving forward, and will certainly continue to have very significant impacts on modern society.Artificial neural networks (ANNs) and the more complex deep learning technique are some of the most capable AI tools for solving very complex problems, and will continue to be developed and leveraged in the future.While a terminator-like scenario is unlikely any time soon, the progression of artificial intelligence techniques and applications will certainly be very exciting to watch! These networks are "neural" in the sense that they may have been inspired by the brain and neuroscience, but not necessarily because they are faithful models of biological, neural or cognitive phenomena. In fact, many artificial neural networks are more closely related to traditional mathematical and/or statistical models, such as nonparametric pattern classifiers, clustering algorithms, nonlinear filters and statistical regression models, than they are to neurobiological models.

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An Analysis of Role of Family Environment in Female Sports Participation of Bulandshahr District Girls

Ms. Sahil*
Dr. Rajesh Kumar Dhauta **

Abstract
The aim of the present study was to find out the was planned to ascertain from female graduate students of the selected colleges from Chaudhary Charan Singh University Meerut, of Bulandshahr District of western Uttar Pradesh, on the role of family environment on their participation in sports. Study was limited to female graduated students form selected colleges in District Bulandshahr. Who have not participated in sports? Only 300 women students were selected for the present study. A randomly selected number of female students from various colleges were selected for the study. The subjects for this study were randomly selected women students from the selected college of District Bulandsahr. Who were pursuing their graduate course, during the academic year 2016-2017. The subjects selected for the study were those who have not participated in sports.

Introduction
Child is wonderful being from his first cry on entering the world to end of his period of development; him / her open up his problem after problem and enigma after enigma. The environmental process is most characteristics and most to be relied upon the direction of his growth Play is an integral part of the life of the child ad is expression of primary growth and development. It is natures prescribed course of education and helps the child to grow emotionally and intellectually. It is spontaneous activity of the child by which he forges his own self and instinctly follows the spirit which leads to the maximum result with minimum effort. The family is the nucleus to this society. It is harbinger for the preservation and transmission of the society values to children at their formative years through the process of socialisation. Girls are discouraged or dissuaded from engaging in physical activities like sports. In some countries like India, very few females take to sports as a form to recreation. This may not be unconnected with previous family environmental cues available to them during their formative periods of infancy and childhood periods. Women have greater freedom today than ever before. More and more she is participating in the social, political and economic life of the world. Women participation in sports especially in competitive sports is subjected to criticism depending upon the circumstances and parental attitudes. Women have always involved in sports, sometimes openly and sometimes covertly, but always passionately. Not surprisingly, women status in sports servers as measures of their status in society Today more and more girls are entering play fields unchanging all the barriers that was created by family, society and by herself. There is a marked change in the environment which allows women to go to pursuit of physical fitness and recreation. Through participation only the meaning of the word "Female", can be equalised with male.

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Statement of the Problem

The purpose of the study was planned to ascertain from female graduate students of the selected colleges from Chaudhary Charan Singh University Meerut, of Bulandshahr District of western Uttar Pradesh, on the role of family environment on their participation in sports.

Hypothesis

The following hypotheses were made before starting this research work.

1. Family environment may not influence female participation in sports.

2. Parental monthly income may not influence female participation in sports.

3. Parental educational qualifications may not influence the factors for female participation in sports.

4. Religion may not influence the factors for female participation in sports.

5. Parental occupation may not influence the factors for female participation in sports.

6. Availability of playing facilities at early years may not influence the factors for female participation in sports.

7. Nativity may not influence the factors for female participation in sports

Significance of the Study

This study has brought to light some new facts regarding female participation in sports there are many prejudices in our tradition bound society regarding female participation in sports.

Delimitations

Study was limited to female graduated students form selected colleges in District Bulandshahr. Who have not participated in sports. Only 300 women students were selected for the present study. A randomly selected number of female students from various colleges were selected for the study.

Limitations

- The female students who were day scholars.
- The daily routine was not similar.
- The subjects were from different castes.

Sources of Data

The subjects for this study were randomly selected women students from the selected college of District Bulandsahr. Who were pursuing their graduate course, during the academic year 2016-2017. The subjects selected for the study were those who have not participated in sports.

Preparation of Questainnair

The questionnaire was prepared taking into consideration the multifarious aspects of the study. The questionnaire contained three sections. section one was intended to get personal information related to the name of the respondent, religion, parental occupation, educational qualifications and their monthly income, information regarding nativity and availability of playing facilities during early years etc. Section two contained 35 statements intended to get information regarding their parent's attitude towards female student's participation in sports during early and afterwards. A last section of the questionnaire contained the respondent's suggestions for more female participation in games and sports. A three point scale was used to find out to what extent the statements describe the parental influence on female participation in sports. The response for every statement shall be made on a three point scale such as agreed, undecided and disagreed. The questionnaire was

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developed at various stages. In the first stage, the investigator personally interviewed various college female students those who have participated and not participated in sports and games and also met various women experts in physical education, education and women studies departments from this, the investigator collected various reasons for female participation and non-participation in sports during early childhood and afterwards. With this knowledge the investigator pooled the items from experts in the field of psychology, sociology, women studies, physical education and views expressed by various college female students. A total 90 items were gathered. The selection of the statements was done keeping the following points in mind, they should be specific and clear, simple, related to the study and double negatives were eliminated. The prepared questionnaire was evaluated by experts in the files of psychology, sociology, women studies, and physical education. They were asked critically to evaluate the statements of the questionnaire about their appropriateness and give suggestions for improvement. In the light of the recommendations from the experts, necessary changes were made in the questionnaire and it was finalised after the approval of the guide. The questionnaire was further tried out as a pilot study on twenty five female graduate students of the AKP PG College, Khurja to judge whether they understand the statements and were able to give responses and it was found out to be quite suitable

Construction of Scale

Likert scale was used with three options. Likert scale is found helpful in estimating the strength of feeling.

Research Tool

The tool used for collection of data was questionnaire with regard to personal information which contained name, college, region, parental occupation, parental educational qualifications, parental monthly income, religion, nativity, availability of playing facilities during early years and 35 statements regarding family environment

- All the statements were to be responded by putting a tick mark as the chosen response on the three point scale. The personal information blank was to be responded in filling the blanks and ticking the appropriate column.

Reliablity of the Questionnaire

- Reliability of the questionnaire was established using internal consistency. The internal consistency method stresses the inter-correlation of the statements in the test and the correlation of the statements with the test as a whole.
- The questionnaire was initially applied on female students to find out the reliability by using Split- Half method. In this method, all the statements were administered once and the scores were divided evenly into two parts, usually odd numbered and even numbered items
- The scores made on the two halves were correlated. Coefficient of correlation between the even numbered statements scores and odd numbered statements scores were calculated by Pearson's product moment method. The value of 'r' was found to 0.86.

Validity

In the present study, content validity was established. Content validity involves essentially the systematic examination of the test content to determine whether it covers a representative sample of the behaviour domain to be covered.

Population

- The population under the study was Girls who were pursuing their graduate programme in the colleges in Bulandshahr during the academic year 2016-2017.

Sample

- 300 women of 10 colleges from Bulandshahr district were selected on random sampling basis. They were the subjects for the present study and they were selected from various colleges. The subjects were pursuing their graduation courses during academic year 2016-2017

Data Collection

- The data was collected from the women from different colleges of Bulandshahr district during academic year 2016-2017. They were explained need and importance of the study and to answer frankly. Extensive data were also collected through mailed questionnaire. The student coordinator and student advisors of the respective colleges help was taken to get the questionnaire back. A total number of 300 women participated in this phase of investigation Extensive data were also collected through mailed questionnaire. The student coordinator and student advisors of the respective colleges help was taken to get the questionnaire back. A total number of 300 women participated in this phase of investigation.

Statistical Technique

The following techniques were used for the treatment of data collected from the population-

1. Chi Square
2. ANOVA
3. t-ratio

Summary, Conclusions and Recommendations

- The paramount purpose of the study was to find out the factors which are having influence on the female participation in sports that a realistic standard programme for increased female participation in sports is assured.
- It was observed that family attitude, background, income of the family, availability of equipment and playing facilities were having significant influence in motivating women towards participation

Conclusion

On the basis of results obtained, the following conclusions were drawn.

1. There has been a lack of encouragement from the parents and family members. The lack of parent's participation in sports obstructed female participation in sports.

2. Parents are not taking their children to play fields and to watch sporting events along with them. They are not providing them with a social sporting experience**.**

3. There was a significant difference between women students from rural and urban areas in the matter of factors influencing female participation In sports.

4. Availability of playing facilities at the early years is having impact on female participation in sports.

5. Parental monthly income is having some effect on female participation in sports.

6. Parental occupation is not having any impact on female participation in sports.

7. Parental educational qualifications are having some influencing on female participation in sports.

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Recommendations

1. Parental education regarding children's participation in sports can be organised in schools and colleges.
2. Physical education teachers should provide up-to-date information regarding current year sports calendar. This can be done in the form of sending newsletter, parent's seminar, parent teacher conferences can be conducted to build a non-threatening relationship with parents.
3. Physical education teachers should evolve parental involvement in school sports activities.
4. The existing system of education can be modified in such a way that physical education is given equal importance like other subjects in the curriculum
5. Female students should be duly motivated and properly encouraged to take part in sports not only by physical education teacher but also by every member of the family.
6. Women students who perform meritoriously in sports and games can be given preference in admissions in educational institutions and appointment and promotion in jobs.
7. By regular screening video films in television on the enthusiastic participation and performance by women, could help to shed of their inhibitions to participate in sports.
8. Equality of opportunity in all walks of life must be attempted so that women can come out to participate in sports.
9. Required number of physical education teachers should be appointed for girls.
10. Involvement of various women organisations can contribute immensely for the development and for larger participation of women in sports.
11. Provision of separate play grounds for women would go long say in encouraging female participation in sports.
12. Basic infrastructure facilities should be developed to suit recent trends in the field of sports.
13. Community sports service centres exclusively for women can be set up in each locality.
14. Opening of more numbers of Sports Authority of India {SAI} training centres for women may be considered by Govt. of India particularly in the rural areas.

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Financial Inclusion through Trust Lending

Dr. Shashi Srivastava*
Dr. Divya Swaroop**

Abstract

India is continuously symbolized as an emerging super power around the world. It has accelerated its growth many fold and is recognized as one of the fastest growing economies. On the contrary, the benefits and economic growth and development could not reach to the larger section of the society. The evident economic disparity has divided the population into developed and under developed, privileged and under privileged and most obvious, the rich and the poor. The economic growth of our country is meaningless, unless we bridge the gap between rich and poor and bring the under privileged or the marginalized section of the society into the mainstream. In order to achieve the goal of balanced and inclusive growth in the society, financial inclusion has been identified as a key determinant. Certain initiatives such as Micro finance, cooperative credit system, self help groups etc. has been popular but still they are proved to be ineffective, on account of higher interest rate, lack of training, marketing inefficiency etc. The basic purpose of this paper is to crystallize my own idea and share it with the academicians the proposed theory of lending based on 'no profit no loss' as a strategic tool for financial inclusion. It was found that the proposed theory may help to channelize the excess fund and generate employability among the weaker section of the society and may foster social and economic growth of the country at large.

Key words: Financial inclusion, Micro finance, Self Help Groups.

Introduction

India is continuously symbolized as an emerging super power around the world. It has accelerated its growth many fold and is recognized as one of the fastest growing economies. On the contrary, the economy is characterized by highly skewed distribution of income and wealth with high incidence of poverty and unemployment also. The benefits of economic growth and development could not reach to the larger section of the society. The evident economic disparity has divided the population into developed and under developed, privileged and under privileged and most obvious, the rich and the poor. The economic growth of our country is meaningless, unless we bridge the gap between rich and poor and bring the under privileged or the marginalized section of the society into the mainstream. In order to achieve the goal of balanced and inclusive growth in the society, financial inclusion has been identified as a key determinant.

The government of India's 'Rangarajan Committee on Financial Inclusion' defines Financial Inclusion 'as the process ensuring access to financial services and timely adequate credit were needed by vulnerable groups such as the weaker section and low income groups at an affordable cost'. It literally refers to the process of bringing in to the financial and banking fold all those who are outside and giving them an opportunities to

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utilize various banking and financial services at affordable cost. It is the delivery of basic banking services at an affordable cost to the vast sections of disadvantage and low income group. It include access to formal financial system such as financial institution markets and instruments, like, savings, loans, remittances and insurance services at affordable costs to the excluded people.

The process of Financial Inclusion in India can broadly be classified into three phases. During the first phase (1960-90), the focus was on channeling of credit to the neglected sectors of the economy. Special emphasis was laid on the weaker section of the society. The commercial banks were Nationalized in 1969 and were directed to lend 40% of their loan able funds at a concessional rate to the priority sector which include agriculture and other rural activities and the weaker strata of the society. To supplement these efforts, the credit scheme Integrated Rural Development Programmes (IRDP) was launch in 1980. First official interest in informal group lending in India took shape during 1986-87 on the initiative of the National Agriculture and Rural Development (NABARD). In the Union budget (1998-99), Finance Minister had observed that problem of rural unemployment and underemployment is a massive one can only be solved through self employment. He further stated that there was no reason why very craftsman and weaver could not be an entrepreneur and run his own little enterprise, adding that a major bottleneck, however, has been lack of credit facilities.

Second phase (1990-2005) focused mainly on strengthening the financial institutions as part of financial sector reforms. The year 2005 was proclaimed as the International year of Micro credit by the Economic and Social Council of the United Nations in a call for the financial and building sector to ‘fuel’ the strong entrepreneurial spirit of the poor people around the world (Singh, 2011). Financial inclusion in this phase was encouraged mainly by the introduction of Self Help Group (SHG) - bank linkage programme in the early 1990s and Kisan Credit Cards (KCCs) for providing credit to farmers. The SHG- bank linkage programme was launched by National Bank for Agriculture and rural development (NABARD) in 1992, with policy support from the Reserve Bank, to facilitate collective decision making by the poor and provide ‘door step’ banking.

During the third phase i.e. 2005 onwards, the financial inclusion was explicitly made as a policy objective and thrust was on providing safe facility of savings deposits through ‘no frills’ accounts (Chakraborty, 2009). The benefits of Micro finance are reaching to the beneficiaries through the mechanism of Self Help Group (SHG).

Micro Finance models in India

Two distinct linkage models of micro credit are currently being followed in India.

Model- I (SHG- Bank Linkage Model): Banks themselves take up the work of forming and nurturing the SHGs directly, opening their saving accounts and providing the loans. Self Help Group (SHGs) financed directly by the banks viz, Commercial Banks, Regional Rural Banks and Cooperative Banks. Self Help Group is small group of people, who have voluntarily come forward to form a group for improvement of social and economic status of the members

Model- II (MFI- Bank Linkage Model): This model covers financing of Micro Finance Institutions (MFIs) by banking agencies for on lending to SHGs and other small borrowers covered under microfinance sector. MFIs are recently defined by the Task force as those which provide thrift, credit and other financial services and products of very small amounts, mainly to the poor, in rural, semi-urban or urban areas for enabling them to raise

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their income level and improve living standards. These are also called Alternative Micro Finance Institutions, which have come up to fill the gap between the demand and supply for microfinance.

In spite of certain initiatives taken by the Government for the development of under privileged section of the society, unfortunately the benefits of micro finance services could not reach to the needy. To enable the reach of micro finance services to the needy, the problems associated with may be related to legal and regulatory issues. Poor coordination among the intermediaries leads to selective growth. The ground level problems regarding implementation remains untouched as there is little or no participation of beneficiaries in the planning of micro finance programs.

Most of the applicants belong to low income group with less or many a times no educational background. In these situations the major issue is to whom and how much loan should be provided which can actually help them to overcome their existing level of income status. The second major issue should be addressed is related to the organizational systems and attitudes regarding the potential loan seekers which may act as a power house to improve their own economic status as well as the status of the society. Mostly the products and procedures adopted by the government are not borrower friendly. A lot of inflexibility could be seen. They are mostly standard products. What actually is needed is a tailor made financial inclusion product featured by flexibility which may differ from case to case. Another problem is related to the lack of adequate loan funds and inadequate institutional capacity to offer funds. Lack of effective training programs for beneficiaries and operators of the programs are some of the reasons behind the ineffectiveness of microfinance. Lastly, the basic idea behind financial inclusion has lost its importance now a day, as it is referred to as a business opportunity rather than a social obligation. Hence, there is a need of the hour to bring desired changes in these, to make them more effective strategy for poverty alleviation in India.

Literature Review

According to the Asian Development bank financial inclusion refers to provision of broad range of financial services such as deposits, loan payment services, money transfer and insurance to the poor and low income households and their micro enterprises. As stated by Agrawal P.K., micro finance is a movement whose object is a world in which as many poor and near poor households as possible have permanent access to an appropriate range of high quality financial services, including not just credit but also savings, insurance and fund transfer.

According to Singh C.B., the term micro finance and micro credit often used interchangeably in literature and media write-ups on poverty. Micro credit is the extension of small loans to entrepreneurs too poor to qualify for traditional bank loans'. But then, Micro finance is a broader concept, encompassing, not only the extension of credit to the poor, but also the provision of other financial services like savings, cash withdrawals and insurance, micro remittance, micro – pension and micro livelihood. This gradual and evolutionary growth process has given a great boost to the rural poor in India to reach reasonable economic, social and cultural empowerment, leading to better life of participating household.

Micro finance can be defined as any activity that includes the provision of financial services such as credit, savings and insurance to low income individuals which fall just above the nationally defined poverty line and poor individuals which fall below the

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poverty line which the goal of creating social value which includes poverty alleviation and the broader impact of improving livelihood opportunities through the provision of capital for micro enterprise, and insurance and savings for risk mitigation and consumption smoothing(Srivastava S., 2011)

According to Sudha V. an all inclusive financial system enhances efficiency and welfare by providing avenues for secure and safe saving practices and by facilitating a whole range of efficient financial services. Despite heightened focus on financial inclusion, Indian banks still somewhat failed to bring the under and unbanked into the mainstream banking fold (Lamba R. 2011). Lending rate of microfinance loans varies from 20-26% per annum based on models adopted by MFIs to lend the money to borrowers. It also depends on the credit worthiness of the borrowers. The lending rates mainly include borrowing cost, delivery cost, loan loss provisions and taxes etc. This lending rate is very much affected by the cost of capital these micro finance institutions need to pay cost of capital depends on several factors like, legal status of MFI, sources of funds, types of funds and duration of funds, etc.(Gupta A., 2011). But, these supply side programs are aided by corruption and leakages, achieved little. The collateral and paperwork based system shield away the poor. The World Bank estimates that more than 87% of India's poor cannot access credit from a formal source and therefore they are not borrowing at all or have to depend on money lenders who charge them interest rates ranging from 48% to 120%. Critics say the micro credit model has been perverted by commercial greed in India, with reports of abusive collection methods and high interest rates. What began as a simple, innovative model of providing credit for the poor women who were excluded from mainstream banks underwent a paradigm shift in India' said R. Subramaniam S, principal secretary for rural development in the southern state of Andhra Pradesh. Many of the Micro finance companies morphed into for Profit companies, agents harass defaulters are committed to suicide.

Keeping in mind the demerits of existing micro finance measures taken by the government, in the present study we are trying to design a framework in which micro financing can be linked up with helping the beneficiaries to generate revenue and to improve their economic status and the society as a whole.

Research Methodology

The basic purpose of the present paper is to crystallize my own idea and share it with the academicians. Whether, the proposed theory can be used as a tool to enhance the financial inclusion by bridging the gap between the rich and poor section of the society and to bring under privileged section to the mainstream economy. The primary objective of the present study is to propose an innovative tool which can bridge the gap between the rich and poor section of the society and can reduce social and economic disparity.

Discussion

A quote from the 'Banker to the Poor' credit means trust, so the bank should trust the borrower which in the long run inculcates a sense of respect in them. The proposed theory, 'Trust lending' will work on the principle of 'No profit no loss.' It will base on voluntary contribution by individuals, government and non government organizations, namely religious trust, etc. The basic source of fund would be individuals, group of individuals, trust, etc. The fund may be used by low income group individuals or unemployed persons. Functions of Trust lending firm would be to collect and organize needy people who are willing to set up their own business. The firm will make them aware about the terms of

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financing and give training also. Hence, the basic function of Trust lending firm would be: to make people aware about the sources of funds available to them so that they can start their own enterprise, training them how to utilize the fund and to provide capital to do business.

The basic features of Trust lending are as follows:

1. It would be Non collateral backed lending: While granting loans most of the banks evaluate the assets owned by the concerned person and ask for collateral, in case of default or inability to repay the bank can make the payment through the collateral. As the people are from the lower income group they can move for Non collateral backed lending, where the trust will be on the capability rather than income status. The firm would evaluate the capability of the person who is taking the loan. This will inculcate confidence in the poor people that they are also credit worthy and able to return loans.
2. It would channelize additional fund into the mainstream: As trust lending is base on voluntary contribution by individuals, government and non government organizations, namely religious trust, etc. It would channelize additional fund into the mainstream as the fund may be used by low income group individuals or unemployed persons. The funds could be transferred from surplus areas to the deficit areas or more specifically to the needy people.
3. It would promote employability: Trust lending can promote entrepreneurship and be helpful to raise the economic status through job creation.
4. It would be a better option as compared to traditional sources of fund: Trust lending could be a better option as compared to traditional sources of fund as it will focus on lending on minimum rate of interest merely 2-3% and borrower friendly.

Mechanism of Trust lending: As compared to traditional sources of fund Trust lending could be a better option as it will focus on lending on minimum rate of interest, merely 2-3% so as to meet only the operational cost of the firm only. The basic mechanism is as follows: Say Rs. 100 was collected through Trust lending. The firm will set aside Rs.50 for lending purpose, Rs. 20 for operational expenses, Rs. 20 for training purpose and Rs.10 as reserve. The facilitators of the firm would be voluntary organization, social entrepreneurs, NGOs, individuals, etc. Apart from making people aware, training them and to provide capital, the organization would track the performance of firms through monthly assessment.

Conclusion

Financial inclusion is something the government has been talking about for decades. It is a key determinant for the sustainable development of the society. It has the potential to unlock the hidden potential of saving, consumption, employment of the poorer section of the society. It is the most effective and efficient tool to fight against poverty and improve the socio economic condition and to bring the deprived section in to the main stream of the society. Though government has taken several measures to achieve financial inclusion yet large potential is untapped. Certain initiatives such as cooperative credit system, self help group etc. seems to be ineffective on account of higher interest rate and inability to train people, etc. Trust lending can act as a tool to foster equal distribution of wealth in the society as it has the ability to transfer the surplus funds to deficit

Limitation

As the organization will be voluntary in nature it will be difficult to lay any rule or regulation regarding the present concept. Putting dream into reality is the major challenge in front of the proposed theory. Further researches may be conducted on the implementation issues and practical applicability of the proposed theory.

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Devanagari Handwritten Numerals Recognition Using Combinational Classifier

Ravinder Singh*
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Abstract
The handwritten devananagari numerals recognition has numerous applications particularly in the field of postal mechanization, record handling etc. Because of its huge applications, numerous researchers are currently working towards improvement of compelling and effective handwritten characters / numerals recognition. Devanagari content is generally utilized content in Indian sub-landmass; additionally Devanagari content structures the reason for some different contents in Indian sub-mainland. In this paper a crossover technique to Devanagari handwritten numerals recognition is proposed. The proposed strategy utilizes, stacking way to deal with meld the certainty scores from four unique classifiers viz., Sequential Minimal Optimization (SMO), Naïve Bayes (NB), Random Forest (RF), and Instance Based Learner (IBK). The proposed technique extracts the global and local features of the handwritten numerals and as a global shape feature a Fourier Descriptor is used. Thus, the numerals locality is established by the analysis of pixel density from distinct zones of the number. The proposed technique has been tried on substantial arrangement of handwritten database and exploratory outcomes uncover that the proposed strategy yields the precision of 99.7823%, which is the best exactness detailed so far for the datasets considered.
Keywords: Handwritten Devanagari Numeral, Sequential Minimal Optimization, Naïve Bayes, Random Forest, Instance Based Learner.

1. Introduction

To perceive characters, the source archive is filtered utilizing an Optical Scanner (OS) and put away as bitmaps. Present OCR frameworks dissect the edge of the stroke, the intermittence of line amongst paper background image and the characters and permit inconsistency of in print/ inscribed by hand ink on record. An OCR algorithm matches the characters and emits the correct one. It influences the best figure about what to character it is by harmonizing the normal of dull and light at the edge of a stroke to the known characters. Consequently perceiving the handwritten characters and content is as yet a lively research area as a result of the Noise s in the picture and irregularity in penmanship style because of mood of the essayist. Cursive handwritten scripts recognition needs character segmentation from the words and then identify the independent features of the characters [1-3]. It is troublesome for a recognition framework to perceive cursive content; even it is hard to human senses to perceive some cursive content; the individuals who have productive optical perusing capacity without any unique circumstance. Character recognition accommodating in digitizing expansive volumes of information in wide

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assortment of business and logical applications like identification archives, solicitations, office computerization, programmed mail arranging and recognition of cheque contents and so on., consequently.

Devanagari content is broadly utilized as a part of Indian sub-landmass. It was ordinarily utilized as a part of nagars so it is called nagri and Sanskrit was emphasize of Devas, so Nagri was called Devanagari. Additionally, Devanagari is one of the most established dialects and structures the reason for a large portion of the other Indian dialects. Numerous Indian dialects utilize variations of Devanagari content as its content. It is a simple to-peruse dialect, which has been advanced and affected by Dravidians, Arabic, Farsi, Turkish, Portuguese and English. This content is considered as Indian in nature, initially it has a place with Brahmi. In the fourth century, Brahmi Gupta content was produced from the northern branch, subsequently; Kutil turned out from Gupta content and created Nagri content till in 8^{th} and 9^{th} century. Devanagari content is being utilized by more than 500 million Indians for talking and composing. Variations of Devanagari content is utilized as scripting by numerous Indian dialects including, Hindi, Sanskrit, Konkani and Nepali dialects. It is additionally utilized for established Sanskrit content [4-5].

In this research paper A hybrid framework is introduced which consolidating both global and local features alongside joined classifiers. In this strategy certainty scores from four unique classifiers viz., Random-Forest (RF), Naïve-Bayes (NB), Instance-Based-Learner (IBK) and Sequential-Minimal-Optimization (MSO) are melded utilizing stacking technique. Likewise, the proposed technique separates both local and global features from the hand in scripted numerals. In this technique, Fourier Descriptors (FDs) are utilized as worldwide shape features and Local features are depicted by the pixel thickness measurements from various zones of the numerals. The accompanying subsections of the section points of interest the proposed strategy for Devanagari Numerals Recognition alongside exploratory outcomes and exchange.

2. Literature Review

Handwritten script / numeral recognition is still a difficult task inspite of many years of research. Because of immense utilizations of handwritten character/numeral recognition, numerous order calculations have been proposed in the past to perceive character/numeral of different dialects like English, Arabian, Roman, and so forth [6] utilized standardized separation highlight utilizing a fluffy model for recognition of transcribed Hindi numerals and they acquired recognition rate of 92.67%. Further, [7] proposed a technique for recognition handwritten characters utilizing MQDF based classifier utilizing directional chain codes highlights for obstructs in jumping boxes and they got 98.86 % precision for numerals and 80.36 % for characters. [8] Obtained a precision of 91.28% with multilayer perceptron (MLP) neural system utilizing multiresolution highlights in light of wavelet changes. [9] Proposed a technique for recognition of Devanagari characters in view of consistent articulation, in their work, the characters were changed over into a grouping and after that geometrical properties of the characters were changed over into a normal articulation. The changed over normal articulations were utilized for coordinating and the base alter separate was utilized to get the coordinating score. They got 82% recognition rate. [10] Have utilized troupe of classifier for recognition of Devanagari characters. In their work they have received multi arrange order, in the primary stage characters were characterized in view of the shirorekha (a best line on the Devanagari character). In next stage arrangement is performed with various capabilities like Histogram, Profile, Edge

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based highlights, and so on. They have gotten recognition rate of 94.2%. [11] Implemented a framework for recognition of Devanagari written by hand recognition utilizing hereditary calculation in view of corner to corner highlights they have detailed 85.78% precision. [12] Proposed a multistage order for recognition of unconstrained written by hand characters, first stage in view of fluffy deduction framework and second stage in view of auxiliary highlights utilizing nourish forward neural system and got 96.95% exactness. [13] Implemented multistage neural system for recognition of numerals in light of auxiliary and geometric highlights and acquired identification rate of 93.17%.

From the above dialog plainly there is couple of strategies accessible for recognition of handwritten Devanagari characters/numerals. Be that as it may, their recognition rates are still a long way from the satisfactory levels. Likewise, the vast majority of the outcomes announced in the current papers depended on the exceptionally predetermined number of datasets and they are not assessed on a standard datasets. There are no normal datasets to assess techniques on a shared opinion; in this manner there was requirement for standard datasets. As of late, [11, 14] have created standard handwritten Devanagari datasets for segregated numerals. In this work, we have utilized the datasets produced by [11, 14] to assess the proposed strategy.

From the talk it is clear that there is a requirement for a powerful and proficient approach for recognition of written by hand devanagri numeral framework which produces adequate recognition rate. In this paper, we have displayed an approach in view of multi-level combination, one at include level and another at classifier level to enhance the general recognition precision of handwritten Devanagari numerals.

Rest of the paper is composed as takes after. In segment 3 we exhibit the subtle elements of the proposed strategy, Experimental outcomes were nitty gritty in area 4, lastly finishing up comments are attracted segment 5.

3. Proposed Algorithmic Framework

This section shows the handwritten Devanagari numerals recognition (0 to 9 numerals) framework. A portion of the example handwritten Devanagari numerals are appeared in Figure 1.

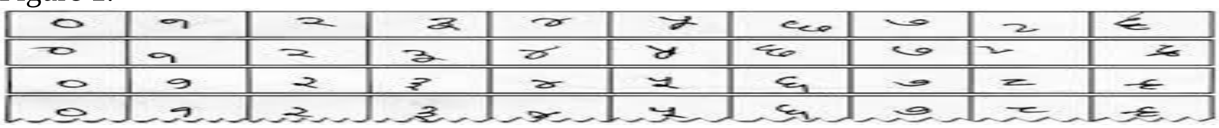

Figure 1: Handwritten Devanagari numerals

The proposed framework of the Devanagari handwritten numeral recognition is shown in Figure 2.

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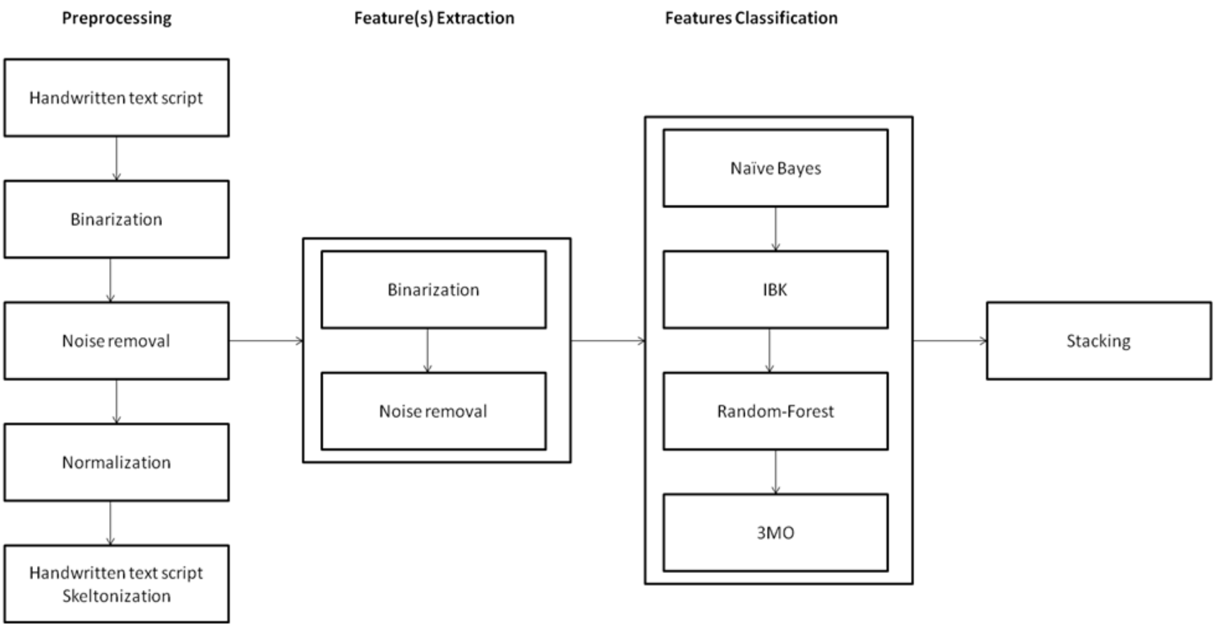

Figure 2: Framework

3.1 Preprocessing

The objective-of-preprocessing is to contain a considerable measure of handling stages in order to upgrade the nature of the character tests. The accompanying preprocessing steps were executed in the proposed work under [15] Binarization [16] Image Cleaning and commotion evacuation [17] Image Normalization [18] Image skeletonization.

3.1.1 Binarization

The given RGB picture is changed over to gray-scale picture. In this manner the gray-scale picture (i.e. pixel esteems 0 to 255) is changed over to parallel picture (i.e. pixel esteems 0 and 1) by utilizing a global-threshold which isolates the background from the background. Be that as it may, Otsu limit [19] did not yield great binarization, because of substantial variety in force. Henceforth, we have utilized custom thresholding for the dataset considered. We found that the edge in the range 150 and 220 is perfect for the datasets; the range has been experimentally determined. The example double picture is appeared in Figure 4(b).

3.1.2 Image-Cleaning and Noise-Removal

A large portion of the imaging sensors have electro mechanical restrictions and thus it is difficult to take out the commotion at the source. The most widely recognized sort of commotion that happens in a picture is the confined spots which are caused by salt and pepper sort of clamor. These disconnected specks must be expelled to augment the recognition rate. For smoothing, we have connected 4×4 averaging channel as given Figure 3 to obscure the picture keeping in mind the end goal to evacuate undesirable points of interest and to expel little bits of commotions.

1/9 □

1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1

Figure 3: Averaging filter-mask

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To dispense with the little, separated parts and scaffold the thin opening in the characters, morphological opening and shutting operations are performed. The example yield of preprocessing operation is appeared in Figure 4(c).

3.1.3 Normalization of an Image

Characters contained inside the first frame are not firmly cut; characters are encompassed by black-space of fluctuating width. To diminish these black-spaces, the limits of the picture were trimmed to the jumping box-of-the-character. For each edge-of-the-character, a calculation begins at the edge and inspects each line/segment moving internal. Once a line/section containing white pixels is discovered, it is taken as another limit of the picture. The character pictures are then standardized to a settled size window. A large portion of the current classifiers require the features to be of uniform measurement (include vector length ought to be same). Keeping in mind the end goal to guarantee that element vectors are of a similar length, the pictures must be standardized through the standard picture resizing operation took after by bilinear addition. In this work, the sum total of what pictures have been resized (standardized) to the standard size of 50x50. The incentive for resizing has been settled to 50x50 by exact examination. The example standardized picture is appeared in Figure 4(d)

3.1.4 Image Skeletonization

Skeletonization is a procedure of lessening prolonged example to a line-like-portrayal. This line-like-portrayal or an accumulation of thin circular segments and bends is alluded to as a skeleton. Thickness of the numerals stroke differs relying upon the author, sort of pen utilized and the determination of the picture while filtering. Thus making the calculation width subordinates, to make the calculation free of the above variables, it is fundamental to perform single pixel width, so the above elements are adjusted. For this reason, in our work, we have played out the morphological diminishing operation, to get single pixel width numerals. The example yield of the diminishing operations is introduced in Figure 4(e)

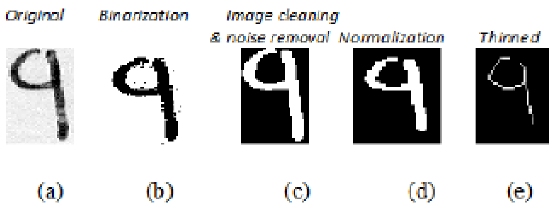

Figure 4: Preprocessing of Devanagari-Numeral.

4. Feature Extraction

Removing appropriate features to speak to and portray the picture is an essential advance in any recognition framework. We have thought about two arrangements of features. One is determined utilizing Fourier Descriptors and second is gotten from Zonal features. Fourier and Zonal based strategies have been effectively relevant to different picture preparing issues and furthermore speak to a basic instrument for creating highlight descriptors. Highlight descriptors which get worked from Fourier capacities, catches worldwide features thus that they are equipped for shape portrayal [19, 21, 22 and 23] and for character recognition.

Then again, Zonal features are successful in catching the neighborhood varieties of numerals. Nearby features are exceptionally fundamental to catch the better variety with in numerals. By and large, for character recognition applications, Fourier Descriptors have been connected to the limit arranges of the planar bend since character‟s limits is a shut bend, the grouping of (x, y) organizes that determines the bend is intermittent. For a given numerals, the limit bend has been extricated from the diminished numerals picture. Fourier changes are connected to the grouping of complex numbers framed by $x+iy$, x-and-y are the facilitate areas-of-the-point on the limit bend of the numerals. Additionally changes are connected in arrangement of complex number shaped by $y+ix$. We have considered, both $x+iy$ and $y+ix$ to deal with flip invariance. The Magnitude of these coefficients is utilized as features, 44 features utilized from $x+iy$ coefficients and 14 features utilized from $y+ix$ coefficients. Let $\left(x(i),y(i)\right)$, $i=0,1,2,3,...N-1$ be the succession of directions speaking to a picture. The picture has been created on two dimensional complex spaces. Fourier Coefficients are gotten by applying quick Fourier-transform algorithm.

$$z_i = \sum_{j=0}^{N-1} (x(j)\_iy(j)\, W_n^{(j-1)(1-1)} \quad i = 1, 2, 3, ..., N-1 \tag{1}$$

Each z_i is a mind boggling esteem. Fourier descriptors are registered for each picture as given by condition 4.2

$$d_i = abs(Z_i) i = 0, 1, 2, 3, ... N-1 \tag{2}$$

From the writing it has discovered that the best piece of the data of each burn is passed on in low recurrence music. In this manner just 55 bring down request Fourier descriptors were considered.

Further, we have utilized zonal element extraction on the numerals pictures. For this reason, picture has been isolated into 24 squares. For each piece the aggregate number of closer view (pixels comparing to numerals) is checked and consider is viewed as a component esteem for that relating square. Henceforth, an aggregate of 24 zonal features are acquired as appeared underneath in Figure 5.

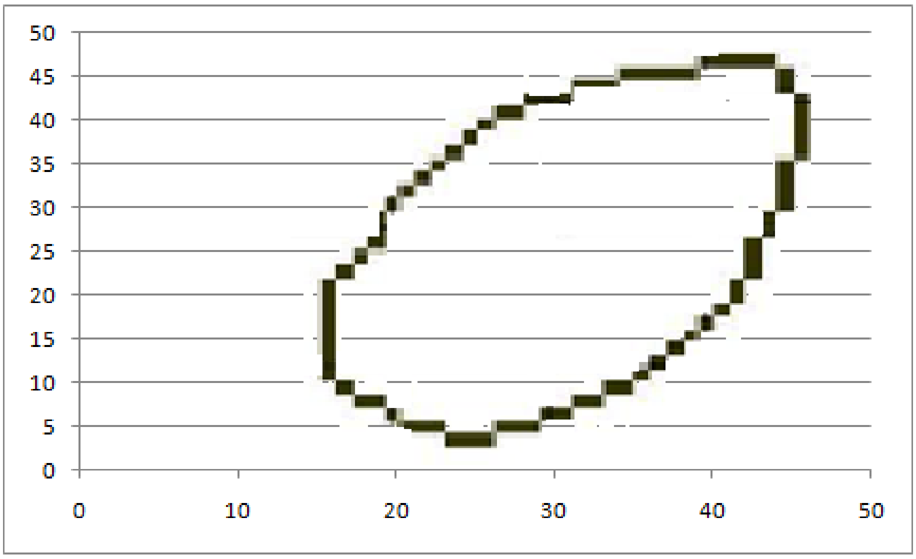

Figure 5: 16 zones of 50*50 standardized hand in scripted Devanagari numeral '0'

At last, the Global features extricated utilizing Fourier Descriptors are joined with the neighborhood features acquired by zonal element investigation are intertwined utilizing the

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connection combining. This has brought about an aggregate of, 80 features for a given numerals. This arrangement of 80 features is utilized for both preparing and testing the classifier.

5. Classifiers: Overview

In the proposed work 5 distinct classifiers are utilized. Each of the four classifiers are freely prepared and individual bits are put away in the information base. The classifiers utilized as a part of this work are NB, IBK, RF, MSO and Stacking. The classifiers are chosen in such a way, to the point that each of them are either supplementing or supplementing every classifier to enhance the general order precision. Following subsections quickly portray the chose classifiers.

5.1 Naïve-Bayes

It is a probabilistic-classifier in light of Bayes hypothesis. The Naïve Bayes classifier can be prepared productively in administering the getting the hang of setting. Innocent Bayes is a restrictive-model $\mathrm{P}\left(\mathrm{C} \mid \mathrm{F1}, \mathrm{F2}, \ldots \ldots \mathrm{Fn}\right)$ that relates a needy class variable C with few results or classes, conditionals or a few element factors $\mathrm{F1}$ through Fn Parameter estimation depends on most extreme probability. Favorable position of Naïve Bayes is that a little measure of information is required for preparing in order to gauge the parameters for arrangement as it accept freedom of factors and registers just the differences of factors for each class. The Naive Bayes classifier consolidates Naive Bayes likelihood show with a most extreme a posteriori (MAP) decision run the show. Bayes classifier is the capacity characterize characterized as takes after:

$$Classify(f_1 \ldots . f_n) = \operatorname{argmax}_c P(C = c) \prod_{i=1}^{n} p(F_i = f_i \mid C = c) \tag{3}$$

Thus, C denotes a needy-class-variable with few results or classes, restrictive on a few element factors $\mathrm{F1}$ through Fn [24].

5.2 Occurrence Based Learner

Occurrence based learning contrasts new issue examples and cases put away in memory amid preparing. Case based learning is a lethargic taking in; its multifaceted nature develops with information since it builds a speculation specifically from preparing examples. The upside of this model is that it adjusts to already inconspicuous information. K-Nearest-Neighbor (K-NN) calculation is an occurrence based-learning calculation. Its order is non-parametric technique and relapse that predicts class participations in light of the K nearest preparing tests in the component space. In the event that $\mathrm{K=1}$, at that point the protest is allocated to the single closest neighbor class. This calculation is touchy to the neighborhood structure of the information. The preparations tests in K-NN are multidimensional component vector space with a class name are put away in memory amid preparing stage. The conduct of this calculation depends on client characterized steady K. Amid characterization stage unlabeled vector is doled out the name that is common among K preparing tests closest to that inquiry point. Thus, Euclidean separation metric is utilized as a separation metric for nonstop factors. The Euclidean-distance between two vectors is as characterized underneath where a and $\mathrm{a'}$ are vectors of a similar length.

$$d\left(a, a'\right) = \sqrt{\left(a1 - a1'\right)^2 + \ldots\ldots + \left(an - an\right)^2} \tag{4}$$

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Loud or superfluous features, or highlight scales which are not steady with their significance extremely corrupts the precision of K-NN calculation. A great deal of research endeavored in choosing or scaling features to enhance characterization. The K-NN occurrence based student is actualized as IBK in Weka instrument.

5.3 Random Forest

Arbitrary Forest is closest neighbor indicator utilized for characterization and relapse. It comprises of numerous decision-trees at preparing-time and yields the method of the class' yield by a singular tress. It joins tree expectations of each tree in view of the estimations of an arbitrary vector tested freely with a similar circulation of all trees in the woodland. The central rule is that a gathering of "frail students" can meet up to shape a "solid student". Classifiers can be made exact by presenting the correct sort of haphazardness.

Single decision trees have high difference or high predisposition. RF Mitigates the issues of high difference and high predisposition by averaging to locate a characteristic harmony between the two extremes [25]. Random forest can show as a weighted-neighborhood. The model envisages $\hat{y}$ new points x' by seeking at the "neighborhood" of the point for training data set $\{(x_i, y_i)\}_{i=1}^{n}$ that represented by weight-function W:

$$\hat{y} = \sum_{i=1}^{n} W(x_i, x') y_i \tag{5}$$

$W(x_i, x')$ is a positive-weight of the ith raining-point relative to the coming point x'. The weights are the some of one for any specific point x'. $W(x_i, x')$ is a training data set fraction which falls on the similar leaf as x'.

RF predicts by averaging the forecasts of m singular trees with their weight capacities Wj given by

$$\hat{y} = \frac{1}{m}\sum_{j=1}^{m}\sum_{i=1}^{n} W(x_i, x') y_i = \sum_{i=1}^{n}\left(\frac{1}{m}\sum_{j=1}^{m} W_j(x_i, x')\right) y_i \tag{6}$$

5.4 Minimal-Sequential-Optimization

MSO understands support-vector-machine quadratic-programming (QP). MSO breaks the QP issue into a QP sub issue. SVM is prepared by tackling a quadratic encoding issue for a dataset $(x_1, y_1) \ldots (x_n, y_n)$ i.e., x_i is an info-vector and $y_i \epsilon \{-1,+1\}$ is a double name by

$$\max_a W(\alpha) = \sum_{i=1}^{n} \alpha_i - \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n} y_i y_j K(x_i, x_j) \alpha_i \alpha_j \tag{7}$$

n

Subject to:

$$0 \le \alpha_i \le C, \quad for \;\; i = 1, 2, 3, \ldots., n$$

$$\sum_{i=1}^{n} y_i \alpha_i = 0$$

Thus, C is a SVM hyper-parameter and $K(x_i, x_j)$ is a piece work provided by the writer; and the factors α_i are Lagrange multipliers.

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MSO takes care of little issues logically by breaking the substantial issue into a grouping of littlest possible sub-issues. On account of the direct uniformity requirement including the Lagrange multipliers α_i, the littlest conceivable issue includes two such multipliers α_1 and α_2, for any two multipliers α_1 and α_2, the requirements are diminished to:

$$0 \le \alpha_1, \alpha_2 \le C$$

$$y_1\alpha_1 = y_2\alpha_2 = k$$

Furthermore, this diminished issue can be unraveled scientifically: by finding at least a one-dimensional quadratic capacity, k is negative of the entirety over whatever remains of the term in the correspondence imperative that is settled in every cycle [26]. In our work we have utilized Pearson VII all inclusive piece (PUK) in light of Ustun et al [27].

