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C O N T E N T S

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Editorial……

It is heartening to note that our journal is able to sustain the enthusiasm and covering various facets of knowledge. It is our hope that IJMER would continue to live up to its fullest expectations savoring the thoughts of the intellectuals associated with its functioning .Our progress is steady and we are in a position now to receive evaluate and publish as many articles as we can. The response from the academicians and scholars is excellent and we are proud to acknowledge this stimulating aspect.

The writers with their rich research experience in the academic fields are contributing excellently and making IJMER march to progress as envisaged. The interdisciplinary topics bring in a spirit of immense participation enabling us to understand the relations in the growing competitive world. Our endeavour will be to keep IJMER as a perfect tool in making all its participants to work to unity with their thoughts and action.

The Editor thanks one and all for their input towards the growth of the **Knowledge Based Society**. All of us together are making continues efforts to make our predictions true in making IJMER, a Journal of Repute

Dr.K.Victor Babu
Editor-in-Chief

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ESTIMATION OF HOUSE SELLING PRICE BY MULTIPLE REGRESSION ANALYSIS

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Abstract

Regression analysis is one of the most widely used statistical techniques. Today, regression analysis is applied in the social sciences, medical research, economics, agriculture, biology, meteorology, marketing, retail, insurance and many other areas of academic and applied science. It is not only suited to suggesting decisions as to whether or not a relationship between two variables exists. It goes beyond this decision making and provides a different type of precise statement. Regression analysis specifies a functional form for the relationship between the variables under study that allows one to estimate the degree of change in the dependent variable that goes hand in hand with changes in the independent variable. At the same time, regression analysis allows one to make statements about how certain one can be about the predicted change in Y that is associated with the observed change in X.

The main objective of the present study is to investigate factors that contribute significantly to estimate the selling price of a house in a locality.

Keywords: Multiple Regression Analysis, Regression, SAS, Residential, Data.

1.1 Introduction

The dependent variable is Average house selling price, the multiple regression analysis applied for exploring the factors affecting the house selling price. The power of SAS in analysing data patterns and developing such models is also demonstrated, appropriate and relevant portions of SAS code are included where possible. Suppose we have data on sales of houses in some area. For each house, we have complete information about its size, the number of bedrooms, bathrooms, total rooms, the size of the lot, the corresponding property tax, etc., and also the price at which the house was eventually sold. Can we use this data to predict the selling price of a house currently on the market? The first step is to postulate a model of how the various features of a house determine its selling price. A linear model would have the following form.

Selling price = β_0 + β_1 (sq.ft) + β_2 (no bedrooms) + β_3 (no bath) + β_4 (no acres) + β_5 (taxes) + error

In this expression, β_1 represents the increase in selling price for each additional square foot of area: it is the marginal cost of additional area. Similarly, β_2 and β_3 are the marginal costs of additional bedrooms and bathrooms, and so on. The intercept β_0 could in theory be thought of as the price of a house for which all the variables specified are zero; of course, no such house could exist, but including β_0 gives us more flexibility in picking a model [17].

The last term in the equation above, the "error," reflects the fact that two houses with exactly the same characteristics need not sell for exactly the same price. There is always some variability left over, even after we specify the value of large number variables. This variability is captured by an error term, which we will treat as a random variable.
Regression gives us a method for computing estimates of the parameters β_0 and β_1, . . ., β_5 from data about past sales. Once we have these estimates, we can plug in values of the variables for a new house to get an estimate of its selling price.

2.1 Introduction to Regression

In statistical modelling, regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modelling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). Regression analysis is widely used for prediction and forecasting, where its use has substantial overlap with the field of machine learning. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. In restricted circumstances, regression analysis can be used to infer causal relationships between the independent and dependent variables. However, this can lead to illusions or false relationships, so caution is advisable [8] for example, correlation does not imply causation.

Many techniques for carrying out regression analysis have been developed. Familiar methods such as linear regression and ordinary least squares regression are parametric, in that the regression function is defined in terms of a finite number of unknown parameters that are estimated from the data. Nonparametric regression refers to techniques that allow the regression function to lie in a specified set of functions, which may be infinite-dimensional.

The performance of regression analysis methods in practice depends on the form of the data generating process, and how it relates to the regression approach being used. Since the true form of the data-generating process is generally not known, regression analysis often depends to some extent on making assumptions about this process. These assumptions are sometimes testable if a sufficient quantity of data is available. Regression models for prediction are often useful even when the assumptions are moderately violated, although they may not perform optimally. However, in many applications, especially with small effects or questions of causality based on observational data, regression methods can give misleading results [9].

In a narrower sense, regression may refer specifically to the estimation of continuous response variables, as opposed to the discrete response variables used in classification [11]. The case of a continuous output variable may be more specifically referred to as metric regression to distinguish it from related problems.

Today, regression analysis is applied in the social sciences, medical research, economics, agriculture, biology, meteorology, marketing, retail, banking, insurance and many other areas of academic and applied science. Reasons for the outstanding role that regression analysis plays include that its concepts are easily understood, and it is implemented in virtually every all-purpose statistical computing package, and can therefore be readily applied to the data at hand. Moreover, regression analysis lies at the

heart of a wide range of more recently developed statistical techniques such as the class of generalized linear models [1]. Hence a sound understanding of regression analysis is fundamental to developing one's understanding of modern applied statistics.

Regression analysis is designed for situations where there is one continuously varying variable, for example, sales profit, yield in a field experiment, or IQ. This continuous variable is commonly denoted by Y and termed the dependent variable, that is, the variable that we would like to explain or predict. For this purpose, we use one or more other variables, usually denoted by X1, X 2,. . ., the independent variables, that are related to the variable of interest.

To simplify matters, we first consider the situation where we are only interested in a single independent variable. To exploit the information that the independent variable carries about the dependent variable, we try to find a mathematical function that is a good description of the as summed relation. Of course, we do not expect the function to describe the dependent variable perfectly, as in statistics we always allow for randomness in the data, that is, some sort of variability, sometimes referred to as error, that on the one hand is too large to be neglected but, on the other hand, is only a nuisance inherent in the phenomenon under study.

However, regression analysis is not only suited to suggesting decisions as to whether or not a relationship between two variables exists. Regression analysis goes beyond this decision making and provides a different type of precise statement. As we already mentioned above, regression analysis specifies a functional form for the relationship between the variables under study that allows one to estimate the degree of change in the dependent variable that goes hand in hand with changes in the independent variable. At the same time, regression analysis allows one to make statements about how certain one can be about the predicted change in Y that is associated with the observed change in X.

First of all, we can ask whether there is a relationship at all between the number of aggressive impulses and the number of incidences of physical aggression against peers. The scatter plot shows a very wide scatter of the points in the plot. This could be caused by imprecise measurement or a naturally high variability of responses concerning aggression. Nevertheless, there seems to be a slight trend in the data, confirming the obvious hypothesis that more aggressive impulses lead to more physical aggression. Since the scatter of the points is so wide, it is quite hard to make very elaborate statements about the supposed functional form of this relation. The assumption of a linear relation between the variables under study, indicated by the straight line, and a positive trend in the data seems, for the time being, sufficiently elaborate to characterize the characteristics of the data.

Every linear relationship can be written in the form $Y = \beta X + \alpha$. Therefore, specifying this linear relation is equivalent to finding reasonable estimates for β and $\propto$. Every straight line or, equivalently, every linear function is determined by two points in a plane through which the line passes. Therefore, we expect to obtain estimates of β and α if we can only find these two points in the plane.

Multiple Linear Regression

Multiple linear regression examines the linear relationships between one continuous response and two or more predictors.

If the number of predictors is large, then before fitting a regression model with all the predictors, you should use stepwise or best subsets model-selection techniques to screen out predictors not associated with the responses.

Data and Variables

Our data represents house selling prices in a locality. In this data we have 550 observations with 12 variables. Performed a study is to investigate factors that contribute significantly to estimate the selling price of a house. The dependent variable is Average house selling price, the multiple regression analysis applied for exploring the factors affecting the house selling price. The entire analysis was done using SAS 9.2 software [19].

Variable Description:

Variable	Description
LSP_D	Local selling prices, in hundreds of dollars
NBR	Number of bathrooms
AS_TSF	Area of the site in thousands of square feet
SLS_TSF	Size of the living space in thousands of square feet
NG	Number of garages
NR	Number of rooms
NB	Number of bedrooms
Age_Years	Age in years
Constuction_Type	Construction type
Architecture_Type	Architecture type
NFP	Number of fire places
SellingPrice	Selling price

3.0 Objective of the study

1. To investigate factors that contribute significantly to estimate the selling price of a house in a locality.

3.1 Methodology of the Study

The present study focuses on the application of SAS software, it determines the selling price of a residential house by making use of the Regression Analysis. The data consists of 550 sample size (observations) and considered as purposive sampling as sampling technique; the data gathered from the secondary source.

3.2 Limitations

The main limitation of the study is it is not generalized one rather it is a specific one.

4.0 Data Analysis

Below is SAS code to read the data into SAS environment.

Data House Price;
inputSno LSP_D NBR AS_TSF SLS_TSF NG NR NB
Age_YearsConstuction_TypeArchitecture_Type NFP SellingPrice;
cards;
Calculation of Correlation Matrix and Summary Statistics for each variable
/* Computing Summary Statistics and Correlation Matrix */
odshtml;
odsgraphicson;
odsoutputSimpleStats=ss pearsoncorr=co;
proccorrdata=HousePricenoprob;
varSellingPrice LSP_D NBR AS_TSF SLS_TSF NG NR NB
Age_YearsConstuction_TypeArchitecture_Type NFP;
run;
odshtmlclose;
odsgraphicsoff;
datacorMat;
set co;
format _numeric_ **5.2**;
run;
dataSimpleStat;
set ss;
format _numeric_ **5.2**;
run;
Summary Statistics:

Simple Statistics						
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**
SellingPrice	550	36.05364	5.12782	19830	25.90000	45.80000
LSP_D	550	6.80294	1.30982	3742	4.54300	9.14200
NBR	550	1.45636	0.49855	801.00000	1.00000	2.00000
AS_TSF	550	6.57782	1.76513	3618	2.30000	9.90000
SLS_TSF	550	1.44176	0.27069	792.97000	0.98000	1.83000
NG	550	1.07636	0.80390	592.00000	0	2.00000
NR	550	6.38364	1.09316	3511	5.00000	8.00000
NB	550	3.01455	0.78451	1658	2.00000	4.00000
Age_Years	550	29.82909	5.23578	16406	20.00000	40.00000

Simple Statistics						
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**
Constuction_Type	550	2.50727	1.10922	1379	1.00000	4.00000
Architecture_Type	550	1.99455	0.83304	1097	1.00000	3.00000
NFP	550	0.43636	0.49639	240.00000	0	1.00000

Correlation Matrix:
For

Pearson Correlation Coefficients, N = 550												
Variable	SellingPrice	LSP_D	NBR	AS_TSF	SLS_TSF	NG	NR	NB	Age_Years	Constuction Type	Architecture Type	NFP
SellingPrice	1	0.82	0.66	0.4	0.59	0.42	0.59	0.44	-0.28	0.07	0.03	0.25
LSP_D	0.82	1	0.59	0.46	0.55	0.37	0.66	0.51	-0.3	-0.06	0.09	0.06
NBR	0.66	0.59	1	0.23	0.66	0.26	0.54	0.49	-0.24	0	-0.08	0.16
AS_TSF	0.4	0.46	0.23	1	0.41	0.12	0.47	0.37	0.02	-0.2	-0.02	0.24
SLS_TSF	0.59	0.55	0.66	0.41	1	0.21	0.71	0.64	-0.2	-0.09	0.04	0.16
NG	0.42	0.37	0.26	0.12	0.21	1	0.41	0.35	-0.01	0.01	0.02	0.13
NR	0.59	0.66	0.54	0.47	0.71	0.41	1	0.63	-0.13	-0.01	0.02	0.26
NB	0.44	0.51	0.49	0.37	0.64	0.35	0.63	1	-0.02	-0.01	0.06	0.12
Age_Years	-0.28	-0.3	-0.24	0.02	-0.2	-0.01	-0.13	-0.02	1	0.22	-0.14	0.11
Constuction_Type	0.07	-0.06	0	-0.2	-0.09	0.01	-0.01	-0.01	0.22	1	-0.02	0.09
Architecture_Type	0.03	0.09	-0.08	-0.02	0.04	0.02	0.02	0.06	-0.14	-0.02	1	-0.12
NFP	0.25	0.06	0.16	0.24	0.16	0.13	0.26	0.12	0.11	0.09	-0.12	1

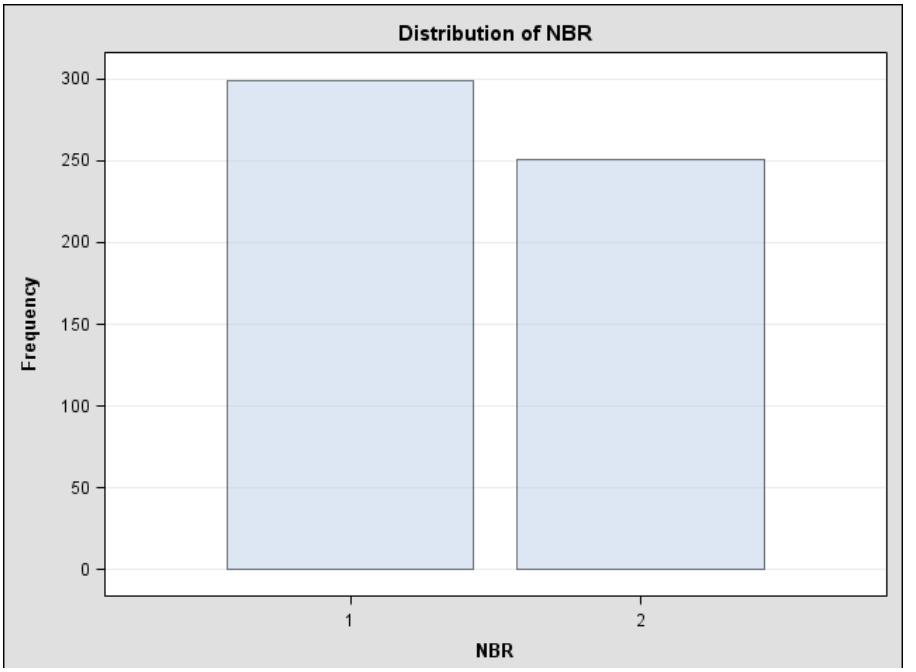
For example: The correlation between SLS_TSF and NR is 0.71 means that the size of the living space in thousands of square feet and the number of rooms are highly correlated(0.71)
Below is SAS code to get frequency for each independent variable.
proc freq data=HousePrice;
tables NBR NG NR NB Constuction_TypeArchitecture_Type NFP;
run;
Variable: NBR (Number of bathrooms)