5.5 Stacking

Stacking is group learning strategy. It joins a few base classifiers, which have a place with various classes of machine learning techniques by utilizing "Meta - Classifier" that takes yield estimations of the base classifiers as info [10, 28]. In this paper, stacking is worried about joining NB, IBK, RF and MSO algorithmic as construct classifiers with respect to a Devanagari numerals dataset S, which comprises of combination of Fourier descriptor and zoning highlight vectors (x_i) and their characterizations (y_i). In the primary stage, an arrangement of base-level classifiers NB, IBK, RF and MSO is produced, where $C_i = L_i(S)$. In the second stage, meta-level rationale support is found out that joins the yields of base-level classifiers. To produce a preparation set for taking in the meta-level classifier 12 overlap cross approval methodology is connected. We app.ly each of NB,IBK,RF and MSO learning calculations to nearly the whole dataset, leaving subset of size one-tenth of the first dataset are forgotten for testing: $\forall_i = 1,\dots,n : \forall k = 1,\dots,N : C_{ik} = L_k(S - S_i)$. Then the learned-classifier is used to depict prophecy for $S_i = \hat{y}_j^k C_k^i(x_i)$. The meta-level data is presented in a specific form $(\hat{y}_i^1, \dots\dots, \hat{y}_i^n)$, where features are predicted as NB, RF, IBK and MSO.

5.6 Results And Discussion

An extensive report has been made through conduction of tests to break down the execution of the proposed approach. The dataset considered for the experimentation incorporates both standard informational collections discharged by ISI Kolkata, CPAR-2012 [29] and our own particular dataset created through various clients. By and large, the quantity of pictures considered for this experimentation is 34,885 pictures with non-uniform conveyance among pictures. We have built up the calculations utilizing Matlab and Weka.

Table 1 presents the recognition precision of individual classifiers and the last line of the table gives the recognition exactness of the combined classifier. It can be seen from Table-1, Stacking beats the other three classifiers on the datasets with a superior characterization precision of 99.78%. In any case, the RF and MSO come about were factually like that of stacking, where they were both measurably superior to NB. This demonstrates the MSO (with polynomial part) and RF are appropriate for Devanagari numerals recognition.

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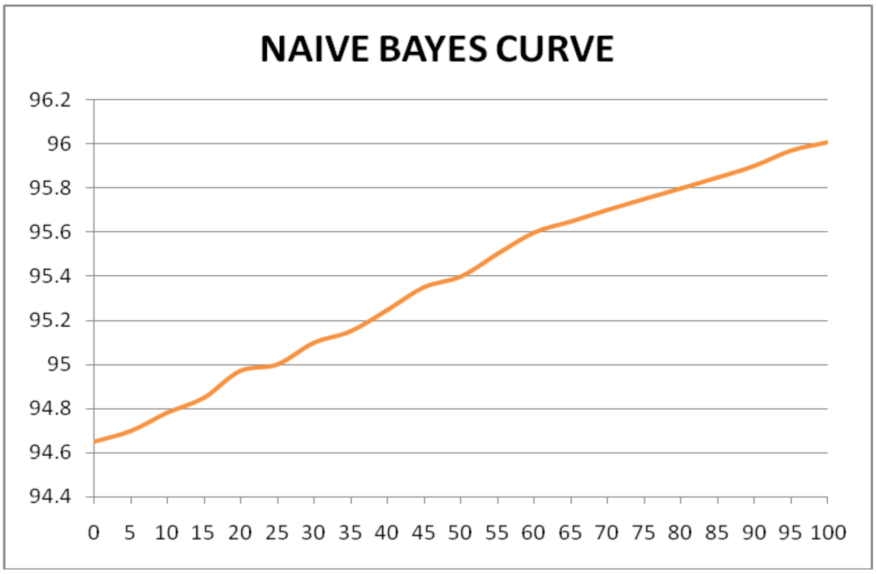
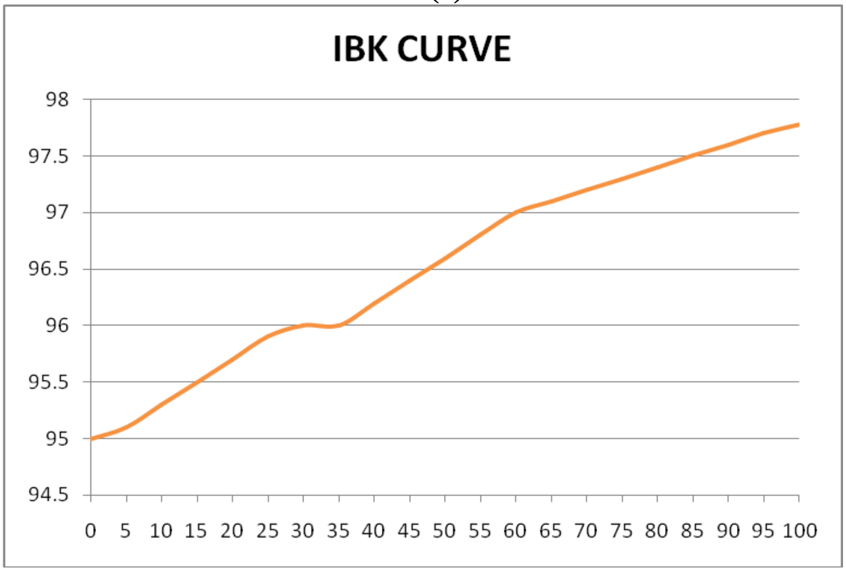
Table 1: Comparative outcomes for different classifiers

Classifiers	Data Size	Accuracy for 10 fold cross validation
NB	34,885	96.007
IBK	34,885	97.78
RF	34,885	99.56
MSO	34,885	99.66
Stacking	34,885	99.7823

Keeping in mind the end goal to exhibit the speculation and soundness of the classifier, we likewise completed the experimentation with fluctuating number of preparing tests and its recognition reaction. The ROC bends from the above experimentation have been appeared in the Figure 6.



(a)



(b)

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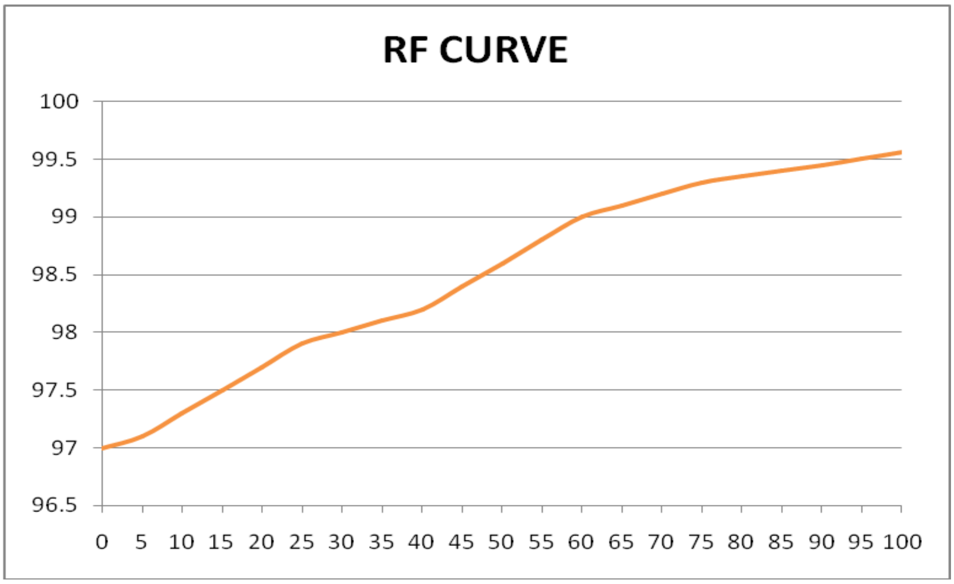
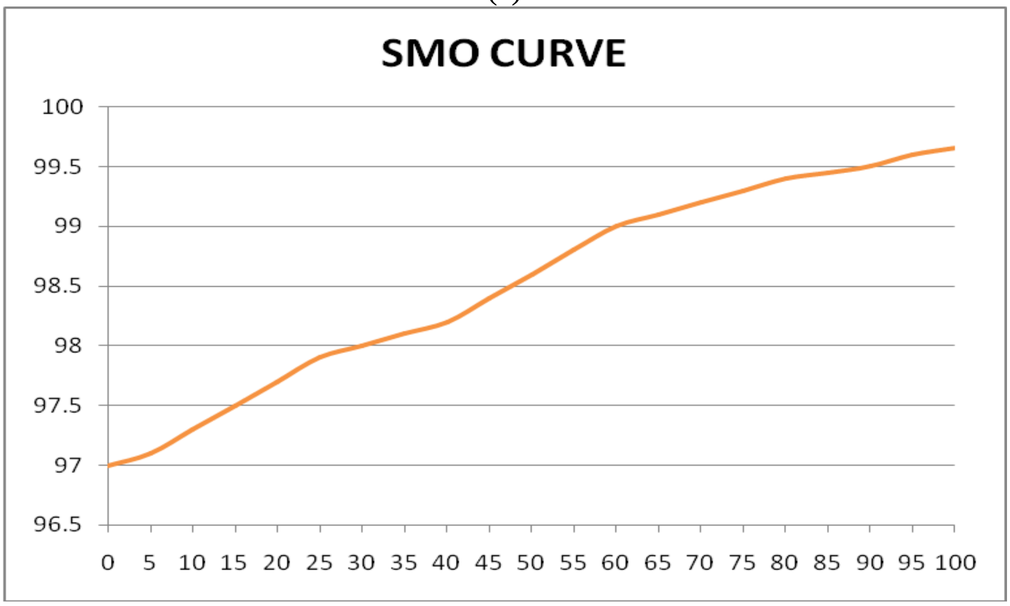


(c)



(d)

Figure 6: ROC bends for (a) NB (b) IBK (c) RF (d) MSO

The consolidated execution of all classifiers with shifting preparing dataset and its recognition rate is exhibited in Figure 7.

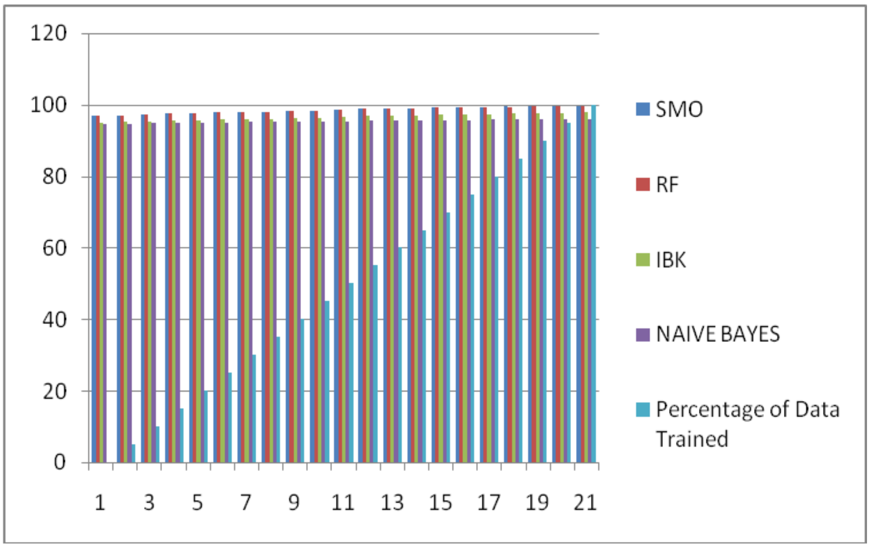


Figure 7: Combined execution of all classifiers.

From the above experimentation, plainly the proposed technique yields great outcomes in general. In particular, blend of NB, IBK, MSO and RF gives best outcome among every single other classifier.

Keeping in mind the end goal to build up the predominance of the proposed strategy over other existing contemporary calculations, we have looked at the consequences of the proposed technique with other existing strategies. Table 2 shows Comparison result. It is apparent from the examination comes about that the proposed technique beats other existing strategies.

Table 2: Comparison of Numerals comes about by analysts

Sl. No.	Proposed by	Data size	Accuracy Obtained
1	Muthalib [15]	4750	92.67%
2	Sardar[17]	22700	91.28%
3	Harouni [30]	11000	94.2 %
4	Ahmad [31]	1000	85.78%
5	S. Pan[32]	11270	98.86%
6	Proposed Method	24782	99.78%

Condition based determination of classifier is most intriguing work and it yields most ideal classifier decision in view of list of capabilities. Nonetheless, condition based determination of classifier is past the extent of this paper. We have kept that work as a future work to choose the classifiers sets in light of the underlying yield of the classifier telling whether; the given character is a numerals, vowel or consonant.

5.7 Conclusion

A novel approach for recognition of handwritten Devanagari numerals is introduced. In this work, both Local and worldwide features are caught through zoning and Fourier Descriptors. In this manner, numerous classifiers to be specific IBK, RF and MSO were prepared. At long last, the scores from all classifiers were joined to get the last decision utilizing stacking. The broad experimentation uncovered that the proposed technique yields 99.78% recognition rate, which is higher than the large portion of the current strategies. Likewise the quantity of features utilized was less and simple to figure. Next part introduces the recognition of Devanagari characters alongside numerals.

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Study of Consumer Purchasing Behaviour towards Tooth-Paste in Bareilly City of Uttarpradesh

Gaurav Kapoor*
Dr. Manish Agarwal**

Abstract
Toothpaste is a FMCG that have seen a surge in their consumption in the past few decades in India. Denizens of cities and rural places are opening up to the idea of trying out new tooth pastes. This study is trying to cover the various factors that influence the buying decisions of consumers who plan to buy & use tooth paste. FMCG the fourth largest sector in India tries to touch all aspect of life. It contributes immensely to the GDP too. The Indian market capitalization of Tooth paste industries is 70% of India's population resident in rural area and 50% Tooth pastes are sold in rural market. To attain this objective, a survey was developed and administered across various part of Bareilly city.
Keywords: Consumer buying behaviour, FMCG, Tooth paste, Demographic factors, Psychographic factors, Behavioural factors.

Introduction

Consumer behaviour is defined is activities people under take when over taking, consuming and disposing of product and services (et.al. Blackwell 2001). The study of consumer behaviour does not only include reason for buying but also the consumption process of the consumer at large. In the entire process of buying consumer get driven by influences such as felling, motivation, income, lifestyle, opinion, culture, personality etc.
The Indian consumer market has higher disposable income, the development of modern urban life style and increase in consumer awareness have affected by buyer behaviour in cities, town, even rural areas. According to 2007 report by McKinsey & company. India is set to grow into the fifth largest consumer market in the world by 2025.
In this scenario, creating customer loyalty is now a whole new challenge. These demographic shifts have also created the need for leader who can keep pace with change and identify with and predict future demand.
This study is basically emphasis on influencing factor on Indian consumer buying behaviour towards the Tooth paste on the basis of demographic, psychographic, behavioural factors. ***FMCG sector in India***
Fast moving consumer goods are popularity names as consumer packaged goods (CPG). Items in this category include all consumable (other than grocery and pulses) people by at regular intervals. The most common in the list are Tooth pastes, detergent, shampoo, toothpaste, shaving products, shoe polish, packaged food stuff and house hold accessories and extends to certain electronic goods. These items are meant for daily or frequent consumption and have a high return.
The Indian FMCG sector in the economy with a total market size in excess of US $ 13.1 billion. It has a strong MNC presence and is characterized by a well stabilized distribution

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network, intense completion between the organized and un organized segment and low operational cost. Availability of key raw material cheaper labour cost and presence across the entire value chain gives India competing advantage. The FMCG market is set to travel from US $11.6 billion in 2003 to US $ 33.4 billion in 2015.

Burgeoning Indian population, particularly the middle class and the rural segments, presence and opportunity makers of branded products to convert consumer to branded product.

Major Categories in FMCG Sector

Household care fabric, Tooth paste, laundry Tooth paste, and synthesis detergent. Household cleaner, VDish/ wash cleaners, toilet cleaners, mosquito repellents. Cake, biscuit, chips, chocolate, ice cream, tea, coffee. Soft drink, branded rice, flour, canned fruits. Vegetables, dairy products, personal care product, oral, hair, skin care product etc.

The Indian Tooth Paste Industry

The Indian Tooth paste industry includes about 700 companies with combine annual revenue of about $ 17 billion. Major companies in this industry include division of P&G, Unilver, and Dial. The Indian Tooth paste industry highly concentrated with the top so companies holding almost 90% of market.

Indian Tooth paste industry volume is Rs. 4800 cr. for the purpose of gaining a competitive edge; Indian companies are now re launching their brands with value additions to woo customers across India.

In terms of market share for Indian Tooth paste the industry the data indicate that (HUL) had a market share 64% in the Tooth paste market followed by Nirma 16.8%, Godrej at 4.4%.

Tooth pastes are categories in to men's Tooth pastes, ladies Tooth pastes, baby Tooth pastes, and common Tooth pastes. There are few specialty Tooth pastes like the glycerine Tooth pastes, sandal Tooth pastes, specially flavoured Tooth pastes, medicated Tooth pastes. Specialty Tooth pastes are highly valued which enjoy only small share of market in value terms. The market is growing at 7% a year. This means that the incremental demand generation that is 5% over and above the population growth. With increasing awareness of hygienic standards. The market for the Tooth pastes could at a rate higher then 8% higher annually. Interestingly 60% of the market is now sourced from the rural sector. This means that the variance between two segments not very large. Since end market focus is the urban areas, margins come from the urban sector.

India is a country with a population of 1030 million people. With household penetration of tooth pastes is 90%. People belonging are different income levels used different brands. Which fall under different segments? But all income level uses Tooth paste. Making it the second largest category in Indian. Rural consumers in Indian constitute of 70% of population. rural demand is growing with more and more Tooth paste brand being launched in the discount segment targeting the lower socio-economic strata of consumer. Tooth paste manufacture originally targeted their products to the lowest income strata in urban as well as rural areas. Positioning their brands as a way to remove dirt and clean the body. For some brands that positioning persists even today with a focus on removal of body odour and keeping the user healthy. However, Tooth paste positioning are move in towards skin care as a value added benefit.

Tooth paste is primarily targeted towards to women. as they are the cheap decision makers in terms of Tooth paste purchase and medicated positioning like germs killing and anti-

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bacterial and marketed to families about 75% of Tooth paste bought through the different types outlets. This is the most common of sources of buying Tooth paste. Which usually forms a part of the month grocery list pan beddi Tooth paste. Total annual Tooth pastes sales by companies marketing their brands at national or state levels is estimated at 14000 tons of a total Tooth paste market considered to be about 126000 tones.

Literature Rivew

Consumer behaviour and its related studies

Consumer behaviour which was earlier termed as covered behaviour is a continuous consumption process related to prepurchase, purchase and post purchase issues. This refers to the physical action of consumers that can be directly observed and measured by others. According To Michael **R.Solomon,& Nancy J.Rabolt (2004)** , consumer behaviour is the study of the process involved when individuals or groups, select, purchase, use or dispose of product , service, idea or experience to satisfied need and desires. According to **Frank R. Kardes (2002),** Consumer Behaviour is the study of human or consumer responses to product, services and the marketing of products and services.

The concept of modern consumer behaviour is that people mostly buy products not for what they do what for what they stand for. This concept implies that the product plays a role which goes beyond their functional purposes what actually they meant for and consumers tend to establish a relationship with a product what they like. the types of relationship a consumer may make with a product is like self-concept attachment, nostalgic attachment, interdependent and love. (**Solomon and Nancy, 2004**)

Sproles & Kendall (1986)- established a model to conceptualize consumers' decision making behaviour with eight consumer mental orientation variables viz., perfectionism consciousness, brand consciousness, novelty and fashion conciseness, impulsive and careless consumer, confused by over choice consumer, habitual and brand loyal consumer, recreational and hedonic shopping conciseness, price and value conciseness.

Jin & Kang (2010) in their study of purchase intension towards foreign brand jeans using four antecedents viz., face saving, attitude, perceived behaviour control and subjective norms found that face saving, attitude, perceived behaviour control have significant influence of purchase intension whereas subjective norms has not significant influence towards purchase intention.

According to **Kotler and Armstrong (2001),** consumer buying behaviour refers to the buying behaviour of the individuals and households who buy goods and services for personal consumption. Consumers around the world are different in various factors such as age, income, education level and preferences which may affect the way they avail of goods and services. This behaviour then impacts how products and services are presented to the different consumer markets. There are many components which influence consumer behaviour namely; cultural, social, personal, and psychological.

Kundi J. et al (2008) stated that consumer behaviour refers to the mental and emotional process and the observable behaviour of consumers during searching, purchasing and post consumption of a product or services. Consumer behaviour blends the elements from psychology, sociology, sociopsychology, anthropology and economics.

The Tooth paste, bath and shower market can expect to see growth in the next few years due to near universal consumer usage of these products for hygiene maintenance along with a lack of competitive alternatives. However, this market does have some issues it will need to address: private level offering are slowly starting to grab market share and sales

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from branded offering; consumer are expecting more from their Tooth paste products; and there is growing concern around the chemicals being used in personal care offerings, new product benefits, and ways of helping consumers to feel better about the products that they use. -Gabriela Mendieta, Home & Personal Care Analysis

Research Objective

As the main research objective of this study is to identify the factor that influence consumer behaviour at the time of purchasing of Tooth paste. The primary research objective is state below which have been further subdivided into sub objectives to illustrative the point further primary objective is –

- Demographic factors
- Psychographic factors
- Behavioural factors

Following are the sub objective providing explanation for each of the research studies objective.

Demographic factors: demographic factors are those factors influencing consumer behaviour which are the consumers' factors comprising of age, gender, income, occupation, education. Demographic factors are important as consumer belonging to similar demographics have like buying patterns. Based on the research study researchers would know what brands are favoured by the male/female consumer s, also depend on the income and occupation. Which brand would be the choice for consumers?

Psychographic factors: comprise of factors that are based on consumers' social class and life style and personality traits. a point to we noted is that some demographics may have very different preference when it comes to psychographic structure. Some brand is concerned one others if they are better at portraying and image which truly reflects the consumer psychographic.

Behavioural factor: Are specially related to the buyers' habits and their attitudes towards different brands. Basically is comprises of components that till about the consumer's knowledge, attitude and responses to a product. If the marketer has ample knowledge about these behavioural barriers, then it makes very informative.

Research Methodology

The present study is an empirical enquiry. The present research paper attempts to identify the factors affecting the purchase decision of customers towards the purchase of FMCG (Tooth paste) to recommend the particular factors that should be considered most important for such type of decisions. To achieve the said objectives, only (fifteen 15) questions items of the questioners was used. The study is based on primary data as well as secondary data.

Primary data was collected through the structured questioners from different location of Bareilly city and secondary data was collected from books, journals, periodicals, articles, internet, etc. in this study the research method is used descriptive research the responded were selected on the basis of non-random sampling and convince sampling. Which mean that the customers who were willing to answer the questionnaire were selected from Bareilly city? The sample size selected was 150.

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Data Analysis and Results

Gender	Male	40%
	female	60%
Age	Below 20 years	20%
	20-25 years	25%
	25-30 years	15%
	30-35 years	20%
	35-40 years	15%
	Above 40 years	5%
Marital status	Single	45%
	Married	55%
Occupation	Students	30%
	Business person	35%
	Salaried	35%
You belongs to which social group	Upper	15%
	Middle	50%
	Lower	35%
Monthly income	Less than 5k	15%
	5k-10k	20%
	10-15k	30%
	15-20k	25%
	Above 20k	10%
How much you are willing to spend on Tooth paste in a month	Less-50 Rs.	40%
	50-100 Rs.	30%
	100-200Rs.	20%
	Above 200 Rs.	10%
How many times you buy the Tooth paste	weekly	10%
	Half monthly	40%
	monthly	50%
Do you like to buy branded and unbranded Tooth paste?	Branded	90%
	Unbranded	10%
What kind of consumer you are?	Brand loyal	30%
	Hard core brand loyal	40%
	Switchers	30%
You normally used the following bathing products	Bath cream	10%
	Tooth paste	90%

Which factor keep in mind when you purchase a Tooth paste?	Price	25%
	Quality	40%
	Hygiene	20%
	Color/fragrance	10%
	Durability	5%
You interested to buy a Tooth paste advertised on	T.V	60%
	Radio	5%
	Newspaper/magazine	20%
	Poster/banner	15%
Your buying decision is influenced by	Family	50%
	Celebrities	30%
	Friends	5%
	Communities	5%
	Social media	10%
You usually Tooth paste from	Convenes store	25%
	Cosmetic store	10%
	Chemist Shop	5%
	Supermarket	10%
	Neighbour store	50%
The reason for changing a brand-	Trying at new brand	30%
	Can't buy the same brand	10%
	Price discount on other offers	20%
	Lower price	20%
	Not satisfied with the same brand	20%

After analysis of data we found that females in terms of customers are the market leader of Tooth paste. Customers are mostly buying Tooth paste monthly. Normally persons buy branded Tooth pastes. Price, quality and hygiene is the basic features which attract the customers to buy a particular Tooth paste. The major promotional influencing factors T.V and newspaper. Celebrities and family work as an opinion leader to influence the buying decision of consumers. The basic reasons for changing brands are trying to new brands and another one is when did not satisfy with product.

Conclusion

The research concludes that the perception of a rural consumer is as equal as the perception of an urban consumer. They are able to realize the need of the product, extensive awareness of the product, and suitable information sources of the product. They derive characteristics through their experience of the product and make careful study on the negative effect and quality of product. They also approach the product of FMCG and make suitable purchase decision. They are able to collect information of the product through Television advertisements. Consumer prefers the product, making the purchasing decision

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and expressing the satisfaction level. The consumers have the tendencies brand shift if not satisfied with the utilization of the product as well as availability in the market. In the post –purchase satisfaction in consumers of predominant brand image and quality of the product is important. The royalty of consumer purpose is very high, so their strength and their expectation are also maximized. The democratic background of the rural consumer plays a vital role in determining the behavioural aspect as well as the royalty of brand and they prefer purchasing of Tooth pastes mostly from convenience store or neighbour retail store.

Consumers now look to their Tooth paste products to deliver not only skin cleansing, but also moisturizing, deodorizing, and exfoliating attributes to name a few. However, though this market has performed well and will continue to grow, consumers are very cost conscious due to current economic circumstances and private label offerings are competing with branded offerings, promoting similar benefits for a lower cost. It will be important that companies and brand continue to integrate new functional and cosmetics benefits in the coming years in order to continue growing the market and to keep consumers engaged with this category.

Limitations and Suggestion for Future Research

The research has a number of limitations which must be acknowledged. Mainly this study was conducted in different region of Bareilly city in India with limited number of respondent. The data collection was based on the opinion of respondent and it may change from time to time. Data collection primary in nature, there for it suffers from the limitation of primary data; some customer was reluctant in answering the questions. The sample size is very limited due to time constraints. To test the propose consumer buying behaviour towards bath care products, this study is used convince sampling of customer who were willing to respond, there for the finding can't be generalized universally. In future research we can add many other factors also.

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Achieving Women Empowerment through Inclusive Financing – An Empirical Study *(With Special Reference to Rural Salem District In The State Of Tamil Nadu)*

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Abstract
The Organisation for Economic Co-operation and Development (OECD) working papers revealed that empowerment of women can be achieved through financial awareness and financial education. Globally, importance on women empowerment is quite enduring and all the developing countries are effectively working to promote their well-being and socio-economic stability. The Government of India and Reserve bank of India has taken several productive and profitable measures to provide financial independence and financial stability for the women population. The present study emphasises on financial inclusion and women empowerment in India. The research work focuses on the inclusivity of women in formal financial products and services and its relationship towards the women empowerment indicators. The study is empirical in nature and the primary data has been collected through structured questionnaires by using random sampling technique. The study covers the respondents from Kancheepuram district of Tamil Nadu state in India.
Key words: *Financial Inclusion, Formal financial products and services, Women empowerment.*

Introduction

Economic empowerment of women has been highly enhanced and gained importance after constituting the National Policy for the Empowerment of women (2001) in India. Government of India concentrated only on poverty eradication and micro credit at primary stage in the policy which mainly favours women to fetch a status of being economically empowered in the society. In present scenario, the role of women and their socio-economic participation is very multi-dimensional and versatile. In International arena, there given greater weightage and induction for women in regards to their substantial growth and development in multifaceted field. The World Bank and International Monetary Fund proclaim more initiatives to promote women development which directly correlates enhanced global socio-economic growth.

The Indian Government adopts various positive discriminations in favour of women with envisioned objectives of women advancement, development and empowerment. While discussing the concept of women empowerment, economics is given more important which positively triggers socio-political empowerment in the nation. This paves a need for making women population financially included in the country. Hence, this research paper intends to create a better insight about the impact of financial inclusion towards women empowerment in India.

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Financial Inclusion – Meaning and Definitions

Financial inclusion or inclusive financing is the delivery of financial services at affordable costs to sections of disadvantaged and low-income segments of society, in contrast to financial exclusion where those services are not available or affordable. (Wikipedia)

The Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost. (The Committee on Financial Inclusion, Chairman: Dr. C. Rangarajan, 2008)

Financial inclusion is defined as the ability of an individual, household, or group to access appropriate financial services or products. Without this ability people are often referred to as financially exclude. (Breckland Council)

Women Empowerment - Meaning

As per the United National Development Fund for women (UNIFEM), the term women's empowerment means:

1. Acquiring knowledge and understanding of gender relations and the ways in which these relations may be changed.

2. Developing a sense of self-worth, a belief in one's ability to secure desired changes and the right to control one's life.

3. Gaining the ability to generate choices exercise bargaining power.

4. Developing ability to organize and influence the direction of social change, to create a more just social and economic order, nationally and internationally.

Thus, empowerment means a psychological sense of personal control or influence and a concern with actual social influence, political power and legal rights. It is a multi-level construct referring to individuals, organizations and community. It is an international, on-going process centred in the local community, involving mutual respect, critical reflection, caring and group participation, through which people lacking an equal share of valued resources gain greater access to the control over these resources.

Women's Role during Chanakya's Arthasastra period:

The summary of points in Chanakya's Arthasastra reveals that a Woman is always dependant on, under the control of and subservient to her father, her husband and her son.

On the other hand, women had certain rights too. The physical punishment which a husband could inflict on his wife is limited to three slaps. (3.3.8)

A woman could run away from home if ill-treated. (3.4.1)

She could not be prevented from visiting her paternal house on special occasions like death, illness or child birth. (3.4.13)

Some women, who customarily enjoyed freedom of movement, are allowed to travel with a man. (3.4.22)

Widows or wives of husbands gone on long travels are allowed to remarry, subject to certain conditions. (3.3.19)

Overall, though they are placed in a subservient role but given adequate protection to make sure this did not lead to total exploitation.

Contributions of Subramania Bharathiar on Women Empowerment

Subramaniya Bharati also known as Bharathiyar (11^{th} Dec 1882 – 11^{th} Sep 1921) was a Tamil Writer, Poet, Journalist, Indian Independence activist and also a Social reformer of Tamil Nadu. His influence on Tamil Literature is phenomenal.

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Bharati was of the opinion that Women are not only equal to Men, he also believed that Women are superior to Men.
Bharati coined a new concept of "Pudumai Pen" a new kind of a woman whom he viewed as a Leader, law maker, above all a free independent and fully realised human being. His wife Chellama was a role model to him and he celebrated her in his poetries.
The new age women will learn many intellectual texts. They will set the base for many scientific discoveries that facilitate human life. They will expunge all backward superstitions in the society. They will present all achievements of mankind as a tribute to God. They will be cherished by the men.
Bharati is considered the first to have advocated and campaigned for women's participation in politics. He advocated greater rights for women and their education. He visualised a modern Indian woman at the vanguard of society. He was of the strong opinion that the world will prosper in knowledge and intellect if both men and women are deemed equal. He condemned the Shashtras; the procedures formulated by some orthodox Hindus and weren't held as holy by most Hindus that suppressed women's rights. Most of his views are considered contemporary even in modern times

Challenges for women to be financially included in India

Traditionally speaking, India is named for the country of women discrimination. Our history has recorded so many data exclaiming the poor and underprivileged status of women in the socio-economic and political background. But in present conventional and globalised society, women development and gender equality is given greater importance. Likewise in implementation process, Indian banking sector also contributes their best to create encouragement of the economic empowerment of women.
In spite of all strenuous efforts taken by Reserve Bank of India and Government of India, there are so many factors affecting women to take up formal financial services. In 2010, the number of accounts operated by females in all commercial banks was 153.18 Crores compared with 487.37 crore accounts operated by males. The deposit amount was Rs. 517209.74 crore for females and Rs. 1838826.25 crore for males. According to 2011 Census, Out of 640.55 (In Crores) Bank accounts only 24% belongs to women. Hence, identification of challenges faced by women to take up formal banking services is much essential and alarming too. Common barriers for women to avail banking services are listed as follows:

1. Absence of regular financial sources for majority of women and status of being dependent
2. Lack of financial literacy and awareness about financial products and services
3. No tailor made and profitable financial services for women
4. Credit is not easily available due to lack of collateral security
5. Social problem including the chauvinistic attitude of men towards women development

Literature review

United Nations Development Programme (2012) project on financial inclusion aims to increase financial inclusion of the poor by developing appropriate financial products for them and increasing awareness on available financial services and strengthening financial literacy, particularly amongst women. Hence, the financial education and awareness is considered to be the foremost important factor for the achievement of financial inclusion.
Pulidindi Venugopal (2012) studied the level of financial inclusion and women empowerment with a sample of 300 respondents in Andhra Pradesh.66.67% of the

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respondents strongly believed women empowerment can be achieved through financial inclusion. The researcher stated education is a vital tool for women to get better status in the society. Moreover the benefits of banking services should be informed to women for the attainment of better inclusive growth and social development. This study also explored the role of working women in progression of Indian economy. Hence, it is very clear that women empowerment can be positively streamed through creating financial inclusion which envisages powerful nation sustained economy.

Anuj Batra (2013) conducted an exploratory study with 150 samples in three districts of North India on Financial inclusion and women empowerment. The researcher identified that being a part of self-help groups women are economically empowered and also get good respect in their family and society. This study revealed that women are utilising only 31% of banking services by participating in self-help groups and various microfinance institutions. The researcher suggested more knowledge and awareness about the formal financial products and services are to be propagated to women community which enables them to be financially included. Hence, by this study it is understood there is a strong correlation between financial inclusion and women empowerment.

Lindi Hlanze, Zoe Stephenson and Achim Deuchert (2013) studied about Promoting women's financial inclusion in U.K. The research study included a scope that the financial inclusion of women population will result in the women empowerment in the country. Hence the study recommended that the government should concentrate more in providing better access for women in regards to varied financial products and services. The study strongly suggested the government to improve awareness of financial services among women population which encourages the financial inclusion. Pratisha Padmasri Deka (2015) studied the various problems faced by women while taking up formal financial services. The research suggested financial awareness is the main ingredient to enrich financial inclusion among women. Moreover, by providing special and unique banking services tailored to meet the needs of women will effectively increase the inclusivity of women with banking industry.

Uniqueness of the study

The present study uniquely focuses on the impact of financial inclusion towards women empowerment. By reviewing the past literature, very few studies were done by concentrating in this particular area. Moreover, the present study helps to understand the relationship between the banking services and women empowerment indicators which ultimately results for the persistence of socio-economic inclusive growth and development along with women advancement. Hence, the present research paper is included with the national wide scope and importance.

Objectives of the Study

1. To find out the various challenges faced by women to be financially included.
2. To study the impact of inclusive financing towards women empowerment indicators.
3. To suggest measures to overcome the problems in achieving financial inclusion by women.

Hypothesis for the study

1. H_0 - There is no significant association between the Bank accounts of respondents and Women Empowerment Indicators.
2. H_0 – There is no significant association between the Educational qualification of the respondents and the formal financial products and services.

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Limitations of the study

1. The sample for the study is confined to Kancheepuram district only. Hence the findings cannot be treated as representative of the entire nation.
2. The random sampling method and the limited sample of 159 respondents have limited the findings of the study.
3. Of course time is also a major concern; with in the short span of time the research work has been done, this also causes a limitation for the study.

Research Methodology

The research work is empirical in nature. A survey questionnaire designed and distributed under Judgement sampling method to find out the impact of financial inclusion towards women empowerment in rural Salem district in the state of Tamil Nadu. Out of 200 respondents only 159 valid samples are considered for the study. Books, Journals and web sites constitute the secondary data.

Data Analysis and Interpretation

The data analysis is completely done with the help of SPSS (15th version). The reliability of the data per Cronbach's Alpha is 83.51%. In order to achieve the objectives of the study statistical techniques are used and the results are presented below.

Table: 1 showing the descriptive analysis of various challenges faced by women in availing Banking services

Challenges in availing Banking services	Mean (N=159)	Std. Deviation
Complicated Banking Procedures	3.51	1.01
Lack of Knowledge about financial services	3.49	0.99
Lack of Documents	3.45	0.97
Lack of Trust	3.39	0.96
High Transaction cost	3.32	1.00
Delay in service	3.29	0.98
No Money to transact	3.25	1.06
No Profitable services	3.23	0.99
No Customer services	3.13	1.00
No Banks in my area	2.55	1.30
No need for banking services	2.45	1.25
Over All Mean Score of Variables	**3.19**	

Source: Computed Data

The various challenges of women in availing banking services are ranged with a score of 5 (Strongly Agree) to 1 (Strongly Disagree). The overall mean score of the variables is 3.19 which actually revealed that women agree that they are facing many aforesaid problems while availing formal financial products and services with the banking industry. Complicated Banking Procedures, Lack of Knowledge about financial services, Lack of Documents and Lack of Trust are the major challenges of women in availing banking services.

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Table: 2 showing the association between Bank accounts of the respondents and Women Empowerment Indicators

Women Empowerment Indicators	Chi-Square Value	P-Value
Having an Ownership of productive assets	26.904	0.043*
Having Own Source of Income	60.835	0.000*
Control over Savings, Earnings and Resources	34.821	0.004*
Income spent on yourself and children	29.792	0.019*
Involvement in Major Household Decisions	22.94	0.115
Access to Information and Technology	36.822	0.002*
Ability to visit friends, relatives and associates	29.087	0.023*
Ability to use public transportation/travel freely in public spaces	31.452	0.012*
Psychological wellbeing	31.968	0.01*
Attitudes on own self-esteem	29.843	0.019*
Articulateness and confidence in speaking with authorities	32.218	0.009*
Ability to negotiate sexual and reproductive decisions	37.916	0.002*
Attitudes on women, work, mobility and violence	33.181	0.007*
Equity of domestic duty load	35.405	0.003*
Financial independence	37.605	0.002*
Access to Education	38.364	0.000*
Access to Nutritious food	43.659	0.000*
Access to Hygienic Sanitation facilities	30.319	0.016*
Access to desired clothing and safe place to live	31.074	0.013*
Participation in Any Social Organization	49.765	0.000*
Awareness about women rights and welfare facilities	24.181	0.019*
Voice to express own political and social views	28.491	0.028*
Getting Personal time & for child care	25.165	0.067

Source: Computed Data

***95% Level of Significance**

H_0 - There is no significant association between the Bank accounts of respondents and Women Empowerment Indicators.

It is inferred from the above table that p-value of the women empowerment indicators are less than 0.05 at 95% level of significance except for the variables 'Involvement in Major Household Decisions' and 'Getting Personal time & for child care'. Hence the null hypothesis is rejected for all the above mentioned variables except two.

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Table: 3 showing the Educational Qualifications and the Usage of Formal Financial Products and Services by the respondents

Usage of Formal Financial Products and Services	Chi-Square Value	P-Value
Bank Savings	0.648	0.723
Bank Loans	1.951	0.377
Insurance	2.435	0.296
ATM card (Debit card) Service	32.522	0.000*
Credit Card Service	7.197	0.027*
Internet/Mobile Banking services	29.068	0.000*
Online Banking Transaction services	25.626	0.000*

Source: Computed Data

***95% Level of Significance**

H_0 - There is no significant association between the Educational Qualifications and the Usage of Formal Financial Products and Services by the respondents.

It is inferred from the above table that p-value of ATM card (Debit card) Service, Credit Card Service, Internet/Mobile Banking services and Online Banking Transaction services are less than 0.05 at 95% level of significance. Hence null hypothesis rejected.

Research findings

- Complicated Banking Procedures, Lack of Knowledge about financial services, Lack of Documents and Lack of Trust are the major challenges of women in availing banking services.
- There is significant association between the Bank accounts of respondents and Women Empowerment Indicators except for 'Involvement in Major Household Decisions' and 'Getting Personal time & for child care'.
- There is no significant association between the Educational Qualifications and the Usage of Formal Financial Products and Services by the respondents with regards to ATM card (Debit card) Service, Credit Card Service, Internet/Mobile Banking services and Online Banking Transaction services .

Suggestions

The Reserve Bank of India should introduce more customised and tailor made financial products and services to meet the needs of women. Since the economic empowerment of women gained major importance across the globe, it is essential for the banking industry to address all the challenges faced by women in availing formal financial products and services. The financial literacy, awareness and education also play a vital role in default for the achievement of financial inclusion by women at faster pace.

Conclusion

Women empowerment in varied sectors will directly impact the socio-economic growth of the nation. The essentiality in enhancement of women status and their standard of quality living is a global consideration. So, the Government of India should take productive steps to enrich the women growth, development and advancement. Banking industry should help the nation to achieve women empowerment for sustainable economy. Hence, it is obvious that Women empowerment can be easily achieved by making them financially included.

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Role of Technology in Building Smart Cities

Srikanth Somanna Patil*

Abstract

In 2050, the number of people living in Smart cities will be almost increasing as the world's entire population today. That's why we need completely new approaches to be taken in order to make our cities to be Smart City. Smart City is a type of city that uses new technologies to make them more functional, competitive and modern through the use of new technologies, the promotion of innovation and knowledge management. Technology plays a vital role in building Smart cities Based on the available literature from various studies I identified eight critical factors of smart city initiatives: management and organization, technology, governance, policy context, people and communities, economy, built infrastructure, and natural environment. Digital infrastructure is the basic requirement for developing smart cities along with biological websites, social networks, GPS and Geospatial datasets are major sources of database to build the smart city.

Keywords: Digital Infrastructure; GPS (Global Positioning System); Smart City; Technology; Social Networks

Introduction

It is better to know what should be included in technology before studying its role in building smart cities. The term technology includes computers, and its associated software. In the present context raw material for doing any business is intellectual rather than physical. Technology has integrated the world by the use of internet. Now we can use internet economy world it is most suitable for today's business. Now a day's all business activities are associated with modern technology directly or indirectly.

Technology is an emerging in all the fields of society and its application in the field of building smart city is a need of the requirement. Smart city should address a comprehensive set of development areas such as Knowledge, Technology, Leadership, and partnerships. We need to achieve creative and talented cities that are innovative and highly technological. Here we will focus on the areas where the technology could be used to improve greater efficiency, to gain cost efficiency and improve feasibility of building smart cities. Today's cities are digital. Today's economy is based on knowledge and technology. Technology is to be considered as one of the factor of production after land labour, capital and organization. The organization place is replaced by the technology.

The following table shows the technology instruments adoption in selected countries (Per 1000);

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Table 1. Technology Instruments adopted in selected courtiers (Per 1000)

Name of the country	Daily news papers	Television Sets	Telephone Main lines	Mobile Phones	Personal Computers	Internet Users
USA	194	990	570	780	762	695
UK	292	980	550	1150	758	554
France	431	940	360	1080	575	491
Japan	551	990	110	780	676	685
Canada	175	990	640	530	876	681
Russian Federation	92	980	280	840	122	180
China	74	890	280	350	43	104
India	73	320	45	150	16	55

Source: World Bank Report

Review of literature

Number of literature have been published on a given topic,. The selected have been studied and presented here. Schumpeter (1942) states that large firms prefer to go for technology innovation due to two main reasons. First, Research & development projects usually involve huge expenses that can only be recovered with exhaustive sales. Scherer and Ross (1990) suggested that smaller firms may be more comfortable to become rapid adoption of technology if Research & Development in larger firms is undermined by loss of managerial control or a bureaucratic approach to innovation. In a theoretical model developed by Aron and Lazear (1990), new (or start-up) firms are more likely to initiate new research programmes and introduce new products that may result in higher profits over the longer term. An existing firm might also suffer if the cost of adopting technology in current product is adversely affected by the introduction of a new one, possibly causing scope diseconomies. Bhattacharyya and Nanda (2000) show that higher market share and more developed client relationships increase the incentive of investment banks to innovate. Technological shocks stimulate innovation: Shocks to technology are thought to provide a "supplyside" explanation for the timing of some innovations. IT and other inventions and innovations in telecommunications (and more recently the Internet) has facilitated a number of innovations.

Research group [2014], personal lives, productivity in the workplace, patterns of consumption will all be impacted by Internet of Things. The research group estimates that about a billion users were connected through internet in the 90s. With the increase in mobile usage by 2000, the figure rose to two billion.This real-time insight of structured and unstructured data can be stored as big data and built in a hybrid cloud infrastructure, stored and mined through various software programming and utilized for citizens, business, complex analytics, modelling, prediction of urban processes and visualize them to understand the likely outcomes of future urban development (Schaffers et al. 2011; Batty et al.2012).

Need and importance of the Study

As earlier researcher stated that, technology plays a vital role in all fields of the human beings. Thus the building smart city is not behind. It felt important to know the use technology in establishing smart cities.

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Objective of the Study

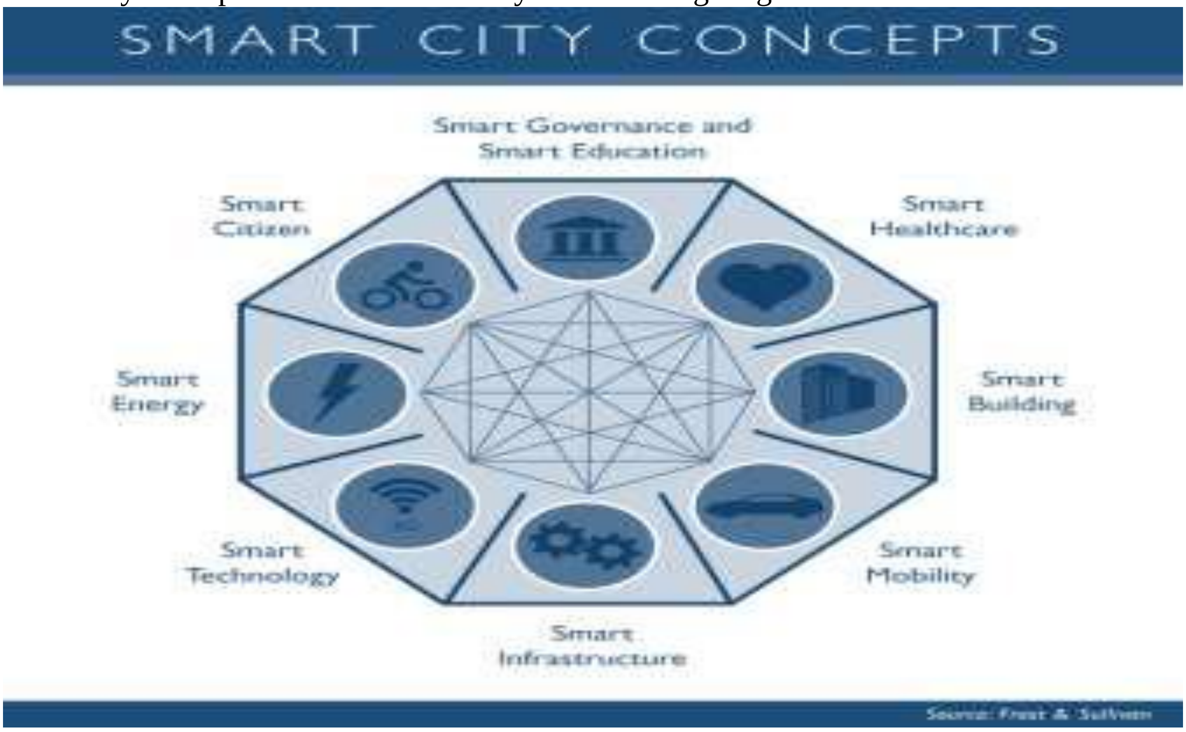
The basic objectives of the study are;

1. To know the smart cities.
2. To know the role of technology in establishing smart cities.

Understanding what is Smart city

A smart city is an urban development vision to integrate information and communication technology and internet of things technology in a secure fashion to manage a city's assets. Social and economic globalization is making the world 'more uniform', and cities are being seen as main part of economic attraction, Cities need public administrations, businesses and citizens that have a greater technological capacity, more entrepreneurial and innovative, more creative and better informed. The concept of Smart Cities is gaining increasingly high importance as a means of making available all the services and applications enabled by ICT to citizens, industries and authorities. A smart safe city is an integrated solution to a challenged faced by cities throughout the world.

Smart city concept we can understand by the following diagram



Technology in Smart Cities

A smart city relies, among others, on a collection of smart computing technologies applied to critical infrastructure components and services. Smart computing refers to a "new generation of integrated hardware, software, and network technologies that provide IT systems with real-time awareness of the real world and advanced analytics to help people make more intelligent decisions about alternatives and actions that will optimize business processes and business balance sheet results" .ICTs are key drivers of smart city initiatives The integration of ICT with development projects can change the urban Structure of a city and offer a number of opportunities.

Core to the concept of a smart city is the use of technology to increase sustainability and to better manage natural resources Smart city initiatives are forward looking on the environmental front of particular interest is the protection of natural resources and the

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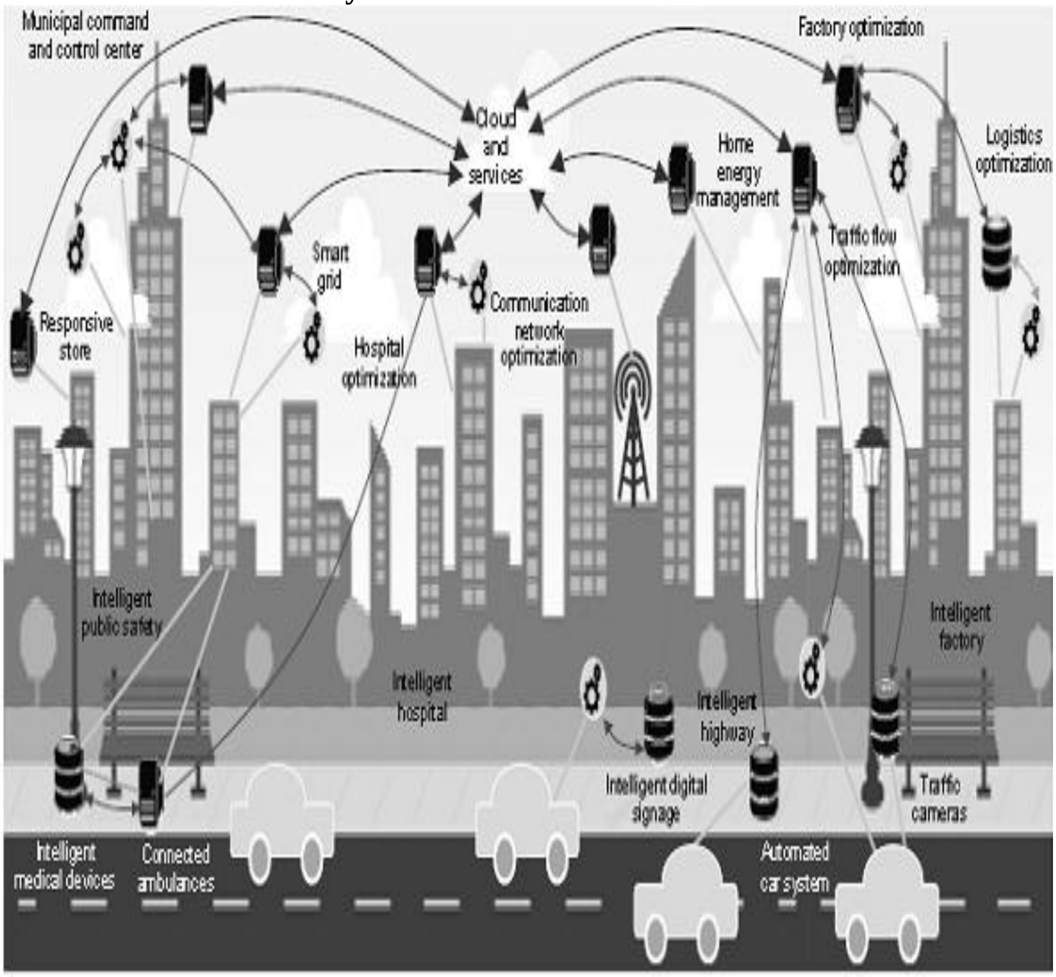
related infrastructure such as waterways, sewers and green spaces such as parks. Bio-based ethanol production for fuel for motor vehicles, LCAs are important for capturing all related environmental impacts, *e.g.* nitrogen use in fertilisers, GHG emissions due to land use for growing the biomass. Sensor-based networks that collect information and software-based interpretation of data can be used to adapt lifestyles, production and commerce in developing countries to the impacts of climate change.

Model of future smart city



Role of technology in creating smart cities

The initiative of government is must in order to reform the investment climate in India which is essential to make India a manufacturing hub. It should encourage promotion of more and more technological, research, and development parks on the pattern of special economic zones. Government should facilitate and encourage to technology innovation in the field of developing model for building smart cities.

Geospatial data and geographic information system (GIS) are essential components for building smart cities in a basic way that maps the physical world into virtual environment as a referencing framework. GIS are being used to provide solutions in legal aspects, administration, tourism, street management, parcel management, city management, demography, and communication, networking (power and water) recreation, transport, logistics, statistical survey and other government service as well as in businesses and industry. Geoinformation technology is being used in surveying, engineering, planning and

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logistics GIS maps, when integrated with other layers of city information, networking systems, and classified high resolution satellite images, create multiple data driven Smart City Platforms involving different stakeholders like the government, private sector, and the civil society. These layers can include building footprint locations, address information, energy consumption, street line markings, railroad and metro rail assets, storm and drinking water management, waterway and wetland areas, surface and volume analysis of roadways, Cadastral survey information, digital topography, encroachments.

Positive side of smart cities

- Reduce resource consumption, enable better and quality services to its citizens,
- Improve operational efficiency - as cities will be able to track its assets, enable efficient asset allocation and situation management,
- Reduce greenhouse emissions, and energy consumption
- Improved waste management and able to better serve its citizens without human intervention.

Negative side of smart cities

- Smart City will not solve existing cities such as haphazard growth patterns and poor neighbourhood.
- Smart City cannot solve bad building location and sub-standard architecture.
- Smart City Technologies rely on constant monitoring and analysis of data for smooth operations. It will reduce the privacy of the citizen
- Data that can be used to find a parking spot can also be used for surveillance there is a chance of misuse.

Challenges of using technology in building smart city

- Lack of IT training programs to employees of the organization
- Lack of export employees with integration skills.
- Lack of cross-sectoral cooperation between organization
- Lack of inter-departmental coordination Unclear vision of IT management
- Politics Culture issues.
- Risk is the most important factor in adopting technology in building smart city technology.
- Major issues of Technology: The working group which is set up by the ministry of information technology has identified four major issues, Information and services, Electronic Governance, Education and Mass campaign for IT awareness.
- Initial start-up costs for adopting technology in building smart city is too high. Limited previous experience is the big challenge in adoption of different technology.

Steps to Over Come the Above Challenges

Innovation in solar wind and bike power there are N no of alternative available for power generation.Use of hand held devices like mobile phones, electronic tablets and scanners theses device work in less power and adopt the virtual branches through agent network, mobile banking units and establishing low infrastructure branches.

- Here adoption of wireless communication technologies will increase the access to digital governance, in the local, national and international market.
- Using technology to improve the efficiency and transparency of physical stocks movement and real time information access.

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- Centralized MIS is must and adoption of WAN across the financial institution. Data base should be easily access able among all branches. It will decrease the cost compared to traditional system.
- Access learning and application of the learning in the work place can be increased using distance learning technology. With this cost of training per employee will be decreased.

Conclusion and Suggestions

The paper witnesses the use of Technology in building smart cities and how best we can use this technology to upgrade the digital governance of smart city. Technologies are key factors of smart city creating. The integration various data components from sensors, GIS, GPS, Imaging, Automated recognizer, social networks, mining the data using the available software and hardware components in the cloud environment would offer better solution to manage the Governance, Transport network, health, energy and business in smart way with low cost, maintain developed environment and benefit of the human kind.. and security in present system should be enhanced according to the requirement of the smart city, technology has revolutionised almost all the sectors thus, smart city should not lag behind.

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An Empirical Study- Impact of Liquidity on Profitability in Navratna Company of India

AKSHYA KUMAR

Abstract

This research paper has studied to explain about impact of liquidity on a company profitability that how can liquidity effect on profitability either negatively or positively. The liquidity ratio includes current ratio, quick ratio and absolute liquidity ratio which measure the company's profitability or efficiency of return on assets and return on equity also. This research has been conducted on Navratna company of India, i.e. ONGC.The data has been collected from different reliable sources such as annual reports, financial statements etc. on.Liquidity plays an important role in every organization because every organization wants to increase their profitability Liquidity refers to the ability of a concern to meet its current obligations as and when these become due. The current assets should either be liquid or near liquidity. The sufficiency or insufficiency of current assets should be assessed by comparing them with short-term (current) liabilities. If current assets can pay off current liabilities, then liquidity position will be satisfactory. On the other hand, if current liabilities may not be easily met out of current assets then liquidity position will be weak. The bankers, suppliers of goods and other short- term creditors are interested in the liquidity of the concern. So financial tools for calculating liquidity are used current ratio, quick ratio and absolute liquidity ratio.Profitability refers to the ability of a company to use its resources up to best possible way to generate revenue in excess of its expenses. It shows how efficiently the management can make profit by using all the resources available in the market. Profitability is the ability of a given investment to earn a return from its use.Financial tools for calculating profitability are used Gross Profit Ratio, Net Profit Ratio and operating Profit Ratio.

Introduction

The primary objective of a business undertaking is to earn profits. Because it is essential for the survival of the business. A business needs profits not only for its existence, but also for its expansion and diversification. The investors want an adequate return on their investment as well as workers want safety regarding their remuneration and future, creditors seek safety for interest and their loan. A business enterprise can discharge its obligations to various segments of the society only through earning of profit. As regards Profitability, it is the profit earning capacity which contributes to the survival of the company. The perpetual existence of the company, which also influence the reputation of the company. The borrowing capacity of the company is also determined by its profit earning capacity. In fact profitability is measured in terms of profit shown as percentage of sales known as profit margin. The profitability ratio mainly consists of in this study are: Gross Profit Ratio, Net Profit Ratio and operating Profit Ratio.

As regards liquidity is one of its controlling nerveCentre. Liquidity means that company pays its short term debt obligations and improves their performance and efficiency. If any company faces liquidity problem then it may be harmful to pay its short term debt timely.

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It effects adversely on the performance of the company. So the company should have sufficient cash to short out its liquidity problem. Current ratio, quick ratio and absolute liquidity ratios are very useful to assist and determine liquidity position and profitability of the company.Liquidity is very important factor of Financial Management. Both excessive liquidity as well as inadequate liquidity affects the normal activity of the business concern. Excessive liquidity implies idle funds which fail to earn any profit for the concern. Inadequacy of liquidity not only impairs the company's profitability but also results in business operation interruptions and inefficiencies. An overall control liquidity of the company can ensure a smooth running of its business wheel.

Liquidity is associated with both the quantitative and qualitative aspects of liquidity. The quantitative aspect includes the quantum, structure and utilization of liquid assets while qualitative aspect implies the ability of a company to meet all present and potential demands in cash in such a way that will minimize cost and maximizes the value of business. In fact, excessive liquidity means accumulation of idle funds which may lead to lower profitability, increased speculation and unjustified expansion, extension of liberal credit terms, liberal dividend policies etc. On the other hand, inadequate liquidity results in interruption of business operations. A Proper balance between these two extreme situations should therefore be maintained for efficient liquidity. The issue in connection with the relationship between liquidity and profitability in an unsolved one. Even the findings of the studies so far made in India and outside India on this matter are conflicting in nature. Liquidity and Profitability are the two important and vital aspects of corporate business world. No firm can survive without liquidity. Without profit a firm may be considered as sick but one having no liquidity may soon meet its down fall and ultimately die. As a matter of fact, Liquidity is pre-requisite for the survival of a business firm. Thus manage to Liquidity has become a basic and broad aspect of judging the performance of a corporate entity.

Objectives of the Study

The main objectives of the study are to evaluate the overall efficiency of the management in terms of liquidity of ONGC. This study focuses how the liquidity of the company affects the profitability under study. More especially the main objectives of the study are:

1. To analyze the liquidity position of the company;
2. To analyze the profitability of the company;
3. To analyze the relationship between profitability and liquidity of the company by computing different ratios.
4. To offer necessary suggestions to improve the efficiency of liquidity in ONGC.
5. To suggest financial measures for gearing up profitability and thereby strengthening the financial position of ONGC Navratna company of India.

Review of the Literature

As regards literature of review, a number of studies are found, significant of them included:

S.K. Khartiktitto Varghese, (2011) found the profitability more or less depends upon the better utilization of resources and manpower. It is worthwhile to increase production capacity and use advance technology to cut don cost of production and wage cost in order to increase profitability, not only against the investment, but also for investor's return point of view.

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Eljelly (2004) highlighted, that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ration that affects profitability.

Shine and Soemen (1998) found that there is a strong negative relation between the cash conversion cycle and corporate profitability for a large sample of listed American companies for the 1975-1994 periods.

Mukherjee (1998) carried out a study to assess the wording capital of public enterprises in India and this study revealed that liquidity and profitability were negatively correlated in eleven enterprises out of the selected twenty and in the remaining cases the positive correlation between two were found.

Vijay Kumar and Venkatachalam (1995) showed in empirical study that liquidity was inversely related with profitability in the selected sugar mills in the state of Tamilnadu.

A significant positive relationship between liquidity and profitability was also found in the private aluminums producing companies in India in the study conducted by Sur et al, (2001). A similar observation was also found in the study on the liquidity management in SAIL, conducted by **Bardia (2004).**

Mallick et al, (2005) in their study found that the liquidity was negatively associated with profitability in ten out of seventeen pharmaceutical companies under study and in the remaining seven cases, it was positive.

Rohit and Vipin (2012) investigated on determinants of corporate liquidity in India for a sample of 100 firms in Indian market over the period 1998-2008. It was found that size of firm has no impact on liquidity.

Sandharet. al (2013) examined the relationship between liquidity and profitability of selected Indian cement companies using regression analysis and revealed that current ratio and liquid ratio are negatively associated with return on assets (ROA),return on investment (ROI) and cash turnover ratio is negatively associated with ROI and ROA.

Neeraj and Devesh (2013) conducted a study on liquidity position and impact on profitability of Tata Steel and steel authority of India. The study found that liquidity position can be improved with the help of low average collection period and average collection can be reduce b proper coordination between sale , production and finance department, lastly conclude that study found positive impact of liquidity position on profitability with the help of various techniques.

Ashok Kumar (2013) studied liquidity position of five leading companies which cover period of 10 tears from 2000-2010. It has been found that the liquidity position of small companies is better as compared to big ones. Lastly, it is concluded that companies should maintain an ideal current and liquid ratio.

Sarvanan and Abarna (2014) conducted study on liquidity analysis of selected automobile companies in India using Anova and found that there is significant difference between among the absolute liquid ratios of the selected automobile companies.

Hypothesis

As regard the formulation of hypothesis in the proposed study, the researcher seeks to and judge whether:

1. Profitability and Liquidity are independent OrProfitability and Liquidity both are positively associated.

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2. Liquidity significantly affects Profitability.

Research Methodology

The required information on the subject collected from various sources. Textual and Statistical material collected mainly from the Head Office of the ONGC and also from the Ministry of Petroleum and Natural Gas Government of India, New Delhi. Resources are also taken from various libraries. Conversation and personal Interviews with the authorities of various departments concerning. Profitability and Liquidity of ONGC held before arriving at the conclusion and fruitful suggestions.

Research Design

1. Source of Data- The study is based purely on secondary data. The data was obtained from the annual reports of the company and also from the Ministry of Petroleum and Natural Gas Government of India, New Delhi.. In addition, Journals, magazines, books and different sites were also referred for finalizing the methodology for the study.

2. Period of Study- The study covers a period of 5 years starting from 31March 2012-13 to 31March 2016-17.

3. Sample size of the study-The researcher has selected Navratna company of India (ONGC) to evaluate, what extent they are profitable financially strength and liquidity position.

Data Analysis and Interpretation

1. Current Ratio

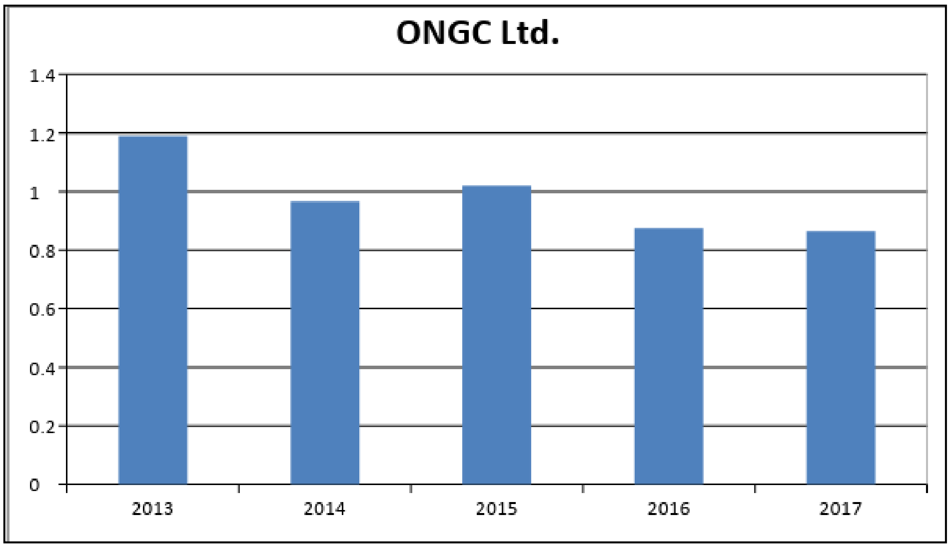
$$\textbf{Current Ratio} = \frac{\textit{Current Assets}}{\textit{Current Liabilities}}$$

TABLE 1

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Current Assets	64138.18	60463.82	63174.65	59710.06	53336.80
Current Liabilities	53673.44	62563.42	62085.91	68253.07	61711.11
Current ratio=	1.19	.966	1.02	.875	.864

Source Annual Report



Interpretation-From the above graph and table it is clear that current ratio of ONGC is decline in 2013-14 in compare to 2012-13. Afterwards it increases slightly in 2014-15, but after it decreases continuously. It shows that the liquidity position of the firm is not good. The firm shall not be able to pay its current liabilities in time without facing difficulties. This is the indication of deterioration in the liquidity position of the company.

2. Quick Ratio

Quick Ratio: $\frac{Quick\ Assets}{Current\ Liabilities}$

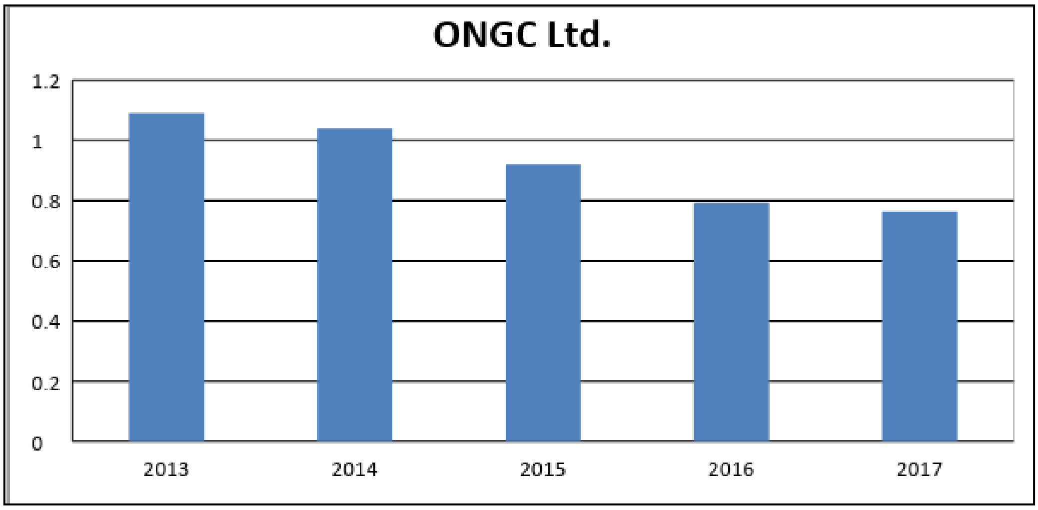
TABLE 2

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Quick Assets	58433.79	54581.28	57211.12	54068.00	47171.48
Current Liabilities	53673.44	62563.42	62085.91	68253.07	61711.11
Quick Ratio=	1.09	1.04	0.92	0.79	.764

Source

Annual Report



Interpretation-From the above graph and table it is clear that Quick Ratio is declining continuously year by year. Its shows that the company liquidity position is not good. It's indication of short term financial crisis.In quick assets inventories and prepaid expenses are excluded because they are not converted into cash immediately. Its ideal ratio is 1:1; it means quick assets should be equal to current liabilities.

3. Absolute Liquidity Ratio

Absolute Liquidity Ratio: $\frac{Absolute\ Liquid\ Assets}{Current\ Liabilities}$

TABLE 3

(Rs. In Crores)

	Mar'2013	**Mar'2014**	**Mar'2015**	**Mar'2016**	**Mar'2017**
Absolute. Liquid Assets	51570.07	46415.61	43632.86	48766.02	40695.27
Current Liabilities	53673.44	62563.42	62085.91	68253.07	61711.11
Absolute L.R.	0.96	0.74	0.70	0.71	0.65

Source

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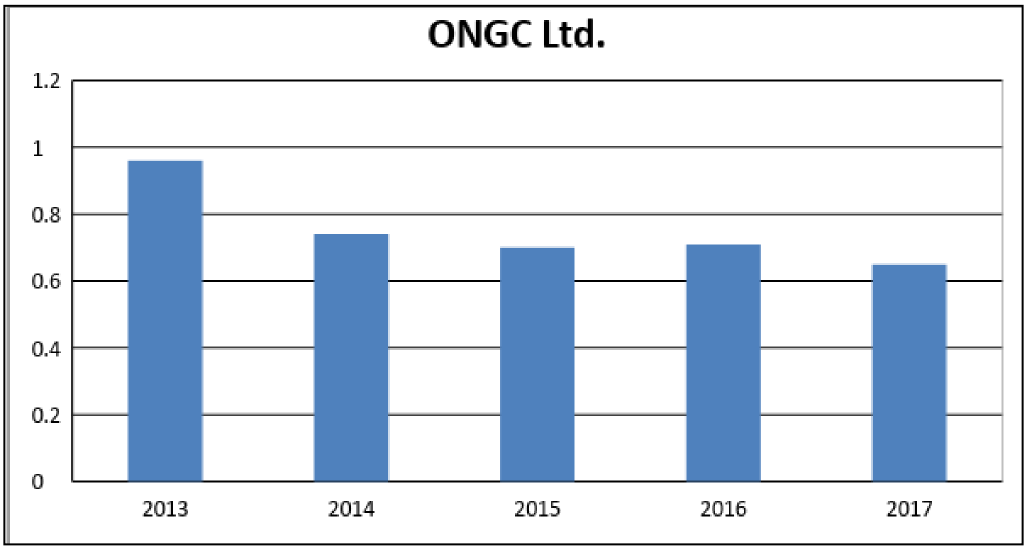


Interpretation-From the above graph and table it is clear that Absolute Liquidity ratio is declining continuously. It displays that the solvency position of the company in not so good.In absolute Liquidity Ratio only cash and cash equivalent items such as marketable securities are taken into consideration which are ready to convert into cash.

4. Debt Equity Ratio

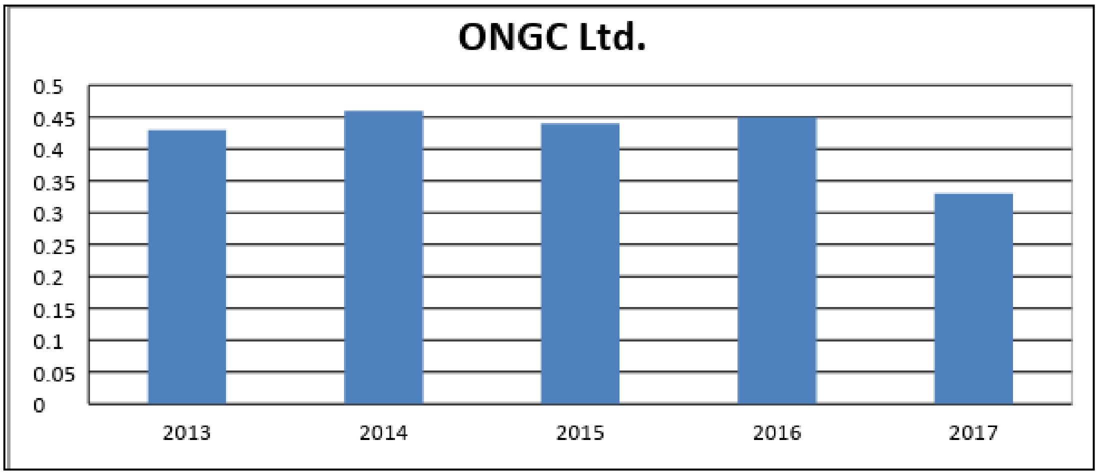
Debt Equity Ratio: $\frac{Debt}{Equity}$

TABLE 4

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Debt	53673.44	62563.42	63478.91	68253.07	61711.11
Equity	124453.22	136725.01	144600.98	151852.70	185538.38
Debt Equity Ratio	0.43	0.46	0.44	0.45	0.33

Source Annual Report



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Interpretation-From the above graph and table it is clear that Debt Equity ration has decreased in 2007 to .33 which is favorable from the point of view of long term creditors. It shows that debt is a few in comparison to equity shareholders fund. In debt some author take only long term debt and some takes long term and short term both. Here the researcher has used in debt short term and and long term both.

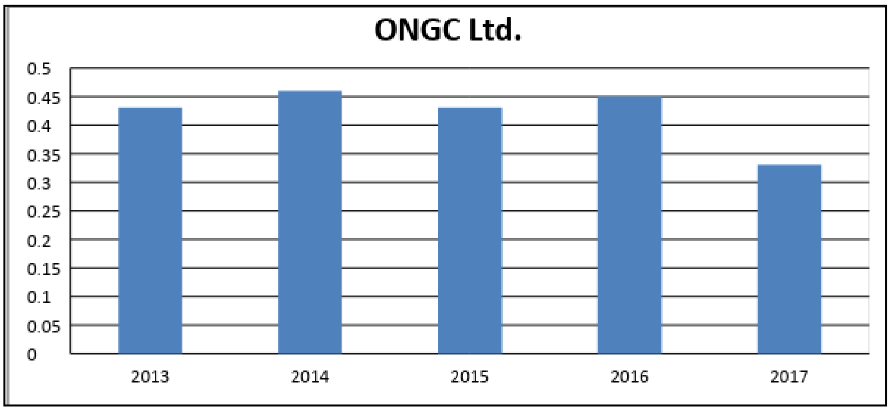
5. Debt to Total Fund Ratio

Debt to Total Fund Ratio: $\frac{Debt}{Total\ Fund}$

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Debt	53673.44	62563.42	63478.91	68253.07	61711.11
Total Fund	124453.22	136725.01	145993.98	151852.70	185538.38
tDebt to Total Fund Ratio	0.43	0.46	0.43	0.45	0.33

Source
Annual Report



Interpretation-From the above graph and table it is clear that Debt to Total Fund is declining which is favorable from the point of view of long term creditors. It shows that that is a few in comparison to Total Debt.

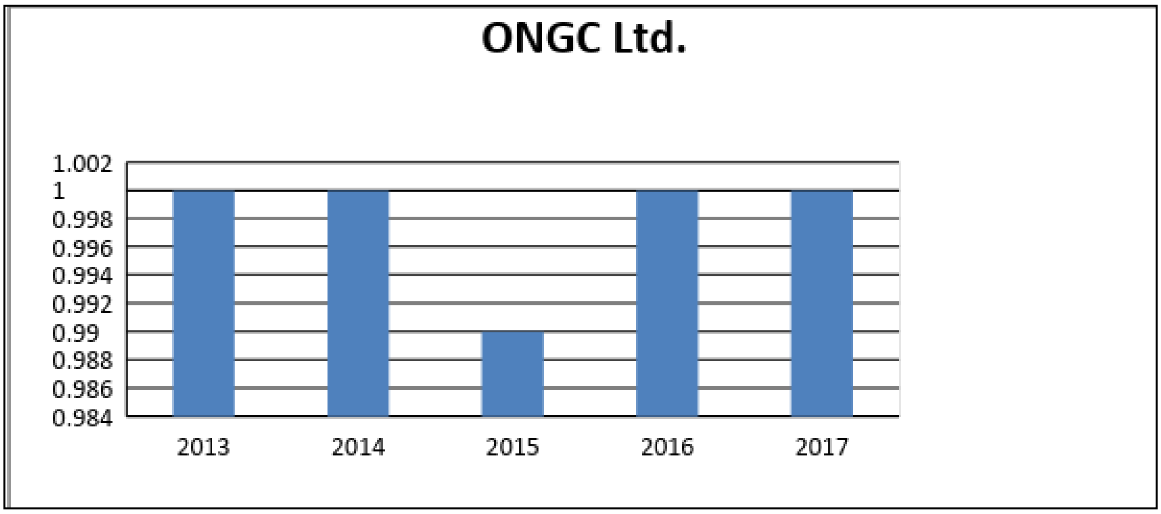
6. Proprietary Ratio

Proprietary Ratio: $\frac{Equity}{Debt+Equity}$

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
shareholders Funds	124453.22	136725.01	144600.98	151852.70	185538.38
Debt+ Shareholders Funds	124453.22	136725.01	145993.98	151852.70	185538.38
Proprietary Ratio	1.00	1.00	0.99	1.00	1.00

Source
Annual Report



Interpretation-From the above graph and table it is clear that Proprietary Ratio is mostly one which indicate better long term solvency position of the company. It means the company has taken mostly sources of funds from internal sources.

7. Gross Profit Ratio

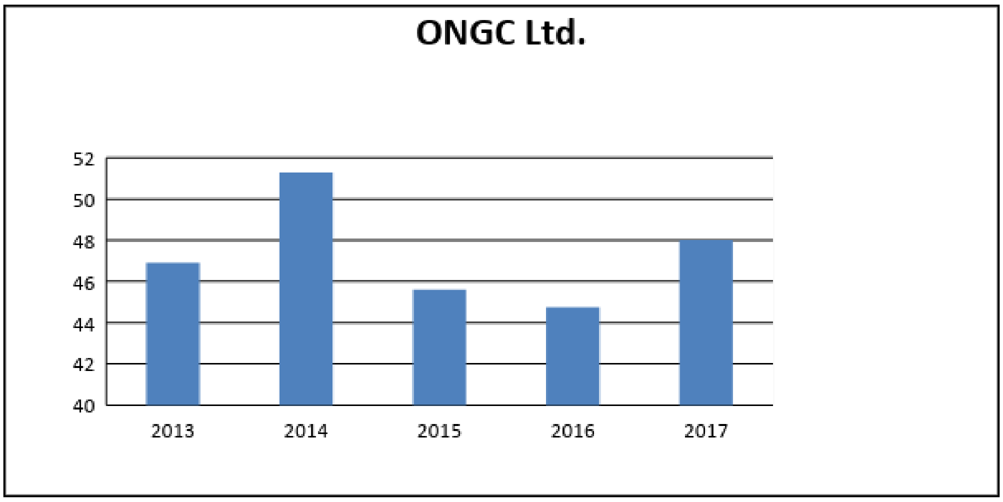
Gross Profit Ratio: $\frac{Gross\ Profit}{Net\ Sales} X\ 100$

TABLE 7

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Gross Profit	38917.90	43039.20	37823.19	34698.77	37405.05
Net Sales	82970.05	83890.27	82870.96	77542.72	77698.48
Gross Profit Ratio=	46.91	51.30	45.60	44.75	48.00

Source
Annual report



Interpretation-From the above graph and table researcher conclude that company earned its highest gross profit (48%) in 2013-14 in total 5 year of sample size. In 2014-15 and in 2015-16 the Gross Profit is declining but in 2016-16 it has increased.

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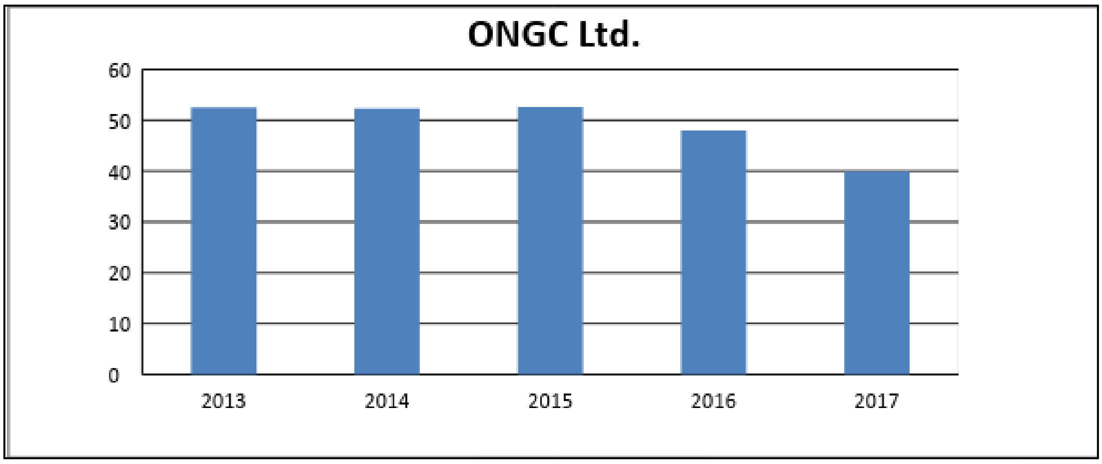
8. Operating Profit Ratio

Operating Profit Ratio: $\frac{Operating\ Profit}{Net\ Sales}\ X\ 100$

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Operating Profit	43582.45	43969.55	43556.14	37609.74	31078.66
Net Sales	82970.05	83890.27	82870.96	77542.72	77698.48
Operating Profit Ratio	52.5	52.4	52.6	48	40

Source
Annual report



Interpretation-From the above graph and table it is clear that Operating Profit is maximum in 2014-15. Except this year the profit is declining in remaining four year. The profit declining in the year 2012-13 and in 2013-14 is not so much. But in the year of 2015-16 and in 2016-17 a large profit is declining which is not a good indicator of the company. For improvement the profit the company should take some remedial action.so that again same level can be achieved.

9. Operating Cost Ratio

Operating Cost Ratio: $\frac{Cost\ of\ Goods\ Sold+Operating\ Expenses}{Net\ Sales}\ X\ 100$

TABLE 9

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Operating Cost	39387054	39920.72	39314.82	40322.21	46619.09
Net Sales	82970.05	83890.27	82870.96	77542.72	77698.48
Operating Ratio	47.5	47.6	47.4	52	60

Source
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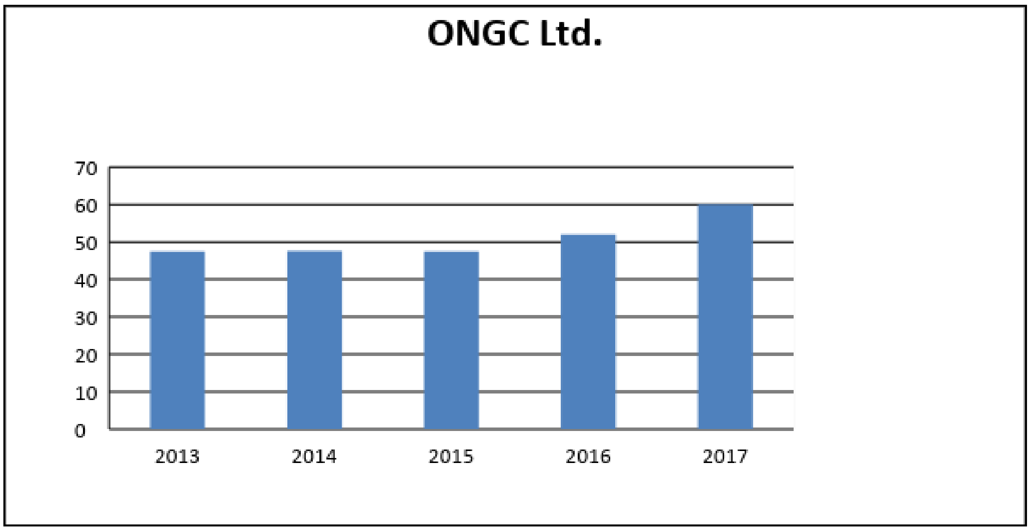

Interpretation-From the above graph and table it is clear that operating cost is increasing continuously year by year. Higher of operating ratio is less favorable for the company. The reason is being that it would give small margin (Operating Profit) to cover interest, income tax, dividends and reserves.

10. Net Profit Ratio

Net Profit Ratio: $\frac{Net\ Profit}{Net\ Sales}\ X\ 100$

TABLE 10

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Net Profit	20956.25	21583.70	18116.86	19123.05	17899.98
Net Sales	82970.05	83890.27	82870.96	77542.72	77698.48
Net Profit Ratio=	25.25	27.73	21.86	24.4	23.04

Source
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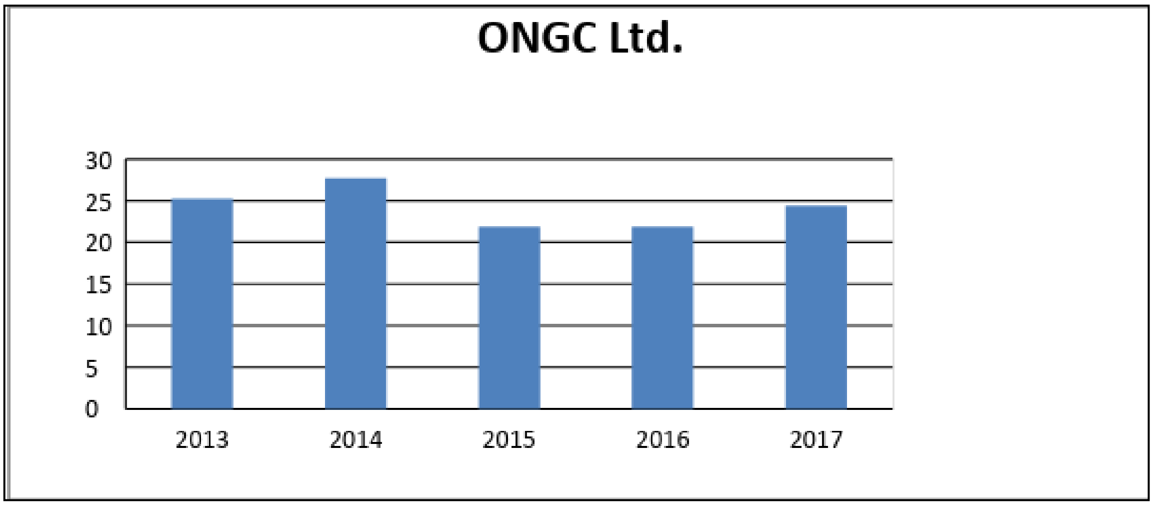

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Interpretation-From the above graph and table it is clear that net profit is declining continuously which is not in the favor of the company. In 2013-14 it shows 27.73% which is highest in 5 years. The company must take some remedial steps for increasing Net Profit Ratio.

11. Return on Shareholder Fund or ROI:

Return on Shareholder Fund or ROI = $\frac{\textbf{Net Profit}}{\textbf{Net Sales}}\ \textbf{X 100}$

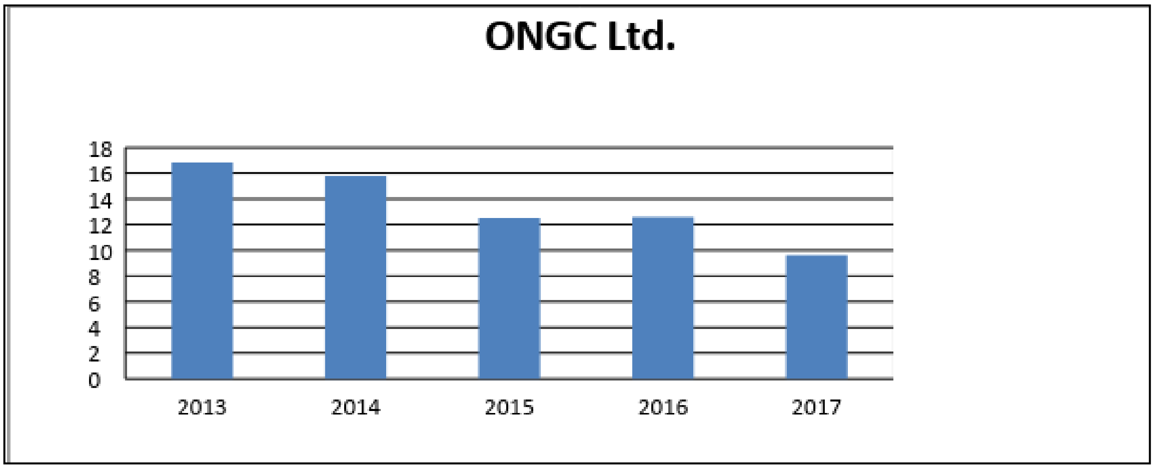
TABLE 11

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Net Profit	20956.25	21583.70	18116.86	19123.05	17899.98
Shareholders Fund	124453.22	136725.01	144600.98	151852.7	185538.38
ROI Ratio=	16.84	15.79	12.52	12.59	9.63

Source

Annual report



Interpretation-From the above graph and table it is clear that return on Shareholders Fund is declining continuously which is not in the favour of Equity Shareholders. So the Earning per Share of the company has been reduced to Rs. 13.95 in 2017.

12. Return on Equity Share Capital

Return on Equity Share Capital: $\frac{\textbf{Net Profit after Tax}}{\textbf{Equity Share Capital}}\ \textbf{X 100}$

TABLE 12

(Rs. In Crores)

	Mar'2013	Mar'2014	Mar'2015	Mar'2016	Mar'2017
Net Profit after tax	20956.25	21583.70	18116.86	19123.05	17899.98
Equity Share Capital	4277.76	4277.76	4277.76	4277.76	6416.63
Return on E.S.C. Ratio	489.88	504.56	423.51	447.03	278.96

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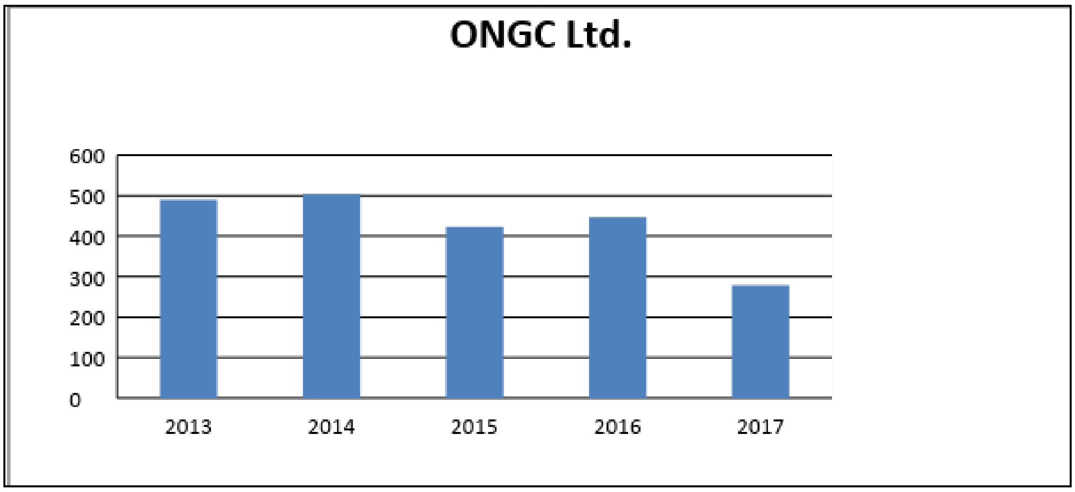

Interpretation-From the above graph and table it is clear that Return on Equity is declining continuously except 2013-14 and in 20125-16. In 2016-17 it has been reduced to 2789.96 which are not fruitful for the health of the company.

Conclusion and Recommendations

By applying various financial tools, the results of the study conclude that all liquidity ratios are declining significantly which is not in the favour of the company. On the other hand, the researcher has noticed that Operating profit is also declining continuously. There is a fluctuation in Gross Profit and Net Profit of the company also. It seems that to overcome the problem of liquidity the company should issue Equity shares, Preference Shares or Debentures. Otherwise the company should raise long term debt. It is better ways to solve the short term solvency problem of the company. The company must overcome the problem of reducing operating Profit Ratio; the company should try to reduce its operating cost.