The SAS System

The FREQ Procedure

NBR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	299	54.36	299	54.36

NBR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	251	45.64	550	100.00



Similarly the frequencies can be calculated for each independent variable

Fitting regression model:

```
/* Regression Analysis with Original Data */
odsoutputFitStatistics = t0;
odshtml;
odsgraphicson;
procregdata = HousePrice;
modelSellingPrice = LSP_D NBR AS_TSF SLS_TSF NG NR NB
 Age_YearsConstuction_TypeArchitecture_Type NFP;
plotresidual. * predicted.;
run;
quit;

/* Store the estimated r-square */
data_null_;
```

```
set t0;
if label2 =  "R-Square"then
callsymput('r2bar', cvalue2);
run;
```

Regression Output:
The REG Procedure
Model: MODEL1
Dependent Variable: SellingPrice

Number of Observations Read	550
Number of Observations Used	550

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	11	11387	1035.22100	182.71	<.0001
Error	538	3048.27676	5.66594		
Corrected Total	549	14436			

Root MSE	2.38032	**R-Square**	0.7888
Dependent Mean	36.05364	**Adj R-Sq**	0.7845
Coeff Var	6.60217		

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Intercept	**1**	14.73812	1.09633	13.44	<.0001

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
LSP_D	**1**	2.52881	0.12600	20.07	<.0001
NBR	**1**	1.81473	0.30816	5.89	<.0001
AS_TSF	**1**	0.18635	0.07425	2.51	0.0124
SLS_TSF	**1**	3.96816	0.66467	5.97	<.0001
NG	**1**	1.00855	0.14629	6.89	<.0001
NR	**1**	-0.74574	0.16537	-4.51	<.0001
NB	**1**	-0.68358	0.18654	-3.66	0.0003
Age_Years	**1**	-0.06789	0.02221	-3.06	0.0024
Constuction_Type	**1**	0.64189	0.09831	6.53	<.0001
Architecture_Type	**1**	-0.01814	0.12699	-0.14	0.8865
NFP	**1**	1.62658	0.22348	7.28	<.0001

Conclusions

The main objective of the present study is to investigate factors that contribute significantly to estimate the selling price of a house. The dependent variable is house selling price, the multiple regression analysis applied for exploring the factors affecting the house selling price.

Below is fitted regression model. From regression coefficients we can observe that, except variable Architecture_type, all other variables were turned as significant in order to predict the selling price of a house.

SellingPrice = 14.738 + 2.5288 LSP_D + 1.8147 NBR + 0.1864VAS_TSF + 3.9682 SLS_TSF + 1.0085 NG – 0.7457 NR – 0.6836 NB – 0.0679 Age_Years + 0.6419 Construction_Type – 0.0181 Architecture_Type + 1.6266 NFP

The coefficient of determination R^2 values is 0.78, so it means that approximately 78% of variation in Selling Price can be explained by all included independent variables.

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AN OVERVIEW OF INDIA'S EDUCATION SYSTEM IN VIEW OF NATIONAL EDUCATION POLICY 2020

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Abstract

Education is one of the most important investments a country can make in its people and its future. It ignites one's spirit to bring a positive change. For proper development of educational system of the country, recently Government of India announced its New National Education Policy(NEP) which is based on the recommendations by an expert committee headed by Dr.Kasturirangan, Former Chairman of the India Space Research Organisation (ISRO). The nation requires such a policy to revamp, rearticulate and restructuring the education sector. This paper highlights the various aspects of new National Educational Policy (NEP) including essential understanding of history of education in the country. Various policies formulated in NEP 2020 for India's higher education system are discussed; and challenges faced for its effective implementation towards achieving its objectives are discussed and suggestions for improvements are mentioned.

Keywords: Higher Education System, National Education Policy, NEP 2020, implementation, suggestions.

Introduction

"Education is the most powerful weapon which you can use to change the world", says Nelson Mandela. If one were to introspect the given quote, one can realize the value of education. Education plays an important role for achieving full human potential, ensuring just and equitable socio-economic system, political transformation and promoting national development.Yes, Education has the potential to revolutionize the growth and development of a nation –with skilled and educated youths.Like the culture and traditions of India, the history of education is awesome. Every Indian will feel proud if we look back to our academic history.The pursuit of knowledge,wisdom and truth was always contemplated in Indian philosophy.Our mother land was one of the pioneers to teach the world the value of education. Our Ancient Universities like Nalanda and Takshashila attracted scholars from all over the world and imparted the wealth of knowledge to the humanity at large. The Indian freedom fighters always believed that, education is the fundamental aid for nation building. Especially, the father of our Nation, Mahatma Gandhi viewed education as "a process of realization of the best in man-body, soul, and spirit".

It is estimated that India, is going to be the third largest economy in the world by 2030-2032 with estimated GDP of ten trillion dollars.While this is how the future looks like,we need a paradigm shift to boost the growth of the Indian Education Sector as per the goals of 21st century. It's a bitter truth that in the present scenario, the Education system in India is fragmented mainly due to the poor framework of the system which is reflected through the poor learning outcomes, gaps between textbook teaching and experimental learning, and huge imbalance in private –public education sectors.Also,

the marketization of the education sector after liberalization has led to growth of huge number of educational institutions with poor quality creating a category of 'educated unemployed'in our country.It is in this context , after more than three decades ,present government has decided to revamp the education sector by introducing a comprehensive National Education Policy 2020.The major focus of the currently introduced National Education Policy 2020 are to meet the changing dynamics of the nation by providing equitable and qualitative education. The vision of NEP is "Envisions an India-centred education system that contributes directly to transforming our nation sustainably into an equitable and vibrant knowledge society by providing Quality Education to All".

Objectives of The Study

- To give an overview of the developments in India's Education System
- To provide a brief about National Education Policies
- To analyse the various policies implemented in NEP 2020
- To discuss the challenges faced for effective implementation of NEP 2020
- To provide further suggestions for improvements in NEP 2020

Methodology of Study

The present paper is mainly based on the report of the National Education Policy (primary data), then in the analysis level I also depend on many secondary data collected from published and unpublished records and reports and contributions of several institutions and organisations.Data collected from various reputed website like UGC, Planning Commission, Ministry of Education,various journals and newspapersare also referred.The paper is analytical anddescriptive in nature.

History of Indian Education

India being a growing liberal country with a large youth population has a rich tradition of learning and education from the antiquity.Ancient Indian education has been evolved strictly on the foundation of Indian epistemological and philosophical traditions .The history of Indian education system has its roots to the Vedic period where "gurukul system" was followed. Ancient universities of repute like Nalanda, Takshashila attracted scholars from different countries of the world. Pali and Prakural along with the Sanskrit become the medium of knowledge impartation.The Vedic period was marked by the Brahmanical and Buddhist system of education. The education in India in official context in medieval or middle times led to the blending of cultures and to the advent of Maktabs andMadarass with Arabic and Persian as its medium of instruction but simultaneously the Hindu system of education continue to subsist in Tols, Pathshalas and the temples. The concept of elementary universal educations appears to have gained coinage in this system. Till the 18th century"India had three distinct traditions of advanced scholarship in the Hindu gurukulas, Buddhist Viharas and QuaranicMadrasas"(Agarwal P;2009) Colonial legacy has surely played its destructive role in the context of education. The colonial system of education in India was developed in three stages;(a) the efforts of East India company 1765 to 1813, (b)the efforts of British parliament 1813 to 1853; and (c) educational efforts under direct British rule 1854 to 1947.

(a) The efforts of East India company 1765 to 1813

The British East India company was less interested in Indian education between 1765 and 1813 except for the foundation of Calcutta Madrasa in 1781 by Warren Hastings in the area of Islamic law and the related subjects followed by the establishment of Banaras Sanskrit college in 1791 by Jonathan Duncan which focused on Hindu philosophy and law .The British East India company saw these schools as their source of qualified manpower in helping the company in the administration of law and order (Hunter 2001).During this period, English education has been gaining popularity with the efforts of Christian missionaries. Lord Wellesley established the Fort William college for the training of youth civilians in 1800 and ushered in Western education by bringing English officials and Indian panditstogether.

b) **The efforts of British Parliament 1813 to 1853**

The Charter Act of 1813 was an important landmark in the history of Indian education. The Charter made East India company responsible for education in India. It also marked the beginning of modern period in Indian education. Shortly, in 1835 Lord William Bentick along with the aid of Raja Ram Mohan Roy put forward the application of English as a medium of instruction (Sharma 2000).But the motive of British was to graft into the Indian society, the system of education which was designed by the British for the maintenance of their imperial administration in India . The East-Western controversy between the indigenous system of education (the Oriental)as opposed to the western system of education on the issue of type of education to be imparted to Indians and the medium of instruction necessitated for the purpose was settled by the Macaulay's Minutes presented on 1835. He recommended that education must be delivered in English, be western in orientation in literature and science, and produce a class of persons Indian in blood and colour but English in taste in opinions, in morally and in intellect (Macaulay's Minutes, 1835).The Educational Dispatch of 1854 (Woods Dispatch) known as Magna Carta of English education became a landmark policy in early beginning of modern educationin Indian subcontinent. This dispatch recognized that Government is responsible for providing elementary Education and it greatly impacted the secondary and tertiary levels of educations reaffirming the recommendation of Macaulay'sMinutes. This decision has reverberated in Indian higher education through 19th and 20th century and has its impact even in 21st century.

C) **Educational efforts under British rule**

In 1857 the East India company was dissolved and British Crown had established its political power over India.University education in British India experience very slow growth. The first 3 modern Universities were established in Calcutta, Bombay and Madras and it took another 30 years for the 4th University - University of Allahabad to be established and again another 30 years for the 5th and 6th Universities -University of Mysore and Banaras Hindu University to be established. Apart from been slow in progress and geographically uneven, this western form of education totally disrupted the development of Oriental /Indigenous form of learning by infusing a new system and a new language. This situation necessitated the India for

reconstructing our educational system far before independence but it took effect post independence. The Indian educational system started expanding at the time of Prime Minister Jawaharlal Nehru and was developed again by various public policies and formation of different commissions and committees like University Education Commission(1948 to 1949),foundation of University Grant Commission in 1956 , Kothari Commission (1964 to 1966), implementation of first National Educational Policy 1968 and so on till today when an initiative of Government of India is sound to usher and implement a new National Educational Policy 2020.

Brief of National Education Policy

Every country must develop a proper educational system that serves as a way to bring about the desired and the desiring changes in the society. With this aim in view, the Government of India has formulated various policies on education to address the growing needs since the country's independence in 1947.The first national education policy was promulgated in 1968 by the Prime Minister Indira Gandhi on the basis of reports and recommendation of the Kothari Commission(1964 to 1966).This policy called for a 'radical restructuring' and proposed equal educational opportunities in order to achieve national integration and greater cultural and economic development. The policy envisaged compulsory education for all children up to the age of 14 years and specialised training and qualifications for teachers. The policy also emphasis on learning of regional languages and it also encouraged the teaching of ancient Sanskrit language. The national education policy of 1968 called for education spending to increase for 6 percentage of national income. Later, in 1986 the government led by Rajiv Gandhi introduced a new education policy. The policy laid special emphasis on the removal of disparities and to equalise educational opportunity especially for Indian women,scheduled tribes and the scheduled caste communities. The policy also called for the creation of the rural university model based on the philosophy of Mahatma Gandhi to promote economic and social development in rural India.

The 1986 national policy on education was modified in 1992 and developed a Programme of Action. The former Prime Minister Manmohan Singh in 2005 adopted a new policy based on the common minimum programme which envisaged to conduct of a common entrance examination on all India basis for admission to professional and technical program in the countryIn May 2016 committee for evolution of new education policy under the chairmanship of Shri TSR Subramanian submitted its report for adopting new changes. Consequently in 2019 the ministry of HRD released a draft of the new national education policy 2019 which was followed by a number of public consultation. Accordingly, the new national education policy 2020 was approved in Union Cabinet on 29th July 2020 which is the third national education policy and the first Education Policy in the 21st century. This policy aims to pave the way for re-claiming,re-articulating and restructuring the current education system and to create a world class multi-disciplinary new system of education. The nation required such a policy in the new millennium to overcome both indigenous and global challenges through knowledge and education resource that draws on past experiences and modern technological developments.

Analysis of National Education Policy 2020

The National Education Policy 2020 envisions an 'India centred' education by considering its tradition, culture, value and ethos to contribute directly to transform the country into an equitable, and vibrant knowledge society.The main objective of currently announced NEP 2020 is to provide a multidisciplinary and interdisciplinary liberal education to every aspirant to raise the current Gross Enrolment Ratio to 50% by 2035. Built on the foundational pillars of Access, Equity,Quality, Affordability and Accountability,this new NEP aims to compensate the previous NEP1986 which failed to improve the quality of education in terms of creating graduates with employability skills and to generate research outputs.The various proposals made in the NEP 2020 has radically transformed the entire system of our education into a vibrant knowledge society and global knowledge superpower.The NEP suggest several reform measures as according to the policy; the existing system of education is fragmented with less emphasis on the development of cognitive skills and learning outcomes and rigid separation of disciplines. The new NEP deals with school education and higher education extensively and provides key targets to ensure sustainable development. The important points of the policy are as follows:

School Education

The new system tries to accommodate the different needs of the students which the previous system fails to do. One of the notable change is that the current form of 10+2 structure will be transformed to new 5+3+3+4 structure, with a strong base of Early Childhood Care and Education (ECCE) from age 3 to ensure the multi-faceted development of a child by optimizing learning outcomes. Secondly, the new education system aims to achieve universal foundational literacy and numeracy in primary school by 2025.To achieve this goal, there is a proposal to set up a National Mission on Foundational Literacy and Numeracy by Ministry of Education on priority. The policy also tries to achieve 100% Gross Enrolment Ratio in preschool to secondary level by 2030 by bringing all those children who have left behind the world of education. It also tries to bring reforms in curriculum, pedagogy and assessment. Educational content which imparts 'traditional Indian values and constitutional values' will be added in the curriculum. It also include contemporary subjects such as artificial intelligence, holistic health, design thinking, at the "relevant stages". The wide choice of subjects along with no hard separation among different subjects and disciplines is a welcome step. There is a also a provision for vocational training along with internships during school.The new education policy will make way for learning with critical thinking along with 'discovery-based, discussion –based and analysis –based' learning. The policy also aims to promote multi - lingualism and learning of native languages. According to the policy,wherever possible, "the medium of instruction until at least grade 5,but preferably till grade 8 and beyond will be the home language/mother tongue/local language/regional language''to be followed in both public and private schools. The policy will also implement the three –language formula with one language being Sanskrit, but with some flexibility and no language will be imposed on any state. It lays great importance on 360-degree assessment reforms, tracking student progress in learning outcomes. The availability of e- courses in regional languages for education

planning, teaching, administration and regulation is also a good step. And also, the policy proposes to set up PARAKH (Performance Assessment,Review and Analysis of Knowledge for Holistic Development),a national assessment centre, as a standard - setting body under Ministry of Education for all recognized school boards of India.