It is also found that liquidity and profitability has direct relationship. It implies that how the liquidity of the company affects the profitability. So it can be said that if the company improve its liquidity position, the profit of the company can also be raised.

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Experimental Study on Partial Replacement of Fine Aggregate by Using Foundry Sand and Glass Powder

A.Sam Appadurai, Dr.S.U.Kannan, J.Samuel Prabaharan, M.A.Raja*

Abstract
Leaving the waste material to the environment directly causes environmental problem. Hence the reuse of waste material has been emphasized. Waste material can be used to produce new products or can be used as admixtures so that natural resources are used more efficiently and environment is protected from waste products. Natural sand is exhausting at a very high speed so there is need to find alternative source to natural sand. In this project the behaviour of concrete assured by partially replacing sand with Foundry sand and Glass powder and also in addition of Steel fibre. A concrete mix of M20 grade concrete was used. Compression test were carried out to evaluate the strength properties of concrete at the age of 7 and 28 days. Test results showed that at 20% there is optimum increase in compressive strength and Split Tensile strength at 28 days and on 30% the strength decreases. The natural river sand was replaced with 10%, 20% and 30% of foundry sand and glass powder and 1 % of steel fibre is added by weight. Test were carried out on cubes to study the mechanical properties of concrete.
Keywords: Foundary Sand, Glass Powder, Steel Fibre, Compressive Strength, Split Tensile Strength

1. Introduction

The advancement of concrete technology can reduce the consumption of natural resources and energy resources and less the burden of pollutants of environment. Presently large amount of foundry sand and glass powder is generated in metal casting and glass industries with an important impact on environment and humans. This project describes the feasibility of using foundry sand, glass powder and steel fibre as partial replacement of fine aggregate. The foundry sand, glass powder and steel fibre added to concrete by replacing 0%, 10%,20% and 30%. The compressive strength of cube is measured for 7 and 28 days. Foundry sand is high quality silica sand with uniform physical characteristics. It is a by product of ferrous and non-ferrous metal casting industries, where sand has been used for centuries as a moulding material because of its thermal conductivity.The physical and chemical characteristics of foundry sand will depend in great part on the type of casting process and industry sector from which it originates. The automotive industries and its parts are the major generators of foundry sand. Foundries purchase high quality specific size silica sand for use in their moulding and casting operations. Glass powder is made from the waste glass material that cannot be recycled or reuse due to the high cost of recycling. Waste glass powder is being used for land fill. Due to environmental problem researches try to use the waste glass powder into the concrete to create a new material to use in constrction field. Steel fibre is the leading low carbon cold drawn steel fibre for concrete reinforcement. It is evenly distributed in bonding capacity exceeding most

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performance specifications for enhancing concrete's flexural and shear strength, fatigue, endurance, impact resistance and ductility. It is a reliable cost efficient concrete reinforcement that is designed to be easy to mix, place and finish.

2. Scope of Study

In this experimental study, the effect of foundry sand, glass powder and steel fibre in concrete in terms of compressive strength had been focused. Foundry sand and Glass powders are added to the concrete by replacing 0%,10%,20%,30%, Steel fibres are added in 0.25%,0.35%,0.45% of Portland Pozzoloanic cement.Totally 24 cubes have been casted. Water cement ratio is 0.4%. The cubical samples were used as compression test specimens to determine the compressive strength at the age of 7 and 28 days.

3.Materials Used

A. Cement

Portland Pozzalona cement "Product of future" is prepared by fully automated dry manufacturing processs using state of art technology under strict quality assuarance at all stages of manufacturing with the help of "ROBOTIC (POLAB)"system.ppc is manufactured by intergrinding well-burnt opc clinker with gypsum and pozzolanic material like power station flyash as silicious earths. It has higher durability of concrete structure due to less permeability of water. It has better surface finish and low heat of hydration.

Fig .1: Cement

Table 1 Properties Cement

Sl.No	Property	Value
1	Specific gravity	3.15
2	Fineness	93.8
3	Initial Setting Time	47 min
4	Final Setting Time	365 min
5	Standard Consistency	32%
6	Fineness Modulus	7%

B Coarse Aggregate

The aggregate used in this project mainly of basalt rock which comes under normal weight category. The aggregates are locally available. The size of the aggregate used in this project is 20 mm. The coarse aggregate also tested for various properties like impact value test, crushing value test, flakiness and elongation index test to check their suitability for the experiment. The shape and texture of aggregate affects the properties of fresh concrete more than hardened concrete. Concrete is more workable when smooth and rounded aggregate is used instead of rough angular or elongated aggregate. Most natural sands and gravel from riverbeds or seashores are smooth and rounded and are excellent aggregates, which have a higher surface to volume ratio, better bond characteristics but require more cement paste to produce a workable mixture.

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Table 2 Properties of Coarse aggregate

Sl.No	Property	Value
1	Specific Gravity	2.8
2	Fineness Modulus	7.5
3	Water Absorption	0.5
4	Particle Shape	Angular
5	Impact Value	16.2

C Fine Aggregate

Natural sand which is easily available and low in prices was used in this work. It has cubical or rounded shape with smooth surface texture. Being cubical rounded smooth surface texture it gives good workability. Sieve analysis was done to find out fineness modulus.

Fig.2: Fine aggregate

Table 3 Properties of Fine aggregate

Sl.No	Property	Value
1	Specific Gravity	2.8
2	Fineness Modulus	3.2
3	Water Absorption	0.5%
4	Surface Texture	Smooth

D. Water

Water for masonry mortar must be clean and free of harmful amounts of acids, alkalis, and organic materials. Whether the water is drinkable is not in itself a consideration, as some drinking water contains appreciable amounts of soluble salts, such as sodium and potassium sulphate, which can contribute to efflorescence. If necessary, laboratory analysis of the water supply should be used to verify suitability.

E. Foundry Sand

The raw materials used for making sand moulds for metal casting are usually recycled. After a repeated use they lose their characteristics, thereby becoming unsuitable for further use in the manufacturing process. All these materials are then discarded as a waste. They are mainly moulding sand and core sand. Moulding sand is the sand which is compacted and shaped according to a pattern that is going to be produced. By-product materials that result from the moulding sand are dust particles and cleaned sand from the casting and excess system sand which is in the form of large lumps of fine sand.

Fig. 3: Foundry sand

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Table 4 Properties of Fine aggregate

Sl.No	Property	Value
1	Specific Gravity	2.7
2	Fineness Modulus	2.7
3	Water Absorption	0.5%
4	Surface Texture	Smooth

F. Glass Powder

Glass is amorphous material with high silica content, thus creation it potentially pozzolanic when particle size is less than 75µm. Studies have shown that finely ground glass does not donate to alkali-silica reaction. In the recent, various attempts and investigate have been made to use ground glass as a substitute in conventional ingredients in concrete making as a part of green house organization. A major concern about the use of glass in concrete is the chemical reaction that takes place between the silica-rich glass particle and the alkali in pore solution of concrete, which is called alkali-silicate reaction can be very damaging to the stability of concrete, unless appropriate safety measures are taken to minimize its effect. ASR can be prevented or reduced by adding mineral admixtures in the concrete mixture, common mineral admixtures used to minimize ASR are pulverized fuel ash (PFA), silica fume (SF) and met kaolin (MK). The fact that glass has high silica content has led to laboratory studies on its possibility as a raw material in cement manufacture. The use of finely divided glass powder as a cement replacement material has yielded positive results, optimal dosage range of this glass powder is chosen based on cement paste studies.

Fig.4: Glass powder

G. Steel Fibre

Steel fibre is the leading low carbon, cold drawn steel fibre for concrete reinforcement. It is evenly distributed in concrete mixture to provide "improved mechanical bonding capacity exceeding most performance specifications for enchancing concretes flexural and shear strength, fatigue, endurance, impact resistance and ductility". It is a reliable cost efficient concrete reinforcement that is designed to be easy to mix, place and finish. Steel fibre is generally distributed throughout a given cross section whereas reinforcing bars or wires are placed only where required. They are relatively short and closely spaced as compared with continuous reinforcing bars of wires. Steel fibres typically do not significantly after free shrinkage of concrete, however at high enough dosage they can increase the resistance to cracking and decrease crack width.

Fig. 5: steel fibre

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4.Results & Discussion

Compressive Strength Test

The compressive strength of concrete cube was determined as per IS: 516 –1959. The compressive strength test is conducted in the Compression Testing Machine of 2000 kN capacity and the test results are as follows

Table 5 Compressive Strength Test Results

MIX	F.S %	G.P %	S.F %	Compressive Strength	
				7 days	28 days
M0	0	0	0	15.32	21.40
M1	10	10	1	17.46	23.22
M2	20	20	1	18.22	26.24
M3	30	30	1	15.38	22.34

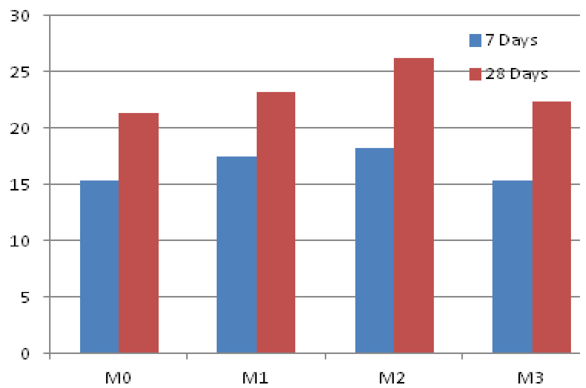

Fig. 6: Compressive Strength Test Results

Split Tensile Strength Test

The splitting tensile strength of concrete cylinder was determined as per IS: 5816 –1999. The load was applied nominal rate within the range 1.2 N/(mm^2/min) to 2.4 N/(mm^2/min)

Table 6 Split Tensile Strength Test Results

MIX	F.S %	G.P %	S.F %	Split Tensile Strength	
				7 days	28 days
M0	0	0	0	2.96	3.25
M1	10	10	1	3.24	3.42
M2	20	20	1	3.30	3.63
M3	30	30	1	3.22	3.38

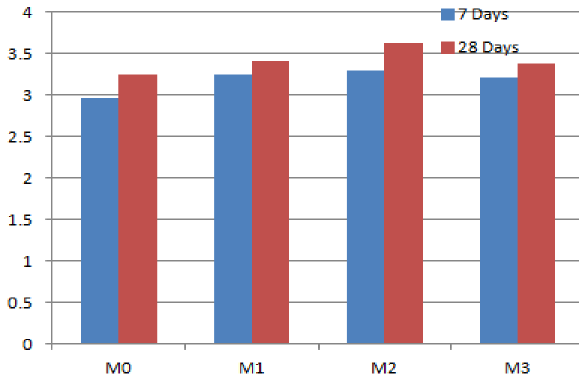

Table 7 Split Tensile Strength Test Results

5. Conclusion

Good quality natural sand is not available easily so artificial foundry sand is being used. Artificial sand is used as an alternative for Natural River sand also glass powder waste from glass industry and steel fibre is being used. The problem of disposal of waste like glass powder and foundry is reduced. So at 20% optimum compressive strength is obtained and at 30% it got reduced since the workability decrease with increase of foundry sand and glass powder content because of very fine particles.

From the above result the following conclusions were arrived. With the inclusion of foundry sand, glass powder and steel fibre the compressive strength and split tensile strength of concrete gradually increases up to 20% but gradually decreases. Also both the compressive strength and split tensile strength of concrete of replaced concrete is greater the conventional concrete. Hence it is concluded that foundry sand and glass powder can be replaced upto 20% for fine aggregate and steel fibre can be added upto 1% for better results.

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Cloudburst in India: Several Case Studies

Pravinkumar yadav*
Dr.M.S Panwar**

Abstarct
A detailed analysis is made of the current ideas concerning floods of a special type. We examine 5 case studies short-lasting torrential flash floods, one of the most widespread and hazardous natural phenomena in the India characterized by a high rate of development, and by a short duration. It is established that such floods are in an early stage of study, which is confirm by the fact that there is no general consensus as to what should be treated as a flash flood. It is pointed out that a special term designating them is also absent in many countries. It is resolve that the key formation conditions for flash floods include intense short-lasting cloudbursts, the occurrence of a river basin in mountainous regions and a small drainage area; on this basis, it is suggested that they be termed flash floods. cloudbust rainfall often leads to floods and landslides in the Himalayan region even with rainfall amounts that are considered comparatively moderate over the plains; for example, 'cloudbursts', which are devastating convective phenomena producing sudden high-intensity rainfall (~10 cm per hour) over a small area. Early prediction and warning of such severe local weather systems is crucial to mitigate societal impact arising from the accompanying flash floods.
Keywords: *Cloudburst flash floods mesoscale tropical rainfall measuring mission*

Introduction

It is an extreme amount of precipitation in a short period of time to a small geographical area. The term "cloudburst" is come from the notion that clouds were akin to water balloons and could burst, resulting in rapid precipitation? Though this idea has since been disproven, the term remains in use.Cloudburst is basically a rainstorm and occurs mostly in the desert and mountainous regions, and in interior regions of continental landmasses due to the warm air current from the ground or below the clouds rushes up and carries the falling raindrops up with it. The rain fails to fall down in a steady shower, which causes excessive condensation in the clouds as new drops form and old drops are pushed back into it by the updraft.Rains are the blessings to all the living beings on the Earth because it is responsible for depositing most of the fresh water on the Earth and it also provides many suitable conditions for many types of ecosystemsand water for hydroelectric-power plants and crop irrigation. The rainfall is used to *prescribe* precipitation in the form of water drops of sizes larger than 0.6 mm. Other forms are snow, drizzle, sleet, hail and cloudburst. But the Global warming causes global changes in the precipitation pattern that's why we keep hearing about clouds bursting every now and then, especially in the hills of North India. Here, we are giving a detailed explanation on cloudburst, how such cloud formed and what causes the clouds to burst and release all the water at once for general awareness.

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Objectives

The objective of the Cloudburst Management Plan is to reduce the impacts of pluvial flooding due to heavy rains, which are expected to increase in frequency as a result of climate change. The plan builds on a detailed socio-economic assessment to ascertain whether cloudburst and stormwater management can pay off for society as a whole. Previously, sewer discharge was allowed to ground level once every 10 years. With the new management plan, sewer discharge will still be only allowed to reach ground level once every 10 years, but average water levels will lonely be allowed to exceed ground level by 10 cm once every 100 years (except areas designated for flood control).

Literature Review

1. In July, 1970 — Cloudburst in the upper catchment area led to a 15 metre rise in the Alaknandariver in Uttarakhand. Entire river basin, from Hanumanchatti near the pilgrimage town of Badrinath to Haridwar was affected.
2. On August 15, 1997, 115 people were killed when a cloud burst came bustling and trail of death are all that is left behind in Chirgaon in Shimla district, Himachal Pradesh.
3. July 16, 2003, About 40 persons were killed in flash floods caused by a cloudburst at Shilagarh in Gursa area of Kullu, Himachal Pradesh.
4. June 9, 2011, near Jammu, cloudbursts left 4 persons dead and over several injured in Doda-Batote highway, 135kms from Jammu.Two restaurants and many shops were washed away.
5. On September 6, 2014 there was a cloudburst in Kashmir valley killing more than 200 people. Center for Science and Environment (CSE) mentioned heavy and unchecked development aggravated the development in the region.

How It Different From Normal Rainfall

Rain is condensed water falling from a cloud while cloudburst is a sudden heavy rainstorm. A report in the Down to Earth said a cloudburst is different from rain only in the amount of rainfall recorded. Rain over 100mm per hour is categorised as a cloudburst.Hence, we can say the cloudburst is natural phenomena, but occur quite unexpectedly, very abruptly, and rather drenching. In the Indian Subcontinent, it is generally occurs when a monsoon cloud drifts northwards, from the Bay of Bengal or Arabian Sea across the plains then on to the Himalaya that sometimes brings 75 millimetres rain per hour.

Record Cloudbursts

Duration	Rainfall	Location	Date
1 minute	1.5 inches (38.10 mm)	Basse-Terre, Guadeloupe	26 November 1970
5.5 minutes	2.43 inches (61.72 mm)	Port Bell, Panama	29 November 1911
15 minutes	7.8 inches (198.12 mm)	Plumb Point, Jamaica	12 May 1916
20 minutes	8.1 inches (205.74 mm)	Curtea de Argeș, Romania	7 July 1947
40 minutes	9.25 inches (234.95 mm)	Guinea, Virginia, United States	24 August 1906
1 hour	9.84 inches (250 mm)	Leh, Jammu and Kashmir, India	August 5, 2010
1 hour	5.67 inches (144 mm)	Pune, Maharashtra, India	September 29, 2010
1.5 hours	7.15 inches (182 mm)	Pune, Maharashtra, India	October 4, 2010
5 hours	15.35 inches (390 mm)	La Plata, Buenos Aires, Argentina	April 2, 2013
10 hours	57.00 inches (1,448 mm)	Mumbai, Maharashtra, India	July 26, 2005

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Duration	Rainfall	Location	Date
24 hours	54.00 inches (1,372 mm)	Pithoragarh, Uttarakhand, India	July 1, 2016
13 hours	45.03 inches (1,144 mm)	Foc-Foc, La Réunion	January 8, 1966
20 hours	91.69 inches (2,329 mm)	Ganges Delta, Bangladesh/India	January 8, 1966

Case Studies in Different Areas of India

In the Indian subcontinent, a cloudburst usually occurs when a pregnant monsoon cloud drifts northwards, from the Bay of Bengal or Arabian Sea across the plains, then onto the Himalaya and bursts, bringing rainfall as high as 75 millimeters per hour. Few disastrous cloudburst accidents are as follows:

Case Study I

In July, 1970 — Cloudburst in the upper catchment area led to a 15 metre rise in the Alaknandariver in Uttarakhand. Entire river basin, from Hanumanchatti near the pilgrimage town of Badrinath to Haridwar was affected. An entire village was swept away.During August and September 2010, Uttarakhand Himalaya witnessed large-scale slope destabilization, particularly along the roads where widening work was in progress. The landslides killed about 220 people in the entire rainy season of 2010. The tectonic fault lines, which are active and see back-and-forth movements, have been cut in many places by roads. More dangerously, roads are built along the fault lines at many places. As a result, tiny seismic movements in the fault lines weaken the rocks at the base of the roads; making these stretches susceptible to cave-ins and slides.Buildings have been constructed over flood ways, old drains and streams, blocking the natural pathways of rainwater. It is also true that once a river is flooded it will continue to be so for 100 more years. People and local administration neglected this theory in the ongoing constructions on the old flood ways. Another reason for the devastation at Kedarnath was that people had constructed houses on the west stream of the Mandakiniriver that had been dry for decades. When the river returned to its old course following the deluge these constructions were washed away.This area is characterised by different types of rocks, undulating terrain and cold climate. The removal of the forest cover has accelerated the rate of erosion and mass wasting in the area. Steeper slopes, high relative relief and presence of weathered, fractured/sheared rocks in addition to unfavourable hydrological conditions are characteristic features of the area. A number of landslide zones are observed in the area. Debris flows, toppling failures and ground subsidence are frequently observed. Every year, a number of landslides cause heavy damage to life and property.A very high hazard zone has already been identified by geologists near Kedardome, Bhartiyakunta peak, Brahma Gupha, Salya, Devangan and Gaurikund in Uttrakhand State. Medium hazard zones are mostly present around Okhimath, Guptkashi, and Kalimath and Rambara areas. Maximum numbers of landslides after a cloud burst have been observed to occur within a distance of one kilometre on either side of the tectonic planes. Some major fault zones in Uttarakhand are Rawanganga fault, Madhyamahashwar fault, Mandakni fault, Godwanala fault and Kaldungnala fault along which a number of landslides occur. **(June 28, 2013 17:55 IST, REDIFF) (Feb 14, 2015,Drishti IAS)**..

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Case Study II

On August 15, 1997, 115 people were killed when a cloud burst came bustling and trail of death are all that is left behind in Chirgaon in Shimla district, Himachal Pradesh.

A man walking on a wooden plank over the flood waters caused by a cloudburst on Wednesday in an area in Kullu district of Himachal Pradesh on Thursday

Shimla July 17. The district administration at Kullu, despite its earlier claims, has not recovered even a single dead body from the place of the cloudburst disaster on Wednesday.About 40 persons died and 35 injured in the severe flash floods that followed the cloudburst. The continuous rain and the absence of local pressure, since the majority of those killed were Nepalese labourers, has slowed down the rescue operations. Unofficial sources are still sticking to a casualty figure of 150 to 200. The water at some places had gone up by 30 to 35 feet, some of the survivors said. The sleeping migrant labourers got washed away with no traces of their habitations. The machinery and vehicles required for the digging operation could not reach the spot even by this evening. More than 5,000 houses were destroyed and a number of roads and bridges were washed away. There were no losses reported from the nearby villages of Manihar and Nanja where the Kullu locals are residing. Meanwhile, the Chief Minister, Virbhadra Singh, whose visit to Kullu was cancelled due to bad weather made a statement in the Assembly that relief and rehabilitation work was being carried out.

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Labourers crossing the flood waters at Shillagarh village in Kullu district of Himachal Pradesh on Thursday, following a cloudburst which killed many on Wednesday.

He said a number of workers at the site escaped, according to some contractors and the toll might not be too high. Such cloudbursts are not new in Himachal and only three years ago about 140 persons died when flash floods occurred in the river Satluj in Kinnaur district. A similar tragedy had happened in the Chirgaon area of upper Shimla and a number of times such incidents have occurred in Manali and other higher reaches of the State. The majority of the victims are migrant workers from Uttar Pradesh, Bihar and Orrisa.The Congress president, Sonia Gandhi has expressed deep anguish and grief at the loss of lives in the Kullu cloudburst. She urged the Chief Minister to compensate the survivors and the bereaved families, an AICC release said today. **(Feb 14, 2015,Drishti IAS)**.

Case Study III

On July 16, 2003, About 40 persons were killed in flash floods caused by a cloudburst at Shilagarh in Gursa area of Kullu, Himachal Pradesh.on Sunday morning, the people of Dharamsala town woke up to face one of the heaviest rainfalls ever witnessed during the past many years.Although the town is known for heavy rainfall next only to Cheranpunji in the country, today's heavy downpour, followed by cloudbursts on the Dhauladhar ranges, resulted in flash floods in many rivulets flowing through the hill town.

A part of a three-storey building in the housing board colony, Dharamsala, washed away in a flash flood in the Manooni rivulet caused by a cloudburst in the Dhauladhar ranges on Sunday morning; and (right) a portion of a bridge near the housing board colony washed away in the flooded rivulet. — Tribune photos by KulwinderSandhu

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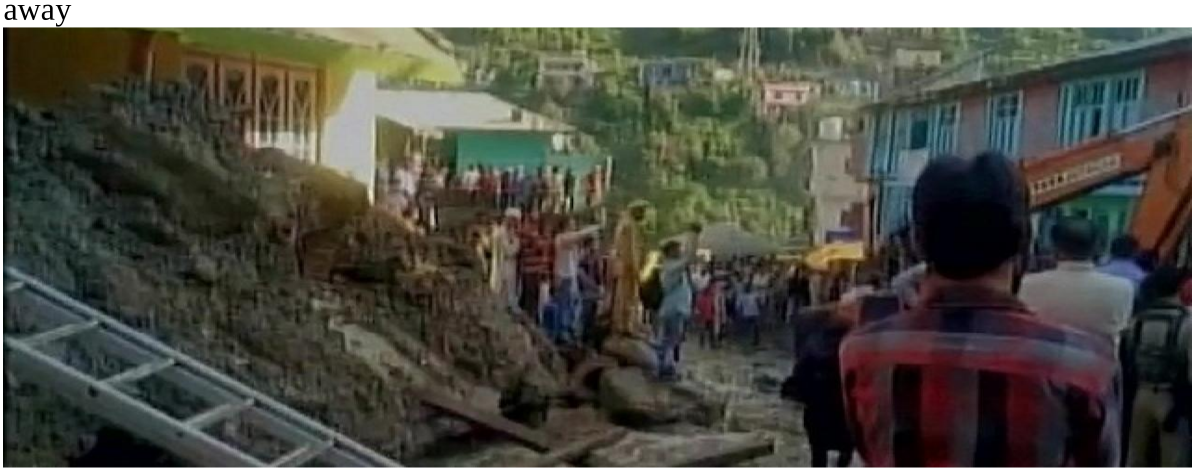
The major source of drinking water supply to Palampur town and the adjoining areas today suffered an extensive damage because of heavy rain and debris thrown by a company executing a power project. Landslides at different points between Bundla village and the water source have hit the water supply pipes disrupting supply of water to its main water reservoir feeding the town and other 20 villages.

Case Study VI

On June 9, 2011, near Jammu, cloudbursts left 4 persons dead and over several injured in Doda-Batote highway, 135kms from Jammu.Two restaurants and many shops were washed away



At least six people were killed and 11 injured after flash floods triggered by cloudburst wreaked havoc in Thathri town of Doda district of Jammu and Kashmir on Thursday morning, inundating vast areas along the Batote-Kishtwar National Highway, washing away half a dozen houses.Six persons, including a 12-year-old boy, were rescued from under the debris."Flash flood triggered by cloudburst hit Thathri town at 2.20 am resulting in a massive increase in the level of the 'nullah' flowing along the JamaiMasjid locality close to the town" a police officer said.Dy SP (headquarters) Doda, Iftkhar Ahmed, said the water level and silt suddenly rose in the drain after the cloudburst, washing away several structures along its path leading to the main market.The extent of damage could not be immediately ascertained."The entire district administration along with the police and Army has started rescue operation on a war footing," the police official said."We have rescued five members of a family and a 12-year- old boy, who was shifted to a hospital in Thathri. Three members of a family are still feared to be under the debris and we are trying to remove the debris to rescue them," said Pervaiz Ahmed, Tehsildar, Thathri.TheBatote-Doda-Kishtwar National Highway (NH1B) was closed due to huge boulders at Thathri market triggered by the cloudburst.Water supply pipes and power supply remained snapped in the area.

Case Study V

On September 6, 2014 there was a cloudburst in Kashmir valley killing more than 200 people. Center for Science and Environment (CSE) mentioned heavy and unchecked development aggravated the development in the region. Over 1,84,000 people were rescued after heavy rains have large part of the State submerged. Indian Army and Central government provided necessary help in a very short span of time saving lives of many.*lood of reports and studies keep coming to detail the causes and consequences of September deluge.* **SaimaBhat** *highlights the flood report prepared by using the satellite images*

For the first time in the history of Jammu and Kashmir, satellite images were used to report the tendency and effects of September floods. These images were used in the compilation of a report, titled 'A satellite-based rapid assessment on floods in Jammu & Kashmir– September, 2014' conducted jointly by the Department of Environment & Remote Sensing (DERS) and Indian Space Research Organization (ISRO).The said report has revealed that the recent flood was the worst flood in past 60 years, which inundated 557 sq kms of Kashmir Valley and affected 22 lakh people. The researchers have blamed unprecedented and intense rains from September 01 to 06, which lasted for about 30 hours. It is said that major parts of the state recorded an average of more than some aspects of catastrophic rain fall while as some parts of the state experienced more than 650mm of rainfall in 3 days. Earlier Kashmir valley has experienced such intensity of rainfalls in 1903,1911,1917,1928 and 1992.Although rain in Jammu region during September has been a normal phenomenon but this year its intensity was very high. In Jammu region such huge rainfall has been earlier recorded in 1903, 1908, 1926, 1942 and 1988. Even moderate rainfall was also recorded in Ladakhregion.Report suggests proper precautions like alternate flood spill channel for Jehlum, widening of rivers and lakes, de-siltation besides other measures are the need of hour to prevent flood devastations in future.

As per the report, the pattern of rainfall starting from September 2 was confluence of three rain-bearing systems over Punjab, which drew copious amounts of moisture into north India in a five-day spell and that wreaked havoc in J&K, the worst sufferer."The state had a deficit of 32% on September 3 which in a span of five days was transformed to 18% excess rains — a change of 50 percentage points. While as analysis of pre and post flood satellite images have revealed that snowmelt had a very little role to play as the post flood image showed more snow than pre flood image. Snouts of Kolhai Glacier were found almost intact. However, fresh snowfall might have occurred during flood days that were washed away by incessant rains resulting in cold flood water," reads the report.

While analyzing the cumulative rainfall from September 01 to September 06 (2014), it was observed in the report that Lidder Catchment received maximum amount of rainfall, 277mm with adjoining catchments in South Kashmir- Arpal, Bringi, Kuthar, Sandran, Vishaw, also receiving rainfall above 200mm.The results reveal South Kashmir region received maximum amount of rainfall during August 28 to September 10 this year which developed a deep depression. From September 03 to 06, Shopian district received 2953%, Kulgam 1850%, Anantnag 1687% and Pulwama 2380% excess rainfall over normal in the week ending September 09, 2014 amounting to cloudbursts. All districts except Poonch received high rainfall.

Due to the heavy downpour of around 650mm on September 04, the glaciers and hard rocks produced lot of run-off, the soil of the region was already saturated and then the incessant high rainfall for more four days generated unprecedented floods, raising the flood level of Jehlum at Sangam to 34.70 ft (danger level 21).It led to the abrupt increase in the flood level at Ram MunshiBagh which touched around 29.50ft (danger level 18). This was boosted by the heavy rains in Sindh basin (105mm) resulting in heavy discharge in SindhNallah which joins the Jehlum at Shadipora causing an upward rush and limiting the free flow of Jehlum water into the Wullar Lake which had the necessary detention capacity at that point of time.

|The flood inflow was more than the combined carrying capacity of Jehlum and flood channel despite the natural breaches of huge size at Kandizal, Chursu, Lelhar, Marwal, Khadermoh, etc," reads the report.As per the earlier records, the discharge of Jehlum at Sangam was about 80,000 cusecs during 1928 floods and 100,000 during 1959 floods. Meanwhile in 2014, the discharge was reported to be highest ever recorded at 1, 35, 000 cusecs on September 06. This figure doesn't include the breaches (reportedly-84) of river Jehlum (I&FC).Reports also suggest the carrying capacity of Jehlum, in Srinagar city is about 35,000 cusecs and another 15,000 in the supplementary channel.(**Kashmir Life on November 17, 2014**)

Conclusion

The study indicated that increased temperature and hot summers in the plains lead to increased evaporation and subsequent cloud formation in the hills. "This in turn, lead to increased duration of snowfall in Ladakh when compared to previous years. "The winters in Ladakh were found to be prolonged," the experts concluded though they felt the phenomenon could not be directly associated with climate change given the short range of data.The region was witnessing unusual phenomenon of bright sunshine in the June and July months causing melting of snow and high relative humidity (72%) as compared to previous years (50%), the sources said. Tracing the change in weather on the basis of the data available, the sources pointed out "since snow absorbed the latent heat also, the monthly maximum and minimum temperature remained low and did not shoot up as compared to previous years **.**The low temperature and high relative humidity lead to formation of dense low clouds in the valley. Since the water vapour content in the clouds were very high and on trying to cross the glaciers, the vapours further condensed. "The clouds could not retain the water droplets that lead to the cloudbursThe cloudburst, which led to flash floods and mudslides, claimed about 180 lives and injured about 400 people, besides causing widespread damage to public and private property. The Defence establishment has also initiated research towards preventing soil erosion in case of heavy rains in the area in future in view of climate change.

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A Study of Achievement of Mid-Day Meal Scheme with Special Reference to Tamilnadu in India

M. VENKATESAN*
Dr. S. RAJARAJAN**

Abstract
In the paper deals with on Mid-Day Meal Scheme is one of the important schemes that the Government of India introduced to protect the varied interests of the children attending primary school. The programme in the holistic manner helps in bringing back all school going age children back to schools, improve retention ratio of school children and arrest dropout rate besides providing nutritious meals to growing children. The field experience of Tamil Nadu is being taken due to its overall successful implementation of the scheme. In this context, the aim of this study is to present the impact of Mid Day Meals Scheme (MDMS) in Tamil Nadu. The report of planning commission on performance evaluation of cooked Mid-Day Meal Scheme also most of states did not follow the guidelines of Government of India to deliver food grains at the school point by PDS dealer, thereby resulting in the leakage of supply chain, food grains supplied got adulterated and pilfered. Different survey also revealed the fact that in most of schools, the basic infrastructure for preparing meals was not available as per requirements. It helps to learn to sit together and share on common meal. MDMs has been successful in cultivating good habits like washing hand before and after meals and in educating them about the importance of clean water, good hygienic environment and other related matters.. The community and the civil society can play a vital role for 'constant vigil' on the working on the personnel, engaged in implementing the 'MID-DAY-MEAL Programme rural and semi-rural areas. Only then, the programme will be uniformly successful in all regions of Tamil Nadu.
Keywords: Mid-Day Meal Scheme, Growing Children, Government of India, Semi-rural areas.

Introduction
The Mid-Day Meal Scheme is one of the important schemes that the Government of India introduced to protect the varied interests of the children attending primary school. The programme in a holistic manner helps in bringing back all school going age children back to schools, improve retention ratio of school children and arrest dropout rate besides providing nutritious meals to growing children. Four important areas are identified for achieving the goal of Education for all. These are Access to Education, Enrolment of children, and Retention of the enrolled children As well as in academic achievement. The Mid Day Meal scheme is an effort to achieve and facilitate these objectives. Various schemes were implemented in the primary education sector by the Government to reach

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the disadvantaged population. Access to primary education was universalized through flagship programmes of Govt., like Sarva Shiksha Abhiyan, however, despite this; a few children are still deprived of Primary Education due to the inability of their parents to send them to schools because of their poor economic status. This has been done through two main nutrition and child development programmes. Firstly, the Integrated Child Development Services (ICDS) which was started in 1976 as a small pilot programme and secondly, the Tamil Nadu Integrated Nutrition Project (TINP), the phase-I of this project was started in 1980. As these both nutrition schemes once started expanding, they were integrated with the NMP infrastructure for preschoolers. In this chapter, the field experience of Tamil Nadu is being taken due to its overall successful implementation of the scheme. In this context, the aim of this study is to present the impact of Mid Day Meals Scheme (MDMS) in Tamil Nadu.

Historical Background of Mid Day Meal Scheme

In the year 1956, the state of Tamil Nadu introduced the Mid-Day meals scheme for the first time in the country. Today almost all states are following different methods of menus and patterns. The government is trying to solve the problems of malnutrition and another side to concentrate on school education from 1 st standard to 10th standard. In the state one step forward to introduce different food menu and importantly to launched daily eggs for children. Aim of this case study to find out the utilization of mid-day meals programme among school children based on a filed visit in children, teacher, organizer, cook, parents and public and also what are problems are faced by school children in hilly, rural and urban areas. Most of the studies concluded that the scheme is working satisfactorily (urban, coastal areas) in Tamil Nadu and even recommend that other states should follow the Tamil Nadu Mid-Day meals scheme. The working of the Mid-Day Meals Scheme in hilly, rural areas was not assessed until now and needs to be examined. This study was conducted at Theni district, Tamil Nadu. This case study concludes that Mid-Day Meals Scheme in Tamil Nadu has positive points and negative points. The children faced many problems and others opinions are not satisfied. However, with some more Commitment, Vision, and Realism the Scheme can be made more effective to fulfill the dreams of K. Kamaraj and M.G. Ramachandran. In the case study strongly suggested alarming findings of the future development of Mid-Day Meals programme

Statement of the Problem

Towards achieving Millennium Development Goals-India 2013, analyses the achievement at the national level of MDGs and the targets on the basis of updates data sets. The number of students in most of the government primary schools in rural areas is meager so that the effectiveness of this scheme is also is stake. The availability of easy and good transportation system managed by the primary schools has adversely affected the number of students in government schools. The report of the planning commission on performance evaluation of cooked Mid-Day Meal Scheme also most of the states did not follow the guidelines of Government of India to deliver food grains at the school point by PDS dealer, thereby resulting in the leakage of the supply chain, food grains supplied got adulterated and pilfered. The different survey also revealed the fact that in most of the schools, the basic infrastructure for preparing meals was not available as per requirements. Some schools lack proper kitchen, storerooms and a source of clean water supply which affected the quality of meal adversely. According to a report of 5th joint Review mission on Mid-Day Meal Scheme in Uttar Pradesh 2013 shows that disruption of the supply of food grains due to which for a number of days. The meal is not cooked in the school which adversely affects the nutrient intake of children. The study by Throat and Lee 2005 is among the few whose focus was on access among Dalits. They find that in Rajasthan and Tamilnadu, access to MDMs for Dalit children is hampered by the fact that the meals are served primarily in dominants cast hamlets. Segregated seating or different foods being served to children of different caste are also instances of discrimination. In Bihar plates were labeled with initial of the child's caste, in Rajasthan children from the lower caste had to be given water by other children, whereas the other children were allowed to help themselves to the water directly. The study of Indian Institute of Dalit studies 2003. In Andhra Pradesh, Bihar Rajasthan, Tamilnadu, and Uttar Pradesh show that 37% report caste discrimination in MDMs and 48% report opposition to Dalit cooks. Recently the death of 23 children due to poisonous food served to them under MDMs has put on the question mark on this scheme. No doubt MDMs is good in itself but the problem lies in its implementation. By breaking the shackles of caste, creed, and class among the children, MDMs has fostered the feeling of cooperation sharing, coordination, and fraternity, thereby leading the development of children emotionally and society also. Psychological development of children is also ensured. Despite all these achievements, there are many problems, in the implementation of this scheme. A major drawback found in this scheme is that the teachers have to spend 2 or 3 hours for the implementation of this scheme. Because of the involvement of the teachers in the scheme, the study time of students and quality of education suffer.

The objective of the study

1. To find out the constraints and bottlenecks in the proper implementation of the programme.
2. To know the status of the mid-day meal programme in Tamilnadu, its monitoring, and evaluation.
3. To suggest policy measures to improve the functioning of the programme.

Need for the present study

Mid-Day meal has big effects on school participation, not just in terms of getting more children enrolled in the registers gut also in terms of regular pupil attendance on a daily basis. Many children reach school on empty stomach. Children who do not have lunch box are not able to concentrate on study. Mid-day meal can help to overcome this problem by preventing classroom hunger. It acts as a regular source of supplementary nutrition for children and facilitates their healthy growth. It helps to learn to sit together and share the common meal. It erodes the barriers that prevent girls from going to school. It also provides a useful source of employment for women. The scheme can facilitate cognitive emotional and social development by removing insecurity, anxiety, and stress.

Methodology

The present study is based on Secondary data. The data were collected from various sources like ICDS, TINP, NGO, Annual Report of MHRD, GOI, Report of MDMs goal etc.,

Review of Literature

Jitendra, (2013) in this article suggest that 92% of schools have good kitchen infrastructure and started upgrading and modernizing, it‟s by providing cooking gas facilities. Complaint boxes have been installed in every school in Tamil Nadu.

Planning Commission, (2010) an evaluation report of the national MDM scheme for a few findings and highlights presented. Tamil Nadu and Kerala working of MDM is better functioning compare to other states. In most of the selected states are suffering from the unavailability and poor functional condition of kitchen and other infrastructure. In most of the states, teachers spend about one or two hours during an activity and reducing precious teaching time.

Thozhamai, (2013) one of the NGOs project suggest that 24% of ICDS centers are not functioning after lunch hours. In 9% of centers, supplementary food is not provided to the children. 11% of centers do not provide any education on health and hygiene. 10% of centers do not perform the major function of maintenance in proper records. Finally ICDS status was very low-level functioning and problems are high.

Anima and Sharma (2008) in an empirical study of the Midday Meal programme in Khurda district of Orissa, found that cooked Mid-day Meal has increased socialization among the children and helped in increasing enrolment and afternoon session attendance. It was also found that MDM has created new employment opportunities for underprivileged sections. However, due to the inadequacy of the required staff, the teachers had to spend much time and effort in running the cooked meal scheme.

An Overview of India

The analysis of the latest report from states shows that less than 50 percent of schools have been inspected in Jammu and Kashmir, Haryana, Puducherry, Andhra Pradesh, Mizoram, and Meghalaya. In the rest, nearly 80 percent of the schools were inspected. In this context, inspection in all the schools was reported by no state. It is a very well known fact that the programme of this gigantic scale, covering close to 12 crores children daily, the quality of food and delivery would always be a challenge. Monitoring is a soul of the programme and it has to be strengthened locally. Parents have to engage themselves in the progress and demand accountability from the schools. Dr. Prema Ramachandran, a leading nutrition expert who have helped to frame nutrition norms for the scheme. According to this expert that the disaster could have happened anywhere. For this to be averted, locals need to take leadership in the programme. Only they can demand accountability from the schools. The safety of food being served is paramount and no one can understand this better than the mother of a child who is being served. Also, testing the food before serving it? The same principles should be applied to mid-day-meals too

There are challenges in this direction. Firstly, the availability of safe water for drinking and cooking in the schools. The center's review report that only 17 states have the facility of drinking water in all the schools of Goa, Mizoram, Karnataka, MP, Daman, Andaman and Niko bar Islands, Tamil Nadu, Lakshadweep, Himachal Pradesh, Punjab, Rajasthan Delhi, West Bengal, Puducherry, Uttarakhand and Uttar Pradesh. The remaining states are still struggling despite the facts that the Right to Education Act., 2009, mandated to the provision of nine infrastructure requirements, including drinking water, within three years of the Act implementation. The deadline had already been expired on March 31, 2013. The Government of India has sanctioned 9, 97,663 Kitchen sheds for schools up to 2012-13. At the end of the 2012-13 financial years, only 6, 26,154 (63 percent) sheds have been constructed. The slowest on the account are Andhra Pradesh (Only 4 percent) and Kerala (13 percent), Haryana (35 percent) and J&K (40 percent). As a result, it has been noticed that there are lizards, rodents, and pest infested food grain where there are no storage sheds and covered spaces. According to HRD Ministry officials that the incidents of pest infestation of food grains and condiments and poisoning of food by lizards have become commonplace. In this problematic area, safe storage is the only solution.

Analysis and Discussion

Table-1: Food Cost per Child in Noon Meals Scheme in Tamil Nadu

Schools	2003-2004	2008-2009	2013-2014
Primary level	2.69	4.01	7.32
Upper Primary level	2.69	4.51	7.70

Source: Department of Social Welfare and Nutritious Meal Programme, Government of Tamil Nadu.

The Government of Tamil Nadu, no doubt, is running the largest feeding programme in the country. This is the most extensive and more expensive nutritious feeding programme being currently undertaken in the State. Over 42 thousand Feeding Centres manned by 128 thousand persons are functioning across the State to feed about 5 million school-going children (i.e. from the first standard to the tenth standard) (Noon-Meal Programme Report, 2013). The food cost per child due to inflation and changes in the menu has been increasing (Table 1). In 2001-02 the cost per egg was only 0.18 paise but now it is Rs.3. Neighboring states also started providing eggs in their noon-meals programme but only once or twice in a week and so food cost per child is relatively low. But the provision of daily egg in Tamil Nadu is imposing a heavy financial burden on the State Government while children are experiencing diminishing marginal utility.

Table-2: Food Cost per Child in MDM Scheme in the Selected States in 2013-14

Schools	Tamil Nadu	Kerala	West Bengal	Odisha	Bihar	Karnataka	Andhra Pradesh
Primary	7.32	4.92	3.33	3.61	3.35	3.11	5.51
Upper Primary	7.70	6.00	4.65	5.00	5.00	4.65	5.55

Source: MHRD - State wise Mid-Day Meals Division Report 2013-2014

Table-2 shows that the food expenditure on the noon-meals programme is higher in Tamil Nadu than in other states. It appears that the State Government is taking measures to improve the health status of children and school education. The benefits of the program need to be examined.

Table-3: Food Norms with Effect from 1-12-2009

Sl.No	Items	Quantity Per Day/Child	
		Primary	Upper Primary
1.	Foodgrains	100gms	150gms
2.	Pulses	20gms	30gms
3.	Vegetables (leafy also)	50gms	75gms
4.	Oil and Fat	5gms	7.5 gms
5.	Salt and Condiments	As per need	As per need

Source: mum.nic.in

Table-4: Revised Cooking Cost Per Child Per Schools Day w.e.f 1.07.2014

Stage	Total Cost	Centre-State Sharing			
		Non-NER States (75-25)		NER-State (90:10)	
		Central	State	Central	State
Primary	Rs.3.59	Rs.2.69	Rs.0.90	Rs.3.23	Rs.0.36
Upper Primary	Rs.5.38	Rs.4.04	Rs.1.34	Rs.4.84	Rs.0.54

Source: mum.nic.in

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The Table above shows, state-wise, the total number of schools, number of schools covered under CMDM, the number of schools covered under MDM, and the number of uncovered schools. The table highlights that in all the sample states, a large proportion of schools have been covered under the CMDM scheme.

Table-5: Schools Covered Under CMDM, MDM and Uncovered Schools in the Selected States

S.No	State	Total Schools	Enrolment	Schools Covered Under CMDM	School Covered under MDM	No. of Uncovered Schools	Enrolment in Uncovered Schools
1.	Andhra Pradesh	60780	6033039	607800	0	0	0
2.	Arunachal Pradesh	4593	218905	4593	0	0	0
3.	Bihar	69204	12858653	69204	0	0	0
4.	Haryana	16589	2549331	12744	1702289	3845	847042
5.	Himachal Pradesh	10982	529843	10982	0	0	0
6.	Jammu & Kashmir	26648	1484887	23091	0	3557	391270
7.	Jharkand	38524	5048908	37923	0	601	82768
8.	Kerala	10913	2160354	10913	0	0	0
9.	Madhya Pradesh	94905	8891737	94905	0	0	0
10.	Maharashtra	85821	9014434	79918	8187366	5903	827068
11.	Meghalaya	7940	627596	7640	0	0	0
12.	Punjab	20494	1767825	0	0	4506	280000
13.	Rajasthan	74690	6960000	74690	0	0	0
14.	Tamil Nadu	34710	4826835	34710	0	0	0
15.	Uttar Pradesh	107377	18917189	107377	0	0	0
16.	West Bengal	74993	10206608	698140	0	5179	1011227

Source: Performance Evaluation of Cooked Mid Day Meal (CMDM), Planning Commission, GOI, May 2010

Table-6: Achievements during the Period 2005-06 to 2011-12

Components	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Children Covered (in Cr.)	11.94	10.68	11.37	11.19	11.36	10.46	10.35 up to 30.09.11
Food Grain Allocated (in lakh MTS)	22.51	21.60	24.79	29.30	27.71	29.40	29.09
Budget Allocation (in Cr.)	3345.26	5348.00	6678.00	8000.00	7359.15	9440.00	10380.00
Total Exp (in Cr.)	3186.33	5233.47	5835.44	6688.02	6937.79	9128.44	7697.24 up to 29.12.11

Source: Annual Report 2011-12, MHRD, GOI

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Findings of the study

- The study was found that the country is now well set to achieve cent percent primary education for children in the primary schooling age of 6-10 years. DISE (District Information System on Education) 2010-11 reports, Net Enrolment Ratio at primary level is 99.89 which is 87.4 in 2004. Apparent survival Rate (Ratio of enrolment in grade V to grade 1) is 82 for 2010-11. Gender party(ratio of girls to boys) in primary education reached the target value of 1 in 2008-09 itself which is 1.01 in 2010-11.MDMs has been successful in cultivating good habits like washing hand before and after meals and in educating them about the importance of clean water, good hygienic environment, and other related matters.
- Out of Rs 13,215 crores earmarked in this year's budget estimates for the programme, nearly Rs 226 crores is set aside for monitoring and evaluation of the scheme, which means food quality, delivery aspects, inspections, and reviews. This component is the weakest link in the entire chain with half the states reporting less than 50 percent utilization of the monitoring and review funds. During the year 2012-13, the total allocation for monitoring the scheme is Rs 19,320.54 crores. On the other hand, the utilization nationally was just 85 percent.
- In 2001-02 the cost per egg was only 0.18 paise but now it is Rs.3. Neighboring states also started providing eggs in their noon-meals programme but only once or twice in a week and so food cost per child is relatively low. But the provision of daily egg in Tamil Nadu is imposing a heavy financial burden on the State Government while children are experiencing diminishing marginal utility.
- It appears that the State Government is taking measures to improve the health status of children and school education. The benefits of the program need to be examined.
- The study was found that the state-wise, the total number of schools, number of schools covered under CMDM, the number of schools covered under MDM, and the number of uncovered schools. The table highlights that in all the sample states, a large proportion of schools have been covered under the CMDM scheme.

Recommendations and Suggestions

- The parents are not supposed to hesitate to check the midday meal from time to time.
- A periodic feedback by the parents, students, teachers and the members of public representatives e.g.¬ Gram Panchayat/Block Samiti/ Zila Parishad are very essential.
- The action plan should be formulated in a way, so that the students may not be disturbed by their¬ general routine. As far as it is possible, the female cook should be managed for cooking the meal.
- The personnel, who are directly or indirectly engaged in the execution process of mid-day-meal¬ programme, should be highly responsive, transparent and accountable to be the public and their officials.
- The community and the civil society can play a vital role for 'constant vigil' on the working on the personnel, engaged in implementing the 'MID-DAY-MEAL Programme'in rural and semi-rural areas. Only then, the programme will be uniformly successful in all regions of Tamilnadu.

Conclusion

The national 'MID-DAY-MEAL' programme which was launched for aimed at multiple objectives for compensating the deficiency of vitamins and minerals for the children living in poverty conditions. As we have observed that the programme has experienced some of the pitfalls in its implementation front. In short, the Mid-Day Meals Scheme in Tamil Nadu has some positive points and some negative points. However, with some more Commitment, Vision, and realism the scheme can be made more effective to fulfill the dreams of Mr. Kamaraj and Mr. M.G. Ramachandran. For effective implementation of MDMs, all the functionaries involved in the scheme, need to be aware of nutrition, health hygiene, and safety of foods. A non-governmental organization, local youth and active social workers can also play a significant role in this scheme. Hence, the quality of education and time span of teaching should not suffer any cost. The adequate staff does not mean the provision of just one cook. It is required is smoothing similar to the Gujarat or Karnataka model where three persons are employed for the provision of the MDM, an organizer, a cook and a helper. It is to be noted that the MDM of the country is the biggest programme in the world and every effort must be done to make this scheme successful. In the end, the success of the programme will depend on continued public participation and vigilance as well as sustained political interest in the scheme. By educating every child of the country it becomes possible to rule out the differences between rural India and urban India and to realize also the concept of inclusive growth.

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Role of Project Manager in Improving Project Performance

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Abstract
The current study aims to highlight the role and responsibilities of the project manager and discussed the role of project manager in making any project a success. The study was based on the past studies which showed that project manager plays a pivotal role right from the planning till completion stage of a project. The study was conceptual in nature and descriptive too. Considering the crucial role played by a Project manager in ensuring flawless completion of project it is important to study his role in detail with respect to how it influences the overall project performance. Study showed that Project manager has to work with a cross functional team and this matrix type of structure does not provide him any documented or formal authority over his members. He needs to create a conducive environment by generating willing trust of each member, resolving conflict as and when they arise, and taking work from them despite each member being involved in his own department as well. Thus he acts as an interface between his team and the various functional departments. Hence, project manager needs to seek support from the top management which ensures that everyone in the organization is aligned and supports the project. The support from top management is also important to realign and motivate the team if in case there is some major variation in the project.
Keywords: Project Appraisal, Project Management, Project Manager, Support, Performance, Leadership, Techniques etc.

Introduction

There will be hardly any project which will be devoid of risks and schedule over runs. There is various project management techniques developed over a period of time which can be deployed along with a good project management team but the matter of fact is that even they cannot deliver the desired results in absence of a capable Project manager to lead them. In other words Project manager plays a very important role in leading the team and implementing best practices in order to meet the project deadlines without compromising on safety norms and quality despite various constraints. In order to accomplish this, the Project manager should have good leadership skills to keep his team motivated to meet the challenges. Additionally at any pointy of time during the execution of the project a Project Manager is supposed to be updated on various queries stake holder may have in terms of project schedule ,cost over runs, if any along with additional resources required, possibility of accommodating requested changes etc. A Project manager who does not have a fairly good knowledge of the best practices of project management and does not have the required competency to handle the intricacies may lead to its failure despite best teams

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being made available to him. Considering the crucial role played by a Project manager in ensuring flawless completion of project it is important to study his role in detail with respect to how it influences the overall project performance.

Literature Review

Despite the handsome amounts spent by originations on projects considering their strategic importance and the numerous advancement which have happened in this field, many of them either encounter inordinate delays or do not see the light of the day (Williams, 2005). Over a period of time the definition of project has also evolved considerably. Though initially it included meeting schedules in terms of budgeted time, cost and scope but as stated by Jugdev and Müller now, the stake holder's requirements have also been included in it. Considering the importance to organization of project management, it is absolutely important that a capable person should lead it who has the capability to switch roles between management and leadership at short notice. This is required because Project managers are supposed to work cross functionally without any formal authority even over their teams (Cleland, 1995) apart from working in an environment which is unknown, complex and uncertain. What makes the process more challenging is that in most of the cases the Project manager does not have the liberty to select his team and additionally which makes the work even more challenging is that some of the project team members are engaged in more than one project. Hence, in order to execute a project successfully, it is important for the project manager to exhibit exemplary leadership and management skills. These traits assume importance since it has been observed that people related issues such as morale, motivation, human relations, productivity and commitment are crucial for timely completion of project within planned budget as also stated by Kerzner (2006). Management skills are needed to enhance the efficiency and effectiveness of operations by intelligent decision making with regards to the process and functions while good leadership ensures that organization goals are achieved by maximizing the potential of employees through proper guidance and motivation. Some other studies such as by (Briner et al., 1996; Cleland, 1999; Turner and Cochrane, 1993; Norrie and Walker, 2004) define management as a program meant for bringing about a change while leadership develops the vision and ability to adjust to these changes (Kotter, 1990, 1999). Thamhain (2004b) claimed the strongest effect on team performance comes when the personal and professional needs of the team are taken care of by the Project manager. This is so as the members being professionals primarily have a need to pursue their career goals along with contributing to the project. He further stated that in addition to this a leader's effectiveness can be gauged by his ability to resolve conflicts, generate mutual trust and respect amongst team members and establishing an effective line of communication between various departments. Establishing trust is a major challenge for the project manager since establishing trust is a time taking process but in case of projects being time bound it needs to be established quickly in shortest possible time and it comes with its own sweet rewards since its makes the task of addressing conflicts and managing change easier for the project manager. At the same time Turner and Müller (2005) concluded that there cannot be one single style of skills and leadership that can be used in all types of projects. Hence Keegan and Hartog highlighted the need of developing new leadership theories to suit the various forms of governance associated with various project managements. Another important aspect of project management is to be conscious of various enablers and derailers which can have a bearing on the completion of project within budget. Hence, it is important to

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study them in order for a project manager to execute his role effectively. There can be various enablers for a project to be successful and they have been defined in detail by various researchers such as (Schultz, Slevin and Pinto, 1987; Pinto and Slevin, 1987) followed by (Larsen and Gobeli, 1989) and then Hartman and Ashrafi (2002). However the two most important enablers which came out were top management support and a high degree of clarity amongst the team on the objectives of the project. Top management support is absolutely crucial for tiding over the complexities of the project which includes, not only managing a cross functional team but also timely availability of resources and support from various functional departments. Also despite best planning it is possible that some changes are required during the process. In case the changes are significant top management plays a crucial role in convincing the employees regarding the need of change and new direction to adopt while keeping their moral and the team spirit intact. Hence, it is an important factor for project success as per Fedor, Ghosh, Caldwell, Maurer, and Singhal (2003). At the same time in order to motivate members to work in collaboration, displaying high level of team spirit, it is important that the project manager should provide complete clarity to the team members regarding the objectives of the project. Also apart from working on the key enablers, the project manager needs to be conscious of various derailers as well which can affect the execution of project adversely? Some of the common derailers of a project can be undefined processes and roles, defective project selection process and failure to manage the outcomes. Roles and responsibilities, if are not clearly defined, may lead to conflict amongst members and harm team work thereby affecting the project success adversely (Day, 1998). This is quite possible to have a situation of conflict in absence of roles and responsibilities not clearly defined. It is so because members come from the various functional departments with their own set of skills and expertise (Gray and Larson, 2005), making the team complex and difficult to manage and control. Hence**,** Thamhain (1999) laid importance on the project manager having a clear understanding of the roles of each team member, their responsibilities, level of accountability apart from working towards creating a conducive environment fostering trust and motivation through open communication and supporting them with techniques and systems. Fedor et al. (2003) stated that leadership plays an important role, so far as communication is concerned, as it can either encourage or discourage open communication. In his study on project management Fedor et al. (2003) also observed that ill defined processes and poor communication can be a major derailers to a project. Potts (2000) in his study on the reasons of failure of projects identified lack of soft skills as a derailer to the effectiveness and efficiency of project which exhibit themselves in the form of team formation not being effective, leadership issues, lack of persuasive power, inability to select suitable negotiation style, defective communication etc. Another very important factor contributing to the project success is the alignment with the stake holder with regards to the various parameters which reflect the progress of the project at the initial stage itself. (Pinto and Prescott, 1987) also concluded from their study that if the expectations of stake holders are mutually agreed at an initial stage that significantly improves the chances of the project being successful. This was further validated by studies conducted by Jugdev and Müller (2005) who recommended that project manager should during the early stage of project itself, should identify the indicators which reflect the needs of stake holder and then keep on updating him on their progress during the various stages of project. So concisely the various factors which affect the performance of a project can be summarized as below:

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1. Clear communication regarding objective of the project along with expected outcomes to prevent exceeding time and cost budgets.
2. Clarity to each member regarding his roles and responsibilities as this helps in enhancing performance, avoiding conflict and getting willing cooperation of functional departments.
3. Each member should be clear about his deliverable so that in future there is no ambiguity on what is expected and what is actually delivered.
4. Project management processes deployed should be consistent to increase operational efficiency and reduce chances of conflict at later stage.
5. An environment of trust which is result of organizational culture leads to development of team spirit amongst members thereby encouraging a collaborative approach.
6. Support from top management is crucial in obtaining willing support to the project from all departments.
7. Project outcomes need to be evaluated against objectives and should be the basis of recognition of the performance of the team.

Objective

The role of Project Manager as a leader is critical for creating the right environment for the team to make them operate at their maximum potential so that the project can be executed successfully.

Hence, the objective here is to identify the competency skills that a project manager should have to influence a successful project performance. So, the important people related factors of project performance have been identified through literature review followed by structured personal interviews to develop a leadership and management model for Project leader.

Role of Project Manager

Project manager is the person who is responsible for a project right from the inception stage to the stage of final delivery. Though, in general the role of the Project Manager is to ensure a flawless planning and execution with the objective of ensuring timely completion of project in all respects but the actual role of a project manager varies from company to company. However the common traits of a project manager is to ask inquisitive questions, resolve conflict amongst various agencies involved in execution and to immediately detect, in case anything is being taken for granted which might affect project execution at any future stage. He is expected to take a lead in planning the project, allocating resources at his disposal .monitoring and controlling various stake holders while making best use of his knowledge, skills, tools and techniques. The role of the Project manager is quite different and many times complex as compared with that of a functional manager in an organization. This is so because every project is unique in itself demanding different skill sets. Moreover, the Project manager has to work with a cross functional team and this matrix type of structure does not provide him any documented or formal authority over his members. He needs to create a conducive environment by generating willing trust of each member, resolving conflict as and when they arise, and taking work from them despite each member being involved in his own department as well. Thus he acts as an interface between his team and the various functional departments. He also needs to set the project outcomes based on the project objective in order to use them as a benchmark to evaluate individual and team performance with the intention of motivating them to perform better thereby generating synergies. At the same time he has to keep the top management aligned with the project so that they can extend necessary support in case of a change in direction and also to ensure that different functional departments keep extending the necessary support required to take the project forward. Hence, it's a complex task and for the project manager to handle this role he needs to have sufficient leadership and management traits in him.

Responsibilities of Project Manager

The responsibility of a Project manager is very comprehensive since he is the person who is overall in charge of the project from the stage of inception to the final execution. It starts with the evaluation of the project to understand the complexities involved and accordingly define its scope. If this step is not executed correctly, it may result in some additional requirements coming up which might delay the project apart from adding costs. Based on the scope of the project and the complexities involved the budgeted costs are worked out. Scope and budgeted cost become the basis of defining the contract conditions and the key indictors which can be used to check and review the progress of the project. Next comes the alignment with the stake holder with regards to the contract conditions and the key indicators so that he can accord his approval for same. Once this stage is over then starts the execution stage which starts with selection of the required team and setting up the systems which will be needed for a smooth execution of the project. Team members need to be imparted the necessary skills for carrying out the roles assigned to each of them apart from updating them on their roles and responsibilities. This not only helps improve performance by avoiding conflicts but also makes it easy to get the support of functional departments. In addition to this they need to be explained in detail regarding the objective of the project so that they all are aligned on the task ahead. Once the project starts Project manager has to continuously monitor and review it at each stage of execution while removing the bottleneck apart from redressing the conflicts, if any, encountered in the process. This is essential to ensure that the available resources are put to best productive use while the team continues to work at its maximum capacity. He is also expected to keep alternative plans ready in case the current approach is not giving desired results apart from keeping ready countermeasures in case of any major deviation. Also he needs to assess the project at each stage to ensure that is running as per planned process while keeping a watch on the defined key indicators on which he needs to update the stake holder periodically till the project gets completed. Also during the course of project if some additional requests come from the stake holder then the project manager needs to carefully evaluate them for feasibility and additional cost required taking into consideration that it should not affect the project quality. Alongside he needs to take the stake holder into confidence with regards to any additional costs involved or any additional requirement of resources. Lastly when the project gets completed he needs to carefully review it, on the basis of a detailed report prepared, as to how well the project went through and also to recommend in case any followup action is required. Thus, it can be said that the various steps which come in the purview of a project manager can be summarized as initiation of project, planning the process, designing the team, starting of execution, constant monitoring performance, controlling for any deviation and finally closure of project within the time and cost budget while ensuring quality. However, having said that the exact role and responsibilities of the project manager may vary from organization to organization.

Conclusions

Various statements were stated in the literature to link the performance of the project with the role played by the project manager. Most of these statements got validated in the subsequent findings. Proper defining of the processes along with roles and responsibilities of individual members came out as the most important parameters enabling professional management of project leading to their successful conclusion. Also the leadership skills of the project manager plays an important role in creating an environment of trust and collaboration amongst the members which he ensures by way of imparting clear understanding of the project objective and establishing an environment fostering clear and transparent communication apart from using technological tools for knowledge sharing. Also the Project manager has to ensure that various enablers are productively used and at the same time he should be conscious of the various derailers which might come in the way and plan countermeasure accordingly. Last but not the least the support of functional departments is crucial to the success of the project as the resources are controlled by them. Hence, project manager needs to seek support from the top management which ensures that everyone in the organization is aligned and supports the project. The support from top management is also important to realign and motivate the team if in case there is some major variation in the project.

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A STUDY OF CSR OF MSRTC TOWARDS EMPLOYEE SPECIAL REFERENCE TO SANGLI DIVISION

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Abstract

The Corporate Social Responsibility (CSR) originated in 1950 in USA at the time of Poverty, unemployment and pollution. The CSR is the responsibility of organization to take proper decisions because of impact on its decision on society, environment, passengers and employee. Employee is the key person of any organization. The employee satisfied from his expectation, needs, wants and attitude then any organization run smoothly. If employee are unsatisfied his working then organization face the crisis like quality of work, care about machinery, accidents etc. Every employee feels organization work his own work then employee highly satisfied from his organization. That time organizations also own responsibility towards employee. But how much organization satisfied the employee there is one question. Hence the researcher selects the MSRTC organization for the study. In this study researcher study CSR of MSRTC towards employee.

Keyword: CSR, MSRTC, Job Satisfaction, Training, skills and development, welfare facilities.

Introduction

Most of the people preferred MSRTC ST bus for short time journey as well as long time journey. It is more popular passengers transport service in India. The ST bus goes on various small villages and big cities. Now a day's various passengers transport facilities supply by various private buses, taxi, riksha, tempo, Leyland etc. The MSRTC ST Buses competition increased day by day but passengers trust significant for MSRTC. MSRTC logway provided services to the Society. The passengers felling about ST buses is different from private passenger's vehicles. Passenger's happiest movement attached to ST buses. The ST bus color is Red. The red color is attracted to the children. Passengers are significant element of the MSRTC and another significant element is employee. Without employees meaningless of any organization, hence one pillar of MSRTC is employee and another pillar is passengers.

Employees are long time concerned with Human resource Management entities such as recruitment, selection, performance appraisal policies, benefits, pay, bonus etc. however, as per human resource polices concerned increased social responsibilities of corporation. Corporations have effectively respond that human resource entities. The social responsible behaviors of corporation supply benefits of the employees like motivation, satisfaction, reduction of cost, welfare facilities etc.

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Review of Literature

In research methodology, the word review means available knowledge of the specific area of the research. The word literature means, knowledge about the concept, definition, and theories used in a particular area of investigation or study. With the help or Review of Literature, a researcher solves his / her problem.

Dr.Ghanshyam D. Giri and Dr. Dilip Aher (2017)[1] the researcher study on working conditions in MSRTC and its effect on work efficiency of Bus drivers. The researcher should suggest some point like working hours of drivers; rest room facility of drivers, canteen facility, and rest room ventilation, lighting, and cooler facility, washroom should daily cleaned, motivation and encouragement of employees etc. As per research study he finding working condition impact on MSRTC positive as well as Negative.

Aya Mohamed Safwat (2015)[2] the researcher research on Rewriting the Relationship between Business and Society towards Corporate Social Responsibilities. The researcher classified between CSR and other related concepts such as business ethics and corporate philanthropy. It analyzes the debate in the CSR and breakeven point mechanism adopted by businesses in carrying out their social responsibilities. The finally concludes with the link between corporate social responsibility and sustainable development.

Dr. Horen Goowalla (Nov, 2014)3 The research conducted on Corporate Social Responsibility towards the Workers in Tea Industry of Assam – A Case Study with Special Reference to Three Company Based Industry. In this research, an attempt has been made to highlight how the manage and supply the workers welfare facilities, social development programmes, better working conditions, provide better medical facilities, sanitation facilities and sports and cultural activities. These facilities have improved their standard of living of employees.

Objectives of the study

The main objectives of the study are:

1. To study the responsibility of MSRTC towards job satisfaction.
2. To study the responsibility of MSRTC towards Training, skills and development.
3. To study the responsibility of MSRTC towards welfare facilities
4. To give the suggestion for improving CSR towards employee.

Hypothesis of the study

H_0: MSRTC unable to extend their social responsibility towards employee satisfaction.
H_1: MSRTC extend their social responsibility towards employee satisfaction.

Research Methodology

Sources of Data

The present study is based on both primary and secondary data. Primary data will be collected through self designed questionnaire and secondary data was collected from various research papers, research journals, reference books, websites etc.

Sample Design

The present study samples will be selected from sangli division of MSRTC. 372 samples selected for the study. In the samples include the officers, driver, conductor, accountant, mechanicals, labor etc.

Sampling Method

Simple random sampling method is used for selection of sample. For hypothesis testing researcher one sample 't' test used.

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Data Analysis and Interpretation

The researcher would be using the different social responsibility statement for the data analysis and perception about satisfaction and dissatisfaction of the employee. The present study researcher was using the five likert scale. Firstly researcher prepare the questionnaire towards employee, then this questionnaire place to respondent and mark their showing their degree of satisfaction or dissatisfaction of the social responsibility statement. The five liker scale assigned as for highly satisfied (5), Satisfied (4), Neutral (3), Unsatisfied (2), and highly unsatisfied (1). The perception was used and total score was used to analyze the CSR of MSRTC towards employees.

Table No. 1: Job Satisfaction

Sr. No.	I agree the Statements of Social Responsibility as There is …….	Level of Perception					Total
		Highly Satisfied	Satisfied	Neutral	Unsatisfied	Highly Unsatisfied	
		5	4	3	2	1	
1	Salary	107 (28.76)	18 (4.84)	24 (6.45)	73 (19.62)	150 (40.32)	372 (100)
2	Allowances	92 (24.73)	70 (18.82)	18 (4.84)	92 (24.73)	100 (26.88)	372 (100)
3	Bonus	38 (10.22)	33 (8.87)	57 (15.32)	84 (22.58)	160 (43.01)	372 (100)
4	Promotion	37 (9.95)	130 (34.95)	75 (20.16)	72 (19.35)	58 (15.59)	372 (100)

Figures in brackets are in percentages **(Source: Primary Survey)**

Employee satisfied for working place of organization. Satisfied employee stick for organization and feel the happiest movement. Employee satisfaction leads to positive attitude at workplace and he give higher productivity.

The employee satisfaction dependent some content like salary, allowance, bonus and promotion. From the above table employees have highly unsatisfied from salary, allowance and bonus. In salary (59.94 percent), allowance (51.61 percent) and bonus (65.59 percent) employees have unsatisfied. 44.9 percent employees satisfied from promotion. The MSRTC gives promotion appropriate employees.

Table No. 2: Employees Skills & Training & development

Sr. No.	I agree the Statements of Social Responsibility as There is …….	Level of Perception					Total
		Highly Satisfied	Satisfied	Neutral	Unsatisfied	Highly Unsatisfied	
		5	4	3	2	1	
1	On line Work Skills	26 (6.99)	46 (12.37)	56 (15.05)	108 (29.03)	136 (36.56)	372 (100)
2	On line Work Training	2 (.54)	8 (2.15)	62 (16.67)	138 (37.10)	162 (43.55)	372 (100)
3	On line Work Development	6 (1.61)	4 (1.08)	60 (16.13)	137 (36.83)	165 (44.35)	372 (100)

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4	Off line Work Skills	303 (81.45)	64 (17.20)	2 (.54)	1 (.27)	2 (.54)	372 (100)
5	Off line Work Training	162 (43.55)	206 (55.38)	1 (.27)	3 (.81)	0 (0.00)	372 (100)
6	Off line Work Development	255 (68.55)	111 (29.84)	2 (.54)	4 (1.08)	0 (0.00)	372 (100)
7	Proper Records Skills	276 (74.19)	91 (24.46)	5 (1.34)	0 (0.00)	0 (0.00)	372 (100)
8	Proper Records Training	154 (41.40)	213 (57.26)	4 (1.08)	0 (0.00)	1 (.27)	372 (100)
9	Proper Records Development	221 (59.41)	147 (39.52)	2 (.54)	1 (.27)	1 (.27)	372 (100)

Figures in brackets are in percentages (Source: Primary Survey)

The corporation vision is dependent on employee skill, training and development. The corporation gives training for higher productivity. Employees are some time take the own efforts for development and up gradation of skill. The MSRTC responsibility to update the employee related work. If corporation ignore the employee skill, training and development then face the number of difficulties and overall negative impact of corporation.

Table no 2 shows the perception of the employee towards skill, training and development. The employees unsatisfied from online work skill, training and development. As per employee perception online work skill 65.59 percent, online work training 80.65 percent, online work development 81.18 percent employees highly unsatisfied. Off line work skill 98.65 percent, off line work training 98.93 percent, offline work development 98.39 percent employee majority highly satisfied. MSRTC maintain some of records. The perception of the employee towards proper records skills 98.65 percent, proper records training 98.66 percent and proper records development 98.93 percent employee highly satisfied.

Table No. 3: Welfare Facilities

Sr. No.	I agree the Statements of Social Responsibility as There is …….	Level of Perception					
		Highly Satisfied	Satisfied	Neutral	Unsatisfied	Highly Unsatisfied	Total
		5	4	3	2	1	
1	Medical Facility	72 (19.35)	156 (41.94)	16 (4.30)	58 (15.59)	70 (18.82)	372 (100)
2	Canteen Facility	59 (15.86)	131 (35.22)	48 (12.90)	60 (16.13)	74 (19.89)	372 (100)
3	Leave Facility	211 (56.72)	135 (36.29)	9 (2.42)	6 (1.61)	11 (2.96)	372 (100)
4	Rest Room Facility	182 (48.92)	145 (38.98)	5 (1.34)	17 (4.57)	23 (6.18)	372 (100)
5	Lunch Room Facility	7 (1.88)	6 (1.61)	115 (30.91)	114 (30.65)	130 (34.95)	372 (100)
6	Pure Drinking Water Facility	43 (11.56)	155 (41.67)	29 (7.80)	62 (16.67)	83 (22.31)	372 (100)

7	Latrine's, Urinals, Sanitation Facility	95 (25.54)	216 (58.06)	9 (2.42)	18 (4.84)	34 (9.14)	372 (100)
8	Sports Facility	4 (1.08)	7 (1.88)	111 (29.84)	140 (37.63)	110 (29.57)	372 (100)
9	Library and Reading Room Facility	3 (.81)	5 (1.34)	85 (22.85)	166 (44.62)	113 (30.38)	372 (100)
10	Education Facility	24 (6.45)	78 (20.97)	60 (16.13)	112 (30.11)	98 (26.34)	372 (100)
11	Scholarship Facility	121 (32.53)	71 (19.09)	27 (7.26)	77 (20.70)	76 (20.43)	372 (100)
12	Housing Facility	23 (6.18)	51 (13.71)	85 (22.85)	113 (30.38)	100 (26.88)	372 (100)
13	Uniform and Washing Facility	136 (36.56)	110 (29.57)	15 (4.03)	46 (12.37)	65 (17.47)	372 (100)
14	Free Travel Facility	318 (85.48)	47 (12.63)	3 (.81)	0 (0.00)	4 (1.08)	372 (100)
15	First aid Facility	221 (59.41)	125 (33.60)	4 (1.08)	11 (2.96)	11 (2.96)	372 (100)
16	Provident Fund	175 (47.04)	180 (48.39)	9 (2.42)	2 (.54)	6 (1.61)	372 (100)
17	Pension	122 (32.80)	218 (58.60)	15 (4.03)	9 (2.42)	8 (2.15)	372 (100)
18	Gratuity	136 (36.56)	198 (53.23)	22 (5.91)	11 (2.96)	5 (1.34)	372 (100)
19	Retirement Benefit	152 (40.86)	201 (54.03)	5 (1.34)	9 (2.42)	5 (1.34)	372 (100)
20	Health and Safety	151 (40.59)	183 (49.19)	13 (3.49)	15 (4.03)	10 (2.69)	372 (100)
21	Awards and Rewards	48 (12.90)	121 (32.53)	71 (19.09)	76 (20.43)	56 (15.05)	372 (100)
22	Accidental Benefit	44 (11.83)	148 (39.78)	49 (13.17)	48 (12.90)	83 (22.31)	372 (100)

Figures in brackets are in percentages (Source: Primary Survey)

It has observed from the above table 3 that, social responsibility of the corporation to provide welfare facilities of the employee. 61.29 percent employee satisfied for medical facility. 51.08 percent employee satisfied canteen facility. 93.01 percent employee satisfied for leave facility. In depot rest room facility available, 87.9 percent employee highly satisfied. As a employee said that lunch room facility not available in depot area hence 96.51 percent employee not satisfied. Pure drinking facility available depot area but only 53.23 percent employee satisfied. 83.6 percent employees satisfied for Latrines, Urinals, and Sanitation Facility. As per employee opinion sports facility 97.4 percent, library and reading room facility 97.85 percent, education facility 72.58 percent employee neutral, unsatisfied and highly unsatisfied for these facility. For the education, corporation has supply scholarship facility hence, 51.62 percent employee satisfied.

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80.11 percent employees not satisfied for the housing facility. Corporation not helps us for housing facility. The employee said that Uniform and Washing Facility 66.13 percent, Free Travel Facility 98.11 percent, First aid Facility 93.01 percent, Provident Fund 95.43 percent, Pension 91.4 percent, Gratuity89.79percent, Retirement Benefit 94.89 percent, Health and Safety 89.78 percent, Awards and Rewards 45.53 percent, Accidental Benefit 51.61 percent, employees majority highly satisfied and satisfied.

Hypotheses testing

H_0: MSRTC unable to extend their social responsibility towards employee satisfaction.

H_1: MSRTC extend their social responsibility towards employee satisfaction.

Employee Satisfaction has been assessed using two categories viz. Job satisfaction and Welfare Facilities, these categories enveloped 26 number of variables. The mean score of variables come under every category has been calculated and one sample't' test test has been worked out for hypothesis testing.

One-Sample Test						
	Test Value = 4					
Parameters	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Job Satisfaction	27.204	371	.000	6.76882	6.2796	7.2581
Welfare Facilities	130.850	371	.000	72.37903	71.2913	73.4667

It has observed from the above table sig. (2tailed) value is 0.000 for two parameters in employee satisfaction, hence a null hypothesis is rejected and an alternative hypothesis is accepted that there is MSRTC extend their social responsibility towards employee satisfaction.

Suggestions

1] Salary, Allowances and Bonus:

Without employees no any importance from corporation hence, corporation take some steps for satisfaction of employees. The satisfied employee is highly motivated, positive attitude, open minded, without stress, without conflict do the work in accurate. Satisfied employees are highly contribution given to corporation. He assign more time for work. Otherwise, negative impact on corporation work viz he not assign more time, not contributed to work, negative attitude etc. Hence, MSRTC take some steps for satisfaction of employee to provide satisfied Salary, Allowance and Bonus.

2] On line work skills, training, and development:

All depots are maintaining records on manually. Now days we are need for maintaining on line work. Because, no of passengers and employees have increased. Lots of information manually recorded hence quickly not uses this information. If online records maintained by employee then quickly generate the various report and information with little time. The employees aware the online skill otherwise corporation give the online work training. Online work is very helpful for corporation or division for decision making.

3] Lunch Room Facility

In accordance of the employees lunch room facility not provided. There is need of employees lunch room facility in accordance with the prescribed standards specified in the rules like provision of drinking water, fan, T.V, cleanliness etc. In lunch time all employees come together and discuss with each other on various problems faced by duty and personal life with open mind.

4] Sports Facility

Corporation not provides sports facility to employees. Sports facility it gives physical and mental fitness to employees.

5] Library and Reading Room Facility

To increase & update the knowledge of employees, Corporation should provide library and reading room facility for drivers and conductors

6] Education Facility

Corporation should provide education facility to employees and employee's children. Corporation should take some steps for motivation. Corporation should start education facility for employees and employee's children whose performance is good. If any employees want of taking education then corporation assigns some benefits. Highly educated employees are beneficial for corporation.

7] Housing Facility

Corporation should provide housing facility for different classes of employees. Drivers and conductors and middle level employees also demand the housing facility from corporation. They have demanding from high salary. From the current salary they have not constructed the individual house.

Conclusion

Corporate Social Responsibility literacy is most important for MSRTC and employee. Corporate Social Responsibility it plays role of supporter and motivator to the corporation of the journey time of reach and peak along with highest standard. As per result of data CSR of MSRTC towards employee is satisfied, except some of the parameters. The excepted parameters MSRTC focus to give higher satisfaction of the employee.

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Promoting Youth Entreprenership Challenges and Prospects

Ms. S.Janani*
Dr. M. Muthuchitra**

Abstract

Entrepreneurship can be an important pathway of opportunity for young people; it is a Pioneering way of bringing youth into the labour market within the framework of potential efforts to boost employment for young people. Taking into deliberation rising youth unemployment, promoting youth entrepreneurship can be a beneficial strategy to generate jobs, improve their living standard and economic independence more over youth entrepreneurship has a multidimensional approach as it fights youth employment in two different ways. First, it generates employment opportunities for self-employment youth as well as for other young people being employed by young entrepreneurship can have a considerable impact on a young person's decision to become an entrepreneur

Secondly, it provides youth with entrepreneurial skills and attitude that are necessary to cope with the general shift from traditional 'job-for-life' carrier towards 'portfolio career'. Hence, it develops young people's general employability for today and tomorrows labor market Entrepreneurship based education has an important impact on young men and women, one important aim of entrepreneurship based education should be the promotion of entrepreneurship as a viable career path learning about business development, administration, and management as well as be learning the necessary skills, attributes and behavior that creates positive attitude.

Keywords- Entrepreneurship, challenges, youth and promoting

Introduction

Development has become the catch line of the21st century. The waves of economic liberalization and globalization have opened up several opportunities to the potential entrepreneurs in the industrial, services and agriculture sectors. The new millennium in the age of entrepreneurship. Entrepreneurs are a business leader who has a key role in fostering economic growth and development, on the whole, the role of the entrepreneur in the context of economic development can be described as 'entrepreneurship is the cause and growth of the economy is its Entrepreneurs and entrepreneurship effect. The concept of entrepreneurship originated in the 1700s and the meaning has evolved ever since. It derived from the French word 'entrepreneur' which means 'to undertake'. Many researchers basically associate it with starting one's own business. But most of the economics consider it is more than that, there are three important characteristics of entrepreneurial activity from the point of view of the economic functions i.e., risk-taking, innovations and entering into new business.

Role of Entrepreneurship in the Economy; Creating Value

An entrepreneur employs new combinations of means of production and plays a vital role in distributing the status quo through innovation or creative distribution and thereby

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become an instrument of change. Hence the dynamic equilibrium achieved by a persistently innovative entrepreneur can develop the conditions for;

- Prospect of enhancing employment opportunities
- Wealth formation
- Introduction and distribution of new methods and technology.

The task of entrepreneurship and an entrepreneurial culture in economic and social development has often been undervalued. However, over the years it has become increasingly clear that entrepreneurship certainly does contribute to economic development. Transformation ideas into economic opportunities are the essence of entrepreneurship. History brings out that economic progress has been considerably advanced by people who are entrepreneurial and innovative, able to utilize opportunities and willing to take a risk. Entrepreneurs provide solutions to the problem of unemployment and they always challenge the existing conditions

Youth Entrepreneurship

Youth is the age when life is most resourceful and joyful. It is the age when idealism blooms and social consciousness is honed. It is when young people begin to dream and prepare themselves to struggle to realize those dreams. But all this is possible only if the minds and hands of young people are employed in productive work. Majority of human resources in the world is lying idle due to large-scale unemployment. Youth from the biggest segment of the society faced with the depressing problem of unemployment and even when they are employed they often have insecure jobs which are poorly Remunerative. The condition of youth women and persons from a socially disadvantaged group is leave lasting marks on the leave of today and have a serious impact on the national development.

Objectives

The present study is pursued with the followings specified;

- To study the factors affecting youth entrepreneurship in India in general and Chennai in particular.
- To identify the problem faced by the young entrepreneurs during their startups of an enterprise.
- To suggest the ways and means of promoting youth entrepreneurship and its contribution to the development of the economy.

Litrature Reviews

Penchev and Salopaju (2011)- There are always two side entrepreneurial competencies model in which one focusses on the core entrepreneurial competencies that are required at a time proactiveness, change risk-taking seeing opportunities, soft networking, decision making, while the other side is more necessary later on for running the establishment company includes leadership, communication achievement, planning and power clusters.

Arshad etal (2004) – Studied the impact of Entrepreneurial orientation on business performance in a study of technology-based small medium entrepreneurship service. The purpose of this study was to determine the impact of entrepreneurial orientation which is represented by five dimensions of business performance.

Galindo and Mendez (2014) - In vitiated entrepreneurship, economic growth and innovation regarding feedback effects at work. This study aimed to analyze the relationship between entrepreneurship, innovation and economic growth and to show the feedback effect in these relations.

Galva's and Mathew (2014)- Surveyed how international entrepreneurship characteristics influence internet capabilities for the international business process of the firm. This Research explored the relationship between international entrepreneurship characteristics and the use of internet capabilities for the international business processes of the firm.
Baker (2008) – Argues in his paper the present challenges of youth unemployment and investigates the role that youth entrepreneurship plays, in solving these challenges. Youth business international (2009) recommends that business, government and other stakeholders in a society highly perceive that supporting

Findings

- The present findings from the interpretation results regarding factor considered for promoting youth entrepreneurship are enumerated here.
- Entrepreneurs with greater initial financial resources are more likely to succeed young people not only will they have low personal savings, but they will also find it more difficult than adults to obtain external finance, including debt finance. The youth-owned firm generally doesn't fit in the assessment parameter for a bank loan.
- Young people likely have limited business network & business-related social capital. This may have consequences for setting up and running their business and building 'legitimacy' among key stakeholders.
- The market business also affects young entrepreneurs financial market may be based away from supporting youth business.
- Young people are affected by their family, teachers, and society as a whole. Important role model &such as parents and teachers are often not very aware of the requirement and opportunities for entrepreneurship.
- This lack of awareness results in a lack of encouragement of entrepreneurial activates or even negative social attitude that act as an obstacle to youth entrepreneurship.
- Youth-owned business may also face "discrimination" in the product market, with customers who can skeptic about the reliability of their product or services.
- It reviles that Entrepreneurship education plays an important role in providing a good background while starting up a new venture.
- Various studies have found that individuals with prior work experience have a higher entrepreneurial intention and people with no prior work experience may find it difficult to develop a good business idea.
- The taxes, VAT, Sales tax not only influence young people to decide to become entrepreneurs but also have an impact on their decision while entering into a field of entrepreneurship. Higher tax rates have a negative effect on entrepreneur's decision to expand their business and take a risk.

Suggestions

- Government should focus on youth entrepreneurship development initiatives such initiatives should offer business development services that are tailored to nurture business venture.
- It is highly advisable that those parents and grandparents, who have been running business for years, should expose/ place their children in their business. This will ensure that contribution of entrepreneurship culture will carry one to next generation. I strongly feel that we need new more entrepreneurs in our country.
- India needs job makers instead of job seekers.

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- The youth in our nation instead of looking for new job opportunities they can start their own enterprises with their new idea.
- It can be a portable solution for our unemployment problem by creating employment for one owns self and others.
- Banks must consider entrepreneurship as a major business opportunity.
- Implement significant policy initiatives, including relevant RBI recommendations which facilitate case of credit flow to small entrepreneurs.
- Improve general perception regarding entrepreneurship to influence family &community support for first-generation entrepreneurship.
- Explore ideas for flexibility of vocational education with mainstream education for greater linkage between theory and practice.
- Making entrepreneurship a core subject in business school, including topics relating to business ethics, an early enterprise management relevant aspect of scaling-up, Indian corporate law and relevant international laws in curricular explore possibilities of establishing.
- To set up enterprise centers in major educational and research centers, with industrial linkages.
- The government should ease tax norms and the process of tax filling by reducing the frequency of taxes.
- Making policy information available and easily accessible which are relevant to a new start-up?

Conclusion

Youth Entrepreneurship is the wheels on which a country can run its economy. Innovation can play an important role in catch-up and growth in a global economy. This study on Entrepreneurship has relevance today, not only because it helps entrepreneurs better fulfill their personal needs but because of the economic contribution of the new venture. More than increasing national income by creating a new job; Entrepreneurship acts as a positive force in economic growth by serving as the bridge between innovation and market price. Youth entrepreneurship development requires a socially conducive atmosphere where entrepreneurial habits and spirit can be inculcated right from childhood. Our educational system also rarely exposes the students to entrepreneur; prepares them for a job instead. Even if someone with a high entrepreneur aptitude wants to set up a business, it is discouraged by a host of an adverse factors; lack of adequate access to information on setting up and operating a business, procedural hurdles, lack of start-up funds, lack of adequate network and mentoring support difficulty in accessing to technology lack of a supportive system, operational difficulties. These factors lose largely and hinder the emergent of the entrepreneur inadequate measure Therefore to develop such an environmental integrated policy measures to be initiated policy measures like a social mismatch, educational training and technological mismatches, banking mismatches etc.

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A Study of Statistical Analysis in Clinical Psychology Using Datamining Techniques

Mr.S.K.Saravanan *
G.Barkavi **

Abstract
Statistical analysis involves collecting and scrutinizing every data sample in set of items for which sample can be drawn; it's a component of Data analysis. Data analysis is a process of inspecting, cleansing, transforming and modelling data with the goal of discovering useful information. This application is based on the research done in clinical psychology whereas; research is a process of gathering information in a scientific manner so as to enable an understanding of attributes and variables. This information is then used to modify behavior or conditions that affect that behavior. Nowadays the researchers are doing their research in the software such as SPSS, SAS, STATA and PSPP and so on. But the researchers are facing some issues during their research process and some of them are proprietary software so they need to purchaseor they have to do their research within the trial period of the software. To overcome this hazards the current system provides the flexible and efficient way to provide statistical data for the specified data sets given by the user. Researchers are doing their research based on quantitative techniques. These techniques are mainly used to a) Describe data (based on the type of variables), b)Test various research hypothesis(frequency distribution). In this application the user can enter the data during the research process or they can import the excel files within the application. This application provides the charts and the hypothesis values of the data based on the user specification.

Keywords: Statistical analysis, Frequency distribution, quantitative techniques, clinical psychology, Regression.

1. Introduction

Statistical techniques involve analyzing the collected data for the purpose of summarizing the information. These techniques use probability theory, which measures uncertainty and randomness associated with the data. The statistical techniques help in classifying and tabulating the collected data. The various statistical measures such as mean, median, standard deviation, etc., help in deriving various inferences from the collected data, which can be used for the purpose of describing the variables studied, testing hypothesis, making predictions and decision making. The contribution that quantitative techniques can make to management decision making is well researched. There is extensive empirical evidence that the relevant application of such techniques has resulted in significant improvements in efficiency particularly at the microeconomic level, and has led to improvements in decision making in both profit and non-profit organizations.

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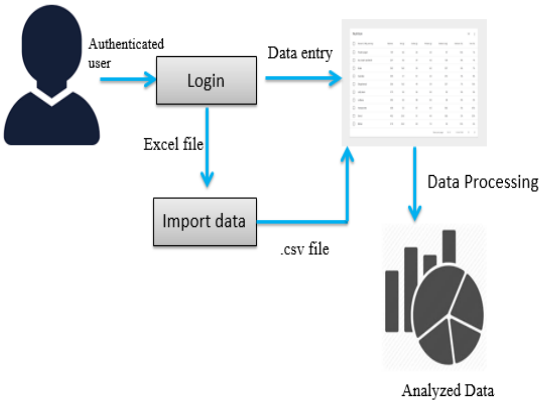

Fig: 1.1 Architcture diagram

Statistical analysis is an important factor in psychology requires more sophisticated techniques for detecting analyzed data. Raw data are often very hard to analyze and dispersed in distinct user profiles, and spread across huge imbalanced real world datasets (e.g. Behavior, life style, level of stress). Measurement is a process of assigning some value to the observed phenomena. There are clearly accepted rules under which these evaluations are to be made. Some tasks are easy while others are complex and difficult. Some are direct, like weight, while others like motivation, leadership etc., have to be inferred. Some measurements are very precise whereas others are abstract and tentative. The attempt of all measurement is to achieve confidence in the evaluation that are made.

Measurements are generally presented in the form of a scale in a range. For example, if men, women and children, watch the movie, we assign 0 to men, 1 to women and 2 to children in order to tabulate our observation of the audience. This is the process of artificially determining categories. These can be further divided as qualitatively or descriptively. There are four levels or types of scales for measurements-nominal scale, ordinal scale, ratio scale, interval scale.

2. Objective Of The Project

This project presents the techniques available to get the analyzed data in the form of charts and range values. The researchers can do their research in the software such as SPSS, SAS, PSPP but the software are proprietary software and the researcher should have a wide knowledge about the software. Even the researcher got the trial version they have to do their research within the time limit. To overcome these issues this application is introduced. This application provides the flexibility and efficiency to the researchers who are doing their research in this application. There is no need to study the whole application because of it user interface.

The researcher need to enter their data or they can even import the data files from excel in the .csv (comma delimiter) file format. After entering the data the researcher undergoes some process based on the type of research such as sample-t-test, paired-sample-t-test, and chi-square test and so on. Along with the tests, charts are also generated for the easy understanding of the user.

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3. Literature Survey

This project is developed from many different ideas from how the researchers are doing their research in the department of clinical psychology and the problems facing by them while at the time of research. Given the substantial of labelled datasets to get the analyzed data is a tedious process in the application level. Because many of the software were doing this process in a successful manner in the organization level but in the research level the researcher are facing many issues and the main reason was the researchers can do their research in mobile phone itself.The peculiarities have remarkable implications for the typical statistical and datamining methods used in the outlier detection field.

4. Data Processing And Data Analysing

System is guided by an in-depth analysis of a real world dataset, which is paramount for our work and provides useful insights for future research. Every day, we are confronted with some form of statistical information through different sources.

The area of statistics cans primarily besplit up into two identifiable sub-areas termed as, Descriptive statistics and inferential statistics. Availability of right information is very important for making right decision. The large amount of raw data generally generated from various business sources is highly cumbersome for the management to use.

Similarly, single or isolated facts or figures cannot be called statistics as these cannot be compared or related to other figures within the same framework. Three important properties make one scale of measurement different from one another:

a) Magnitude: It refers to the property of 'moreness'. Any attribute that is being measured can be more, less or equal at one instance as compared to another instance.

b) Equal intervals: This means the difference between any two points at any place on the scale has the same meaning as difference between two other points that differ by the same number of scale units.

c) Normality and Abnormality: This involves the context in which any measurement is made. If the context places any type of stress on the individual, then the response would reflect it. For example, if there is no pulse measured the situation is alarming, for the body. For many psychological tests, such a condition does not exist. For example in case of anxiety, there cannot be a 'zero' for there can be no situation where there is absolutely no anxiety by the number of such values.