Higher Education

The NEP 2020 also focused on systematic and structural changes in higher education. Given the 21st century requirements, quality higher education must aim to develop good, thoughtful,well- rounded and creative individuals. The multi-disciplinary approach that is introduced at the school level is continued in higher education which is clearly aligned with global standards for accelerating the professional pace of learners. Policy suggests that by 2040, all higher education institutions shall aim to become multi-disciplinary institutions. A format for re-modelling the existing affiliated colleges into three types of institutions- research- intensive universities, teaching intensive universities and degree colleges will be developed. The discourse on higher education has changed drastically with a focus on multi–disciplinary initiatives and research oriented growth. The proposed National Research Foundation will promote community-oriented research that has national importance. The policy suggests, a new structure of higher learning where the 3 years of graduation has been upgraded to 4 years with a provision for multiple entry and exit options within this period, with appropriate certifications.Higher Education Institutions (HEIs) will have the flexibility to offer different designs of Master's programs. The M. Phil programme has been discontinued and the new system allowed the possibilities of pursuing PhD program after either the master degree or a 4 –year Bachelor's degree with research.An Academic Bank of Credit (ABC) will also be established, which will digitally store the academic credits earned from various recognised HEIs, thus enabling the students to avail degree from an HEIs taking into account credits earned previously. It also focus on creating a 'light but tight'regulation system by setting up the Higher Education Commission (HECI) as a single regulator for entire higher education (excluding medical and legal education). This policy also aims to set up effective and responsive rules and regulations to encourage academic excellence and public hope in higher education. The NEP also focus on ensuring growth in both public and private institutions,with a strong emphasis on developing a large number of outstanding public institutions.

Teacher Education

The new national education policy envisages a competency based model for teachers and –teaching in the form of a tenure-track system and emphasises the continuous professional development of teachers. It has proposed the establishment of a common guiding set of National Professional Standards for Teachers (NPST) by 2022.It also proposes to set the 4year integrated B.Ed as the minimum educational qualification for teachers by 2030.In addition, a new and comprehensive National Curriculum Framework for teacher education,(NCFTE),will be formulated by NCTE, in consultation with NCERT, by 2021.

Other Changes

- The NEP proposes a National Educational Technology Forum (NETF) to provide a platform for the free exchange of ideas on the use of technology to enhance learning, assessment,planning and administration.
- It also encourages the foreign universities to set up campuses in India and also top Indian educational institutions will be encouraged to go global.
- Gender Inclusion Fund shall be set up to build the nation's capacity to provide equitable and quality education to all girls and transgender students.
- For supporting socio-economically vulnerable groups, Special Education Zones will be set up.
- An Adult Education Curriculum Framework will be developed by a new and well – supported constituent body of the NCERT along with necessary infrastructure that enables lifelong learning.
- The NEP also aims to increase the public investment in Education sector from 4.6 % to 6 % of GDP.

Challenges of New Education Policy

NEP will try to strengthen the basics of providing value –based education holding the virtues of ancient education. Though, it aims to provide opportunities for equitable and qualitative developments aligned to cultural contexts and global possibilities, some of the proposals face challenges. The extension of free and compulsory education from pre-school to secondary levels is welcome and overdue; yet one wonders how the costs of doing this will be met. There is a lack of sufficient clarity regarding curricular, pedagogical and teacher –education related issues that disrupt the teaching and learning of early literacy. Though the policy aims to break the monopoly of English medium schools through the inclusion of three –tier language system, in reality to implement this will require sufficient political will which seems to be a difficult task. The policy stresses the need for changing the perception of vocational education which would result in sustaining and furthering the existing inequalities in access to education. The said provision for the inclusion of vocational education from class six will lead to more drop out and students opting for low –skilled jobs at young age. And also, the policy does not discuss about how to prepare teachers to successfully teach foundational literacy in am multi –lingual country. Instead, it recommended the recruitment of volunteers and community members to support the matter of early literacy. Though volunteers are helpful,it cannot be a driving force to deliver basic education to students.The choice –based system will put enormous stress on the parents and students as they need proper guidance to make use of wise choices so as to ensure optimal learning outcomes. The policy fails to address the role of the private sector in school education which is somewhat disappointing. The studies indicates that,nearly two –thirds of all schools are under private management,and the enrolment of students in private schools are increasing every year.Thus,it could been an opportunity to introduce a regulated frame work for ensuring recognition for private schools,though it is far away from the reality.Also,the execution of all the provisions of NEP will require a huge budget which is estimated to be 6 percentage of GDP. As our economy is passing through depression stage, with a present education budget less than 1 percent of our

GDP,it is obviously a difficult task to mobilise the funds.Especially when in the coming years health care and defence sectors are set to demand more expenditure. Moreover, the suggestion to spend 6 % of the GDP on education is there since the Kothari Commission which still remains as an unachieved goal.Also, as Education is being included in the concurrent list of our constitution, there remains a huge task for consensus- building among states. The draft has robbed the states by creating an excessively centralized structure of authority and vesting powers with Prime Minister –led Rashtriya Shiksha Aayog. Though the new national educational policy paves a new way for revamping our existing education system, the success of it depends on judicious use of available facilities and proper and effective implementation.

Further Suggestions for Improvements

- Removal of obsolesce in Higher Education System
- Higher education leaders should be role models in Research and innovation.
- Ph. D should be compulsory qualification for a permanent teaching position in colleges and Universities.
- Use of services of retired Professors as research guides.
- Compulsory faculty annual publication leading to IPR.
- Compulsory publication during post-graduation courses.
- Promotion to open access publication with retention of copyright with authors.

Conclusion

Education is an important element in deciding the shape of our future economy. The nation's government is responsible for offering numerous possibilities of higher education .National Education Policy 2020 is such a progressive policy which aims to address many growing developmental imperatives of our country .The NEP can be seen as a continuum of the ideals and principles laid down in the constitution, as the NEP itself claims to" build an equitable ,inclusive, and plural society" It will encourage our students to grow and create our youth to fly with wings of opportunities and growth ,making India to be self-reliant Bharat .Hence ,NEP 2020 is opening up India's new doors to the world, and build a better India for centuries to come if its properly implemented.

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METHOD FOR SOLVING CERTAIN ALGEBRAIC EQUATIONS BY ADOMIAN DECOMPOSITION

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Abstract

Differential Algebraic Equation (DAEs) systems are considered in this paper using the Adomian decomposition process, the approximate solutions for differential algebraic equations (DAEs) systems are obtained. Two examples of differential algebraic equations (DAEs) systems are shown in the method and series solutions are obtained. The solutions were contrasted with those obtained by precise solution

Keywords: Differential-Algebraic, Equations (DAEs), Adomian Decomposition Method.

1. Introduction

In a wide range of scientific and engineering applications, DifferentialAlgebraic Eq uations (DAEs) can be found, including circuit analysis, computeraided design and realti me simulation of mechanical (multibody) structures, power systems, stimulation of che mical processes and optimal control. In terms of differentialalgebraic equations, several significant mathematical models can be represented (DAEs). Much research has been fo cused on the numerical solution of differential-algal systems in recent years.

Differential-algebraic equations (DAEs) are the most common type given by

$$F(x, y, y') = 0 \qquad (1)$$

With initial values

$$y(x_0) = y_o y'(x_0) = y_1$$

Whereand y are a function of the vector for which we assumed adequate differentiability

$$\partial F / \partial y'$$

Where F and y are a function of the vector for which we assumed adequate distinguishab ility.It may be,

This Jacobian matrix's rank and structure may be generally, it depends on the solution y(x) and we will always assume that for simplicity. The fact that it is independent of x. Th e significant special case of semiexplicit algebraic differential equations (DAEs) or an O DE with constraints,

$$y' = f(x, y, z)$$
$$o = g(x, y, z)$$

This is a special case of (1). Index is 1 if $\partial g/\partial z$ is non singular because then one differentiation of 2(b) yields z'in principle. For the semi-explicit index-1 ADE. We can distinguish between differential variables y(x) and algebraic variables z(x).

The algebraic variables per one derivative may be less smooth than the differen tial variables. In the semiexplicit form, differentialalgebraic equations (DAEs) (1) can b e written.

For example, in circuit analysis, chemical process simulation, power systems, and many other applications, these types of systems occur.The Adomian method of deco mposition has been extended to physics problems, Biology and reactions to chemicals. S ubsequently, the application of Adomian's decomposition technique to solve a wide clas s of nonlinear equations has been of great interest, including algebraic, differential, parti aldifferential, differentialdelay anIntegrodifferential equations [2,]. We applied the deco mposition method of Adomian to the approximation solution of the differential-algebraic equations system (DAEs).

2. Adomian Decomposition Method (Adm)

Consider the Differential Equation

$Lu + Ru + Nu = G(x)$ (2.1)

Where N represents non-linear factor, L represents the highest order derivative which is supposed to be invertible and R represents a linear differential factor, whose order is less than L. From (2.1), we obtain

$Lu = G(x) - Ru - Nu$ (2.2)

As L is invertible, therefore L^{-1} exists. Multiply Equation (2.2) with L^{-1}, we obtain

$L^{-1}Lu = L^{-1}G(x) - L^{-1}Ru - L^{-1}Nu$ (2.3)

After simplification, from (2.3), we obtain

$u = C + Dx + L^{-1}G(x) - L^{-1}Ru - L^{-1}Nu$ (2.4)

where C and D are constants of integration and can be obtained from the initial or boundary conditions. Adomianmethod approximate the solution of Equation (2.1) in the form of infinite series

$$u(x) = \sum_{n=0}^{\infty} u_n(x) \tag{2.5}$$

and decomposing the non-linear operator N as

$N(u) = \sum_{n=0}^{\infty} A_n$ (2.6)

where A_n represents the Adomian polynomials as discussed in [19, 20] and are given by

$$A_n = \frac{1}{n!}\frac{d^n}{d\lambda^n}\left[N\left(\sum_{i=0}^{\infty}\lambda^i u_i\right)\right]_{\lambda=0}, \quad n = 0,1,2,\ldots$$

Substituting (2.5) and (2.6) into (2.4) we get

$$\sum_{n=0}^{\infty} u_n = C + Dx + L^{-1}G(x) - L^{-1}R\left(\sum_{n=0}^{\infty} u_n\right) - L^{-1}\left(\sum_{n=0}^{\infty} A_n\right).$$

The recursive relationship is found to be

$$u = G(x)$$

$$u_{n+1} = -L^{-1}Ru_n - L^{-1}A_n$$

Using the above recursive relationship, we can make solution of u as

$u = \lim_{n\to\infty} \Phi_n(u)$, (2.7)

where

$$\Phi_n(u) = \sum_{i=0}^{n} u_i$$

3. Convergence Anylasisof Adomian Decomposition Method

Consider the equations $u''(t) = F(t,u)$ with $u(0) = u_0,\ u'(0) = u_1$. This equation can be written as:

$$u'' = Lu + N(u), \qquad t > 0,\ u(0) = F,\ u'(0) = F'$$

where $L: T \to X$ is a linear operator of form a Banach space T to a Banach space $X(T \subseteq X), N(u): T \to T$ is a nonlinear function on the Banach space T and $F, F^{-1} \in T$ are initial data. Suppose the functional equation is defined as

$$u = u_0 + u_1(t) + F(u), \qquad u \in T$$

where T is a Banach space and $F(u): T \to T$ is analytic near the initial conditions u_0 and u_1.

$$\left.\begin{aligned} U_n &= u_0 + u_1(t) + \sum_{k=2}^{n} u_k \\ F(U_n) &= \sum_{k=0}^{n} A_k(u_0, u_1, \dots, u_k \end{aligned}\right\}$$

The Adomian decomposition method is equivalent to determining a sequence $\{U_n\}_{n\in N}$ from the following equations

$$\left.\begin{aligned} U_0 &= u_0 + u_1(t) \\ U_{n+1} &= u_0 + u_1(t) + F_n(U)_n, \qquad n \geq 0 \end{aligned}\right\}$$

If the limits

$$\left.\begin{aligned} U &= \lim_{n\to\infty} U_n \\ F &= \lim_{n\to\infty} F_n \end{aligned}\right\}$$

exist in Banach space T, then U solves the fixed point equation $U = u_0 + u_1(t) + F(y)$ in T . It is also assumed that the following condition holds

$$\left.\begin{aligned} \|F(u)\|_T &\leq 1, \qquad \forall\, u \in T \\ &and \\ \|F_n(U_n) - F(u)\|_r &\to 0\ as\ n \to \infty \end{aligned}\right\}$$

These two conditions are rather restrictive. The first condition implies a constraint on the nonlinear function $F(u)$ and the second condition implies convergence of the series of Adomian polynomial to the locally analytic function $F(u)$.

Numerical Observation

In this section, we present some numerical examples to illustrate the accuracy of proposed method

Example 1
Consider the equation

$$-x^2 + 5x + 6 = 0$$

Whose solutions are $x = -1$ and $x = 6$.Write it in the form
$5x = -6 + x^2$,

$$x = -\frac{6}{5} + \frac{1}{5}x^2$$

Apply the Decomposition approach we have

$$x_0 + x_1 + x_2 + \cdots = -\frac{6}{5} + \frac{1}{5}\sum_{n=0}^{\infty} A_n$$

$$x_0 + x_1 + x_2 + \cdots = -\frac{6}{5} + \frac{1}{5}A_0 + \frac{1}{5}A_1 + \cdots$$

Matching both sides, as was done in the previous example, the latter scheme yields the following first five values of the iterates

$$x_0 = -1.2000,$$
$$x_1 = 0.2880,$$
$$x_2 = -0.1382,$$
$$x_3 = 0.0829,$$
$$x_4 = -0.0557,$$
$$x_5 = 0.06790$$

n-Term Approximation $\sum_{k=1}^{n-1} x_k$	**Numerical Solutions**	**Absolute Errors**
$n = 1$	-1.200	0.200
$n = 2$	-0.912	0.088
$n = 3$	-1.050	0.050
$n = 4$	-0.967	0.032
$n = 5$	-1.023	0.023
$n = 6$	-0.983	0.017

Table 1.1 Comparison of the n-th term approximation of ADM to the exact solution x

From the numerical results in Table 1.1, it is clear the scheme yields numerical values that converge pretty fast to the smaller root, which is $x = -1$.