5. Measure Of Central Tendency

There are several commonly used measures such as arithmetic mean, mode and median. These values are very useful not only in presenting the overall picture of the entire data but also for the purpose of making comparisons among two or more of data. While the arithmetic mean is the most commonly used measure of central location, mode and median are more suitable measures under certain set of conditions and for certain types of data.

a) Arithmetic Mean: The mean is computed by adding all the data values and dividing it In general, if there are n values in the sample, then

$$\overline{X} = \frac{\sum_{i=1}^{n} Xi}{n}$$

If we have the data in grouped discrete form with frequencies, then the sample mean is given by:

$$\overline{X} = \frac{\sum f(X)}{\sum f}$$

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The sum of the deviations of individual values of X from the mean will always add up to zero. Since the computation of the mean is based upon inclusion of all values in the data, extreme value in the data would shift the mean towards, it thus making the mean unrepresentative of the data.

b) Median: the median is a measure of central tendency and it appears in the center of an ordered data. It divides the list of ordered values in the data into two equal parts so that half of the data will have values less than the median and half will have values greater than the median. In general, the median is $\frac{n+1}{2}th$ observation in the ordered data.

c) Standard Deviation: Standard deviation is the measure of dispersion of a set of data from its mean. It measures the absolute variability of a distribution; the higher the dispersion or variability, the greater is the standard deviation and greater will be the magnitude of the deviation of the value from their mean.

$$\sigma = \sqrt{\frac{\sum(x-\overline{x})^2}{N}}$$

For grouped data (discrete variables)

$$\sigma = \sqrt{\frac{\sum f(x-\overline{x})^2}{\sum f}}$$

d) Minimum Value: The minimum values are calculated based on the data entered in the column. This value is calculated by the MIN () function.

e) Maximum Value: the maximum value is calculated based on the data entered in the column. This value is calculated by the MAX () function.

f) Standard Error: This measure is used to determine the dispersion of observed values of Y about the regression line. This measure is designated by $S_{y.x}$ and is given by:

$$S_{y.x} = \sqrt{\frac{\sum(Y-Y_c)^2}{n-2}}$$

6. Approches

6.1: Correlation Analysis
6.2: Regression Analysis
6.3: One sample T-test
6.4: Paired sample T-test
6.5: Chi-squared test

6.1 Correlation Analysis

Correlation analysis is a statistical tool generally used to describe the degree to which one variable is related to one another.

The relationship if any is assumed to be a linear one. This analysis is used quite frequently in conjunction with regression analysis to measure how well the regression line explains the variations of the dependent variable. It is used to see the relationship between continuous and discrete variables.

Tests for correlation hypothesis

$\boldsymbol{H_0}$**: P =0 (no correlation)**

$\boldsymbol{H_1}$**: P ≠ 0 (correlation exists)**

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According to Karl Pearson 'r' can be worked out as follows:

$$r = \frac{\sum xy}{n\sigma_x \sigma_y}$$

Coefficient of determination, r^2

The coefficient of determination can be defined as the proportion of the variation in the dependent variable Y that is explained by the variation in independent variable X, in the regression model.

$$r^2 = \frac{\sum(Y_c - \overline{Y})^2}{\sum(Y - \overline{Y})^2}$$

6.2 Regression Analysis

Regression analysis is dealing with many variables at one time. Here the variables can be categorized into dependent variable and independent variable (weight depends on height). These variables are related to eachother.

In general regression can be calculated as follows,

$$Y = a + bX$$

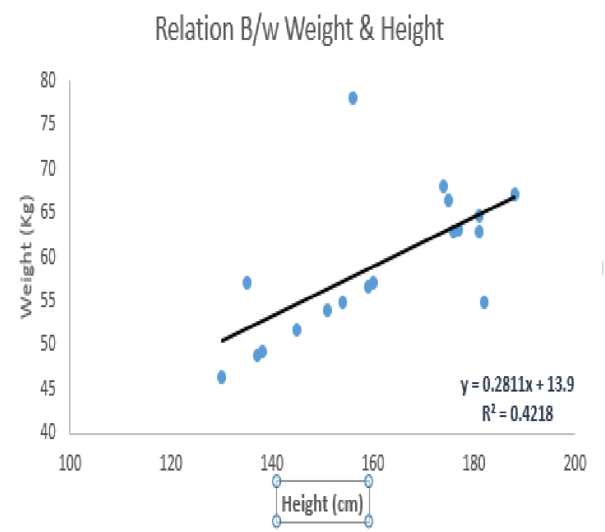

Fig. 6.2.1 Regressin Curve

6.3 One Sample T-Test

One sample t test makes several assumptions. Although t-test are quite robust, it is good practice to evaluate the degree of deviation from these assumptions in order to access the quality of results. In this test the dependent variable must be continuous, the observation is independent of one another, the dependent variable should be approximately normally distributed, and the distributed variable should not contain any outliers.

Test for statistics,

$$t = \frac{\overline{y} - m_0}{\sigma / \sqrt{n}}$$

This value is obtained by comparing t to a t-distribution with (n-1) degree of freedom.

$$P = 2.\text{pr}\ (T > |t|)\ (\text{two-tailed})$$
$$P = \text{pr}\ (T > t)\ (\text{upper-tailed})$$
$$P = \text{pr}\ (T < t)\ (\text{lower-tailed})$$

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6.4 Paired Sample T-Test

The dependent sample t-test is a statistical procedure used to determine whether the mean difference between two sets of observation is zero.

The mathematical representation of the null and alternative hypothesis,

$$H_0=\mu=0$$
$$H_1=\mu \neq 0 \text{ (two-tailed)}$$
$$H_2=\mu>0 \text{ (upper tailed)}$$
$$H_3=\mu<0 \text{ (lower tailed)}$$

The p-value gives the probability of observation the test results under the null hypothesis. The cut off value for determining statistical significance is ultimately decide on by the researchers but usually a value of .05 or less is chosen. This corresponds to a 5% or less chance of obtaining a result like the one that was observed if the null hypothesis was true.

6.5 Chi-Square Test

The Chi-square test is a non-parametric test of statistical significance for bivariate tabular analysis (also known as cross- breaks). Any appropriate test of statistical significance lets you know the degree of confidence you can have in accepting or rejecting a hypothesis. Typically, the chi-square test is any statistical hypothesis test, in which the test statistics has a chi-square distribution when the null hypothesis is true.

In general chi-square is calculated with the help of,

$$x^2=\sum\left(\frac{(O-E)^2}{E}\right)$$

If the calculated value of x^2 exceeds the table value, the difference between the observed and expected frequencies is taken in significant but if the table value is more than the calculated value ofx^2, then the difference between the observed and expected frequencies is considered as insignificant, i.e., considered to be a consequences of chances and as such can be ignored.

7. Dataset Description

To measure the quality of the dataset and of attributes, we make an exploratory analysis on their values; we show the results for internet addiction (research) scaling such as internet addiction test scale, UPPS scale. The dataset variables are categorical or non-categorical.

8. System Implementation

In this project we are implementing the statistical analysis in the field of clinical psychology. Statistical analysis is important here to get the output for their research work. Nowadays they are facing many issues at the time of analyzing their datasets. These are done with the help of software so that the user has much knowledge about the software. In this application the user works with the user interface GUI and they can work with it without having any prior knowledge about the application. The datasets entered in the table is stored in the database. The analysis may undergo many kinds of tests such as sample t-test, parametric test and non-parametric test.

Based on the type of research the researchers undergoes they select the test type. Every single test produces different values based on the test selected. The data we collect can often be more easily understood for interpretation if it is presented graphically or pictorially.

Diagrams are more suitable to illustrate the data which is discrete, while continuous data is better represented by graphs. So it finally produces the charts with its values. The data added dynamically and stored into the database was the major crises faced by the system.

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The measure of central tendency plays a vital role in the entire test. Karl Pearson provides all the test methods to do the data analysis. Here we implemented one sample t-test for the givendatasets. The hypothesis value gained by the application is shown here.

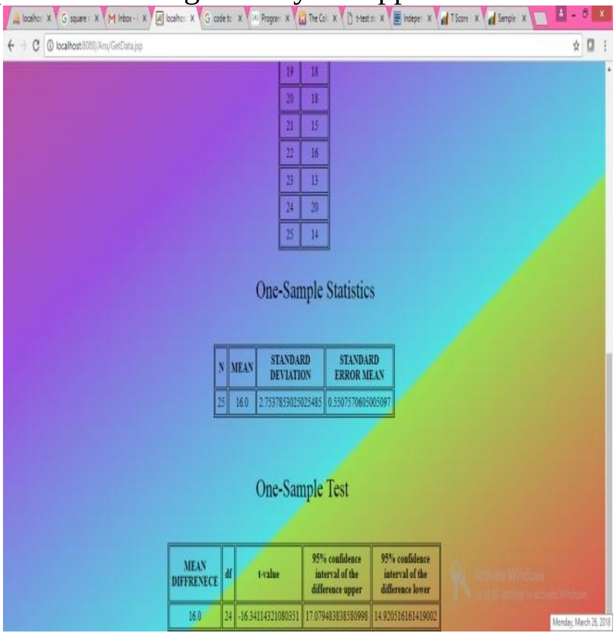

Fig. 8.1 Data Set after sampling

9. Result

The goal is to measure the effectiveness of this system in correctly collecting the datasets and to provide the range values to the researchers for their research. The trained datasets consists of scaling methods such as internet addiction test scale, UPPS-P and so. The research can undergoes some any kind of scaling method to do the research.The evaluation of this system is quite complex because, this system requires more complicated datasets and operations because it should possess the exact range values i.e., mean, median, mode, standard deviation, r value and p-value. The another approach is regression that are usually very hard to obtain due to the dynamically generating datasets .This work aims at developing an effective statistical analysis andautomatic decision support system for psychological research.The scores calculated have a clear statistical meaning, aiding theanalyst's activity. The goal is to produce the analyzed data for the given datasets which is collected by the researchers and to provide the charts. The resultant r value is taken into consideration for further work.

10. Conclussion

At present, building a well-defined, manageable and well understood statistical analysis system is an essential requirement for the psychological institutions. Data analysis and decision support system is an effective semi-supervised approach to do the research and to decide the outcome for the research, using this decision support system is developed. The datasets which is used by the researcher may be primary or secondary data. Primary data is one which collected by the researcher himself for the purpose of a specific inquiry or study. Secondary data is one which an investigator uses the data which has already been collected by the others. This application provides the efficient statistical data analysis to the user to obtain their range value in the application itself. Here the researcher can dynamically add the data at run time and can even import the dataset which is already used. The hypothesis testing value for all the test is shown to the user with the appropriate charts (bar, pie, scatter diagram). Based on the range value the researcher undergone the process of decision making for their research.

11. Future Enhancement

The future enhancement provides the additional features to this application to make them more effective and flexible. Here we can inbuilt the scaling methods which are widely used by the researcher so, that the researchers' can create their own datasets in the application itself by sending the e-document to others and getting it back. This helps to reduce the paper cost. The cluster analysis and other techniques such as ROC curves may also implemented to enhance the system more powerful.

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Preserving Data Storage Confidentiality Using Multi-Cloud Architecture

Mr.A.R.Gadekar*
Dr.M.V.Sarode, Dr.V.M.Thakare**

Abstract
There are many files and documents that are important for some reason. These documents are very efficiently stored and protected. Security of documents is mandatory because no third party can be seen in those documents. Today the use of cloud computing is used to store large quantities of data in the field of industry, military, colleges etc. We can retrieve data from the cloud at user's request. There are number of solutions to provide security to documentation. Data confidentiality is providing the data safely and securely in the cloud and when users share files, no third party agent should see the file. The user must create his / her own account so that the AADHAR ID provided by Indian government to the user has been used, which has been linked to his mobile number. For the storage of files in various formats, cloud storage is used. The security of documents is required to securely and accurately store each file in any cloud service provider. Cryptography and steganography algorithm are now the most widely used algorithms. Here the files are split into blocks and these blocks are encrypted with the same or different algorithms. User can request a document to a public or specific user. Other users will get a request and they can either accept or reject it. For each file we are going to use QRcode. No one can view or download the file without the concern QRcode.
Keywords Android Application**,** Cloud Computing**,** Cloud Storage**,** Client / Server**,** Distributed databases

Introduction

In many organizations, the use of cloud computing has increased rapidly. Cloud Computing provides many benefits as a low cost and data availability. Cloud storage security is important in cloud computing environments because the user has stored sensitive information with cloud storage providers. But these providers may be unreliable. Dealing with "Single Cloud" providers, due to the risk of failure of service availability and the potential risk of malicious in-house people in the same cloud, is likely to be less popular among consumers. In "multi-clouds" or in other words, a movement has emerged recently in the direction of "Inter-Cloud" or "Cloud-Of-Cloud". The basic idea of securing files / documents after storing in multi-clouds. The third party agents / hackers, can view files or attack or use it for various malicious activity. For this reason we split the files into blocks and each block is encrypted using the same or different algorithm. Certain limits are placed in the file to identify file blocks. A user can send the document as public or to a specific user. We are providing QRcode for each file. Only using QRcode, users can view documents or download them. Cloud benefits are infinite, this method of computation is not for all businesses, there are certain disadvantages to ensure that these systems are not

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for every company, and in any particular situation it is necessary to determine and seek professional advice. Using this technology puts you at risk of losing control of your company. Many IT managers are experimenting with different ways of implementing the in-house cloud system running services, but this is not always the most attractive business. Many people are frustrated with cloud technology because there is not always enough space because they find that once they have established a cloud system in their business, the storage space is over. Although it is possible to update the system, it can be a stimulating process.

Security and Privacy: Cyber-crime has become a problem since technology has started to spread the painful paths that appear in today's age and era. Cloud computing is likely to increase security risks, while most companies use the updated virus database and also it does not store all instances and information in the cloud . These advantages and affordability in cloud computing can vary from business to business, so it will be important for any business to weight them when considering their movements in cloud computing.

Literature Survey

In cloud computing, there are many threats to avoid widespread acceptance of clouds as mentioned above. Data privacy and data integrity in cloud storage are major threats. There is a lot of research going on in the field to ensure and provide data integrity in the cloud storage. Several solutions have been planned to focus on resolving the issue of integrity. One model of Juels and Kaliski [1] was one of the first attempts to retention the retrievability of the model (POR) and retention of the data retrieval of reliable and reliable integrity without retrieving the data. Of course it is a data encryption mechanism that detects data corruption and retrieves data without any losses. Shancham and Waters [2] gave a new model of POR, which allowed the user to authenticate numerous quotes with at least overhead. Later, Jia Xu and Ee-chien [3] gave a theoretical model for the implementation of POR, but all the proposed mechanisms were weakened by the security point as they all worked for the same server. That is why, in his later work, Boute gave a HAIL protocol that extends POR technology to many servers.

Therefore, Curtmola has proposed a plan for data reliability and data retrieval for many servers. Many methods have been proposed so far to ensure full data concentration and data privacy of cloud storage based on encryption and cryptographic technology, using hash value and data encoding. Phillho offers RSA-based hash data integrity mechanism for peer-to-peer file sharing networks and has expansions the full data file, but this system focuses on static data files and not on dynamic files. Atan and Abdullah proposed the cloud integration system of cloud zones that use the concept of multi-agent system (MAS) architecture. MAS are a technique used in artificial intelligence where they communicate with each other and offer complete solutions.

1.1 Problem Definition and Scope

This is an app where all the files and documents have been placed on the cloud and those documents are provided with necessary security on the cloud for relevant documents. Various documents are provided using cryptography and steganography algorithms. Cloud computing can be represented by the following attributes: Virtualization Infrastructure: Workloads on virtualized infrastructure consisting of virtual servers, virtual networks and virtual storage. In this proposed system, block data security is used by different algorithms. Here you have used the QRcode for files. No user can view or download files without QRcode.

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1.2 Goals and Objectives

The main purpose of this system is to provide files or documents security using various [4] algorithms of cryptography. While keeping the cloud secure, the following objectives must be met:

1. Understanding cloud computing environments provided by a cloud service provider.
2. Cloud Computing Solutions must meet the basic security and privacy requirements deployed on any sector.
3. Maintain awareness of the cloud and application of data security and applications distributed in the cloud computing environment.
4. Data Integrity
5. Service availability
6. User services run by customer service providers.
7. To perform best in terms of efficiency and expense ratio for cloud computing
8. Enhancing security used in encryption techniques.
9. Provide data integrity and security for user's data.
10. Reduce unauthorized user access.

This study requires the use of cloud computing technology in India, which seeks to influence the enterprise, and expresses the impact of expenditure on enterprises business. Data protection should be provided that will be shown on the cloud and no one else except the sender and recipient will be able to view or view the file. The user can safely place data that can only be viewed by his / her. The results of this study show that studies are useful for the general public and companies in the cloud computing. They can understand the value showing the benefits of cloud computing and all the factors in the enterprise. The findings of this study show that it is worthwhile to conclude before going for actual implementation of a cloud computing technology. The various deployment models in cloud computing are:

Public: Cloud infrastructure is common to people and is supported by cloud services organization. There are services available for general users on the Internet.

Private: Cloud Infrastructure Functions for Private Business It's like a virtualized data centre running in a firewall.

Community: Cloud infrastructure has been generalized to many organizations with the same principles and views of the contract. Is controlled, administered by the community or by one or the other members of a third party, and shall be on or that site.

Hybrid: cloud infrastructure is a group of clouds (public, private, or community). The user can place less important information in the public cloud, but the more robust data remains on the private cloud. Various distribution models such as SAAS, PAAS and IAAS are used.

1.3 Service Models

Software-As-a-Service (Saas): A client can access data related to software and data on a cloud through a browser. User cannot handle or manage cloud infrastructure as well as networks and servers

Platform-As-A-Service (Paas): Clients can use the applications of ongoing providers on cloud infrastructure and can be accessed from the user's device with the help of such web browser.

Infrastructure-A-Service (Iaas): Clients can call resources based on their demands and can set up and operate any software as operating systems and applications. The user handles resources such as operating system, storage, and applications.

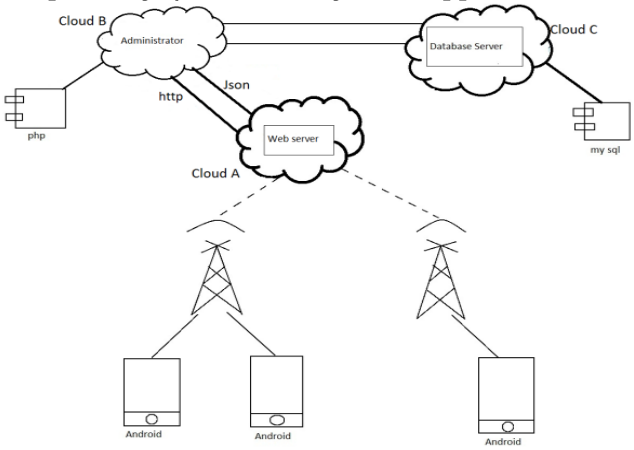

Fig.1: Basic architecture

1.4 Major Constraints

1. The use of the collection of volumes does not exceed the budget.
2. Every service provider has enough space to store all the data.
3. The service provider must have the correct data protection certificate
4. Minimum response time measured by other organizations for GET / PUT operation.

Methodology

In the first section, our cloud storage modules and system modules will be described. We will describe our problem statement; we will keep in mind that interchangeable work on cloud service providers and service providers, in which we are interrupted because cloud storage is not reversible. Secure Multi Cloud Storage is proposed for security reason. Cloud Storage is used in multiple cloud storage approach and multiple service providers also doing same. Each cloud represents different multiple service providers in the store. Those Cloud Servers are implemented by different cloud service providers. There are clear objectives in multiple cloud storage that minimize the cost of data as a part of storage on service providers. Cloud user and cloud service provider are two components for a storage service for cloud data storage. Cloud storage services are rewarded with two components, how much data is stored on the cloud server for short time, and how much data is stored on distributed server for long time. In our model, we assume that all data is stored for same time period. The number of cloud service providers is with data service per-share rate provider storage services. Cloud users can collect more than one data at the level of security required and according to their cheap budget.

Module 1: User Module
A. User registration
B. Log in
C. Upload, delete, download the file
D Change password
Module 2: TPA modules
E. Split files
F. Stored in multiple cloud storage

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G. for encryption AES, blowfish, RC6 algorithm
H. Using QRcode for every file

2.1 N-Clouds Approach

A more advanced, but more complicated approach comes from the Encryption Algorithms discipline Byzantine Agreement Protocol. Assuming the existence of N cloud providers, of which maliciously contribute against the cloud user, if N is more than 3f , the cloud user's computational task will performed by N clouds. Then, all cloud providers run a distributed algorithm that resolves the General Byzantin Agreement protocol. After that all non-malicious cloud providers are guaranteed to recognize the exact results in computing. Therefore, in a null step, the results are sent back to the cloud user by a secure broadcast algorithm. Therefore, in the presence of a malicious cloud, the cloud user can determine the right outcome.

2.2 Cryptographic Data Splitting/Partitioning

Perhaps, the most basic cryptographic method stores data in an encrypted form for securely storing data. While cryptographic users may be able to stay in the area, it is worthwhile to have an online presence available to increase the number of cloud data processing or if necessary to enable the system to multiply. That is why this approach delivers the main content and encrypted data into different clouds. Similar approaches are used by many solutions for safe cloud storage: Relapse data from cryptographic cloud storage is an encrypted key or a solution for cloud storage, so that data is easily accessed. This includes searchable encryption for key elements to achieve. Keyword search provides useful encryption on encrypted data if an authorized token is provided for the keyword. When data is secure in an unreliable public cloud, that's kept in private cloud

2.3 Relevant Mathematics

Input: login details, personal information, signal etc.
Output: login access / decline, open / close lock, turn camera on / off, etc.
Functions: authentication, signal processing, sending sms etc.
Objects: Various users in the network of PaaS, IaaS, SaaS, etc.
Mathematical Model:
S= {U, I, O, D, P}
Where, U= set of users =∑i=1 n Ui= {U1, U2, U3, …., Un}
I= set of inputs = ex. Login details, personal information, signals, etc
O= set of outputs = ex. Login access/deny, lock open/close, camera on/off, etc
D= set of devices = ex. android device, camera, etc = ∑i=1 n Di={D1, D2, D3, …., Dn}
P= set of processing = ex. authenticate, signal processing, massage sending, etc

2.4 Applications

In this section, we present some applications for cloud computing:

A. Cloud Computing for ERP: Traditional Enterprise Resources Planning Systems have some limitations, as businesses grow in an organization, many software applications may be required to manage information in many areas such as human software, salaries, finance and administration. Clearly, installing and maintaining such a variety of software applications shows the increasing business challenges. Moreover, traditional ERP systems are limited according to the availability of multiple user accessibility and resources.

B. Cloud Computing for e-Governance: Traditional e-Governance challenges such as: Resources cannot increase or decrease with changes from time to time. This can lead to

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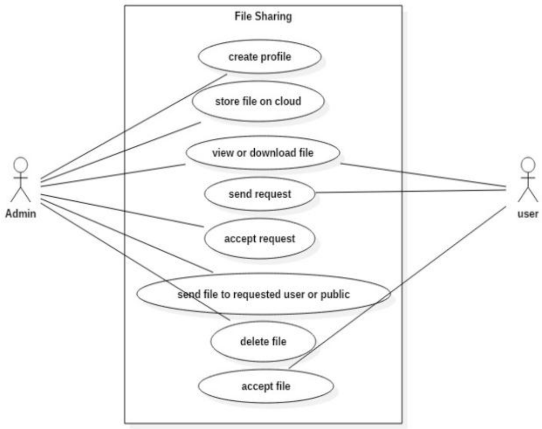
insufficient or unnecessary resources. Software and hardware have been carefully upgraded and maintained so that time and money would not waste.

Model Solutions

The main purpose of this paper is to enable the cloud system to enable data sharing capability, and it can provide a great amount of benefits to the user.



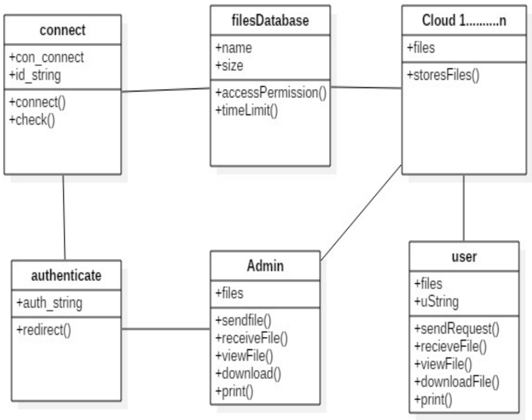
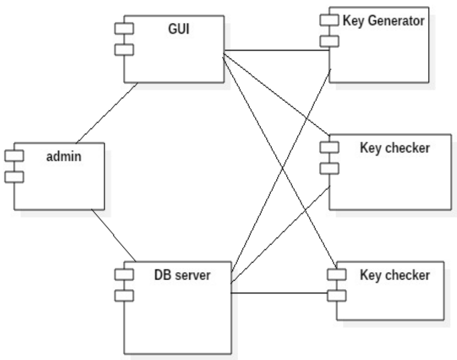


Diagram 3.1: Use case diagram **Diagram 3.2: class diagram**

The most important element to model a system is to capture dynamic behavior. Use case diagram are consists of actors, case use and their relationship. The diagram is used to model a system's / subsystem of an application. Single use case diagram captures a specific functionality of the system.

The class diagram is a static diagram. This shows the static view of an application. Class diagrams are not only used for visual, description, and documenting of various aspects of the system but also for the executable code of the software application. Our class diagram includes Classes to Connect, Authentic Manager, User, and Cloud and File Database. Each class has its own purpose, it will come into force in a certain order. Connect class will be used for class administrator, cloud and user connections.



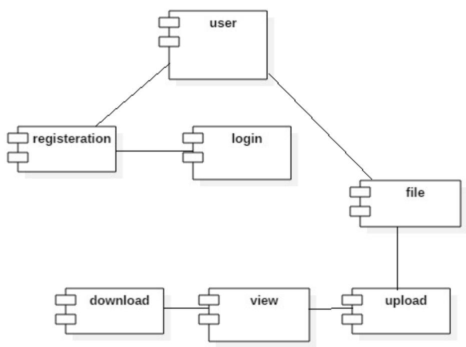


Fig a. For Admin **Fig b. For user**

Elements are provided in the component diagram and the necessary interfaces, ports, and connections between them are shown. Use of this type of diagram is used in component based development (CBD) to describe system-oriented architecture (SOA). The assumption of component-based development is based on which previously created components can be reused and if necessary, some elements can be replaced by an "equivalent" or "confirmation" element. It contains one element of the component and the module has set of programs of module. Our program has 5 components: users, registrations, logins, files, uploads views and download components. There are 2 more components that can be used only if validation succeeds.

Conclusion

Security is the reason due to most of the businesses are rushing to move their workloads on cloud computing. If there are malicious indenters in the Cloud, they are afraid to lose their privacy information. Also the service available area must be related to the single cloud; If that cloud fails, the integrity of the data remains in our proposed work. Security is a major problem because users are afraid of losing important data with any malicious attack on cloud storage. Therefore, we are using a strong cryptography algorithm which will provide the most important data protection without any losses.

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Impact of GST on Small and Medium Enterprises (SMEs) Registered under Composition Scheme: An Assessment

Rahul Nandi*
Dr. Pradipta Banerjee**

Abstract
Implementation of Goods and Services Tax (GST) has started a new era in the indirect taxation system in India. Though the process of implementation of GST was started earlier in 2006-07, due to conflict between the center and states on fiscal power and uncertainty in its structure, it was finally implemented in the country on and from 1st July, 2017. The major objectives of implementation of GST were to bring uniformity in taxation, elimination of cascading effect in indirect taxation and simplify the lengthy and complicated process of computation of so many types of indirect taxes those were prevailed in the country before the introduction of GST. Large organizations have plenty of resources and capability to cope with the new system. But, small and medium enterprises (SMEs) are trying hard to make compliance with the provisions of GST with their limited resources and capabilities. The government, however, has introduced an optional scheme under GST- 'Composition Scheme' for small taxpayer under which the taxpayer needs to pay tax at a flat rate on turnover without any input tax credit and file quarterly returns instead of monthly returns if its annual turnover does not cross the prescribed limit.
In the present paper, the impact of GST on SMEs registered under the composition scheme has been examined as these units are trying to cope with and survive in the changed indirect tax environment of the country and these SMEs play a significant role in Nation's development by crafting new entrepreneurs, generating large employment opportunities, promoting industrialization in rural and backward areas and also by ensuring supply of ancillary units to large industries in the country.
Keywords: Small and Medium Enterprises (SMEs), Goods and Services Tax (GST), Input Tax Credit, Composite Scheme.

Introduction

Goods and Services Tax (GST) has started a new era in the indirect taxation regime and is expected to drift the Indian economy as it provides a common base to both domestic and international players in the Indian market. After a long time India had initiated such a tedious task of introducing GST and has been facing a lot of conflicts among the various stakeholders of the country. Though the process of implementation of GST was started earlier in 2006-07, when the then Union Finance Minister in his budget first proposed the idea of moving towards the GST but due to conflict between the center and stateson fiscal power and uncertainty in its structure, that could not materialize. It was the 1st July, 2017 on and from which GST finally introduced in our country. At the launch of the event the Prime Minister Mr. Narendra Modi said 'GST was not just about taxation reform that would help business persons by putting an end to tax terrorism but is a measure that will

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help in the fight against corruption and black money'. The major objective of implementation of GST was to bring uniformity and elimination of cascading in indirect taxation and simplify the lengthy and complicated process of computation of so many types of indirect taxes those were prevailed in the country before the introduction of GST. Moreover, it will help Indian business houses to compete against international firms in domestic as well as in international markets around the globe. The present paper, however, focuses on its impact on Small and Medium Enterprises (SMEs) which are trying to cope with and survive in the changed indirect tax environment of the country. SMEs of our country has emerged as the most promising sector of the economy and play a significant role in development of nation and contribute enormously to the socio-economic development of the country by crafting new entrepreneurs, providing knowledge, training and skill, generating large employment opportunities, promoting industrialization in rural and backward areas and also by ensuring supply of ancillary units to large industries in the country. According to Europe-India SME Business Council (EISBC), the prime objective of which is to support SMEs and entrepreneurs to enhance bilateral trade and investment promotion in India and Europe, 'SME sector of India is considered as the backbone of economy contributing to 45% of the industrial output, 40% of India's exports, employing 60 million people, create 1.3 million jobs every year and produce more than 8000 quality products for the Indian and International markets. Despite of this strong growth, there is huge potential amongst Indian SMEs that still remains untapped. Once this untapped potential becomes the source for growth of these units, there would be no stopping to India posting a GDP higher than that of US and China and becoming the world's economic powerhouse'. According to Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, MSME are classified into two classes, Manufacturing Enterprises and Service Enterprises. Manufacturing Enterprise are defined in terms of investment in Plant and Machinery and further classified into three categories namely, Micro, Small and Medium Enterprises according to their potential of investment in Plant and Machinery. The Micro Enterprises are those which have an investment in plant and machinery up to rupees twenty five lakh. Small Enterprises are those having an investment of above rupees twenty five lakh but not exceeding rupees five crore and Medium Enterprises are those which have an investment of above rupees five crore and up to rupees ten crore in Plant and Machinery.Service Enterprises, the enterprises which are involved in providing or rendering of services, are defined in terms of terms of investment in equipment. These enterprises are classified into three categories based on their investments in equipment. The enterprises having investment in equipment up to rupees ten lakh are categorized as Micro Enterprises, having investment of above rupees ten lakh but not exceeding rupees two crore as Small Enterprises and having investment above rupees two crore but not exceeding rupees five crore as Medium Enterprises.

Large organizations have plenty of resources and skill to complying with GST. But, small taxpayers and startups are trying hard to comply with the provisions of GST due to their limited resources. For small taxpayer who cannot afford the expensive compliance cost and have an annual turnover of up to rupees one crore (rupees seventy five lakh for special category states except J&K and Uttarakhand) the government has introduced an optional scheme – Composition Scheme under GST in which the taxpayers have to pay tax at a flat rate without input tax credits and required to file quarterly return on turnover and less

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paper work instead of three monthly returns and bulky preparation of accounts which are required as per provision of GST under regular scheme.

II. Review of Literature

Though a large number of countries globally have successfully implemented GST, the concept of GST is very new to India. Presently, there are 160 countries which successfully adopted GST globally. France was the first country to adopt GST which implemented GST in the year 1954. Different countries around the globe follow different models of GST having their own peculiarities. Countries like Singapore, Australia impose taxes on everything nearly at a single rate while some countries like India, Brazil and Canada follow a dual system where GST is levied by both the Central and State Governments and have more than one rate (a zero rate, certain exemptions and higher and lower rates). A large number of studies have been conducted abroad on various dimensions of GST but a very few studies have been found in Indian context as GST is at the stage of infancy in India. Amongst the Indian studies, some studies are Shaik et al. (2015), Bhowmik (2016), Iqbal (2016), Kour et al. (2016), Venkat (2016), Zainol et al. (2016) Pandit (2017), Suman (2017), etc. In their study, Kour et al. (2016) examined the impact of GST on SMEs and also studied the difference between indirect taxes and GST with the probable benefits and challenges of implementation of GST. The authors argued that GST will play a dynamic role in the growth and development of our economy. In a different study, Zainol et al. (2016) studied the impact of GST on SMEs in Malaysia and suggested that governments concerned needs to take into consideration of the impact of tax reforms on SMES in order to minimize the adverse effects of GST on business operations of SMEs. Pandit (2017) in his study investigated the impact of GST on MSMEs in Indian context in which he opine that in the initial years of GST implementation, it would be adverse for SMEs as it will increase the administrative difficulties and the compliance cost. But use of technology and robust IT infrastructure can make the compliance simple in the later stage. Suman (2017) in his study tried to analyse the impact of GST on Small Businesses Entrepreneurs in India using primary data collected through survey of SMEs. For the purpose of the study, a survey was conducted and results showed that most of the respondents were still unable to understand the workings of GST.

III. Objectives of the study

From experiences in other countries where GST was introduced earlier, it is expected that GST will play a significant role in near-term to boost the economic activities of our country, though it is hard to comment on it in Indian context as it was introduced very recently in India. The present study, however, confines to conceptual analysis of probable impact of GST on SMEs registered under composite scheme which are small in size in terms of capital investment and turnover compared to those businesses registered under regular scheme and availing input tax credit. The major objectives of the present study are:

(i) To analyse impact of GST on Small and Medium Enterprises (SMEs).
(ii) To examine the opportunities offered by GST to SMEs.
(iii) To investigate problems faced by SMEs in implementation of GST.
(iv) To examine the impact of GST on SMEs registered under composition scheme.

IV. Methodology of the study

The present study is analytical in nature and purely based on existing resources published in the form of official publications by different government agencies, journal, magazines, newspapers, etc.

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V. Concept of GST

GST is a comprehensive, multi-stage and destination-based tax which is imposed at each stage of value addition on products and services and hence it in some countries is called modified value added tax. GST was introduced in the country after abolishing almost all types of indirect taxes and by making necessary amendments in the constitution. The power to impose and control over GST is shared between the center and the states. The present structure of GST is to a great extent alike to VAT system which was prevailed in the country before the implementation of GST. The major objectives of introducing GST are to reduce overall tax burden on consumer by eliminating multiple taxation or cascading effect and bring uniformity in taxation system in the country. There are four tax slabs under the current regime namely, 5%, 12%, 18% and 28%. Apart from these, has been fixed at 3%. GST is governed by five types of laws namely, Central GST law (CGST law), Union Territory GST law (UTGST law), Integrated GST law (IGST law), State GST law (SGST law) and GST Compensation law. All exports and supplies to Special Economic Zone units are exempted from GST. Under GST, there is a provision to get registered as a regular dealer or as a composite dealer and a person can get himself registered voluntarily under these categories though there are a number of threshold limits for each category.

VI. Advantages offered by GST

GST being the biggest tax reforms in the country has offered a number of advantages to business houses, some of which are as follows:

(i) Simple and ease procedure: The entire process of GST (like, registration, computation of tax, e-filing and payment of tax, etc.) is executed electronically and in online mode through a common GST portal without requiring any interaction between the tax authority and the taxpayer which considerably will reduce litigation, harassment and corruption. The procedure of compliance with GST is also made very simple. All these will lead to ease of doing business particularly for start-ups.

(ii) Elimination of cascading tax effect: It is a comprehensive indirect tax which brought indirect taxes under one umbrella. The most important advantage of implementation of GST is that it eliminates the cascading tax effect or tax-on-tax effect. The comprehensive input tax credit system under GST by eliminating cascading tax effect would help to reduce prices and enhance competitiveness of Indian goods and services in the global market places.

(iii) Lesser number of compliances and common tax law: Before introduction of GST, there were many types of taxes like, VAT, service tax, central excise duty, additional excise duty, additional customs duty, surcharges and cesses, etc. each of which had separate returns and different compliance requirements. Under GST, however, only one and unified return is required to be filed. Again, introduction of GST would by abolishing multiple types of taxes on goods and services, lead considerably to avoid confusion and avoidance of tax.

(iv) Reduce tax rate and increase compliance: The ultimate effect of GST will be in reduction of tax amount to the common people and will result in widening tax base and increased revenue to the Central and State Governments. Besides uniformity in tax, it will also help to reduces administrative cost of the Government, greater degree of control and easier compliance.

(v) Specific treatment for E-commerce operators: Earlier to GST regime, there was no specific tax treatment for the e-commerce companies those supplying goods in different parts of the country and they had to follow variable VAT laws in various states. In some states they had to file a VAT declaration while in some other states they were treated as facilitators without having any obligation to register for VAT. But, under GST these differential treatments and compliances have been removed and the provisions laid down under GST for e-commerce sector are applicable uniformly throughout the country.

(vi) Broadening tax base: In the pre-GST era, certain industries in India like construction, textile, etc. were largely unregulated due to lacuna of the taxation system but by bringing accountability in operation of GST, these sectors have been compelled to make compliances with the tax laws.

(vii) Higher threshold for registration: Under the previous VAT structure, every business with an annual turnover of more than Rs 5 lakh was liable to pay VAT in most states, though the limit differed in some states and every service provider with turnover of more than 10 lakh had to pay service tax. Under GST regime, however, this threshold has been increased to Rs 20 lakh (Rs. 10 lakh for north-east states), which exempts many small traders and service providers from the purview of GST.

(viii) Enhanced efficiency for logistics industry: Logistics industry plays a vital role in developing countries and considered as the backbone of manufacturing and trading activities of a nation. Before introduction of GST, the businesses under logistics industry in India had to maintain multiple warehouses across states to avoid the then CST and state entry taxes on inter-state movements of goods resulting increased operating cost due to maintaining warehouses in different states. But, in GST regime they are focusing on setting up warehouses at strategic locations only as restrictions on inter-state movements of goods have been lessened in GST. As a result this sector is expected to experience higher profitability than the before.

(ix) Composition scheme for small businesses: Under GST, a scheme 'Composition Scheme' has been introduced for the small taxpayers. It is a simple and easy scheme which any taxpayer with turnover less than Rs. 1 crore (except north eastern states and Himachal Pradesh for which the threshold limit of turnover is Rs. 75 lakh) can opt for and pay GST at a fixed rate of turnover with lesser GST formalities. The small businesses will greatly be benefitted under this scheme due to lower the tax burden and tax compliance.

(x) Promotion of Exports: With the objective to increase the volume of exports of the country, export of goods or services is considered as a zero-rated supply under GST and no GST of any kind is levied on export of any kind of goods or services. However, input tax credit will be available to the exporters. With zero rated exports, availability of input tax credit and availability input tax credit on services, Indian export industry will be more competitive in global market

Despite a number of advantages, a number of disadvantages are also associated with the implementation and compliance with GST and the businesses are to overcome these in order to capitalise the opportunity offered by GST. For filing GST returns, business houses need to update their existing accounting software to make it GST-compliant or purchase a GST software as well as require imparting training to employees to make them GST-savvy which leads increased cost. The requirements of issue of GST-complaint invoices, digital record-keeping and timely filing of return pose certain challenges to SMEs at least at the initial stage. To be GST-compliant organisations will have to hire tax professionals or train existing employees which will enhance operating cost of the business. Businesses are now compelled to switch to paperless online invoicing, return filing and payments which are difficult for the small businesses to cope with. However, cloud-based software like Clear Tax GST Billing software can help a lot in overcoming these problems in which the taxpayer only to upload the invoices and the rest will be done automatically. Before implantation of GST, businesses with more than 1.5 crore turnover had to pay excise duty but in the GST regime every business whose turnover exceeds Rs. 20 lakh need to pay GST. It will pose difficulty and higher tax burden to the small businesses in the manufacturing sector. Though the option of registering under composition scheme is there under GST in which the taxpayer has to pay GST at a flat rate of 1%, but the threshold limit of turnover of Rs. 1 crore is to be fulfilled and no input credit can be availed.

VII. Impact of GST on Small and Medium Enterprises (SMEs)

India has second largest number of SMEs in the world next to China and SMEs are the second best sector next to agriculture which provides largest employment in the economy. The SMEs contribute significantly towards balanced growth of the economy through generating employment, promoting industrialization in rural and backward regions, ensuring equitable distribution of national income hence lowering regional imbalances in the country. As SMEs are considered as the backbone of the economy, the government has taken a number of initiatives to boost up the SMEs sector like implementation of Pradhan Mantri Mudra Yojana, Make in India, Startup India, Skill India, etc. Implementation of GST will provide an impetus to that direction. It is expected to bring transparency of tax process, reduce cost of production and facilitate easy access to new markets for businesses of SMEs. The unified tax system will help the country business expansion and offer the SMEs sector an equal opportunity like established and large sized enterprises. Though the SMEs are facing a lot of challenges in coping with new tax regime of the country, it is expected that the problems arising from lack of knowledge, awareness of new system and technicalities in its implementation will not sustain in long run and all the businesses will be benefitted by the tax reforms with unified and reduced tax rate.

VIII. Impact of GST on Small and Medium Enterprises (SMEs) registered under Composition Scheme

Implementation of GST has posed challenges to small and medium enterprises in coping with the new tax system involving increasing cost of accounting and growing degree of compliance. Small and medium enterprises are predominantly run by proprietor himself or herself with limited resources and expertise. Before introduction of GST, these businesses had to adhere to a very few norms and legal requirements. But, in the GST regime they are required to make compliance with several legal formalities. As a relief to these businesses, government has made two arrangements. Firstly, an exemption from GST has been given to those businesses which have an annual turnover of rupees twenty lakh [Rs.10 lakh for special category States except J&K). Secondly, a simple and easy scheme with lesser compliance mechanism – 'composition scheme' has been introduced for those businesses which have an annual turnover of up to rupees one crore [Rupees seventy five lakh for special category States except J&K and Uttarakhand). A person may get registered himself or she under this scheme if he or she doesn't have any inter-state transaction of goods and is not a service provider. The person engaged in manufacturing (except manufacturer of ice cream, pan masala or tobacco) or trading of goods and registered under this scheme need to pay GST at a flat nominal rate of 1% on turnover (CGST @ 0.5% and SGST @ 0.5%) and

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those engaged in restaurant businesses (without alcohol) are required to pay GST @ 5% on turnover (CGST @ 2.5% and SGST @ 2.5%). However, no Input Tax Credit can be claimed by a dealer opted the composition scheme. In both the cases the taxpayers are to file four quarterly returns in Form GSTR-4 and one annual return in Form GSTR-9A.

However, the scheme has some major disadvantages. Firstly, the composition dealer cannot make inter-state transaction which limits the area of his/her business. Secondly, no input tax credit is available for the taxpayer registered under this scheme. As the dealer cannot issue any tax invoice to its customers, he/she has to bear the entire amount of tax on turnover resulting increase in price and less competitive advantages. Thirdly, a composition dealer is not eligible to supply exempt goods or goods through an e-commerce portal.

IX. Conclusion

The process of coping with the change is always difficult to some extent. Government is taking initiatives from time to time to smoothen the process of complying with GST and remove technicalities in its implementation. Patience is required to overcome these difficulties to experience the advantages of unified tax system. The time has not yet come to judge whether GST will be able to fulfill the expectations of the policy makers of our country but it is expected that it can be a game changer for Indian economy. GST is not at all a complex system but for complying with its requirements business houses have to rely on technology and internet. Though, there still exist a lot of confusions, queries and lack of clarifications on different facets of its implementation but like any other reforms these will be addressed and resolved with the passage of time. GST has also offered a great opportunity for the SMEs, which are considered as the growth engine of the nation. But they have to cope with the new regime and capitalize the opportunity offered by GST, particularly by the composition scheme under GST for SMEs.

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Economic and Cultural Conditions As Gleaned From the Inscriptions of Umamahesvarar Temple at Thirunallam

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N. Marisamy**

Abstract
The Thirunallam Umamahesvarar temple inscriptions describe the importance of Thirunallam. It tells that Sembiyan Madeviyar alias Madevadigal built Thirunallam temple. It also expresses that who were built the parts of the temple at Konerirajapuram during the imperial Chola period. The temple inscriptions mentioned that the common people also donated the land, statues, lamps, paddy and gold things to the temple.
Keywords: Devaram and Thirupathiyam songs, Construction of temple, Meykeerthi, Donation of Silver and Copper statues, Gold jewels, Paddy to the temple.

Introduction
Konerirajapuram alias Thirunallam Umamahesvarar temple was very famous during the Cholas period. This temple was praised in 34th Devaram place.[1] In this temple, give as the imperial Chola kings namely Uttamachola, Rajarajachola I, Rajendra Chola I, Rajendra Chola II, Rajadhiraja I, Vikramachola, Virarajendra, Kulottungachola I, Kulottungachola III, inscriptions are seen. Among them, Chola queen Sembiyan Madevi was the daughter of Mazhavarayan, wife of Sri Gandaradityachola and they were very popular.[2] The dedicated queen built a structural temple in Thirunallam. It was called Sri Gandaradityam. After the death of her husband Gandaradityachola, she was lived in the period of Arinjayachola, Parantakachola II, Uttamachola, Rajarajachola I and Rajendrachola I.[3] She did many donations in that period. She built many temples in South India from bricks into the stone temple. For instance, she built Siva temples in Viruthachalam,[4] Thirukkodika,[5] Thenkurangadudurai,[6] Sembiyanmadevi alias Thirunallam,[7] Thiruvarur Araneri,[8] Thirutunthurutti alias Kuttalam,[9] Anangur,[10] Thirumananjeri,[11] Thiruvakarai,[12] Mayiladuthurai.[13]
Among those temples, Umamahesvarar temple in Konerirajapuram was very famous. The famous temple inscriptions describe the Economic and Cultural conditions of Thirunallam and some literature also explains the history of the temple and devotional faiths to the people.