Example 2
Consider the fifth order Algebraic equation

$$x^5 - 3x^4 + 2x^3 + 5x^2 - 6x - 4 = 0,$$

Whose equations are $x = 1.76518195942719, x = -1.09890396313245$ and
$x = -0.528896048966185$

Write it in the form

$$6x = x^5 - 3x^4 + 2x^3 + 5x^2 - 4,$$
$$x = -\frac{4}{6} + \frac{5}{6}x^2 + \frac{2}{6}x^3 - \frac{3}{6}x^4 + \frac{1}{6}x^5,$$

Applying the decomposition approach, we have

$$x_0 + x_1 + x_2 + \cdots = -\frac{4}{6} + \frac{5}{6}\sum_{n=0}^{\infty} A_n - \frac{2}{6}\sum_{n=0}^{\infty} B_n - \frac{3}{6}\sum_{n=0}^{\infty} C_n + \frac{1}{6}\sum_{n=0}^{\infty} x_0 + x_1 + x_2 + \cdots$$
$$= -\frac{4}{6} + \frac{5}{6}A_0 + \frac{2}{6}B_0 - \frac{3}{6}C_0 + \frac{1}{6}D_0 + \cdots$$

Where A_n,B_n,C_n and D_n are Adomian polynomials.
Matching both sides, as was done in previous examples, the later scheme yields the the following the first four values of the iterates

$$x_0 = -\frac{4}{6} = -0.6666666667,$$
$$x_1 = \frac{5}{6}x_0^2 + \frac{2}{6}x_0^3 - \frac{3}{6}x_0^3 - \frac{3}{6}x_0^4 + \frac{1}{6}x_0^5 = 0.1508916324,$$
$$x_2 = \frac{5}{3}xx_0 + x_1^2x_0 - 2x_1^3x_0 + \frac{5}{6}x_1^4x_0 = 0.0136609708,$$
$$x_3 = \frac{5}{3}xx_0 + \frac{5}{6}x_2^2 + \frac{5}{6}x^4x_0 + \frac{5}{3}x^3x^2 - 2x_1^3x - 3x_0^2x_2^2 + x_0^2x_1 + x_0x_2^2$$
$$= -0.03656980055.$$

Consequently, the solution in a series form is given by

$$x = x_0 + x_1 + x_2 + x_3 + \cdots = -0.5386838640$$

Conclusion

The purpose of this paper is to implement the Adomian's decomposition method to system of differential-algebraic equations(DAEs). The Adomian decomposition method is that the solution expressed as an infinite series converges very fast to exact solutions. Results have been found very accurate when they are compared with analytical solutions.

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GENDER DIFFERENCES ON INTERNET USERS AMONG UNIVERSITY STUDENTS

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Abstract: Present study was designed to investigate the gender differences (if any) among internet users. To realize the main objective of the study, total sample of 80 participants was drawn from university's Post Graduate Departments. The sample comprised 40 males and 40 females with the mean ages of 25.6 and 23.9 years respectively. Internet Addiction Test developed by Kimbel Young (1998) was administered after complying the rules as suggested by author. Obtained data was analysed using by descriptive statistics (Mean, SD, SK, and KU) and t-ratio. Descriptive statistics reveal the normalcy of data distribution except some minor discrepancies. t-ratio showed that males are to be higher on internet addiction scale as compare to females (t=3.58<.00). It depicts that males tend to be high on internet addiction as compare to females. For more generalization, large scale studies are required because review of literature reveals that contradictory findings have been explored by several researchers (Beranuy et al., 2009; Gnisci et al., 2011; Wu & Zhu, 2004b; Chiu et al., 2013; Li et al., 2010; Lin et al., 2011; Yu et al., 2013; Aylaz et al., 2015; Anderson et al., 2017; Su et al., 2019).

Keywords: Internet Addiction, Gender.

Introduction

Initially the concept of 'Internet Addiction' was introduced by Goldberg (1996) and extended by other researchers (Young, 1998; Shapira et al., 2003; Greenfield, 1999; Musetti et al., 2016). Young (1996) suggested the similarity between nature of pathological gambling and internet use, and defined it an impulse-control disorder without involving an intoxicant. He also developed screening instrument consisted of eight items for diagnostic criteria and Internet Addiction Test to assess the level of internet addiction among internet users. Pies (2009) stated the inability of individuals to control their internet use, resulting in marked distress and/or functional impairment in daily life. Some of the countries (China, South Korea) have identified it problematic factor for health and suggested to do related researches. Shaw and Black (2008) explained internet addiction in terms of excessive or poorly controlled preoccupations, urges or behaviours regarding internet use that cause to impairment or distress.

Similarly, many other researchers have also found similar activities among internet users as in addictive of drugs, alcohol and gambling. Activities may be sketch in terms of academic failure (Brady, 1996; Murphey, 1996); reduced work performance (Robert Half International, 1996), and even marital discord and separation (Quittner, 1997). In the area of clinical psychology, compulsive gambling (Mobilia, 1993),

overeating (Lesieur & Blume, 1993), and compulsive sexual behavior (Goodman, 1993) are studied, and these behaviours may relate with criteria of internet addiction. As, some of the researchers (Griffiths, 1996; Shotton, 1991; Kubey & Csikszentmihalyi, 1990; McIlwraith et al., 1991; Keepers, 1991) have applied the similar criteria on technological overuse, computer dependency, excessive television viewing, and obsessive video game playing.

Many demographical and psychological correlates and other issues have been studied in relation to internet addiction. Chao et al. (2005) suggested that since 1996 many research issues related with internet addiction are studying. These issues are (1) Internet use and time, (2) related problems of Internet addiction, (3) gender differences in Internet addiction, (4) Internet addiction and social-psychological factors, and (5) Internet addiction and attitudes toward computers. Research findings have depicted that internet addiction relates with age, gender, occupation, and total online time (Zhong et al. 2011; & Samarein et al., 2013). Psychological measures such as-self-reliance, a strong preference for solitary activities, lack of social conformity, emotionality, sensitivity, vigilance (Young & Rodgers 1998), need for cognition, information communication and technological innovativeness (Zhong et al., 2011), social isolation, low self-esteem (Tsai et al., 2009), aggression, impulsivity (Kim et al., 2008), neuroticism, extraversion, agreeableness and conscientiousness (Samarein et al., 2013) have been investigated in several studies. Literature reveals that internet addiction has been dominantly studied in relation to Cattellian personality factors (Young & Rodgers, 1998) and five personality factors of Five Factor Model (Swickort et al, 2002). Kumar and Singh (2014) examined the personality correlates of internet addiction. They found that neuroticism-anxiety, aggression-hostility and impulsive sensation seeking correlates positively, and sociability and activity negatively with internet addiction.

Present study has also empirically endeavoured to explore gender differences among internet users of university students. In view of gender differences, studies reported that men (71%) are more dependent internet users as compare to women (29%) (Scherer, 1997). Morahan-Martin and Schumacker (2004) investigated that males were high on pathological symptoms as compare to females. Literature also revealed that men and women not differed in case of time online and number of related problems (Brenner, 1997). Zhang et al. (2010) found that males scored lower than females on internet addiction related protective features and higher on internet addiction related potential risk factors. Although, it has also observed that female adolescents take family supervision than males which may help to avoid much time internet related activities (Yu & Sheck, 2013). Lin et al. (2011) investigated that males use the activities of high internet addiction i.e. online games or cyber sexual activities. In contrary, several studies reported the different findings. Sun and colleagues (2012) studied the cultural differences and found that in Chinese samples, males scored higher on internet addiction prevalence as compare to females (male 15.7% v/s females 5.8%), and in US samples, (male 7.3% v/s female 9.7%). Aylaz and associates (2015) examined that females scored higher as compare to their counterpart on a sample of Turkish high school students. Recently, Su et al. (2019) did meta-analytic study on 115 independent samples from 34 countries/regions. They found that males had higher level of internet addiction in general as compare to females (g=0.145). They also reported that the regions of Asia,

North America, Europe, and Africa with Egypt have effect size 0.208, -.049, .114 and .092 respectively. In review, most of the studies claim that males tend to be high on internet addiction related activities as compare to females, and few of the studies do not support. Hence, present study has also designed to examine the gender differences among internet users.

Research Method

Sample*:* Eighty Post Graduate students of various P.G. Departments of CRS University participated in the present study. Total sample consisted of 40 males and 40 female students. Age ranged between 20 to 27 years for males and 20 to 26.5 for females with mean ages of 25.6 and 23.9 years respectively. Participants were selected from the streams of sciences, social sciences, arts and humanities. The sample included the subjects who obtained more than 20 score on Internet Addiction Test.

Measure: Internet Addiction Test (Young, 1998) consists of twenty items on which respondent rates himself or herself on a five-point Likert scale. It contains some aspects of behaviours related with daily life, social life, productivity, sleeping pattern, and feelings. Composite raw score is obtained by adding up the scores for each item. The minimum score is 20, and the maximum is 100 which means higher the score, the greater the problems internet use causes. Young suggests that a score of 20-39 points is an average online user who has complete control over his/her usage; a score of 40-69 depicts frequent problems due to internet usage; and a score of 70-100 means that the internet is causing significant problems. Widyanto and McMurran (2004) suggests that six factors can be obtained from this test i.e., salience, excessive use, neglect work, anticipation, lack of control and neglect social life having Cronbach's standardized alpha reliabilities ranging from .54 to .82. This test has been used in several studies and translated, and findings claim satisfactory psychometric properties.

Administration and Procedure

The researchers contacted to all the participants personally in their respective Departments and established the rapport with making them aware of the purpose of the study. Then test was administered and scored strictly following the instructions specified in the respective test manual. Only composite score as prescribed by author was obtained for analysis. Obtained data was set up in data matrix and further used for required statistical analyses. Data was analysed with the help of SPSS Version 20 (Statistical Package for Social Sciences) and obtained findings were reported and discussed in the sections of Results and Discussion.

Results

To achieve the objective of the study, obtained data was analysed by applying descriptive statistics and t-ratio. Results are reported in Tables 1 & 2.In view of the descriptive statistics, mean, standard deviations, skewnesses and kurtoses were calculated and reported in Table-1. Table-1 reveals that data meets the requirement of normalcy except some minor discrepancies. Hence, data may be used for t-ratio.

Table-1
Descriptive statistics on the measure of Internet Addiction

Descriptive Statistics	Male Data (N=40)	Female Data (N=40)
Mean	37.93	24.70
SD	18.68	14.54
Sk	-.15	.96
Ku	-1.18	1.19

To calculate t-ratio, mean values of males and females data are used and analysed. Results show in Table-2. Mean difference and S_{Ed} values are 13.23 and 3.69 respectively. Male students scored higher than female students on the measure of internet addiction. Then, t-ratios is found 3.58 which is significant (t=3.58<.00") at .00 level of significance. Significant t-ratio depicts that males tend to be high on internet addiction as compare to females.

Table -2
Gender Differences on Internet Addiction

	Mean	SD	Mean Difference	S_{Ed}	t-ratio	Significance
Male	37.93	18.68	13.23	3.69	3.58	.00
Female	24.70	14.54				

Discussion

In discussion, it has found that males are more prone to internet addiction comparatively to females. Findings of the present study also support the findings of earlier studies. Although, findings can not be generalize because review of literature shows different findings on gender differences. Anderson and associates (2017) reviewed the findings of seven different cultures and found that males are high on risk of internet addiction as compare to females. Meta analytic study of 115 independent samples from 34 countries/regions showed significant gender differences on internet addiction related activities in favor of male participants, and other correlates were also investigated like potential economic, sociocultural and psychological (Su, et al., 2019). Other researchers (Sun et al., 2012; Aylaz et al., 2015) have investigated the contrary findings. More recently, Wang and colleagues (2019) reported that females showed different vulnerabilities to internet gaming disorder than males. In conclusion, related review of literature clearly reveals the contradictory findings explored in different studies. Hence, issue of gender differences is still debatable, needed to be further studied considering the more related variables at large scale.

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ARELATIVE STUDY OF THE INDIAN CAPITAL MARKET (BSE) WITH THE REFERENCE OF TWO INTERNATIONAL STOCK MARKET

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Abstract
This research paper is result of my original work from the internship project which I have prepared for my MBA degree. The stock market is observing heightened activities and is increasingly gaining importance. In the current context of global markets this paper captures the trends, similarities in the activities and movements of the Indian capital market with two international stock market. The Purpose of this study is to evaluate about which stock exchange have the highest and lowest number of fluctuations. This study covers Indian capital market means Bombay stock Exchange (BSE), New York Stock Exchange (NYSE), Tokyo Stock Exchange from the various economic background. Time period has been divided into various years to test the correlation between the various exchanges to prove that the Indian capital Market have become more integrated with its global counterparts. For the purpose of the study, the secondary data has been collected from book, internet, etc., Data Analysis shows the Index Value, High Value and Low Value of given Stock Market.

Keywords: Capital Market, BSE, Movements, Fluctuations between BSE-NYSE

Objectives

The basics objective of the research will be to study the comparison between Indian stockmarket with two international stock market. For this purpose, the following objectiveshave been framed.

- To study about selected stock exchange.
- To study and evaluate which stock exchanges have the highest and lowest number of fluctuation.
- To relate the data of two international stock exchanges with the data of Indian stock exchange.
- To detect the correlation between economic growth of each country and market index.

Introduction

The information about “A relative study of the Indian capital market (BSE) with twointernational stock markets.” This topic is introducing about three stock exchanges are BSE,NYSE and Nikkei. The performance of the stock market is an indicator of the economyonmultiple levels. At the face of it, the indices show the facts and figure soft he pricesmovements in the markets. At deeper level stock market reacts to economic crises. Thus,comparison of the data of stock markets can help develop useful insight into the differenceand similarities in the way stock markets.

Stock Market

It is a place where shares of pubic listed companies are traded. The primary market iswhere companies float shares to the general public in an initial public offering (IPO) to raise capital. A stock market refers to public markets that exist for issuing, buying, and selling stocks that trade on a stock exchange or over-the-counter. Stock also known as equities, represent fractional ownership in a company, and the stock market is a where investors can buy and sell ownership of such investible assets.

The Stock Exchanges under Consideration

Bombay Stock Exchange

"The Bombay Stock Exchange(BSE) is an Indian stock exchange located at Dalal Street, Kala Ghoda, Mumbai, Maharashtra, India.""Established in 1875, the BSE in Asia's First stock exchange, it claims to be the World's faster stock exchange, with a median trade speed of 6 microseconds. The BSE is the world's 11th largest stock exchange with an overall market capitalization of more than$2Trillion as of July, 2017. More than 5500 companies are publicly listed on the BSE oft hese, as of November 2016, they are only 7,800 listed companies of which only 4000trade on the stock exchanges at BSE and NSE. Hence the stocks trading at the BSE and NSE account for only about 4% of the Indian economy."