Devaram
The god of the temple is praised as, '*Nathan Meviya Nallam Nagarthozha Posthuman*' by Thirunavukarasar and as, '*Namaiyalvan Nallan Nagarane*' by Gnanasambandar.

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Thirupathiyam

There were two members appointed in the Thirunallam temple to sing Thirupathiyam. For salaries to the people, two lands from Poongudi villages were given as deeds.[14] Lands were given as deeds for the people were singing Thirumurai.

Location of Village

Thirunallam is one of the parts in Nagapattinam district, South India, Tamilnadu. It is located in the bank of Arisilatrankkarai. Konerirajapuram, 3 km from South to Puthur in Kumbakonam-Karaikal highway road and 10 km South-East to Thiruvidaimaruthur.

Different Names of God

The earliest inscription of the Uttamachola tells that the temple God called as 'Thirunallamudaiyar'.[15] In the12th regnal year inscription of Rajarajachola I tell as 'Thirumulathanamudaiya Mahadevar'[16] and the Rajendrachola I express as 'Umaiku Nallar',[17] in the 47th regnal year inscription of Kulottungachola I speaks of 'Kailasamudaiya Mahadevar'.[18] Sembiyan Madevi constructed her husband's statue in the premises of the temple and she was written in the inscriptions which were front in the direction of southern side of the statue. That is,

"Svasthisri Gandaradityadevar Deviyar
Madevadigalana Sri Sembiyan Madeviyar
Thamudaiya Thirumagalar Sri Madhurandakadevarana
Sri Uttama Cholar thirurajiyam seitharula nirga
Thamudaiyar Sri Gandaraditta devar thirunamathal
Thirunallamudaiyargut thirukkarrali eluntharuli
Vitha itthirukkarraliyile Thirunallamudaiyarait
Thiruvadi thozhuginraraga eluntharulivitha
Sri Gandaradittadevar Ivar."[19] It conforms that Sembiyan Madevi built a Siva temple here for the remembrance of her husband Gandaradityachola.

Meykeerthi in Inscriptions

In the temple, inscriptions are seen that meykeerthi like Rajendrachola I's meykeerthi 'Thirumannivalara',[20] Rajendrachola II's 'Thirumaruviya single',[21] and 'Thirumathar Pooviyenum'[22] and Veerarajendra's meykeerthi 'Veerame Thunaiyaga'.[23]

Construction of the Temple

Sembiyan Madeviyar was built Thirunallam temple in Nagapattinam district.[24] It was constructed by Sattan Gunabhattan of Alattur under the command of Sembiyan Madeviyar.[25] The pillar inscription expresses that the dancing hall of the temple would be built by Vayanattaraiyan alias Arumolidevan of Alattur.[26] In the 15th regnal year inscription of Kulottungachola I mentioned that Sandesvarar temple was built by Tittai Vizhumiyan alias Pillaiyadiyar.[27] Another important parts of the temple of vimana would be built by Mudalipillai of Vangipuram.[28] In the 27th year inscription speak of Rajarajachola I was constructed Olakka-mandapa (place of assembly) inside of the temple.[29] So, we came to conclude that some parts of the temple had built by the common people also.

Donations of God's Statue

In the 12th regnal year inscription of Rajarajachola I expresses that, Nakkan Nallathadigal had donated Silver god's statue, copper Sandesvarar statue to the temple.[30] Arinthavan Madevi, wife of Rajendrachola I donated Sethirapalar statue in the 17th regnal year of Rajendrachola I.[31] Lands were given in as deeds to worship Lord Vinayaga in the southern

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side 'Pugalabharanamandapa'. It occurred in the 16th regnal year of Kulottungachola III.[32] The people of the imperial Cholas had donated statue as the worship of gods. The system also follows by the people of modern.

Deeds of Lands

The Sabha members of Pavaikudi (Sabhas) donated lands to Thirunallam temple for feeding to Saiva saints, god's devotional activities and worships. Sabha members of Thirunallam sold their lands in the period of Rajendra Chola I for the expenses of feeding to the devotees. And Rajadhiraja I inscription mentioned that the lands donated to the temple for the maintenance of the garden.[33]

Donation of Paddy

In the 31st year inscription of Rajendrachola I describe a servant of the temple gave paddy to the Umamahesvarar for worship.[34] Now, that earliest system was followed by the current people.

Deeds for Lamp

In the 27th regnal year inscription of Rajarajachola, I describe that amount would be given as deeds to the temple for lamps. Another inscription of Uttamachola speak of amounts would be given to Adityesvaramudaiya Mahadevar for the lamps[35] and in the 7th regnal year of Rajendrachola, I also gave money to the temple for twilight lamps. Nowadays, the people donated money to the temple for lamps and feds.

Donation for Temple Festival

Lands were given as deeds for temple festival and worship. It is seen in the 13th regnal year inscription of Vikramasola.[36] In the 3rd year inscription of Rajendrachola I mentioned that land was donated to compensate the amounts for a temple festival.[37] In the 28th regnal year inscription of Kulottungachola, I describe amount would be given as deeds for the festivals.[38] In modern people also celebrates the festival and after the fast to the gods and goddess.

Deeds of Jewels

In the 17th regnal year inscription of Kulottungachola, I narrate the jewels were donated to the goddess by the people of Thirunallam. Vanakovaraiyar, the chieftain of Cholas donated gold jewels and bangles to the god and goddess for the worship it is seen in the 11th year of the inscription of Rajendrachola III.[39] Through this message the village people had got independence from the state.

Conclusion

Sembiyan Madevi was a dedicated woman so she constructed a beautiful temple in Thirunallam for the remembrance of her husband Gandradityachola. She was constructed many temples in Nagapattinam region, South India. This famous temple was praised by Appar and Sambandar. Here, Sembiyan Madevi built her husband's statue inside the temple at the premise deity of the place. She trained the devotional activities to Rajarajachola I and Rajendra Chola I with the help of Kundavai Pirattiyar.

Even the death of her husband she desired to live so that she makes a special place. In this occasion, she was presented many gold jewels, tax-free lands to the temple for the maintenance of the temple. She inspired the dukes, so they were donated lands, lamps, jewels, and silver and copper god's statue to the temple. It is no doubt that this may induce the self-confidence and endurance to the present day women. It is important that it has to be noted that like her there are many in the world.

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A Study on Groundwater Quality in Vellore District, Tamil Nadu

M.ARULMURUGAN*
Dr. T.SARAVANAKUMAR**

Abstract
In Tamil Nadu water crisis plays a major role, varying in scale and intensity depending mainly on the time of the year. Water is an essential component of life, but it is limited on earth. The water resource is polluting and declining due to agricultural and industrial activity. Urbanization and rapid industrialization have resulted in heavy losses to economic welfare in terms of the effect on agricultural activities. According to the Central Groundwater Board, there has been a general decline in groundwater level in 2003 due to the complete desideration of shallow aquifers. There has been a considerable failure of irrigation wells in Vellore district. Tanneries used a high percentage of ammonium sulphate, sodium chloride, sodium sulphate. Chromium sulphate and leaching of the effluents into the ground could have led to contamination of groundwater is the reason for the high concentration of major ions and chromium in groundwater. The aim is to analyses and understands the toxic effect of sewage water and solid wastes in drinking water and to assess the day to day life of people nearby polar River.Tamilnadu stands fourth in terms of state income and fifth industrial development. the water quality index found for the region suggest that the WQI consists of a mixed value and less variation with respect to pre and post-monsoon season showing profound human interference. The fast-growing population has results in the fast urbanization and increasing demand for water from various sectors of the state economy.
Keywords: Water Resource, Economic Welfare, Agricultural Activities, Groundwater, Water Quality Index.

Introduction

Groundwater is extremely important to the future economy and growth of the country. If the resource is to remain available as high-quality water for future generations, it is important to protect from the possible contamination. This freshwater crisis is already evident in any parts of India, particularly Tamilnadu, varying in scale and intensity, depending mainly on the time of the year. In Tamilnadu water crisis plays a major role, varying in scale and intensity depending mainly on the time of the year. The underground water in Vellore is deteriorating and the maximum sampling stations need special attention, as all the parameters such as Ph, TDS, Electrical conductivity, Chloride, Hardness and bicarbonate is found high. The minimum sampling stations have their respective physic-chemical parameters at certain sampling locations may be due to the unscientific disposal of solid wastes, the depth of wells and nature of the geological materials with which the groundwater comes in contact may influence the quality of the water.

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Water is an essential component of life, but it is limited on earth. The water resource is polluting and declining due to agricultural and industrial activity. Urbanization and rapid industrialization have resulted in heavy losses to economic welfare in terms of the effect on agricultural activities, human health and ecosystem at large through air and water pollution. The problem of pollution of rivers and streams has assumed considerable importance and urgency to urbanization. It is therefore essential to ensure that the industrial effluent and domestic sewage water is not to be allowed to discharge into the water courses without adequate treatment. As such discharges would render the water unsuitable as a source of drinking water as well as for supporting fish life and also for use in irrigation. Pollution of rivers and streams also causes increasing damage to the country's economy. An attempt has been made to study the impact of untreated sewage in the river located Vellore district.

To evaluate the physical, chemical parameters, the water samples from the river and also from the well and from bore well were collected from the residence located in and around the river and also on the tanks of the polar River. On any account, the sewage water should not be discharged into the river water, which causes river water pollution and groundwater pollution. In long run, the water becomes unfit for domestic and human consumption. The physicochemical analysis of water in the river, as well as the groundwater sources around the river, reveals that there is high turbidity, high TDS shows that the water cannot be used for drinking purposes. The electrical conductivity, the total hardness, the high chloride value in the groundwater sources indicates that the water cannot be used for human consumption. The safest way for the residence is to abandon the river water sources in order to escape from the waterborne diseases caused by the use of polluted river water.

Ground-Water Resources of Vellore

The utilizable groundwater recharge is 22,423 MCM the current level of utilization expressed as net groundwater draft of 13.558 MCM is about 60 percent of the available recharge, while 8875 MCM (40 percent) is the balance available for use. Over the last five years, the percentage of safe blocks has declined from 35.6 percent to 25.2 percent while the semi-critical blocks have gone up by a similar percentage. Over-exploitation has already occurred in more than a third of the blocks (35.8 percent) while eight blocks (2 percent) have turned saline. The water level data reveals that the depth of the wells ranges from an average of 0.93 meters in Vellore district to 43.43 meters in vaniyambadi. According to the Central Groundwater Board, there has been a general decline in groundwater level in 2003 due to the complete desideration of shallow aquifers. There has been a considerable failure of irrigation wells in Vellore district. The total surface water potential of the state is 36 km3 or 24864 M cum. There are 17 major river basins in the State with 61 reservoirs and about 41,948 tanks. Of the annual water potential of 46540 million cubic meters (MCM), surface flows account for about half. Most of the surface water has already been tapped, primarily for irrigation which is the largest user. There are about 24 lakh hectares are irrigated by surface water through major, medium and minor schemes. The utilization of surface water for irrigation is about 90 percent.

Availability of safe drinking water is inadequate. Severe water shortages have already led to a growing number of conflicts between users (agriculture, industry, domestic), intra-state and interstate. With the increasing demand for water from various sectors like agriculture, household industries, a pertinent need arises both from the government sector as well as from the private sector on the management of water resources. Tamilnadu stands

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fourth in terms of state income and fifth industrial development. The fast-growing population has results in the fast urbanization and increasing demand for water from various sectors of the state economy. This requires an understanding of the various sources of water supply and the demand arising from various sectors.

Statement of the Problem

People will not be able to get good quality of drinking water from the river and wells. In the study area of sewage is discharged into the right Tank of River polar basin. The industrial effluent is also discharged from the left side of the river. Polluted water contaminates the surface and groundwater. The environmental damage caused by water pollution by the discharge of sewage water and industrial. The quality of the water has deteriorated considerably and groundwater in several thousand homes around the lake has gone from bad to worse over the years. Due to the contamination of groundwater with heavy metals and ions from the industrial and dumping site affect the health and socio-economic conditions of the people residing in the area. Tanneries used a high percentage of ammonium sulfate, sodium chloride, sodium sulphate. Chromium sulphate and leaching of the effluents into the ground could have led to contamination of groundwater is the reason for the high concentration of major ions and chromium in groundwater.

Water pollution is mainly due to the flow of untreated industrial effluent into the water resources. With rapid industrialization and urbanization, the water requirement for energy and industrial use is estimated to rise to about 18 percent (191 cm) of the total requirements in 2025. Poor environmental management systems, especially in industries such as thermal power stations, chemicals, metals and minerals, leather processing and sugar mills, have led to discharge of highly toxic and organic wastewater. Most of the rivers in the country get polluted as they enter cities due to the discharge of pollutants such as fertilizers and insecticides, domestic sewage and industrial effluents. Many rivers in Tamil Nadu had been polluted by the wastage released from the factories and industries. These wastages are mixed with the river waters and make them as polluted water. There are many dying and bleaching units running in this city and they produce huge wastages every day

The present study concentrates mainly impact of industrial water pollution on the value of cropland. This will help the farmers to analyze the causes and effects of industrial pollution on crop production, income, soil fertility and socio-economic condition. To be more useful to farmers to better understand the problems regarding dyeing industry effluents and their farmlands.

Table-1: Water Quality Analysis

S. No	Water Quality Parameter	Methods of Analysis
1.	Colour	Visual comparison
2.	Turbidity	By Nephelometric method
3.	Total dissolved solids	By Conductivity meter
4.	Electrical conductivity	By Conductivity meter
5.	PH	By Digital PH meter
6.	Total hardness CaCo3	By EDTA method
7.	Alkalinity	By Titration method
8.	Calcium	By ETDA method
9.	Magnesium	By EDTA method
10.	Iron	By Calorimetrically

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11.	Manganese	By Spectrophotometer
12.	Ammonia	By Nesslerization method
13.	Nitrite	By Spectrophotometer
14.	Nitrate	By Spectrophotometer
15.	Sodium and potassium	By Flame photometer
16.	Chloride	By Argentometric method
17.	Fluoride	By Calorimetrically
18.	Sulphate	By Gravimetric method
19.	Phosphate	By Calorimetrically

The physical and chemical parameter analysis of river water and the groundwater on the polar Riverbank are presented and discussed. In order to study the impact of industrial effluent and sewage water disposal in the polar River, a study is carried out to assess the extent and magnitude of surface water contamination and groundwater contamination along the downstream of polar River. The variation in the various physic-chemical parameters of the river water and the groundwater at a different distance from the river were measured12. The level of various physicochemical factors indicates the pollution was found to exceed water the quality standards and affects the water quality and water utility pattern13. The groundwater was found to be of low quality near the rivers and the level of Pollutants found to decrease with increase in distance of the water source from the polluted river14. Electrical conductivity is an important parameter to find the dissolved electrolytes in water.

Table -2: Water Quality Measurement on Selected Blocks

S.No	Parameters	Walaja	K.V. Kuppam	Kaveri Pakkam	Arcot
		Mean Value in Mg/1			
1.	Turbidity	2.0	1.4	1.0	1.3
2.	Total dissolved solids	1547	970	781	1110
3.	PH	7.68	7.70	7.83	7.72
4.	Total alkalinity	387	310	256	312
5.	Total hardness	613	453	428	470
6.	Calaium hardness	155	110	102	116
7.	Magnesium hardnes	56	40	36	42
8.	Sodium	203	127	91	153
9.	Potassium	19	11	9	15
10.	Iron	0.09	0.09	0.08	0.08
11.	Ammonia	0.26	0.08	0.09	0.16
12.	Nitrate	66	28	24	31
13.	Chloride	360	217	176	252
14.	Fluoride	0.82	0.70	0.64	0.70
15.	Sulphate	157	84	51	104
16.	Phosphate	0.10	0.06	0.08	0.08
17.	Chromium	0.0065	0.0043	00.0026	0.0025

Note: Values are mentioned in mg/1 except for PH Turbidity

Water Quality Index (WQI) is one of the meanings full of approach for groundwater and all other type of water like river, lake and surface water quality analysis. Water quality is the condition of the water paddy or water resource in relation to its designated uses. The phytochemical state analysis for each of the parameter is estimated in each of the selected blocks. That is Walajah, K.V. Kuppam, Kaveripakkam and Arcot between the pre-pollution periods. For quality assessment, all the water quality parameters or companies with the guidelines suggestion for Bureau of Indian standards in which there are two levels i.e. acceptable limit – BIS and permissible limit (BIS) in the absence of alternative sources. It is seen from the Table 2 shows the mean value of the water quality parameters and drinking water specifications between pre and post pollution period by covering the selected blocks in Vellore district. It is seen from the results that the water pollution in terms of total dissolved solids, total alkalinity, total hardness, calcium hardness, sodium, chloride, and sulphate including the other parameter are relatively higher during the post pollution period then the pre-pollution period. Further, the water quality parameters are relatively higher during the post pollution period then the pre-pollution period. Further, the water quality parameters are relatively higher in Walajah and Arcot blocks than K.V. Kuppam and Kaveripakkam blocks. However, all the water quality parameter is relatively higher when compared to an acceptable limit and possible limit in the absence of an alternative source, during the post pollution period.

The total dissolved solids in water include all the dissolved solids. In the present study, the total dissolved solids range from 562 mg/l and 1456 mg/l. Physical and chemical parameters Changes in water depend on the pH of the water. The chemical examination of the water samples shows that the pH value from 6.84 to 7.67. The permissible limit prescribed by WHO and BIS standards are 7.0 to 8.5. Hardness is the measure of calcium and magnesium in the water. The highest desirable limit prescribed by BIS is 100mg/l for drinking water. But the hardness of the samples is higher than the permissible limit. It means the water is very hard. According to BIS, the highest acceptable chloride concentration is specified as 200mg/l for drinking purpose. In the present study, the chloride values are higher than the permissible limit. Hence the water cannot be used for the domestic purposes. The increase of calcium in water contributes to hardness in water and thereby reducing the utility of water for domestic purposes. The normal acceptable limit prescribed by BIS is 75mg/l. But in the present study, the river water has the values of 80 and 280.

Water pollution includes loss of soil quality and water quality and pollution of particular areas by industrial effluent. The effects of water pollution had resulted in changes to the land value reported by the farmers. In the present study, the qualitative and quantitative characteristics *viz.*, farm income, Irrigation and land quality indices and the distance between the affected farm and polluted river were influencing the value of cropland.

Conclusion

The present study is attempted to evaluate the extent of pollution of groundwater in and around the polar River located at Vellore District. This study was carried out to assess the magnitude of the pollution problems in polar River. The aim is to analyses and understands the toxic effect of sewage water and solid wastes in drinking water and to assess the day to day life of people nearby polar River. Based on the findings of the investigation, it is concluded that the sewage water must be treated before discharge. The absence of any organized industrial and sewage disposal system in the polar basin the community wastes often find their way to the nearby pillar River.

The physicochemical analysis of water in the river, as well as the groundwater sources around the river, reveals that there is high turbidity, high TDS shows that the water cannot be used for drinking purposes. The electrical conductivity, the total hardness, the high chloride value in the groundwater sources indicates that the water cannot be used for human consumption. In order to prevent the river water pollution, use of synthetic detergents containing phosphate should be banned. This will prevent the eutrophication in the river. Further, the water quality index found for the region suggest that the WQI consists of a mixed value and less variation with respect to pre and post-monsoon season showing profound human interference. The sewage water which used to mix in the river water should be diverted into the underground drainage system. During the rainy season, the rainwater harvesting in the river bed is essential to reduce the impact of sewage pollution. In order to improve the quality of groundwater around the river, a suitable R.O. system can be used to remove salts present in the water.

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Optimization of process parameters in wire electrical discharge machining process using graph theoretic approach

Sunil Kumar*
Ravi Kalra**

Abstract
In this paper, wire electrical discharge machining of D2 die steel with two performance measures viz. metal removal rate (MRR) and surface roughness (SR) have been examined. Eight process parameters namely, discharge current, pulse-on time, pulse-off time, servo voltage, dielectric flow rate, wire feed rate, electrode material and wire tension are considered. In experimental work, a combination of various process parameters under different range of performance measures has been done for high MRR and lower SR using graph theoretic approach.
Key-words- Wire electrical discharge machine, graph theoretic approach, D2 steel, metal removal rate, surface roughness

1 Introduction

Wire electrical discharge machining (WEDM) is one of the most widely used non-traditional machining process for machining and shaping hard, fragile and difficult-to-cut materials in the tool and die industry process. The mechanism of metal removal in wire electrical discharge machining mainly involves the removal of material due to melting and vaporization caused by the electric spark discharge generated by a pulsating direct current power supply between the electrodes [1]. It uses a thin wire as an electrode transforms electrical energy into thermal energy for removing materials [1]. Figure 1 shows the schematically setup of WEDM.

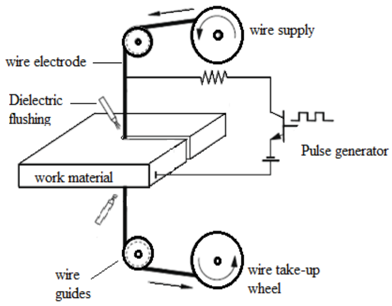

Figure 1: Schematic of WEDM [1]

2 Literature Review

Spedding and Wang [2] developed response surface methodology and artificial network models for the WEDM process by increasing pulse duration, open circuit voltage, wire speed surface roughness. **Liao et al. [3]** investigated the optimal machining parameters

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setting in WEDM by adjusting table feed, pulse on time & other parameters for better surface roughness & machining efficiency. **Lin and Lin** [4] optimized the multiple performance characteristics in WEDM by combining the orthogonal array and grey relational analysis. Machining parameters viz. work piece polarity, discharge current, pulse on time, duty factor, open discharge voltage, and dielectric fluid were optimized for MRR, SR and electrode wear ratio. **Puri and Bhattacharyya [5]** carried out the experimental investigation on the geometrical inaccuracy caused due to wire lag phenomenon. **Tosun et al. [6]** presented an investigation on the effect and optimization of machining parameters on the kerf and MRR in WEDM. Taguchi's design of experiment method was used to study the machining parameters such as pulse duration, open circuit voltage, wire speed and dielectric flushing pressure. **Sarkar et al. [7]** investigated the WED machining of the γ-titanium aluminide using ANN model by analyzing Six control parameters viz. pulse on time, pulse off time, peak current, wire tension, dielectric flow rate and servo voltage. **Rao and Gandhi [8]** applied the digraph and matrix method for failure cause analysis of machine tools. The diagraph model of failure cause of machine tool contributing events and their interaction in terms of the cause-effect relationship. **Rao and Gandhi [9]** proposed a methodology for selecting the best work-tool combination for a given machining operation. **Grover et al. [10]** introduced a graph theoretic approach for finding the performance evaluation of quality of products for better efficiency using directed graph. **Jangra et al. [11]** proposed a methodology to evaluate the performance of carbide compacting die using GTA. Authors investigated the effect of changing taper angle, peak current, pulse-on time, pulse-off time, wire tension and dielectric flow rate on material removal rate and surface roughness.

3 Methodology and Experimentation

The experiments were performed on a 5-Axis sprint cut (ELPLUS-40) WEDM manufactured by Electronica Machine Tool Pvt. Ltd. A rectangular block of D2 Steel of size *20cm x 12.5cm x 2.5cm* with density 7.8 kg/cm^3 has been machined using WEDM. The graph theoretic approach (GTA) has been applied in five phases namely (i) digraph representation (ii) matrix representation (iii) permanent representation (iv) quantification and (v) evaluation of performance measure. Eight process parameters viz. pulse on time (T_{on}), pulse off time (T_{off}), peak current (I_p), servo voltage (S_v), wire tension (W_t), wire feed (W_f), dielectric flow rate (DFR), work material (WM) are taken for optimization of MRR and SR. Table 1 shows the machining parameters and their ranges during experimentation.

Table 1: Process parameters, their ranges

Machining Parameters	Range	Other Parameters
Discharge current (Ip)	10-230Ampere	Wire electrode material
Pulse-on time (Ton)	101-131 machine unit	Work piece thickness
Pulse-off time (Toff)	14-63 machine unit	Dielectric conductivity
Servo voltage (SV)	10-99V	Distance between work piece and upper nozzle
Wire feed rate (WF)	1-15 m/min.	
Wire tension (WT)	1-15 N	
Dielectric flow rate (DF)	0-12 litre per minute	
Wire offset (WO)	-----	

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4 Results and Discussions

(I) Effect of discharge current on MRR and SR

Table 2 shows the effect of varying discharge current and Ton on MRR and SR keeping other parameters constant (Toff 30; SV 30; DF 10; WF 7; WT 10, SF 2080). Plane brass wire of 0.25mm diameter was taken as tool electrode.

Table 2: Performance measure for discharge current

Expt.	Ip	**Ton**	MRR	SR	**Ton**	MRR	SR	**Ton**	MRR	SR
1	**60**	**105**	0.58	1.11	**110**	0.982	1.32	**115**	1.23	2.13
2	**80**	**105**	0.615	1.09	**110**	1.09	1.64	**115**	1.36	2.61
3	**100**	**105**	0.657	1.2	**110**	1.17	1.95	**115**	1.79	2.75
4	**120**	**105**	0.645	1.06	**110**	1.25	1.43	**115**	1.86	2.92

Figure 2 & 3 shows the graph of MRR and SR against discharge current

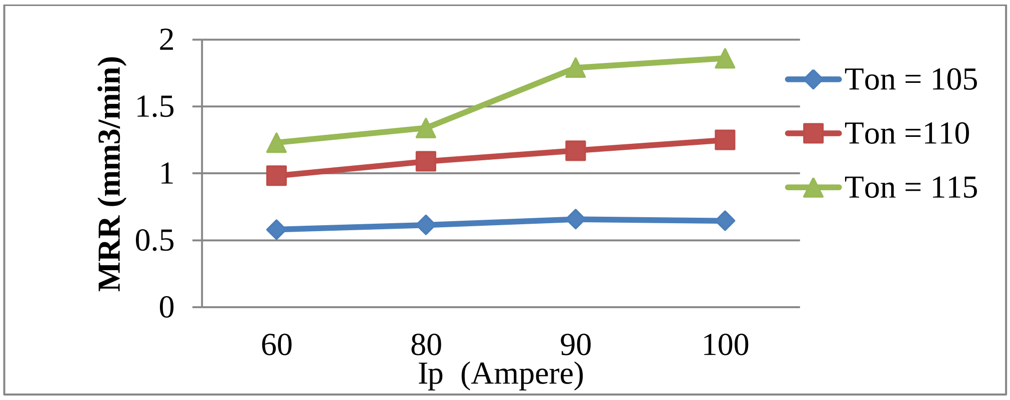

Figure 2: Effect of Ip on MRR

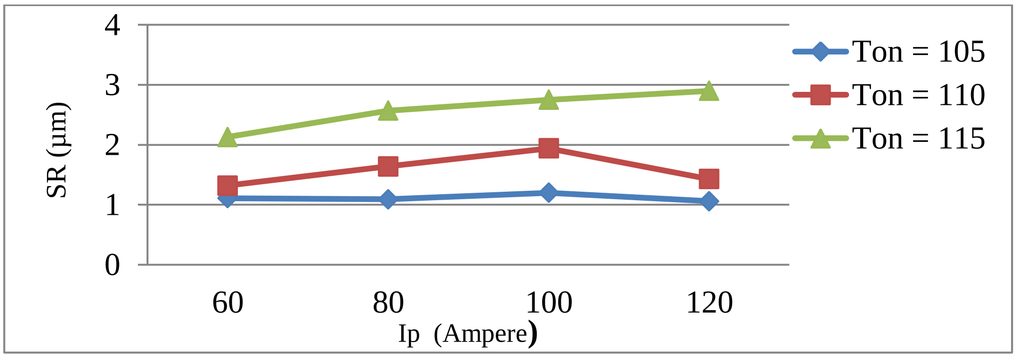

Figure 3: Effect of Ip on SR

At low Ton (105), the MRR is very low and a negligible rise in MRR is observed with increase in Ip. This is due to insufficient heat produced by discharge current (Ip) at low Ton resulting into low SR. At higher value of pulse duration Ton (115), MRR increases significantly beyond 80A and then increases at a slow rate or becomes constant beyond 120A. At high Ip, the amount of debris in the gap becomes too large that causes arcs, resulting in decrease in MRR. This results into large deposition of melted material on work surface resulting in increase in surface roughness.

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(II) Effect of Pulse on time on MRR and SR

Table 3 shows the observed data for different values of pulse on time (Ton) for range 105-120 units keeping other parameters are kept constant at Toff 30; SV 30; DF 10; WF 7; WT 10, SF 2080.

Table 3: Performance measure for pulse on time

Expt	**Ton**	**Ip**	MRR	SR	**Ip**	MRR	SR	**Ip**	MRR	SR
1	**105**	**60**	0.58	1.11	**100**	0.657	1.2	**120**	0.645	1.06
2	**110**	**60**	0.982	1.32	**100**	1.17	1.95	**120**	1.25	1.43
3	**115**	**60**	1.23	2.13	**100**	1.79	2.75	**120**	1.86	2.9
4	**120**	**60**	1.48	2.62	**100**	2.162	3.182	**120**	2.24	3.21

Figure 4 & 5 shows the graph of MRR and SR against pulse on time

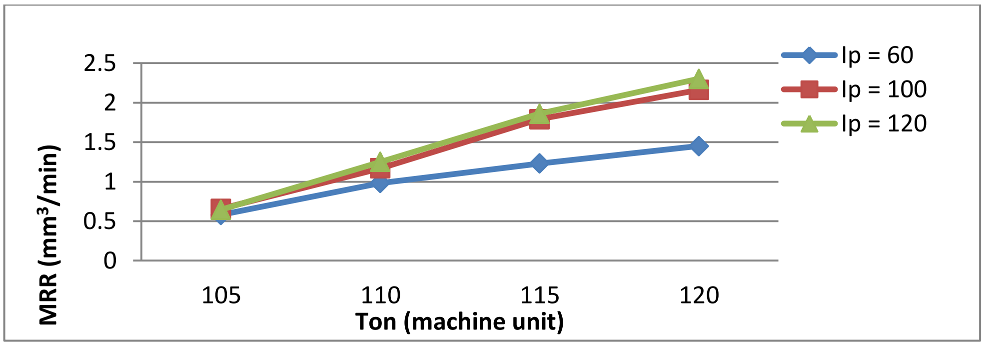

Figure 4: Effect of Ton on MRR

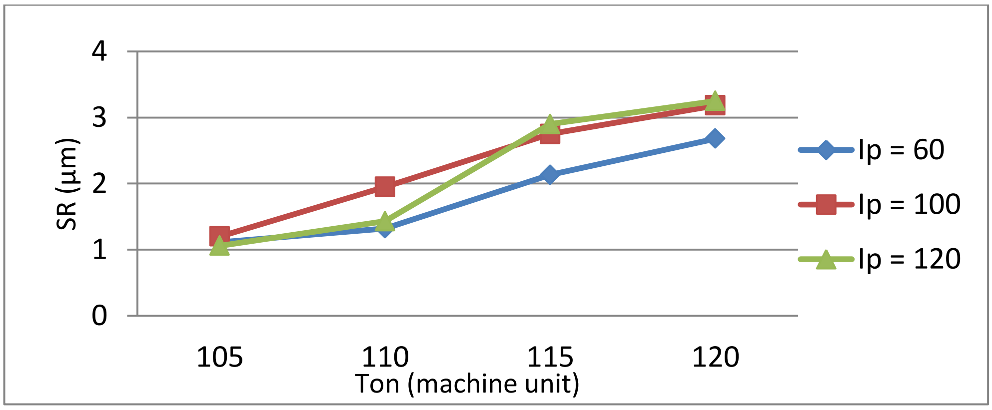

Figure 5: Effect of Ton on SR

Figures 4 & 5 shows that MRR and SR increases sharply with the increase in Ton which is due to the high discharge energy available across the electrodes. High discharge energy results into large craters on work surface which results into high surface roughness. At low value of discharge current (Ip) and pulse-on time (Ton), the heating effect is not sufficient to melt and erode the work material. This heating effect can be increased by increasing the value of Ip and Ton but that may results into more melting of the work material & wire electrode is more melted that may cause wire breakage.

(III) Effect of Pulse off Time on MRR and SR

Table 4 shows the observed data for different values of pulse off time (Toff) in the range 30-50 units at constant value of Ip 100; SV 30; DF 10; WF 7; WT 10.

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Table 4: Performance measure for pulse off time

Expt	**Toff**	**Ton**	MRR	SR	**Ton**	MRR	SR	**Ton**	MRR	SR
1	**30**	**105**	0.675	1.2	**110**	1.17	1.95	**115**	1.79	2.75
2	**40**	**105**	0.46	1.19	**110**	0.78	1.27	**115**	1.32	2.58
3	**50**	**105**	0.237	1.19	**110**	0.48	1.86	**115**	0.66	1.69

Figure 6 & 7 shows the graph of MRR and SR against pulse off time. A decreasing trend is obtained in MRR and SR with increase in Toff. With low Toff and high value of Ip and Ton, eroded material do not easily flushes out of the spark gap, resulting into unstable machining and more recast layer formation. Again, either Ip or Ton has to put at lower value or value of Toff has to be raised. Therefore, these parameters (Ip, Ton and Toff) have highly noticeable influence among each other.

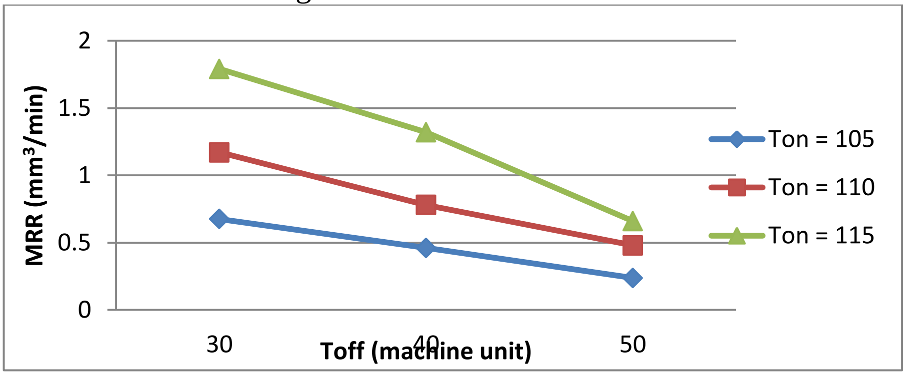

Figure 6: Effect of Toff on MRR

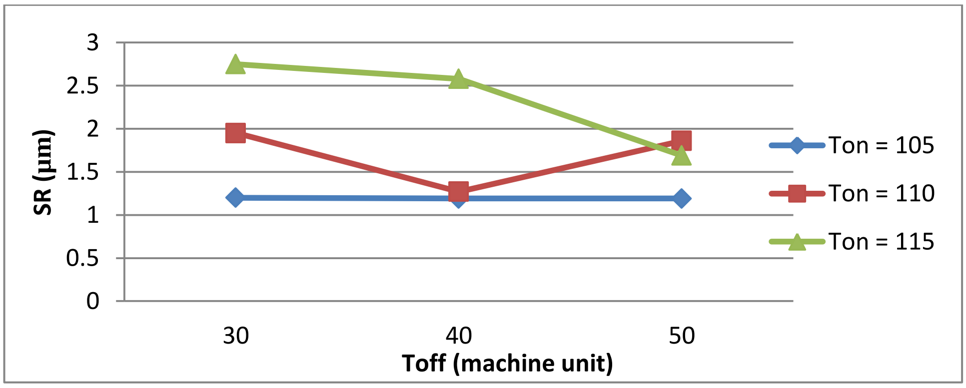

Figure 7: Effect of Toff on SR

(IV) Effect of Servo Voltage on MRR and SR

Table 5 shows the observed data for different values of servo voltage in the range 20-60 units at constant value of Toff 30; Ip 100; WF 7; DF 10; WT 10.

Table 5: Performance measure for Servo Voltage

Expt	**SV**	**Ton**	MRR	SR	**Ton**	MRR	SR
1	**20**	**110**	0.89	1.55	**115**	1.81	3.16
2	**30**	**110**	1.17	1.95	**115**	1.8	2.75
3	**40**	**110**	1.08	1.68	**115**	1.63	2.53
4	**50**	**110**	0.9	1.54	**115**	1.4	2.58
5	**60**	**110**	0.8	1.5	**115**	1.1	2.53

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Figure 8 & 9 shows the graph of MRR and SR against servo voltage

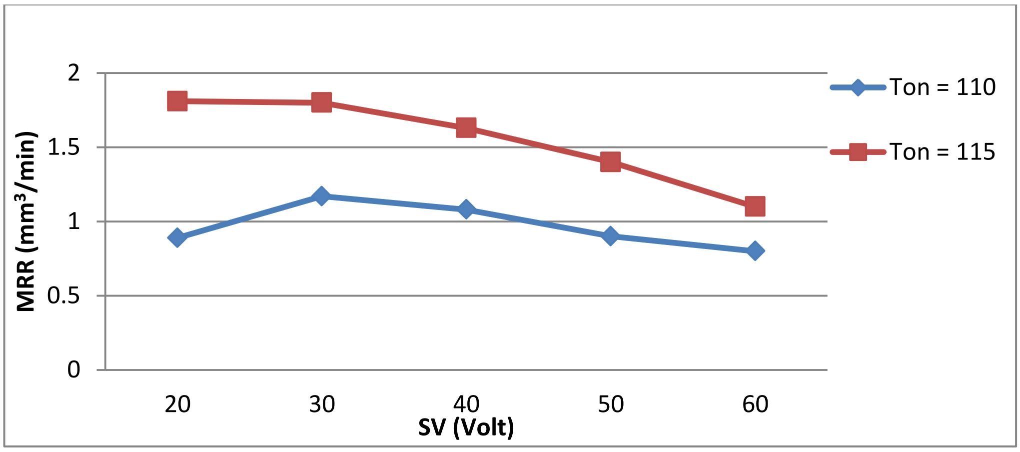

Figure 8: Effect of SV on MRR

MRR and SR decreases with increase in SV as shown in figure 8 & 9 respectively. At low servo voltage at low Ton, the MRR firstly decreases and after increase in servo voltage MRR increases at some extent and again it will decreases. But at high Ton, the MRR decreases as the servo voltage increases.

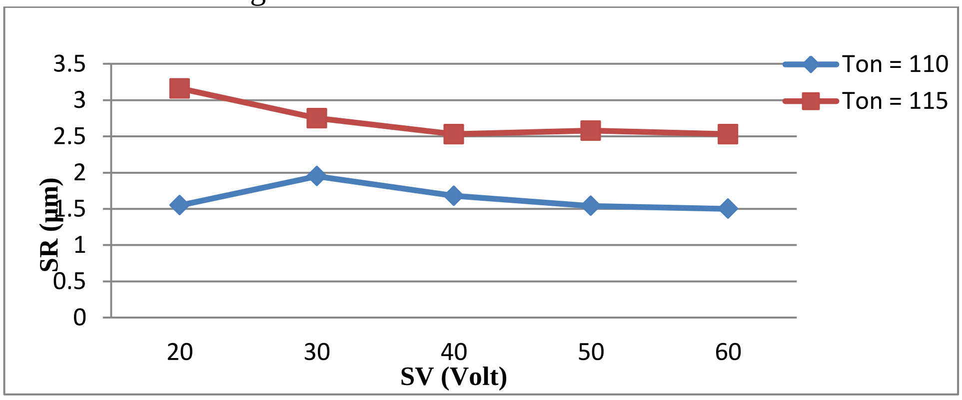

Figure 9: Effect of SV on SR

(V) Effect of Dielectric flow rate on MRR and SR

Table 6 shows the observed data for different values of dielectric flow rate (DFR) in the range 5-10 units at constant value of Toff 30; Ip 100; WF 7; WT 10.

Table 6: Performance measure for dielectric flow rate

Expt	**DFR**	**Ton**	MRR	SR	**Ton**	MRR	SR
1	**5**	**105**	0.57	1.1	**115**	1.76	3.1
2	**7**	**105**	0.65	1	**115**	1.86	2.9
3	**10**	**105**	0.65	1	**115**	1.86	2.85

Figure 10 & 11 shows the graph of MRR and SR against dielectric flow rate. As the DFR increases there is a little increment in MRR and after it remains constant. But in case of SR, there is little decrement as the DFR increases. The die electric flow significantly low effect on MRR & SR. here MRR somewhat slight increasing effect on the increasing rate of die electric flow rate. But SR will slightly decrease.

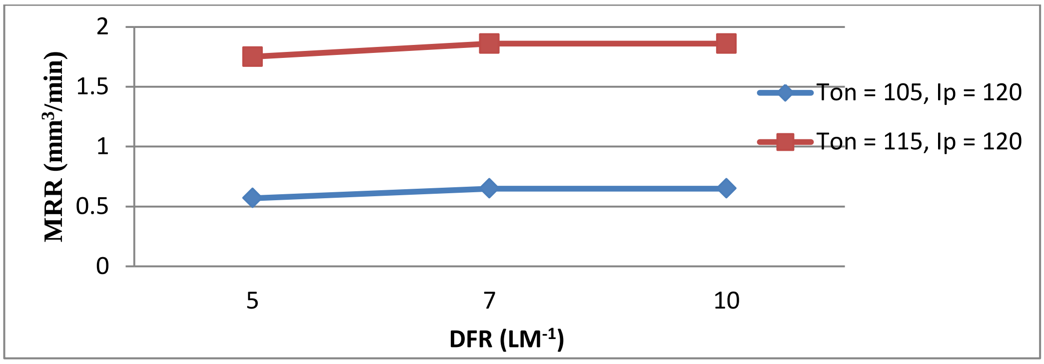

Figure 10: Effect of dielectric flow rate on MRR

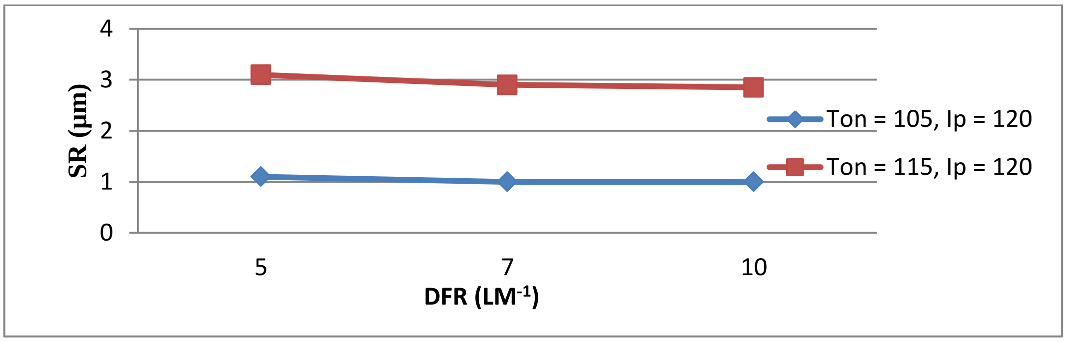

Figure 11: Effect of dielectric flow rate on SR

(VI) Effect of Wire Tension rate on MRR and SR

Table 7 shows the observed data for different values of wire tension (WT) in the range 5-10 units at constant value of Toff 30; Ip 100; WF 7; DFR 10.

Table 7: Performance measure for WT

Expt	**WT**	MRR	SR
1	**4**	0.91	1.59
2	**6**	0.91	1.58
3	**8**	0.92	1.57
4	**10**	0.92	1.55
5	**12**	0.93	1.53

Figure 12 shows the graph of MRR and SR against wire tension. As the wire tension increases, the MRR decreases slightly with SR. The cutting rate and SR remain practically constant with the increase in wire tension. Wire tension shows negligible influence on machining characteristics.

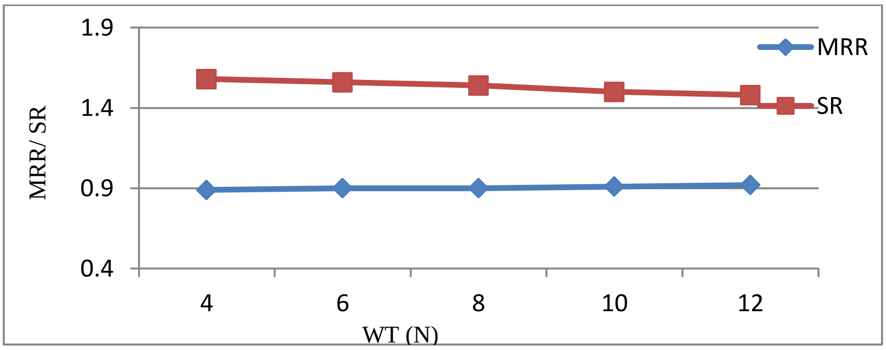

Figure 12: Effect of wire tension on MRR and SR

(VII) Effect of Work Material on MRR and SR

Table 8 shows the observed data for the performance measure for work material.

Table 8: Performance measure for Work material

	zinc coated brass wire			Simple brass wire		
Expt	**Ton**	MRR	SR	**Ton**	MRR	SR
1	**105**	1.1	1.22	**105**	0.67	1.2
2	**110**	1.72	3.11	**110**	0.97	2.25
3	**115**	2.39	3.19	**115**	1.78	2.83
4	**120**	2.79	3.21	**120**	1.9	3.1
5	**125**	2.92	1.22	**125**	2.51	3.27

Figure 13 & 14 shows the effect of zinc coated brass wire produces high MRR and SR as compared to simple brass wire. When a small amount of pulse is applied to the wire coating, it get overheated and evaporated. Hence electrode material directly affects the MRR and SR. Result shows that zinc coated brass wire give higher MRR.