"BSE100 is significantly correlated with the stock indices of emerging markets. The S&P7BSE Small Cap Index accounts for 45% of the annual turnover, while the S&P BSE midCap Index and the S&P BSE Large Cap Index account for 21% and 30%respectively."Today, BSE is the world's number one exchange in terms of the number of listed companiesand the world's 5th in transaction numbers. The market capitalization as on December 31,2007 stood at USD 1.79 trillion. An investor can choose from more than 4,700 listedcompanies, which for easy reference, are classified into A, B, S, T and Z groups.The BSE Index, S&P BSE SENSEX, is India's first stock market index that enjoys aniconic stature and this tracked worldwide. It is an index of 30 stocks representing 12 majorsectors. The S&P BSE SENSEX is constructed on a "free-float" methodology, and issensitive to market sentiments and market realities.

New York Stock Exchange

The New York Stock Exchange (NYSE, nicknamed "The Big Board") is an AmericanStock exchange located a 11-wall street, Lower Manhattan, New York City, New York. Itis world's largest stock exchange by market capitalization of its listed companies atUS$30.1 trillion as of February2018. The average daily trading value was approximatelyUS169 billion in 2013. The NYSE trading floor is at located at 11 Wall Street and iscomposed of 21 rooms used for the facilitation of trading. An additional trading room,located at 30 Board Street, was closed in February 2007. The NYSE is owned byIntercontinental Exchange, and American holding that is also lists (NYSE: ICE).Previously, it part of NYSE Euronext (NYX), which was formed by the NYSE"s 2007merger with Euronext. The New York Stock Exchange is the world's largest securitiesexchange. It provides a marketplace for buying and selling 9.3 million corporate stocksand other securities a day. The NYSE lists 82% of the S&P 500, 90% of

Dow JonesIndustrial Average, and 70 of the world's largest corporation. It is, itself, a publicly- tradedcompany with almost 3,000employees.

Tokyo Stock Exchange

The Tokyo Stock Exchange (TSE) is the largest stock exchange in Japan, headquartered inits capital city of Tokyo. The Tokyo Stock Exchange was established on May 15, 1878.As of June 2020, the exchange has over 3,700 listed companies, with a combined marketcapitalization of greater than $5.6 trillion. At first, government bond, gold, and silvercurrencies formed the bulk of the exchange's trade, but, with the growth and modernization of Japan's economy, trading in stocks has come to predominate bythe1920s."In July 2012, a planned merger with the Osaka Securities Exchange was approved by the Japan Fair Trade Commission. The resulting entity, the Japan Exchange Group (JPX), was launched of January 1, 2013." "Stocks listed on the TSE separated into the First Section for large companies, the Second Section for mid-sized companies, and the Mothers (Market of the high-growth and emerging stocks) section for high growth start-up companies and 182 Mothers companies.The main indices tracking the TSE are the Nikkei 225 index of companies selected by theNihon Keizai Shimbun (Japan's largest business newspaper), the TOPIX index based onthe share prices of First Section companies, and the J30 index of large industrialcompanies maintained by Japan's major broad sheet newspaper."

Literature Review

- **Paramati and Gupta (2011)** Researched upon the comparison between Indian stock exchange with two international stock exchange and performance of country stock markets and their corresponding relationship with economic growth in the country. The study of this data was conducted in the duration between April1 996 and March 2009. Using a series of different test, the study was finding that in the short run, there was a relationship between economic growth and stock prices in the country.
- **Scholl hammer and Sand (1985)** He researched the inter-dependence of stock markets across the world. For this research he concentrated on the markets of major countries of Europe – contrast against United States in an actual investigation. This was the first extensive works to study the relation of Indian stock exchange with different countries. Further the farmer countries also showed a positive indication towards a relation with the markets of the US.
- **Varadharajan and Vikkaraman (2011)** Researched on the impact of pre and post Budget on stock market volatility. The secondary data collected from four major indices between 2001 to 2011. The result of this paper showed that April, May and October were the more volatile months during the study. Also researched that NSE give the high return to the investors should be more attention during the volatile months.
- **Rajput et al. (2013)** Focused the future trading and its impact on volatility of Indian stock market. Bi-variant E- GARCH and unit root techniques were used to fetch the result. The paper found the uni-directional relationship between future

trading and spot market. Finally, the study concluded that spot and future market were improved the risk management and investment decision of the agent.

- **Pathak Manish (2013)** Highlighted the stock market seasonality effect. The secondary data used in the study were collected from closing prices of the NSE index during the period from 1st April 2002 to 31st March. One way ANOVA test were used to achieve the objective. The result of this study revealed that there was no seasonality present in the daily and monthly return of the market.
- **Chander and Kumar (2016)** Studied that seasonality Effect in BSE SENSEX from 1st April 2005 to 31st March 2015. Descriptive statistics were used to compile the data. The paper suggested that BSE SENSEX in India was not free from seasonal anomalies despite increased use of advanced information technology and numerous regulatory frameworks.
- **DebjbanMukharjee, T.A Pai management Institute Manipal India,** He founded that the popular belief that the markets in general and Indian market in particular is more integrated with other global exchange from 2002-03 onwards. This can very well be seen since the south Asian crisis of the mid-late barely affected us due to government policies and was just making the transition
- **Dr. Vijay Agarwal, Associate Professor BIT Mesra**They found that the correlation of stock return of India with five other Asian countries. There exists a very weak correlation between the Indian market and Hong Kong, Indonesia, Malaysia and Japan. Comparatively higher correlation was found between the Indian and the Korean markets, which seemed to have weekend in the short run. Hence it can be said that the Indian markets offer diversification benefits to international investors looking for investments.
- **Hiard and Asimakopoulos (1997)** investigated the interrelationship between daily return generated by major stock exchanges. Evidence found that strong interdependence exists between the daily returns generated by United States and other selected major world indices.
- **Chaplinsky and Hansen** Suggested that the indifference stock market reaction was partly on account of market expectation of debt issue. They find significant negative stock price reaction to debt issue announcement after controlling for market expectation However, the fall in price in case of debt issue announcement has been found to be lower than that of fall in the case of stock issue offerings.

Research Methodology

1. Type of Research Method

This study is based on quantitative and qualitative study.

Quantitative and Qualitative Research Method

Quantitative researched is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms quantity. Qualitative research on the phenomena i.e., phenomenon relating to or involving quality or kind. This type of research aims at discovering the underlying motives and desires, using depth research. The proposed study in quantitative in nature with scope for inference that is also qualitative in nature. For this topic, “A comparative study of the Indian stock market

with two international stock markets" applied quantitative and qualitative research methodology.

2. Type of Data Collection

Secondary Data: The present study was based on the secondary data, which has been collected from daily closing price of BSE, NYSE and Nikkei stock exchange covered a period between 2017 to 2020. The data to be used in this study are from the official website of the respected stock exchange and is secondary in nature. And secondary data also collected from books, journals, and different websites

3. Limitations of Study

- The time period is limited for the study.
- Limited access to data
- Issues with sample and selection.
- Lack of previous research studies on this topic.

4. Sample Technique

Sample technique is the technique that used to select sample size. In the research we havechoose a sample of Stock market data.

5. Sample Size

We have used three years data for this research from 2017-2020.

Hypothesis

- **Null Hypothesis(H0)** – There is no significant relation between the index value and movements of BSE with NYSE and Nikkei

- **Alternate Hypothesis(H1)** - There exists a relation between the index values and movements of BSE with NYSE and Nikkei

Statistical method used for proving hypothesis

- Correlation
- Regression by using Microsoft Excel as a tool.

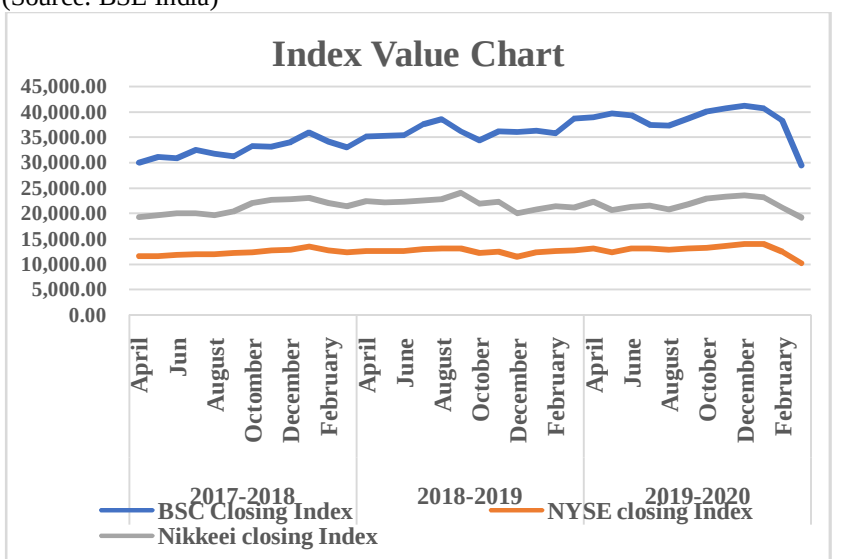
Data Analysis and Interpretation

Table 1 – INDEX VALUE OF BSE, NYSE AND NIKKEI

Index Value				
Period	**Month**	**BSC Closing Index**	**NYSE closing Index**	**Nikkeei closing Index**
2017-2018	April	29,918.40	11,536.08	19,196.74
	May	31,145.80	11,598.03	19,650.57
	Jun	30,921.61	11,761.70	20,033.43
	July	32,514.94	11,967.67	19,925.18
	August	31,730.49	11,875.69	19,646.24
	September	31,283.72	12,209.16	20,356.28
	October	33,213.13	12,341.01	22,011.61
	November	33,149.35	12,627.80	22,724.96

	December	34,056.83	12,808.84	22,764.94
	January	35,965.02	13,367.96	23,098.29
	February	34,184.04	12,652.55	22,068.24
	March	32,968.68	12,308.90	21,454.30
2018-2019	April	35,160.36	12,515.36	22,467.87
	May	35,322.38	12,527.14	22,201.82
	June	35,423.48	12,504.25	22,304.51
	July	37,606.58	12,963.28	22,553.72
	August	38,645.07	13,016.89	22,865.15
	September	36,227.14	13,082.52	24,120.04
	October	34,442.05	12,208.06	21,920.46
	November	36,194.30	12,457.55	22,351.06
	December	36,068.33	11,374.39	20,014.77
	January	36,256.69	12,299.03	20,773.49
	February	35,867.44	12,520.03	21,385.16
	March	38,672.91	12,696.88	21,205.81
2019-2020	April	39,031.55	13,060.65	22,258.73
	May	39,714.20	12,264.49	20,601.19
	June	39,394.64	13,049.71	21,275.92
	July	37,481.12	13,066.60	21,521.53
	August	37,332.79	12,736.88	20,704.37
	September	38,667.33	13,004.74	21,755.84
	October	40,129.05	13,171.81	22,927.04
	November	40,793.81	13,545.21	23,293.91
	December	41,253.74	13,913.03	23,656.62
	January	40,723.49	13,861.92	23,205.18
	February	38,297.29	12,380.97	21,142.96
	March	29,468.49	10,187.21	19,084.97

(Source: BSE India)



➢ **Interpretation**

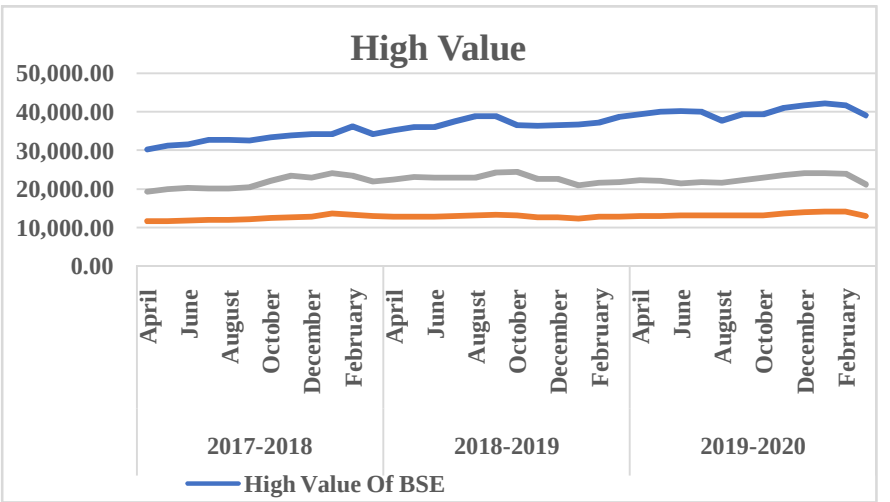
From the above illustration, the index value of Bombay stock exchange as represented by BSE has the highest value as well as fluctuations. The trend seen in the NYSE and Nikkei is significantly similar in from 2019-2020. Further in terms of volatility and index fluctuations, NYSE has shown the lowest fluctuations and volatility. However, BSE is the most volatile of the three indices under consideration.

Table 2 – HIGH VALUE OF BSE, NYSE AND NIKKEI

Period	Month	High Value Of BSE	High Value Of NYSE	High Value Of Nikkei
2017-2018	April	30,184.22	11,653.17	19,289.43
	May	31,255.28	11,666.90	19,998.49
	June	31,522.87	11,837.60	20,318.11
	July	32,672.66	11,989.53	20,200.88
	August	32,686.48	12,019.85	20,113.73
	September	32,524.11	12,209.45	20,481.27
	October	33,340.17	12,443.80	22,086.88
	November	33,865.95	12,673.70	23,382.15
	December	34,137.97	12,868.11	22,994.33
	January	34,137.97	13,637.02	24,129.34
	February	36,256.83	13,414.78	23,492.77
	March	34,278.63	12,963.42	21,971.16
2018-2019	April	35,213.30	12,774.37	22,495.56
	May	35,993.53	12,853.33	23,050.39
	June	35,993.53	12,888.98	23,011.57
	July	37,644.59	12,989.46	22,949.32
	August	38,989.65	13,148.42	23,032.17
	September	38,934.35	13,261.77	24,286.10
	October	36,616.64	13,175.61	24,448.07
	November	36,389.22	12,682.06	22,583.43
	December	36,554.99	12,624.75	22,698.79
	January	36,701.03	12,315.14	20,892.68
	February	37,172.18	12,769.64	21,610.88
	March	38,748.54	12,854.82	21,860.39
2019-2020	April	39,487.45	13,067.03	22,362.92
	May	40,124.96	13,069.09	22,190.49
	June	40,312.07	13,095.57	21,497.82
	July	40,032.41	13,255.13	21,823.07
	August	37,807.55	13,154.38	21,556.69
	September	39,441.12	13,177.88	22,255.56

	October	39,441.12	13,248.65	23,008.43
	November	41,163.79	13,611.49	23,608.06
	December	41,809.96	13,978.61	24,091.12
	January	42,273.87	14,183.26	24,115.95
	February	41,709.30	14,148.24	23,995.57
	March	39,083.17	13,015.66	21,179.78

(Source: BSE India)



➢ **Interpretation**

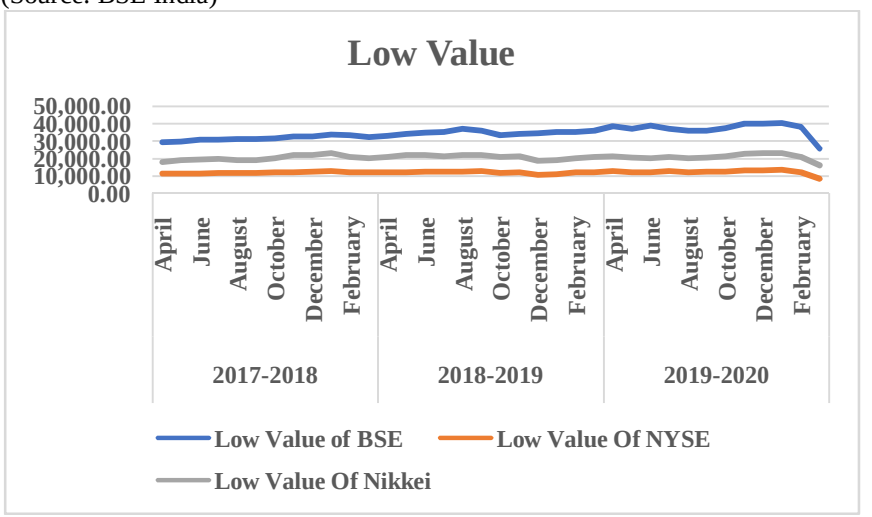
On an average, the value of BSE was in higher range than that of NYSE and Nikkei; it was interesting to note that at the time of study the range was quite stable. After that has shown some highly variant figures.

Table 3 – LOW VALUE OF BSE, NYSE AND NIKKEI

Period	Month	Low Value of BSE	Low Value Of NYSE	Low Value of Nikkei
2017-2018	April	29,241.48	11,324.53	18,224.68
	May	29,804.12	11,374.64	19,144.62
	June	30,680.66	11,603.41	19,686.32
	July	31,017.11	11,684.75	19,856.65
	August	31,128.02	11,760.88	19,280.02
	September	31,081.83	11,783.87	19,239.52
	October	31,440.48	12,200.13	20,363.28
	November	32,683.59	12,178.89	21,972.34
	December	32,565.16	12,463.83	22,119.21
	January	33,703.37	12,842.27	23,065.20
	February	33,482.81	12,048.66	20,950.15

	March	32,483.84	12,166.54	20,347.49
2018-2019	April	32,972.56	12,107.72	21,056.02
	May	34,302.89	12,255.85	21,931.65
	June	34,784.68	12,377.04	22,038.40
	July	35,106.57	12,400.54	21,462.95
	August	37,128.99	12,648.32	21,851.32
	September	35,985.63	12,873.38	22,172.90
	October	33,291.58	11,820.33	20,971.93
	November	34,303.38	12,016.08	21,243.38
	December	34,426.29	10,724.19	18,948.58
	January	35,375.51	11,169.46	19,241.37
	February	35,287.16	12,186.66	20,315.31
	March	35,926.94	12,336.49	20,911.57
2019-2020	April	38,460.25	12,773.53	21,471.12
	May	36,956.10	12,238.40	20,581.58
	June	38,870.96	12,273.09	20,289.64
	July	37,128.26	12,979.37	20,993.44
	August	36,102.35	12,325.93	20,110.76
	September	35,987.80	12,600.71	20,554.16
	October	37,415.83	12,482.02	21,276.01
	November	40,014.23	13,231.18	22,705.60
	December	40,135.37	13,280.04	23,044.78
	January	40,476.55	13,573.04	22,892.95
	February	38,219.97	12,024.45	20,916.40
	March	25,638.90	8,664.94	16,358.19

(Source: BSE India)

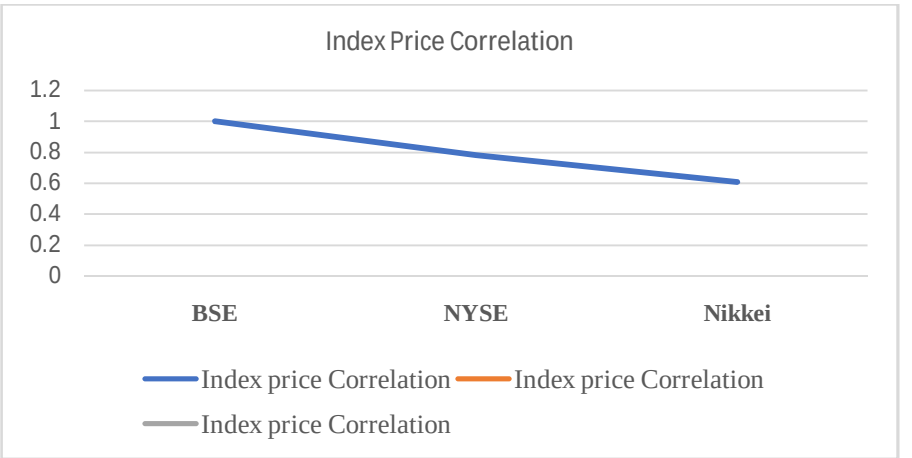


➢ **Interpretation**

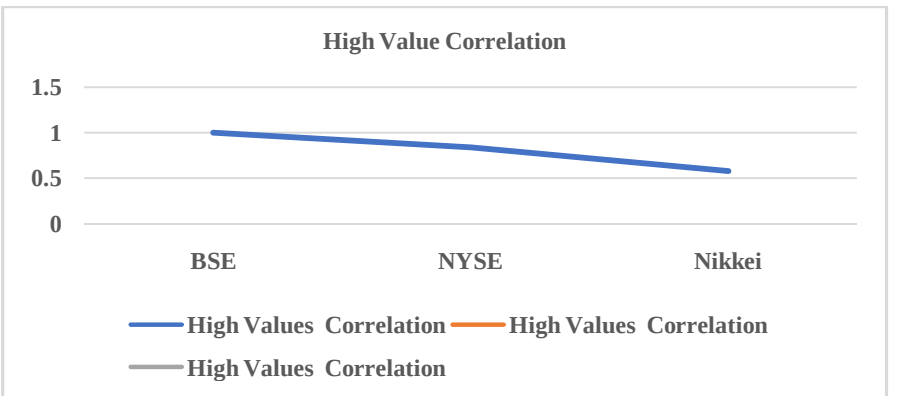
On an average, though the value of NYSE was in lower range than that of BSE and Nikkei. The fluctuations between BSE and NYSE was significantly similar rather than Nikkei. Nikkei has high fluctuations rather than BSE and NYSE.

Table 4 – CORELATION MATRIX

	Index price Correlation		
	BSE	**NYSE**	**Nikkei**
BSE	1		
NYSE	0.782	1	
Nikkei	0.6059		1



	High Values Correlation		
	BSE	**NYSE**	**Nikkei**
BSE	1		
NYSE	0.8348	1	
Nikkei	0.5753		1



	Low Value Correlation		
	BSE	**NYSE**	**Nikkei**
BSE	1		
NYSE	0.7545	1	
Nikkei	0.6809		1

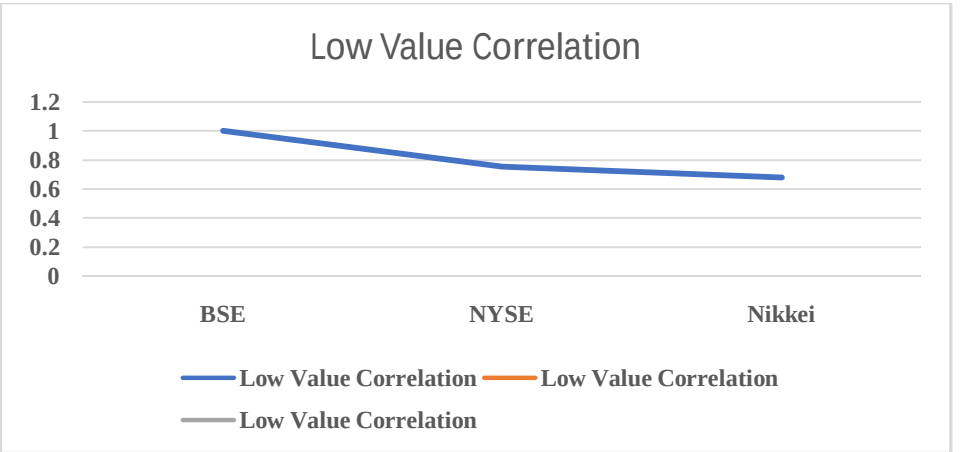


Table. 5 - REGRESSION MATRICES
Index Values Regression

SUMMARY OUTPUT							
Regression Statistics							
Multiple R	0.7820081						
R Square	0.611536668						
Adjusted R Square	0.600111276						
Standard Error	456.6844078						
Observations	36						
ANOVA							
	df	*SS*	*MS*	*F*	*Significance F*		
Regression	1	11163072.81	11163073	53.52435	1.78393E-08		
Residual	34	7091062.044	208560.6				
Total	35	18254134.85					
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*
Intercept	6354.761063	848.9461519	7.48547	1.09E-08	4629.494907	8080.027219	4629.494907
X Variable 1	0.172733524	0.023610269	7.316034	1.78E-08	0.124751684	0.220715364	0.124751684

High Values Regression

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.832423							
R Square	0.692928							
Adjusted R Square	0.683897							
Standard Error	767.1239							
Observations	36							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	45150023	45150023	76.72324	3.09E-10			
Residual	34	20008290	588479.1					
Total	35	65158313						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1295.74	2697.696	-0.48031	0.634082	-6778.11	4186.642	-6778.11	4186.642
X Variable 1	1.828431	0.208745	8.75918	3.09E-10	1.404211	2.252651	1.404211	2.252651

Low Values Regression

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.880342							
R Square	0.775003							
Adjusted R Square	0.768385							
Standard Error	689.6095							
Observations	36							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	55694390	55694390	117.113	1.49E-12			
Residual	34	16169082	475561.2					
Total	35	71863472						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	2582.742	1684.193	1.533519	0.134402	-839.949	6005.434	-839.949	6005.434
X Variable 1	1.498668	0.138485	10.82187	1.49E-12	1.217232	1.780103	1.217232	1.780103

Inferences and Findings for above analysis

Mean			
	BSE	**NYSE**	**Nikkei**
Index	35,811.84	12,540.67	21,625.64
High Value	36,791.71	12,908.91	22,307.32
Low value	34,544.76	12,133.20	20,766.37

Standard Deviation			
	BSE	**NYSE**	**Nikkei**
Index	3,269.50	722.18	1,312.90
High Value	3,266.88	621.18	1364.428
Low Value	3336.636	841.717	1432.913

Based on the descriptive statistics run on the data of the BSE, NYSE and Nikkei, it can be seen that BSE shows a very high trade volume and mean for the size of the stock market it deals with. The index also shows a higher standard deviation as compared to NYSE and the relative value for Nikkei. Besides this, BSE also shows a greater range in its values as compared to the other indices.

Correlation Inferences

From the correlation matrix given above, the observation that can be made is that BSE has a very high Correlation in the index values as well as low values with Nikkei. However, in the case of high values, the correlation of BSE is more with NYSE.

Regression Inferences

Based on the findings of the regression analysis run on the data of BSE, NYSE and Nikkei, there is a moderately significant but clearly positive relation between the BSE Index, the NYSE Composite and the Nikkei. These findings, when coupled with the extremely low p-values in all the aforementioned cases enable the proving wrong of the null hypothesis and the proving right of the alternative hypothesis that there exists a significant relation between the index values and trend movements between the BSE and NYSE and TSE.

Overall Findings

- The trend in Index value followed by the BSE was initially not similar to NYSE. The trend seen in the NYSE and Nikkei was significantly similar from 2019-2020.
- BSE shows the highest value as far as indices along with the highest fluctuations and greatest volatility.
- The highest correlation was seen in the trend of BSE.
- The Null hypothesis of the study has been proven wrong and the alternative hypothesis that there does exist significant relation between BSE, NYSE, Nikkei index value has been proven right.

Conclusion

Thus, as seen from the findings of the paper, there exists a significant relation between the index value of the BSE, with those of the NYSE and the Nikkei. Bearing in mind that India is growing economy. The investors in the Indian Stock Markets can make more educated and rational investments.

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SOCIAL NETWORKING SITES AND TEEN'S SOCIAL AND ACADEMIC DEVELOPMENT

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Abstract

Social networking sites are Web based Services allowing individuals to contact a semi-public or public profile in a bounded system. Social networking sites are not only popular for providing platform chatting, sharing scraps, videos, pictures etc, but also for discussing social issues. SNSs have great by influenced and affected the minds of teens. Today Social networks were only an electronic connection between users but unfortunately it has become an addiction for teenagers, and adults.

This research paper assesses the effect of SNS on teen's social and academic development. This is a qualitative study which employs both the primary data as well as secondary data. Primary data was collected based on the observation in depth interviews and focus group discussion. The study finds that there are both risks and benefits to teenager's social and academic development when it comes to the use of SNS.

Introduction

Today communication is a basic human need. To meet this basic need man has to depend on interpersonal or mass communication. Unlike in the past, the people of the world are today living in a global village because of advent of new media technology. According to Canadian Professor of English Marshall Me Luhan" the world is now a global village where the whole world is now compressed into a single electronic chat room ".

The current tools of teenage communication go by a Peculiar set of names. Wall post, Status Updates, Activity feeds, Thumbs ups, Emojis, Smiley's, Posters, Profiles are just some of the ways that youth today communicate with one another. Ahn's (2011) qualitative study on the effects of SNS on adolescent social and academic development stated that these tools are features of SNSs, such as Fb, My space. He also found that there are both benefits and risks to SNS and adolescent use. He also stated that SNS could play a significant benefit in teen's social life, stating that SNS is aiding in adolescentssocial development. In a qualitative study written by Lee(2009)psychologists have pin-pointed a few issues directly related to this new outbreak of using social media, which include behaviors such as bullying, chique-forming, sexual-experimentation (sexting), and internet addiction. Lee (2009) concluded that although there are severe risks to our media saturated youth there are also beneficial social developments to this media culture. Teens are consistently seeking for their identity and SNS is Assis tenting in teens search for Identity (Lee 2009). SNS is both frightening prospect for parents, care givers and educators to have youth connected to these global online communities. Today teenagers are a very unique population of SNS

users. They are among the first to have grown up entirely surrounded by communication technologies. Ahn (2011) mentioned the importance of ongoing research in this field due to the intriguing networked teens growing up around us.

Rosen in his study in 2011 found out that in terms of daily use of all social media collectively those born between 1965 and 1979 (Generation) consumes appropriately 19 hours of social media per day. Those born between 1980 & 1989 (Net Generation) consumes approximately 19 hours of social media per day, and those born between 1990 & 1999. (I Generation) consumes approximately 20 hours of social media per day.