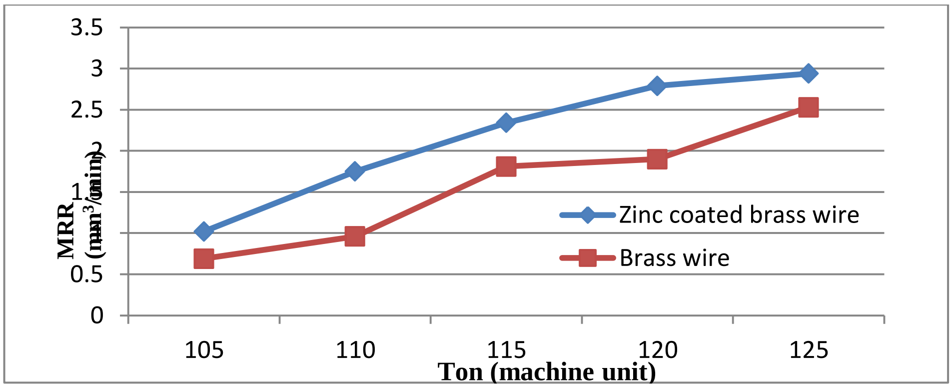

Figure 13: Effect of electrode material on MRR

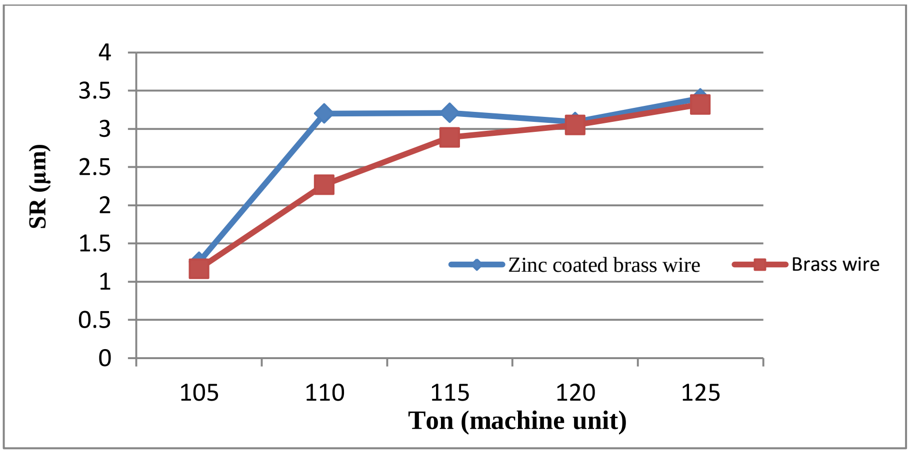

Figure 14: Effect of electrode material on SR

(VIII) Effect of Wire Feed on MRR and SR

The Wire Feed (WF) is varied from 5-10 units. Effect of DFR was evaluated at constant value of Toff 30; Ip 100; WT 10; DFR 10 as shown in figure 15 & 16. Downward movement of wire electrode helps in easy escape of melted debris out of the spark gap and hence stable machining condition occurs during next spark. As a results MRR increases and SR decreases with the increase in wire feed rate. Generally, wire feed rate do not influence machining characteristics significantly but it need to be set at optimal value to avoid wire breakage at high discharge energy also keeping the wire cost in mind.

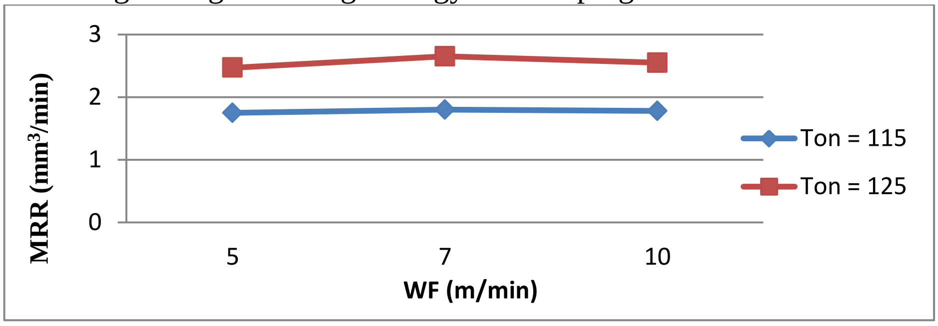

Figure 15: Effect of wire feed rate on MRR

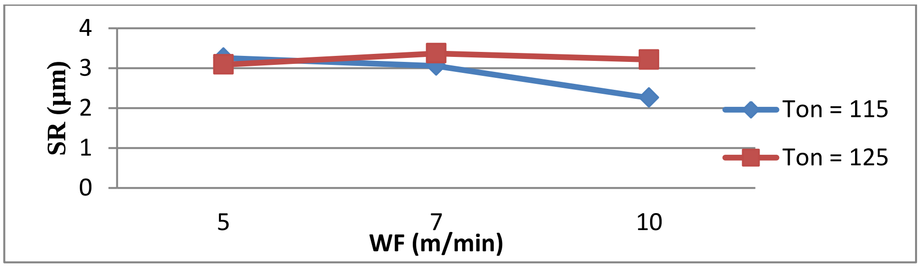

Figure 16: Effect of wire feed rate on SR

5 Performance Index

In order to select the optimal process parameter setting for MRR and SR, performance index has been evaluated. The diagraph shown in figure 17 has been designed and variable permanent matrix as shown in figure 18 has been developed.

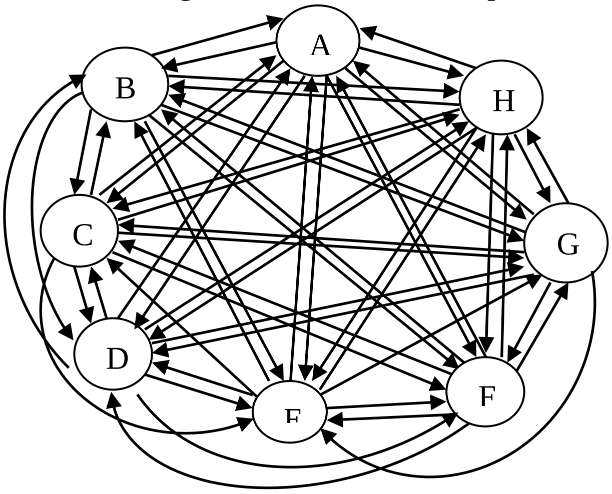

Figure 17: Performance evaluation diagraph for Wire EDM

$$\mathbf{VPM_{PM}} = \begin{array}{cc}
\begin{array}{cccccccc} A & B & C & D & E & F & G & H \end{array} & \text{Parameter} \\
\begin{bmatrix}
A & 3 & 2 & 4 & 3 & 3 & 3 & 2 \\
3 & B_i & 5 & 4 & 4 & 3 & 3 & 2 \\
3 & 4 & C_i & 4 & 4 & 2 & 2 & 1 \\
3 & 4 & 4 & D_i & 2 & 2 & 3 & 1 \\
2 & 3 & 2 & 2 & E_i & 2 & 3 & 1 \\
2 & 2 & 2 & 2 & 2 & F_i & 3 & 1 \\
3 & 3 & 2 & 2 & 1 & 2 & G & 2 \\
1 & 1 & 1 & 1 & 1 & 1 & 2 & H
\end{bmatrix} & \begin{array}{c} A \\ B \\ C \\ D \\ E \\ F \\ G \\ H \end{array}
\end{array}$$

Figure 18: Variable permanent matrix (VPM_{PM})

The values of diagonal elements or inheritance of process parameters has been assigned on the basis of MRR is "larger the better" type of characteristics while SR is "lower the better type". Therefore, inheritances of process parameters are different for both performance measures. Inheritances to the parameters are assigned as per their impact on performance measures as listed in tables 9-16.

Table 9: Inheritance of Ip

Ip (A)	Symbol	Inheritance	
		MRR	SR
60	A_1	3	8
70	A_2	3	7
80	A_3	4	6
100	A_4	7	4
120	A_5	8	3
140	A_6	8	2

Table 10: Inheritance of Ton

Ton (B)	Symbol	Inheritance	
		MRR	SR
30	C_1	8	5
40	C_2	6	6
50	C_3	5	8

Table 11: Inheritance of Toff

Toff (C)	Symbol	Inheritance	
		MRR	SR
30	C_1	8	5
40	C_2	6	6
50	C_3	5	8

Table 13: Inheritance of DF

DF (E)	Symbol	Inheritance	
		MRR	SR
4	E_1	4	4
7	E_2	5	5
10	E_3	5	5

Table 14: Inheritance of WF

WF (F)	Symbol	Inheritance	
		MRR	SR
5	F	3	2
7	F	4	3
10	F	4	4

Table 15: Inheritance of electrode material

Electrode coating (G)	Symbol	Inheritance	
		MRR	SR
Zinc coated brass	G_1	8	5
Simple brass	G_2	6	6

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Table 12: Inheritance of SV

SV (D)	Symbol	Inheritance	
		MRR	SR
20	D_1	4	8
30	D_2	5	7
40	D_3	7	6
50	D_4	6	5
60	D_5	7	4

Table 16: Inheritance of WT

WT (H)	Symbol	Inheritance	
		MRR	SR
4	H_1	4	3
6	H_2	4	4
8	H_3	4	4
10	H_4	4	5
12	H_5	4	5

Permanent function of VPM_{PM} is evaluated by using a computer programmed developed in MATLAB to evaluate the permanent function. Performance index for two machining characteristics has been evaluated under different combinations of process parameters. Numerical value of permanent function or performance index under different combinations of process parameters is listed in table 17.

Table 17: performance index values under different combinations

Sr. No.	**Combination of process parameters**	**Performance Index**	
		MRR	**SR**
1	$A_1 B_1 C_1 D_1 E_1 F_1 G_1 H_1$	1.06599×10^8	7.77264×10^7
2	$A_2 B_2 C_2 D_2 E_2 F_2 G_2 H_2$	1.14332×10^8	1.03765×10^8
3	$A_5 B_4 C_1 D_1 E_3 F_2 G_1 H_1$	1.90575×10^8	6.00408×10^7
4	$A_6 B_4 C_1 D_2 E_2 F_3 G_1 H_4$	1.90575×10^8	8.29374×10^7
5	$A_1 B_1 C_3 D_4 E_3 F_3 G_2 H_4$	9.13459×10^7	1.74193×10^8
6	$A_4 B_2 C_2 D_2 E_3 F_2 G_1 H_2$	1.51718×10^8	8.68608×10^7
7	$A_3 B_2 C_2 D_1 E_2 F_3 G_2 H_3$	1.20253×10^8	1.02356×10^8

6 Conclusions and future scope

A graph theoretic approach has been proposed to select the optimum combination of process parameters in a machining operation for desired performance measure. WEDM of D2 die steel with two performance measures MRR and SR have been done. Eight process parameters namely, discharge current, pulse-on time, pulse-off time, servo voltage, dielectric flow rate, wire feed rate, electrode material and wire tension have been considered.

Performance index have been evaluated under different combinations of process parameters. Higher the index value, better the performance measure. In present case, parameters combination no. 3 (A_5 B_4 C_1 D_1 E_3 F_2 G_1 H_1) and 4 (A_6 B_4 C_1 D_2 E_2 F_3 G_1 H_4) gives equal and highest index values (1.90575×10^8) for MRR while combination no. 5(A_1 B_1 C_3 D_4 E_3 F_3 G_2 H_4) gives highest index (1.74193×10^8) for SR. This means the combination no. 3 and 4 would produce equal and highest MRR while combination no. 5 gives lowest SR in present machining operation.

Influence of each process parameters depends on their diagonal and off diagonal values i.e. inheritance and interdependencies. Using performance index, insignificant parameter values can be eliminated. I have been observed that the influence of wire tension (WT) is negligible on other parameters. This effect can be separated out by evaluating the index values with different values of WT (i.e H_1, H_2,.. H_5). To get higher MRR, high discharge energy is required but it produces poor SR. Hence a compromise is required between two performance measures depending on the requirement. Performance index (PI) helps to solve this problem. In table 17, parameter combination no. 2 has least difference in PI values for MRR and SR. Hence this combination will favors both MRR and SR.

The optimal combination of process parameters can be predicted for any machining characteristics before actual shaping the material into useful application. In future, other parameters such as work thickness can be found out that directly affect the performance of machining characteristics like MRR and SR. Taper angle, wire speed, grain size, homogeneity, required tolerances makes such a combination between them.

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Managing Cross Culture Workforce: A Challenge or an Opportunity for Organizations

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Abstract
Several phenomena have paved the ways to the prevalence of diversity in the modern workplace like globalization, cross-border mergers & acquisitions, MNC's work style and plant location etc. All these factors have redefined the Indian organization workforce structure and put its impact on different areas of organization likes policies, productivity, performance, the effectiveness of the organization and personal life of the employees. The increased competitive environment made it crucial for all organization to embrace cross-cultural challenges of the workforce and also need to take measures to tackle the challenges of workforce diversity in the organization for sustainable business development**.** The objectives of the paper are to throw light on understanding facts whether the cross-cultural issues has a positive or negative influence on organizations and will cover the review of several kinds of researches and experts on managing cultural issues & challenges and strategies for managing regarding the same in the challenging environment.
Keywords: *Managing Diversity, Cross Cultural Issues, Organizational performance, Diverse Workforce.*

1. Introduction

The present scenario is witnessing how organizations are putting their gigantic efforts to meet the expectation of global competition. In India there is a progress in no of MNCs from the era of liberalization, also with the "MAKE IN INDIA" initiative of ruling party; further the increase is expected in near future. This is the primary reason that organizations are moving towards various efforts and strategies on human resource factor these days to cope with this changing environment. Diversity management strategies are one of them and it aims at indulgent the relationship between the employee working together from different backgrounds, perceptions of diversity and perceived organizational performance. Therefore this required to explore the Indian dimension of diversity at the workplace for a better understanding of diversity management which helps worldwide managers and domestic managers to accomplish and harness the goodness of diversity. Thomas and Ely (2001) found that the diversity exists at the workplace where their employee differs from each other along with one or more significant ways. If everyone in the organization is exactly like everyone else, no diversity exists. Workforce diversity allows us to recognize actually that persons vary from one another in many ways, like noticeable or unnoticeable, mostly age, sex, marital status, qualification, social positions, religion, origin and culture and all these factors puts its impact on several areas of an organization.

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Johnston & Packer (1987) highlights the actual term cultural diversity that is usually, did not appear in the management literature until Workforce 2000: Work and Workers for the Twenty-First Century. This publication contributed to the popularity of the phrase among organizational researchers (e.g. Riccucci, 1997; Thomas, 1999; Watson, Kumar, & Michaelsen, 1993). It is widely recognized that the main thrust to its development was a government-commissioned report entitled Workforce 2000 which studied the changing demographics of the US workforce. It concluded that the demographics of the employee is changing with the increased global competition and stressed on the necessity for national investment in education and training, along with changes in the working condition of the organization. Nowadays cross-cultural and multicultural employees have become the common matter not only at the workplace in western countries but also at domestic organizations. Due to the increase in the diverse workforce at workplace made it compulsory for every organization to make better managing policies & strategies to exploit the benefits of a cross cultural workforce in organizations sustainable growth.

2. Research Methodology

The paper adopts a literature review approach start with specifying significant works on cultural diversity, workplace diversity management and categorizing the literature in a process of realizing its importance, and impact on organizational performance in the Indian context and to find out the current cross cultural diversity strategies used at the workplace by the organizations.

3. Literature Review

Luthans, (2013) defined diversity as the means of understanding the individual's uniqueness as well as recognizing individual differences. Cox (1994) defined in particular; cultural diversity refers to "the representation, in one social system, of people with distinctly different group affiliations of cultural significance". Cox and Blake (1991) believed that diverse employee helps in harmonies an organization better chance to understand and to attend different markets, also offers a better-talented pool of employees from which they can recruit. Additionally, by exploiting the potential consequences of cultural diversity at the workplace, it can support in gaining a competitive advantage and also helps in making a way towards change in an organization. Doka (1996) emphasized on cultural diversity and state that it should be treated as a valuable resource in coping with the challenges of this opposing global economy. Schermerhorn, Osborn and Hunt (2005) put emphasizes on the fact that, cultural diversity has a crucial part to play in getting together different ideas and viewpoint at workplace leading to the accomplishment of the organization's aims and objectives.

Black Enterprise (2001) found that managing and valuing diversity is a key component helps in effective people management at the workplace, which can improve organizational productivity. Cox (2008) stated in his paper that there is a complex association between workforce diversity and organizational performance and there can be no argument about the significance of the successful management of diversity. It has both the sides; some believe firms must acknowledge new chances of development and flourishing through continued and progressive steps to create a diversity-welcoming Organizational culture. He found that a viable and deliberate way to deal with building intercultural capability is one critical component in developing the association and in accomplishing its key business objectives through full incorporation. Hammer and Martin (1992) studies the expediency of cross cultural training in enhancing the exchange of technical information, attaining organizational goals, and decreases anxiety and uncertainty.

Richard and Johnson (1999) investigate the organizational benefits of proper diversity practices and accept the fact that by implementing the formal diversity practices at the workplace can decrease turnover. They also found that a crucial outcome of these practices on earnings, a strategic contingency connection was supported only due to the diversity practices interrelated with better productivity and market performance for organizations by this innovative strategies and on the other hand Gareth and Jones et al, (2008) clarifies diverse individuals continue to experience unfair treatment in the workplace as a result of various challenges from biases, gender schemas, stereotypes and overt discrimination and also face barriers like the glass ceiling, therefore need to manage diversity. According to Economic Times, (2017) Companies twitch hiring policies and start opening towards more to women employees these days, but it's still has a long way to go. This is showing how organizations are making efforts for creating the right balance of workforce. As we have highlighted in this article, addressing cultural and other forms of diversity has been a challenge across the globe. It is correct to summaries from the above literature that cultural diversity at the workplace is an important challenge in front of management. Cultural diversity can impact both positively and negatively to the organization; this wants the human resource department of the organization to address these issues seriously.

4. Today's Challenges and Opportunities of Cultural Diversity

Due to the rapid changes in today's business environment, it becomes necessary for every leader to recognize both the challenges and opportunities of cultural diversity in the organization. Jehn et al. (1999) recognize the difference in principles, background, and experience that heterogeneous groups have can easily create a conflict situation in the workplace. Quappe and Cantatore (2005) according to them, this is a challenge for HR professionals to look for procedures to use cultural diversity as an effective instrument to build efficiency and develop means to meet the necessities of the worldwide business. Roberge and Dick (2010) identified that on one hand differences of employee's outcomes in positive influences like inventiveness, critical thinking, and advancement; yet on other decent variety perhaps will bring about some negative angles like developing clashes, diminishing gathering execution and gathering cohesiveness. The workforce ought not to be just regarded as far for making monetary advantages for an organization yet we ought to likewise pay mind towards the elements that empower diversity at work environment and to value the complex changing parts of working environment i.e. diversity issues like administrative structures, legislative offices, legislators, courts, specific associations, intrigue gatherings, and the overall population must be considered. Joplin and Daus (1997) reviewed nowadays' organizations are thinking about promoting the abilities of a diverse staff yet for this they need to confront numerous obstacles like various assessment, an absence of sympathy contrasts in observation, an absence of interest. Assist every one of these difficulties can be taken care of by compelling authority style instead of applying outdated techniques. McKay et al. (2009) witnessed that if the idea of cultural diversity is essential for every organization's value system the organizations must incline towards creating a diversity-friendly atmosphere through the execution of policies that help to integrate every member of the organization. Cox (1991) put stress on with every difficulty of broadened workforce, associations should appreciate diversity to enhance organizational productivity focal points like innovativeness, critical thinking, and adaptable adjustment to

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change that may prompt upper hand thusly it gives different open doors before directors to deal with every one of these issues by grasping key devices like administration, preparing, research, examination and change of culture and human asset administration frameworks and follow-up activities like additional preparation, dialogs about decent variety matters with the gathering individuals.

5. Suggestive Framework for Managing Culturally Diverse Workforce

Nowadays' organizations are managing the diversity issues from different sectors like demographic variations in the workforce and buyer populations, united with globalized markets and overall rivalry. An organization must focus on the ways to manage diversity strategically to improve its performance. Based on the detailed review of work, some suggestive diversity management initiatives for organizations to adopt at the workplace are:

1. Global Management Leaders: Along with the demand for cross-cultural competence in Organization, there is the need for the more capable workforce as well as capable management. Global management leaders must be professional and talented in their business dealings across cultures. Global leaders must be aware and understand the cross-cultural impacts on business operations. They are required to have the comprehensive approach to culture, its characteristics, and know the crux of cultural difference.

2. EEO and AAP's: Equal employment opportunity (EEO) means that the liberty from discrimination of special section of employees on the basis of race, color, gender, nationality, creed, age, disability or genetic background. On the other hand, Affirmative action plans (AAPs) can be defined as a business's typical criteria for proactively recruiting, hiring and encouraging women, minorities, disabled personnel and veterans at the workplace. AAPs contain distinctive measures with the aim of expanding the image of minorities at the workplace and to assist organizations to handle diversity proportion at working environment.

3. Role of HRD: Nowadays cultural diversity effects business's through their HRD activities in the fields of recruitment and retaining employees; executive practice and decision making processes; and in building relationships inside the organization. The act of HRD in handling cultural advancement is significant of how accomplished the departments are in dealing with issues and difficulties by building up plans and programs.

4. Cross-Cultural Communication: It is problematic to speak with people having distinctive languages and it is an undertaking, not every person is prepared to do. The idea is exceptionally indistinguishable to intercultural communication which detects how individuals with different cultural upbringings cooperate and converse among themselves both incomparable and distinctive way, and how accurately they follow to know other cultures. In the following ways effective cross-cultural communication between individuals at the workplace largely adds to the achievement of any organization.

5. Examining the present HR diversity practices: An effective examination of the present management diversity practices will support organizations in managing cultural differences at workplace. HR activities, like staffing, selection & placement practices, selection techniques, promotions and training methods, performance appraisal and reward management is very important. All this can assist to overcome unfairness & prejudice practices at the workplace by removing the glass ceilings, gender differences and eliminate resistance.

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6. Cross-Cultural Training programs: Because of the growing requirement for a global society, organizations are nowadays investing in the cross-cultural training programs. This also, employees will feel more competent at workplace as cross-cultural cooperation and support rises in the organization. Cultural awareness programs helps in broadens the information about different cultural backgrounds and many appearances of culture at the workplace. These kinds of training programs stresses on handling cultural diversity in the organization.

7. Collaborative atmosphere: Collaborative atmosphere at workplace helps companies to make a working atmosphere that encourages cooperation, involvement and cohesiveness among the employees. This can also help in the professional side and when it arises to whether you stay in that position or stay in the company or believe in performance and progress. Making of cooperative atmosphere at workplace helps in numerous ways in limiting the effects of cultural diversity at workplace.

8. Support Groups and Mentoring: The workplace might be tough for those who embody a demographic that is unique or limited within the organization. Workers who share a similar statistic foundation may have the capacity to offer help to each other on the off chance that they approach a formal care group composed and encouraged by HRD. These gatherings met frequently to share their encounters (both positive and negative) to influence recommendations to each other for prospering and to enhance the social condition of the association.

6. Conclusion

A diverse workforce is a replication of a changing world today, India is full of diverse people, and hence the Indian HR practices deeply rooted in its socio-cultural aspect, the cross-cultural challenges faced by MNCs in India cannot be overlooked. Global companies have started setting up their offices & shops in different countries all these aspect pose a danger for all companies. Therefore this makes it necessary for organizations to employee culturally diverse workforces but it is stressful for the workforces to modify themselves with a new atmosphere and culture and all this will affect the organizational performance directly or indirectly. Today the burden on HR managers is to identify and adjust accordingly to the cultural differences by employing different strategies while doing business globally. All these issues made it essential for organizations to tackle all these cross-cultural challenges in a best ways to improve the organizational productivity, performance and for its growth in future.

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The impact of compensation on Employee productivity in Insurance companies

Dr. Rita*

Abstract

Compensation is very important for the performance of the employees. The purpose of this research is to measure the impact of compensation on employee performance. A questionnaire was designed to collect the data on the factors related to compensation like salary, rewards, Indirect Compensation and employee performance. The data was collected from insurance sctor employees. Different analytical and descriptive techniques were used to analyze the data. It is founded from different results that Compensation has positive impact on employee performance. It is proved from correlation analysis that all the independent variables have weak or moderate positive relationship to each other. Regression analysis shows that all the independent variables have insignificant and positive impact on employee performance. Descriptive analysis also reveals that all the independent variables have positive impact on employee performance. ANOVA results reveal that education have not same impact on employee performance.

Keywords: Salary, Rewards, Indirect Compensation and Employee Performance.

Introduction

Compensation is concerned with the determination of adequate and equitable remuneration of the employees in the corporation for their contribution to the organization goals. The employees can be compensated both in terms of monetary as well as non-monetary rewards. The components of a reward system consist of financial rewards (basic and performance pay) and employee benefits, which together comprise total remuneration. They also include non-financial rewards, (recognition promotion, praise, achievement responsibility and personal growth) and in many case a system of performance management. Pay arrangements are central to the cultural initiative as they are the most tangible expression of the working relationship between employer and employee.

Intrinsic rewards: Intrinsic rewards are less tangible, originate from persons or job it and reflect Herzberg motivators. Example of such factors includes; Variety in Job Content, Sense of being a part of value adding process, Believe that they are valuable members of a team, increased responsibility and autonomy, Sense of accomplishment, Participation in setting targets and opportunities to achieve them, Feedback information, Recognition, opportunities to learn and grow.

Extrinsic rewards: Results from the actions of others, such as supervisions are more easily controlled by managers. Examples include pay, fringe benefits, praise and promotion.

Review of Literature

Venu Gopal (2008) General Secretary, All Indian insurance Employees Association rid the demand for 40% wage hike is quite justified, as both LIC and GIC had the capacity to

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Pay "and the operative expenses of LIC are the lowest in Industry at 5.54% against 23.111% of private companies." He said salaries of LIC staff were much lower in comparison to wages of the private insurance company's staff. However, there is not much attrition and only 4-5% of the LIC staff is leaving jobs to join private companies.

The demand for wage hike is therefore quite reasonable. Even internationally, the accepted norm is that 6% of the premium income be allocated to salaries of the staff and LIC was only paying 4.6% or so, he explained.

Subrahmanian, Anjani ***(2010)*** *found that* In Automobile Industries, the counseling is basically given for helping and supporting the employees, who have been reported for reasons such as behavioral changes, poor attitude, lack of interest in work, high absenteeism, alcoholism, job miss, increased accidents and reduced production. The counseling is provided by the respective Section Heads, IR Coordinators to the specific employees who show the sign of misconduct. According to the study, manufacturing and automobile industries face serious issues amidst their employees, which arises due to various reasons and have a direct impact on the productivity, which is considered as a loss to both organization and individual. Taking into account the affecting factor of the above said reasons, counseling is considered to be a vital procedure that has to be given weight age and studied. Descriptive research design has been adopted in this study. A total of 200 NEX employees from various automobile industries were selected for the study in Chennai City.

The study conducted in viewed the effect of compensation on motivating the employees of public and private banks. The author has described compensation contains three components as flexible pay, fixed pay and benefits. The study has been conducted on 95 employees of private and public banks of Peshawar. The study concluded that the employees of private bank should rewarded with the benefits that they value whereas the employees of public banks get highly motivated with vacations, medical insurance and retirement benefits.

Objectives of Study

The study has been carried out with the following main objectives.

- To examine the extent of compensation which are being used in LIC
- To study how demographic variables like gender, designation, the level of education of the employees affect the employees perception about the compensation.
- To establish the impact of compensation to the employees productivity of the corporations applying them

Research Questions

How demographic variables like gender, designation, the level of education of the employees affect the employee's perception about the HRD practices?

Hypothesis

Ho1.1 There is no significant difference between the perception of male and female employees regarding reward/Compensation system.

Ho1.2 There is no significant difference between the perceptions of employees at different levels regarding reward/Compensation system

Ho1.3 There is no significant difference between the perception of graduate and post graduate employees regarding reward/compensation system.

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Sample Size

The researcher contacted 400 employees in above mentioned divisional offices and its branches. They were appraised about the purpose of the study and request was made to them to fill up the questionnaire with correct and unbiased information. The researcher was able to collect the 280 filled questionnaires with response rate of 70%. However, this 70% response is considered fairly good and is a point of big satisfaction. Finally 250 filled in questionnaire were selected for this study after rejecting 30 questionnaires for various reasons like errors, incompleteness and inadequate information.

Analysis and Interpretation of Data

Compensation/Reward system

The results in the following table reveal that in the scale for performance appraisal, the highest mean score (20.33) is for employees at level I and the lowest (16.35) is for female. The same has been shown graphically in figure

Table: 1 Scale for Compensation/ reward system

Factor	No.	Mean	S.D
Gender-Male	185	18.06	14.39
Female	65	16.35	14.98
Designation-Level 1	50	20.33	14.52
Level 11	110	19.72	14.63
Level 111	90	18.56	14.72
Qualification- Graduate	140	20.69	14.93
Post Graduate	110	19.58	14.51

Source-Own Analysis

Hypothesis- 1.1

Ho: There is no significant difference between the perception of male and female employees regarding compensation/reward system

This hypothesis was tested by applying "t"test statistics.

Tab.2 Perceptual differences between male and female employees regarding compensation /reward system

Group	size	Mean	t- value	df	P -value
Male	185	18.06	2.60	248	.009 *
Female	65	16.35			

***P>0.05**

Summary of "t" test presented in the above table indicates that t-value (2.60) is significant as p-value (.009) is less than 0.05.Hence the hypothesis stating, The difference is not significant between the perception of male and female employees regarding reward

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system." is rejected at 0.05 level of significance. So there is a significant difference between the perception of male and female employees regarding reward system.
Mean value for males (18.06) is more than females (16.35) therefore it is concluded that male employees have better perception of reward system than female employees.

Hypothesis- 1.2

Ho: There is no significant difference between the perceptions of employees at different levels regarding reward system.

Tab.3 Perceptual differences between employees at different level regarding compensation /reward system.

Group	size	Mean	F- value	df	P-value
Class-1	50	20.33			
Class-II	110	19.72	2.126	2	0.027*
Class-III	90	17.56			

* P<0.05

Summary of the univariate analysis of variance presented in the above table indicates that p-value (0.027) is less than 0.05 as F value (2.126) is significant at 0.05 level of significance .Hence the hypothesis is rejected at 0.05 level of significance so there is a significant difference among employees at different level regarding reward system in selected branches of LIC.As the results are significant it was decided to run LSD Post Hoc test of multiple comparison. Only significant mean differences are presented here.

Table 4 Summary of multiple comparison regarding different level groups

Groups	Mean difference	p-value
Class I Vs class III	2.77	0.009
Class II Vs class III	2.16	0.003

From LSD Post Hoc test it is concluded that Class III is significantly different from the other two groups in their perception of reward system.

Hypothesis- 1.3

Ho: There is no significant difference between the perception of graduate and post graduate employees regarding reward system

Tab: 5 Perceptual differences between Employees with graduate and postgraduate qualification regarding compensation/ **reward system.**

Group	size	Mean	t- value	df	p-value
Graduate	140	17.69			
			3.12	248	.002*
Post-Graduate	110	19.58			

**P<0.05*

Summary of "t"test presented in the above table indicates that t-value (3.12) is significant as p-value (0.002) is less than 0.05.Hence the hypothesis stating, the difference is not

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significant between the perception of graduate and post graduates employees regarding reward system is rejected at 0.05 level of significance. So, there is a significant difference between the perception of graduate and post graduate employees regarding reward system in selected branches of LIC Mean value for graduate(17.69) is less than Postgraduate Employees (19.58) therefore it is concluded that post graduates employees have better perception than graduates employees regarding reward system.

Q-Does demographic variable like gender, designation, the level of education of the employees affect the employee's perception regarding compensation /reward system.?

1. The difference is significant between the perception of Male and Female employees regarding the reward system in selected branches of LIC.
2. There is a significant difference among employees at different level regarding reward system.
3. The difference is significant between the perception of Graduates and Post Graduates employees regarding the reward system in selected branches of LIC.
4. It should be noticed that the following non monitory awards also be given at all classes for supported to up great their standard of living.

1) Holiday pay
2) Bonus
3) Pension benefits
4) Overtime pay
5) Proper training and promotion also to be given to the staff in order to they will be satisfied their job.

Recent trend of Compensation /reward systems in LIC

In LIC the components of a compensation/reward system consist of financial rewards: Basic and performance pay, Dearness allowances, House rent allowances, City compensatory allowances, Special allowances, functional allowances, hill allowances, Provident fund, Gratuity, Graduation increment and graduation allowances, Northern Eastern States Education allowances, Transport allowances, Encashment of Unveiled Privilege leave, Medical Benefits, Audit allowances Pension, which together comprise total remuneration. This intrinsic reward is given all class employees. But extrinsic reward i.e. non-financial rewards (recognition, promotion, praise, achievement responsibility and personal growth) are given only class II employees. Pay arrangements are central to the cultural initiative as they are the most tangible expression of the working relationship between employer and employee.

LIC of India has decided to reward its employees by giving meal. This meal scheme can be considered as one of the strangest decision taken by LIC (Life Insurance Company). As per the meal scheme, LIC employees across India, who will come on time, will receive food coupons ranging between INR 1000 to INR 4000 along with their monthly salary. However LIC India has taken an aberrant decision of rewarding its employee who comes on time. Actually LIC India has decided to develop it employee by giving meal coupons ranging between INR50 to INR200 per day to employees who come on time i.e. by 10am and there is 10 minutes grace period too.

Conclusion

It is concluded from different results that Compensation has positive impact on employee performance. It is proved from correlation analysis that all the independent variables have weak or moderate positive relationship to each other. Regression analysis shows that all the

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independent variables have insignificant and positive impact on employee performance. Descriptive analysis also reveals that all the independent variables have positive impact on employee performance. ANOVA results reveal that education have not same impact on employee performance.

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Types of Leadership and Their Impact on Job Satisfaction of Employees: A Study of Shipbuilding Industry

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Abstract
This paper seeks to investigate the different types of leadership styles and their impact on job satisfaction of employees in the shipbuilding industry. It aims to explore advantages and disadvantages of different leadership types. The study also examined the importance of good leadership. In this study a qualitative research was conducted, and 6 senior management officials from2 chosen shipyards in Gujarat were chosen for the assessment using open ended interview questionnaire. The responses and the findings were thematically assessed to analyze the impact of leadership type on job satisfaction. Response assessment found that transformational and democratic leadership was prevalent among the senior employees from the chose shipyards thereby playing an important role in improving job satisfaction of the employees. Although there is a mix of all the leadership qualities, but Autocratic and transactional leadership styles were less prevalent for improving job performances as they do not engage employees in decision making and punish them for poor performances.
Keywords: ***Leadership styles, Job Satisfaction, Jon Performance, Shipbuilding industry***

Introduction

Importance of leadership and its types

According to Kruse,(2013)as defined by DePree in 1990 "*Leadership is a process of social influence, which maximizes the efforts of others, towards the achievement of a goal*." The number of leadership styles has been increasing as studies on leadership types have evolved over time. Burke et al.,(2006)cited Schriesheim & S Kerr,(1976) for **Autocratic leadership** where the leaders deals with making choices and decision without informing or asking team members It emphasize on absolute power over the followers. In **Transformational leadership** style followers trust their leaders' judgment and encourage their value system. Also, Rothfelder et al.,(2013) cited that according to Atwater & Bass (1994)leaders transforms the value and needs of the followers and motivates their followers to rise their expectation In contrast **Transactional leadership** is mainly based upon rewards as well as punishment to improve employee's performance (Sarwar et al., 2015). Other style is **Laissez-Faire leadership** in which a leader prefers not to interfere with the work assignment or try to avoid his responsibilities by not guiding his employees (Limsila & Ogunlana, 2008). **Democratic leadership type,** workers have freedom to express their views and they also participate in decision making process (Dalluay, 2016).

Indian Shipbuilding Industry

Water-shed for Indian shipbuilding industry can be seen in the year 2002. As in 2002, subsidy scheme for both public and private shipyards was introduced by Government of

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India. It was provided to address the distortions of the domestic economic environment which affects domestic shipbuilders adversely (FICCI, 2008). It was announced that Government will announce new repair policy with an aim to double the size of the industry to Rs. 20,000 crores by 2022. It has contributes 8% of world market. The current scenario presents that in financial year 2016-2017 , Indian port sector recorded capacity growth of 1065 million tonnes per annum (MTPA), showing a CAGR of 7.8% since FY07 (IBEF, 2018).

Aim of the Study

The main aim of the study is to examine the impact of various leadership styles on the job satisfaction of the employees.

Literature Review

Advantages and disadvantages of different leadership types

Some of the studies found that transformational leadership helps in improving job satisfaction, job performance and organizational commitment (Pedraja-Rejas, Rodríguez-Ponce, Delgado-Almonte, 2006; Chih & Lin, 2009).On the contrary Laissez faire leadership style is known as the least effective style as it does not provide any or very little guidance or support to subordinate. This results in less satisfaction amongst work groups and they become less productive, which further degrade organizational performance (Smith, 2015).

Importance of Good Leadership

A good leadership can create a successful and effective management in any organization (Sarwar et al., 2015). According to (Nanjundeswaraswamy & Swamy, 2015), leadership helps in influencing work condition directly which are appreciated by the employees. Effective leaders support and assist their workers in using extra effort and try to offer a better workplace(Bennett,2009). According to Keller, (1992, p. 498)"*Good and effective leadership motivates new ways of thinking and gives a sense of purpose and mission to accomplish by encouraging extra effort*". It also helps in resolving conflicts and promotes sharing of diverse knowledge skills and experience with team members which further enables learning and improvement (Pagell & LePine, 2002). In the study of nursing management in healthcare organization by(Curtis & O'Connell, 2011)stated that a good leadership type empower and involve their subordinates so that they are able to offer to provide solutions for the problems. It was also assessed that empowerment of workers increases the profitability which stimulate workers o remain in the organization.

Impact of Leadership on Job Satisfaction

According to Rothfelder et al.,(2013), transformational is regarded as the most suitable behavior to influence employees' job satisfaction. It was found that intellectual stimulation of transformational leadership have shown positive correlation to job satisfaction and employees commitment (Emery & Barker, 2007). On the other hand transactional leadership is highly positively correlated with job satisfaction and organizational commitment (Emery & Barker, 2007). whereas it was concluded that autocratic leaders have higher productivity than democratic leaders from their experiment which were subjected to series of arguments (Kouzes & Posner, 2007). Transformational leadership impacts job satisfaction by using intellectual stimulation and use of vision whereas job satisfaction is influenced by transactional leadership through contingent reward (Vecchio et al., 2008).

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Empirical review

In a study by Kytola,(2017), aimed to assess the leadership innovations in shipyard towards sustainability and job satisfactions. The study used case study methods whereby shipbuilding industry from 9 countries was chosen. The study also used semi-structured interviews whereby 29 participants from the shipyards of these South Korea and China. It was found from the interview assessments and the case study analysis, that there are various factors that impact the sustainability and job performances of the employees in a shipyard. Apart from other factors of sustainability, it was perceived by the respondents that leadership and management qualities are very important in performance assessment.

In another study by Paramanandam,(2014), who aimed to study stress resilience and job satisfaction among the employees of a Shipyard in Kerala. The study used quantitative study whereby the study had sixty participants who were also employees of the shipyard in Kerala. The statistical findings found that there is positive significance between level of resilience and job satisfaction. Level of resilience was also motivated by the leadership qualities of the senior management in the respective shipyard.

The above studies were also supported by Bakotić & Tomislav,(2013), whereby the study studies the impact of various internal and external factors on job satisfaction of the employees. The study comprised of 60 employees from a Croatian shipbuilding company. The study attributed that there are various factors that impact job satisfactions. However, the statistical findings also found that management qualities, leadership and employee management significantly impacted Job satisfactions. The study also concludes that job satisfaction is very important driver of performance.

Research Methodology

The current study applied qualitative methodology to assess the perspectives of the leaders and senior management with respect to leadership and its impact on job satisfaction. Therefore, for the analysis 6 senior management officials from 2 shipbuilding industry in Gujarat were chosen for the study, and open ended questionnaires were administered. The responses were then thematically presented. Any data regarding respondents is kept private to secure the confidentiality of the information provided.

Analysis

In this part of the chapter, the data findings from interviewing 6 senior managers has been discussed and interpreted thematically using the content analysis method. As mentioned formerly, the table 1 shows the demographic profile of the 6 interviewed senior management from various shipyards building in Gujarat. One third of them are female managers. The table also shows that most of them are working from 1-3 years with their respective shipyard company. 50% of them belong to 1st shipyard and 50% of them belong to 2 shipyard located in Gujarat.

Respondents	**Gender**	**Years worked with company**
1.	Male	1-3 years
2.	Male	3-6 years
3.	Female	Less than a year
4.	Male	3-6 years
5.	Female	1-3 years
6.	Male	1-3 years

Table 1: Demographic Profile of Senior management

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Type of Leadership

In this section various leadership factors from the different styles were identified according to their responses. The responses were then cross referred to the leadership qualities so as to identify the type of leadership prevalent and their impact on job performance in shipbuilding industry.

Respondents	**Transformational**		**Transactional**		**Autocratic**		**Laissez-Faire**		**Democratic**	
	Effective communication	Intellectual stimulation	Rewards and punishment for bad performance	Focus on group organisation	Control over staff	Do not consider workers suggestion	Direct supervision	No regular feed back	Boost employees morale	Freedom to express views
1.	✓	X	X	✓	X	X	✓	✓	✓	✓
2.	✓	✓	X	X	X	X	✓	X	X	✓
3.	X	✓	X	✓	✓	X	✓	X	X	✓
4.	✓	✓	✓	X	X	X	✓	X	X	✓
5.	✓	X	✓	✓	X	✓	✓	X	✓	X
6.	X	✓	✓	X	✓	✓	X	✓	✓	X

Table 2: Responses for the different Leadership characteristics

It was assessed that where there is freedom to express vie and opinions, employees are more satisfied with their jobs. On the other hand where there is no feedback given to the employees, there is less job satisfaction which is a case of Laissez faire leadership. As respondent 1 and 6 do not get regular feedback can contribute to their low job performance.It must be noted that when there is effective flow of communication and intellectual stimulation by the manager employees are more satisfied with the leaders and give better job performances. This is a type of transformational leadership. Therefore, it is considered as the most effective form of leadership. On the other hand democratic leadership enables workers to think in innovative ways. Whereas in autocratic leadership dissatisfy employees as it controls employees and does not involve employees in decision making as mentioned by one of the respondents. Also, Transactional de-motivates employees and does not consider as a good leadership style as it punishes workers for the bad performances witnessed by respondent 5 and respondent 6. It was found that characters of transactional leadership do not impact employee's job satisfaction positively.

The above analysis shows that Transformational leadership is commonly applied form of leadership. Factors such as flow of effective communication with the employees and creation of an environment of intellectual stimulation which impacts employees' behaviour positively were found significant in majority of cases. Autocratic leadership style was found to be rarely used in this industry, as most of the respondents denied that they control their employees and also most of the employees consider their employees workers

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suggestion in the decision making process. Second mostly used leadership style is democratic leadership which gives freedom to express their workers to their employees. After critically analyzing about 66.6% of the managers provide freedom to their staff to express their ideas and opinions and only 53% of the total respondents boost their employees' morale to work efficiently. However, Laissez faire leadership style shows that 83.3% of the employees directly supervise their workers where 33.3% do not provide regular feedback.

Impact of Leadership style

Respondents	Impact on job satisfaction of employees	Impact on job performance of employees
1	✔	X
2	✔	✔
3	X	X
4	✔	✔
5	X	X
6	X	X

Table 3: Impact of Leadership style on Job satisfaction and Job performance

Table 3 shows that respondent 2 and respondent 6 are highly satisfied with type of leadership they follow. After critically analyzing the table 2 and table 3 it was found that, respondents 2 and 4 follow Transformational leadership. That is why they have a significant impact on job performance and job satisfaction which motivates them to work effectively. On the other hand, respondent 5 follows the characteristics of transactional leadership and do not believe that there is impact of this leadership on either job satisfaction or job performance. Respondent 1 follows all the features of democratic leadership and it does have a significant impact on job satisfaction but not on job performance. Therefore it may be assessed that Transformational leadership is the most prevalent and most effective to impact job performance in shipbuilding industry.

Conclusion

The study aims to identify different types of leadership styles and their impact on job satisfaction, specifically on shipbuilding industry. The above analysis was done by using qualitative methodology and findings are thematically presented. From the above analysis, most of the effective leadership styles give freedom to the employees and ask about their opinions in decision making process. Therefore, it was found that Transformational leadership is a suitable choice for shipbuilding industry because it promotes participation and empowerment and increases staff motivation. It also believes in skilled communication to promote self-confidence within their groups and build trust also makes employees to work efficiently; This style also leads to develop relationship of mutual stimulation to provide junior workers with guidance to construct effective leadership skills(Saeed, Almas, Anis-Ul-Haq, & Niazi, 2007). Therefore intellectual stimulation is provided by the managers is the most prominent form of leadership. Therefore after critical analyzing aspects of all leadership styles it can be concluded that although democratic leadership is also able to impact job satisfaction positively, but it is Transformational leadership that has a definite influence on employee's job satisfaction as well job performance.

There are other various strategies in this leadership style that shipbuilding management can use to build or increase motivation and creating better work environment that encourages employees to perform in a mature and innovative way, empowering them and allowing them to participate in decision making process, enriching work environments by linking changes in practices to the tasks that assist them(Smith, 2015). Transformational leadership also helps in increasing worker's empowerment by offering them better quality of work-life balance. Furthermore, these leaders are able to see the critical aspects of organizational change, they have vision can organize commitment to that vision and sustain the necessary changes. A vision of future formed by leader motivates followers and enables them to engage in activities and facilitates effective communication between them.

The current findings are supported by past studies; it shows that there is consistent positive relationship between transformational leadership type and motivation of employees(Kytola, 2017). This research validates that higher level of employee's satisfaction and effectiveness is linked with transformational leadership styles in comparison with non-transformational leadership styles. In the shipbuilding industry transformational leaders have the ability to achieve greater performance by inspiring creative ways of thinking and transforming follower's principles and belief's. It is also concluded that management should consider developing junior staff's leadership skills, specifically when there is junior workers shortages. Leadership in shipbuilding is crucial to ensuring consistent standards across all attributes of building an environment for excellence.

For future scope, other leadership style such as participative, cross cultural leadership can be included in future study. Moreover, other factors such as organizational commitment and employer-employee relationship may also be studied in the future. Therefore it is suggested that further studies can be conducted to investigate other factors as well.

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APPENDIX-I

Interview Questionnaire

A. Demographics

a. Gender___________

b. Years of experience__________

B. Leadership qualities

a. Do you give freedom to your employees to express views?

b. How do you help your employee's morale?

c. Do you reward your employees for good performances and punish for bad performance?

d. Is there chain of effective communication between you and your employees?

e. Do you control staff?

f. Is there any direct supervision of employees by you?

g. Do you consider workers suggestion in decision making?

h. Do you provide regular feedback to the employees?

i. Do you create an environment of Intellectual stimulation?

j. Do you focus on group organisation?

C. Job Performance aspects

a. Do you think that there your leadership style have an impact on job satisfaction of employees?

b. Do you think that there your leadership style have an impact on job performance of employees?