As the term social media has obtained a broad meaning, the term SNS generally refers to internetbased locations that allow individuals and groups to interact. SNS are purely internetbased locations that allow purely internetbased services that Promote online social interaction between two or more persons within a bounded system for the purpose of friendship, for exchanging information, contains a functionality that lets users create public or semi-public personal profile pages that contain information of their own choice. SNS also serves as a mechanism to communicate with other users, and contains mechanism that allows users to search for other users according to some specific criteria.

In terms of Membership and daily usage. More recent estimates show face book as having over 750 million users worldwide, Linked In over 100 million members, Twitter having Over 177 million tweets per day. And YouTube having over 3 Billion viewers each day (Chen &Bryer 2012). The use of social networking sites has been repeatedly found to be the highest among these between the ages of 18 and 29 (Raine 2011); While the fastest growing segment utilizing SNSs since 2008 has been among those aged 35 & above (Hampton, Sessions - Goulet, Rainie & Purcell 2011). In terms of overall popularity regarding usage, one recent survey conducted by the Pew Research centre found that Face book is the most used (92%), followed by my Space (29%), then Linked In (18%), Twitter (13%) and other Social networking sites (10%) (Hampton, sessions –Goulet Rainie % purcell 2011)

As related to this exploratory study, the previous statistics indicate that social media tend to have highest usage rate among the younger generation. Today studies reveal that between 55% and 82% of teenagers and adults use social networking sites on a regular basis.

Relative to the general population adolescents and young adults are the heaviest computer and internet users, primarily using it for completing school assignments (46%), E-mail and /or instant messaging (38%) (DE Bell & Chap man, 2006) SNSs are the latest online communication tool that allows users to create a public or private profile to interact with people in their networks (Boyd & Ellison 2007). SNSs have become part of the daily life experiences for an increasing number of people. Socialization through the internet has become an increasingly important part of young adult life (Gemmilet at 2006). The popular image of young people is of the social sites, with their faces glued to screens while they are constantly texting, checking e-mail, or updating their face book pages. The stereotype is that we are becoming increasingly disconnected from the world around us. The truth is that through the use of cell phones, Laptops, iPod's and online social networks such as my space, young people are not only staying connected with their peers but are becoming more adopted at keeping up with

world events and helping to shape them (Kalie2009). With so many social networking sites displayed on the internet, students are tempted to abandon their homework and reading times in preference to chatting online with friends.

Many students are now addicted to the online wave of the moment, with face book, Twitter, TikTok etc. Today most youths and students possess face book, what's App accounts. Olubiyi (2012), noted that these days students are so engrossed in the social media that they are almost 24 hours online. Even in classrooms and lecture theatre it has been observed that some students are always busy pinging. What's App chatting, or face book while lectures was on. Time that fought to be channelled to learning, academic research and innovation have been crushed by the passion for meeting new friends online, sometimes, busy discussing issues of less importance. Therefore, most students academic suffer setbacks as a result of distraction from the social media. Obi et al (2012), Observed that the use of these sites also affect students use of English and grammar. As they use short form of writing words in their chat rooms, they forget and use the same in their class rooms, and this affects their class room assessment.

Research Aim or Objectives

The use of SNSs among the teenagers in the contemporary era is inevitably predominant, given the scientific and technological invention that led to the fast growth of smart phones. Although the use of social networking sites brings a lot of benefits to the teens, it also contributes to the strings of problems that can even disturb or distract their academic performance & social development. As such, this study is under taken to assess the effect of SNSs on Teen's social & Academic development.

Research Methodology

This is a qualitative study encompassing data was collected based on the observation, in-depth interviews and focuses group discussions, secondary data was obtained from books, journals, articles, reports and other secondary materials. 25 in - depth interview and 5 focus group discussions were carried out with teens representing different schools and junior colleges. Selection of interviews was based on simple random sampling. The study uses the descriptive analysis to analyze the data gathered at the field.

Literature Review

Literature review provided the result previous studies relating to the topic and it helped to select appropriate objectives and methodology for further development on the topic.

Several studies have been carried out by different research to assess the effect of SNS on teen's academic Performance Choney (2010), Meh mood &Taswir, (2013), Kistc (208) Jacobsen &Forste (2011), believe that the use of technology such as internet is one of the most important factors that can influence educational performance of students positively or negatively. It stated that many parents and guardians are worried that students spend too much time on face book and other social media sites and do not have enough time to study.

Rant & Patil (2016) explained the various positive & negative effects of social media on education of students. He gave two suggestions that moderating their access to SNSs, and reducing the amount of time spent on SNSs. Khan (2012) explore the

impact of SNS on students. The result of the study shows that respondents whose age ranges between 15 to 25 mostly use SNS, an individual whose age is between 15 to 25 generally uses SNS for entertainment while Gender analysis shows that male mostly uses SNSs.

Early studies in the field also imply that characteristics such as slyness, self - esteem and narcissism are related to behavior in SNS (Barker, 2009; Buffardi& camp bell, 2008, Zywica&Danow ski, 2008) Survey data find that female & male youth might use SNS in different ways (Lenhart, madden, margill& Smith, 2007)

Berson and Berson (2005) stated that high use of internet linked high risks, and there had no risk of simple use of internet. In early childhood, they did not know about risks, and they need guider. In teenage, they had not developed abilities to make life's choices. Brady, Holcomb, and smith (2010) stated that social media had provided efficient ways for education. Students used social media for e-learning.

According to Washington (2011) adolescent thought social media as the component of their culture, not a craze. It could enhance their ability and they used it as educational tool. Ahn (2011) Summarizes that this can lead to ego diffusion, personality confusion and in most severe cases lead to suicide attempts. Forming identity is a major developmental step all teens must achieve, failure to identity their identity can lead to many harmful effects. Now that SNS has taken over teenager's lives finding out how SNS can either aide or hinder teen's identity development is crucial for today's research. (Ahn 2011).

Clarke Pearson, et. al. (2011) Qualitative study on the impact of social media on our teens and families stated that once " SNS depression " has set in, the teen may become more at risk for social isolation and turn to risky internet sites & blogs for help that may promote substance abuse, unsafe sexual practices, or aggressive or self - destructive behaviors.

Lenhart's (2012) qualitative study, also reports that roughly one in four teens own a smart phone, which gives them access to many different apps that support the SNS.

Findings

The study reveals that

1.55% of teens have given out personal info to someone they don't know, including photos and physical descriptions.
2.29%have been stalked or contacted by a stranger or someone they don't know.
3. Only 34% parents check their child's social network sites.
4. 29% of teens have posted mean info, embarrassing photos or spread rumors' about someone.
5. 24% have had private or embarrassing info made public without their permission.
6. 22% have been cyber pranked.

Conclusion

The social networking websites has become essential need today, but it should not be motivated at all. It could ruin the future of teenagers and children and it had very bad impact on education as it is discussed above. There is no third party or any other community which could check for what actions are been performed by which users. The study shows that students browse and chat in class even studies are on-going and when they ought to be doing other more profitable things, they are so gripped online in their chats. This shows great misuse of resources of time and intellect. Although it has not been proven to be the cause for students poor academic performance, time management is great essence, as it enhances efficiency and productivity.

Recommendations

Given the findings and the conclusions above, the study recommend that students should be able to rightly place their priorities in their academic work rather than misuse their time in non-profitable things.

Counsellors should also communicate to parents about their children's behavior and use of internet, where and when necessary schedule meetings with parents on account of their children's behavior as it will help for continuous monitoring of behavior.

The study recommend that parents should keep their eyes on the children to ensure that their use of internet does not interfere with their homework and studies and help achieve efficiency and high productivity.

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DEFINING HEALTH IN AYURVEDA

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Abstract

Definition of health has always been a dynamic entity which has evolved over a period of time with the changing challenges posed from time to time. Hence the principles and practices of maintain health also have changed over a period of time and also has necessitated to have a holistic definition of health encompassing all facets of human existence. Hence the stake holders of involved in health service have started searching the traditional systems of healing for answers. Ayurveda being a science of medicine has a holistic definition of health inclusive of both principles and practice.Health has been understood in two dimensions – Physical and Psychological which extend to social and spiritual aspects as well.

Keywords: Health, Ayurveda, Wellbeing, Ayu, science of life.

Introduction

Health is a point of relevance while framing government policies as it ultimately affects the people. WHO defines Health as a complete state of physical, mental and social wellbeing and not merely the absence of disease or infirmity. [1] Criticism of this definition is now intensifying owing to the changes in disease patterns.[2] [3] This definition is viewed as impracticable, because 'Complete' is neither operational nor measurable.[3] This gave rise to need to have an operational definition of health [4] which is more practical to assess. Hence, there comes a need understand the concept of Health in other systems of medicine. Ayurveda being an ancient system of medicine provides a comprehensive understanding of health. This article aims at understanding the concept of health in Ayurveda and its various dimensions used in designing the principles and practice of Ayurveda.

Approach towards Health in Ayurveda

The way Life has been understood in Ayurveda forms the basis for the way health is viewed. Life or living matter is that which shows certain attributes that include responsiveness, growth, metabolism, energy transformation, and reproduction.These attributes have been viewed as reflection of three components of human being namely - Mind, Soul and Body. Therefore, Ayurveda views human being as a blend of these three components which bring out the attributes of life in two dimensions namely – Physical and Psychological. The other aspect which forms the foundation for understanding health in Ayurveda is the principle which views Human being a unit of universe and hence there is a constant interaction and influence each other [5]. Therefore, Health is viewed as a dynamic entity which is under a constant

change and is influenced by the external changes and needs a constant effort to sustain the status of health [6]. Hence structuring the strategies for sustenance of health has been done in an extensive manner by maintaining the consistency of thought process while designing the Principles and Practice of Medicine. Diligent care is taken to incorporate all the factors including the minute details which can influence the status of health and hence the approach is inclusive and holistic in nature.

Dimensions of Health

Health is approached in two dimensions namely Physical dimension and Psychological dimension. The social health and spiritual health are dealt exclusively in the texts of Ayurveda but are included under these two dimensions.

Physical dimension

Equilibrium statuses of the factors which are key in maintaining the physical health are namely – Dosha, Agni, Dhatu and Mala [7]. Doshaform the functional components of the body while Dhatu form structural components of the body which are responsible for the entire physiology of the body. Agni is functioning at various stages is responsible for digestion and metabolism. The essential end product of the process of digestion is converted into the structural and functional components of the body. Mala are non essential end product of digestion and metabolism which have to be eliminated out and this mechanism of elimination has to be balanced. These factors when function in harmony the internal environment of the body is maintained well and the status of health is balanced.

Psychological Dimension

Along with the physical dimension of health the factors which are key in maintaining the Pyschological health namely – Indriya, Mana and Atma have been considered.[7]Indriya(senses) is that component which is a doorway through which the individual interacts with the outside world. Five Indiryaperceive the specific information from the outside world with the support of Mana (Mind) and these are termed as IndriyaArtha [8]. The information received is now analyzed by the Mana in terms of pleasant (Sukha) and unpleasant (Dukha) experiences under the association of Atma and these are termed as Mano Artha. Atma brings the element of consciousness (Chetana PratiSandhata) and hence the role of Atma in this mechanism is to bring an initiation in the Mana and thereby stimulating the Indriya to perceive the information [9]. The final outcome of analysis done by the Mana is termed as Buddhi or Prajna which is decides the kind of behavior, attitude and perception of an individual. [10]

Prajna has three main facets [11] – Dhi i.e. the ability to cognize the things factually,[12]Dhruti– the ability to regulate Mana and Indriya[13] and Smruti– the ability to be in a state of constant awareness.[14]. Atma and Mana should be in a state of balance for the functioning of Prajna. If Prajnais functioning well then there will be judicious use of Mana and Indriya which are the doorway though which the individual interacts with the outside world. [15]

Mind and Body cannot be understood in isolation and they are mutually interconnected. Therefore, the status of health or manifestation of disease is mutually interconnected and hence definition of health should not be reclusively physical or psychological.

Concept of Social health

Ayurveda being a science of life studies about various aspects of life in a systematic way. Life is complex and dynamicboth internal components of the human being and also by varied influence from external factors. Hence it is not the study of a living being under standard controllable environment but rather it is the study of living being who is being exposed to various external factors. The external environment comprises of both living and non-living things along various other factors in the eco system constantly have an impact on the living being. This interaction between living being and the external environment is mutual. This thinking of Ayurveda is reflected in the principle of Loka – Purusha Samya Vada which says that there exists a similarity between Loka (universe) and Purusha (individual) and they also share a relationship of a whole and part.[5] Ayurveda believes that everything existing in the universe has a mutual relationship and hence any change occurring in one has to definitely affect the other. In this background the social health needs to be understood in following ways –

1. The influence of external factors on the individual in terms of changing environment influencing health of an individual which comes under the physical component of health. The fundamental unit of the human body (Dosha Dhatu Mala) and the universe are composed of five basic units called as Panchamahabhuta. Hence the changes that take place in the universe in the form of diurnal variations and seasonal variations naturally influence the fundamental units of the body. So, the diet and lifestyle prescribed in the texts of Ayurveda are designed to neutralize these influences and thereby the status of health remains within the permissible limit.
2. The influence of the individual on the environment is going to affect the community at large. And if the influence is negative then the effect would be deleterious to the entire community.[16] Human being as a unit of Eco system has to function with harmony. But with evolution of human civilization Human being has become the consumer and the rest of eco system has become the resource for his consumption. As long as the consumption was balanced in terms of availability and the nature could replenish, there was equilibrium in the ecosystem. Because of the change in the human conscience (Prajna) value system of the society like attitude, perception and beliefs have changed from universal interests to individual interests. This has been dealt under the umbrella of*Janapadodhvamsa* an exclusive concept which touches upon the social health in a very subtle but in an impactful manner.[17]

Concept Spiritual health

The spiritual health aims at helping the individual to explore and realize his potential to the fullest and use this to serve the very purpose of life which is much larger than the mundane materialistic purposes. Ayurveda being framed on the Indian philosophical background has symbolically views individual as part of the universe. The

evolution of an individual is symbolically equated to the evolution of the universe and regards him as *Purusha*whichistheprimary focus of study (Adhikarana) in Ayurveda. [18] Based on the purpose of study Purusha can be viewed in various ways especially the approach is different for different aspects of health. When the physical aspect of health is considered, Purusha is viewed as an amalgamation of six components and is called Shat Dhatu Atmaka Purusha.[19] The word Dhatu refers to components which together constitute the Purusha and Shat is six. So here Purusha is composed of six components which are five basic elements Panchamahabhuta (Dosha, Dhatu and Mala) and soul. Surpassing this is the Purusha who is composed of twenty-four elements and is known asChaturvimshatiTatvaAtmaka Purusha.[20] Literally word Tatva refers to reality. And here in this context it refers those tangential elements which constitute the individual and beyond the purview of sensory tools as they are metaphysical in nature. This becomes the focus of study exclusively when one wants to achieve something beyond physical health and is termed as NaishthikiChikitsa.[21] The realization of origin of self and what constitutes self is necessary to explore the self-potential.Everything in the universe is derived from Avyaktai.e. un-manifested which is beyond comprehension (Agrahya) and analysis (Achintya).[22] It is independent of its existence (Bhava Nirapeksha) and is eternal (Nitya).[22] The entire universe is the manifested form of this Avyakta which are composed of Prakruti and Purusha. Prakruti is a state of balance of Trigunai.e.,Satva, Raja and Tama which represents Matter.[23] Matter may be defined as that which is capable of originating objective sensations-sensations which can be perceived by anyone who is suitably conditioned to receive them as for instance, by sending rays of light into our eyes. (Sir James Jeans) Purusha is the element which is responsible bringing consciousness (Chaitanya). [24] Because of consciousness of Purusha the evolution of life begins which brings change in the Prakrutiwhich acts as a substratum of body.[23] Because of the association of Purusha with Prakruti it is now called as Jeeva and certain attributes are now reflected on it. When there is association of Prakruti and Purusha the manifestation of the universe begins. The first element to get manifested is called Mahat Cosmic intelligence. Now Jeeva assumes a separate identity because of its association of Prakruti which is combination of Triguna. The next element which gets formed is Ahankara which makes Jeeva perceive everything with the relative understanding of self. From here the evolution happens in two folds – one at the level of intellect and one at the level of the matter. At the level of intellect five senses are formedto receive the stimuli, one to analyze (mind) and five to respond. At the level of Matter five Tanmatra (Rupa, Rasa, Gandha, Shabda and Sparsha) are derived which eventually result in Panchamahabhuta which are basic physical units of human being.[25] The Panchamahabhutawith Jeeva is called Shat Dhatvatmaka Purusha. This entire process manifestation is beyond sensory perception but can be comprehended by intuition. The diseases of mind are mainly because of lack of understanding that Tatvai.e., reality. The reality is Jeeva (self) is different from this Prakruti(Physical substratum). This lack of understanding is due to association of triguna which create an illusion in the mind. When the person realizes that this body and the apparent universe is different from Jeeva (self) he attains eternal happiness. In this state the person remains unaffected by any kind of misery. This state of self-realization where one perceives the reality that I am the part of Purusha (eternal creator - Brahma) is called Moksha. This

should be the ultimate aim of life. The method of self-realization is called NaishthikiChikitsa[21] which is aimed at realizing the true self by following the path of *Yoga*[27, 28] and attaining the salvation. The realization of true self is possible with the path of Satya Buddhi [29] which is generated only when the *Dhee*, *Dhruti* and *Smruti* components of an individual are functioning appropriately. As a result of the Satya Buddhi, one realizes that eternal truth that both self and the universe are part of this well-regulated universe.[30] This makes the individual carryout life for a higher purpose by indulging in this materialistic life with moderation.

Conclusion

The health in Ayurveda is a dynamic entity which is constantly influenced by the eco system. The understanding of variations seen in the functional units of the body is the key to understand the physical dimension of health which helps in designing the principles to maintain the physical health. The process of cognitive interaction of mind and the senses are the key to understand the psychological dimension of health which helps in designing the principles to maintain the psychological health. Social health and spiritual health are the integral part of both physical and psychological dimension of health and are inclusive while designing the principles.

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EXPRESSION OF ENVIRONMENTAL CONCERNS THROUGH KASHMIRI FOLK THEATRE

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Abstract

Environmental studies as a field of study has received a multidisciplinary approach since its evolution helping to give an understanding of the relationship between humans and the physical environment, they live in. The message for conservation and preservation has mainly relied on mediums which are modern and inaccessible for the majority of masses particularly in the rural areas. This paper explores the ways of indigenous forms used in India for past many centuries which have helped in developing ecological understanding among people who have less access to other mediums. This paper analyzes Kashmiri folk theatre popularly known as Bhand Pather in which environmental conservation, preservation and interdependency have been highlighted by making use of the theatrical expression of rural minstrels. For the purpose two plays *ShikargahPather* and *BakerwalPather* have been taken into consideration.

Keywords: Environment, Ecology, Folk Theatre, Medium, Kashmir

Introduction

Since "ecology has lit a greening fire across disciplines, from environmental history to environmental management, from ecofeminism to green economics" and through the concepts of 'ecotheatre' and 'green theatre' it has also been focusing on the ecological concerns in theatre yet critics are of the opinion that if art represents the human actions, their conflicts and their interdependency, then theatre, which helps in unfolding this natural phenomena should place itself as a holistic ecological entity (May, 84). Nevertheless, in Indian context, both popular theatre and the cinema are lacking behind in order to make any progress in developing such awareness; however, the Indian folk arts deserve a due credit in touching this milestone. With the help of different forms of songs, riddles, proverbs, tales and plays, it has been serving as an important medium for promoting an ecological understanding to a larger population not only as a social service but sometimes also as a devotional exercise, as Durgadas Mukhopadyay puts it:

As for utilisation of folk arts in ecological campaign in India, the Nature had always been present in all the art forms. Having been born and brought up in the lap of Nature, the singers and writers reflect the beauty of nature in their art forms. The rural people worship trees and other aspects of nature. Rivers are considered sacred. Mountains are abode of gods. The tribals believe that every tree possesses a spirit. A tribal would seek permission of the spirit before cutting a tree. (ch. 7)

Since most of the folk traditions are connected with agrarian societies, ecological concerning finds an important place in its different forms. During the Chipko

Movement in Uttarakhand, the women folk of the native places used to assemble in the woods and holding the trees they would sing songs in which they praised the woods and also protested the selling of the trees to a paper mill. Their songs, that initially echoed through the woods of Himalayan foothills only, later gathered such a force that marked a history of its own. Likewise there are many local or indigenous ways used in remote Indian villages which protest and convey messages about the ecological conservation and preservation.

Folk theatre is one such way which since decades has been serving this purpose in India given that it appeals a larger audience pertaining to the agrarian cultures that have less access to formal education and other mediums effective in imparting awareness on health, hygiene and other social issues like castiesm, dowry, gender inequality etc. Folk theatres across the country have proved as important mediums of transmitting the public opinion and it is for the same reason that post independence government felt necessity of reviving folk theatre activities across the country in order to approach the masses locally on different subjects. Achieving such target wouldn't have been possible using the print and electronic mass mediums given that "80 per cent of India's 121 crore population reside in villages" where "mass media proved impersonal and unbelievable in contrast with the familiar performance of traditional artists whom the villagers could not only see and hear but touch" and besides, the barrier of poor literacy rate was another affecting factor to it (Das, 02).

Environmental concerns in Kashmiri Folk Theatre

In Kashmiri context also Bhand Pather, the folk theatre of Kashmir has also served the same purpose because the social milieu in which it originated and cradled also had lesser means of communication and expression and Bhand Pather proved itself as an important medium to convey socio-political concerns to a larger rural audience and sometimes also proved effective in registering grievances to the higher officials.

Bhand Pather formulated as the mass media of its times not only through satire and criticism venting out the suppressed feelings of the people but sometimes it also conveyed a social message to its receivers (audience) by directly reflecting upon an issue. Unlike the street theatre which each time comes up with a new issue or devotional theatre with its morality plays, Bhand Pather though with a limited subject matter attempts to enlighten its audience with a deeper consciousness of the locale focusing on the importance of interdependence in social, cultural and environmental domains.

Shikargah Pather is a folk art performance in Bhand Pather that develops an ecological understanding, whereby the issues of environmental sustainability and wildlife preservation are highlighted and put forward for immediate attention both from the masses as well as the administration. Shikargah is a wildlife sanctuary in Kashmir situated between Wasturwann Mountain and Khirwon in Tral area of district Pulwama, some 35kms away from the main city of Srinagar. The sanctuary had been serving as a famous hunting spot for the elite classes and royal nobles ever since Mughals conquered the valley however during the Dogra Rule, in order to "satiate aristocratic craze of princely families, Dogra Maharaja's established many Sikargahas at the government expenses amidst Kashmir's green woods" where the events of hunting expeditions were organized and state guests across the country were invited (Fayaz, 138). Ernest Neve

also talks about such expeditions during the same time where he says, "Kashmir is, of course, the sportsman's paradise. Every year, many young British officers on leave, and others, go far afield in the Himalayas in search of large game" (p.151). For locals, the hunting expeditions were prohibited and time and again the sanctuary had been put under the official surveillance causing trouble for the local populace especially the shepherd and Bakerwal communities.

The play carries forward the message of 14th century Sufi poet of Kashmir Sheikh Noor-u-din Noorani popularly known as NundReshi in Kashmir, in which he says 'Ann poshitelliyelliwannposhi' (mankind will last until the forests last). The same concern is also presented through ShikargahPather where the message of ecological sustainability, ecological biodiversity and interdependence and wildlife preservation are conveyed. The play also highlights the careless and corrupt nature of the wildlife officials who in the name of protection and safeguarding of the wildlife turn out to be the real threats to it.

In BhandPather this play presents a unique site of juxtaposition where the ecological concern is incorporated into a folk art performance through a representation of wild animals by performers using the dummy masks and thus also places itself as the only mask among the Kashmiri folk theatre performances. Unlike the other plays of BhandPather, there are no jesters or clowns in this play though the character of Goor (cowherd) is knitted as the same.

The major characters of the play consist of one lion, two stags, shepherd, a guard and two other wildlife officials. For the major part of action, the lion usually remains behind the scene and only appears when the intruders like the Sipah (guard) or Shah Sawaars (horse riders, officials) come to attack him in his own territory and thus his appearance is marked with a special Vaad of music called the 'Seh Vaad' (Seh is the Kashmiri name for a lion and a unique vaad on the same name has been dedicated to this charcter). Each time there is an intrusion; the lion retaliates, and once, even takes away the bow from the guard which actually reflects his way of marking a protest against lethal weapons used on wild animals for mere sporting. The Goor or cowherd also falls into trouble when the guard and two officials question him about the stags. He is the only human character in the play who is not attacked by the lion stressing the point that he is a part of the wilderness and a part of the ecological interdependence but he bears the official wrath for nothing which shows that how such intrusion affects the natives or inhabitants of the wildlife. The shepherd laments the death of stags when the lion kills them and also feels the pain when the lion gets killed by the officials. The killing of the lion is not just a sport for the officials, but a revenge against the lion for killing the stags who according to the guard are state properties and it is the state only which is rightful of killing the animals. Towards the end of the play, when the lion gets killed by one of the state officials, there begins an argument between the guard and one of the officials that who should take credit of the killing. They go to the lion asking him that who killed him and when the guard asks "Didn't I kill you?", the lion nods and when the same question is asked by the official, the lion nods to him too (Bhagat, 242). This is the actual message conveyed through the play. In a comic way of teasing and poking a serious message is put out blaming not a single individual but finds everyone responsible, directly or indirectly in affecting the biodiversity for petty self interests.

Another play which pars on the same praxis is *BakerwalPather* depicting the living conditions of a tribal community in Kashmir whose lives are mostly connected with the rearing of livestock for which they make seasonal migrations from one side to another side of the valley. Though most of the play invokes fun and laughter with the Bakerwal's amalgamation of Kashmiri and Gojri yet the play presents their dependence with ecological diversity where on one side they have to rely on the vast green land for cattle rearing and on the other side their deep rooted relationship with their livestock. The sad song of the Maskhara (jester) reminds him of his goat which has died in the recent past and when the jester tries to empathize, the Bakerwal tells him while sobbing "my goat had the same amount of hair your child has" (Bhagat, 136). He considers his goats as children and that is why he compares his dead goat with the Maskhara's child. It is a part of their life which they consider so highly. By employing such consciousness, the play stresses on the importance of reliability and interdependence of Bakerwals in environmental biodiversity.

Conclusion

The valley of Kashmir known for its marvelous natural beauty falls under the Himalayan hotspot, one of the richest biodiversity hotspots in India. From time immemorial the natives have been relying on this biodiversity in many ways like food, shelter, medicine, fuel etc. thus making them responsible for its preservation and sustainability. The message of the 14th century mystic poet shows that how people have been concerned about the environmental issues. In such a need the Kashmiri folk theatre has provided a platform to sensitize the masses as well as the authorities about the importance of interdependence and preservation of this diversity which sustains them. The threat to endemic species like the wild stags of Kashmir as well as the importance of tribal communities like Bakerwals in the coexistence has caught the attention of environmentalists very recently but the folk theatre has delivered the message much earlier by using the dramatic expression.

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A STUDY TO ASSESS THE EFFECTIVENESS OF WARM WATER FOOT BATH ON IMPROVING THE QUALITY OF SLEEP AMONG HOSPITALIZED PATIENTS AT SHARDA HOSPITAL OF GREATER NOIDA U.P

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Abstract

Sleep is a physiological mechanism of regaining energy and recovering from fatigue, and it has an important role in people's health. Skin temperature rhythm and core body temperature have a functional relationship with sleep and wakefulness cycle. Therefore, a footbath with warm water can increase blood and peripheral body temperature without increasing or decreasing core body temperature and it can increase sleep quality and ease sleep onset. **Aims:** To assess the effectiveness of warm water foot bath on quality of sleep among hospitalized patients. **Material & Methods:** Quasi experimental – Pre-test Post-test Control group design was used to accomplish the objective of this study. **Sampling & Sample Size:** simple random sampling technique was used to select the 60 sample from the population. **Result:** The post test level for the quality of sleep among hospitalized patients after warm water foot bath therapy represent that maximum number of patients fall in n=21(70%) were in good sleep, followed byn=9(30%) were in average sleep in experimental group. There was significant difference between the experimental group mean pre-test score 10.30 and mean post-test score 3.13, then p value was showing that 0.001 and table value is showing 22.26. Hence it is inferred that warm water foot bath therapy was improving quality of sleep among hospitalized patients. **Conclusion:** This study shown that warm water foot bath was more effective along with hospital routine for improving the quality of sleep. Warm water foot bath can be used for improvement in the quality of sleep.

Keywords: Sleep, Warm Water, Footbath.

Introduction

Sleep is the basic human need; it is universal biological process common to all the people. Human spend about one third of their lives asleep. We require sleep for more reasons: to cope with daily stresses, to prevent fatigue, to conserve energy, to restore the mind and body, to enjoy life more fully. Sleep can be defined as a normal state of altered consciousness during which the body rests; it is characterized by decreased responsiveness to the environment, and a person can be aroused from it by external stimuli.

Sleep provides healing and restorations. Achieving the best possible sleep quality is important for the promotion of good health as well as the recovery from illness. Ill clients often require more sleep and rest than healthy client. Sleep is a cyclical physiological process that alternates with longer periods of wakefulness. The sleep wake cycle influences and regulatesphysiological function and behavioural responses.

Result:

Paired t Test: Pretest and Post test scores of effectiveness of warm water foot bath for improving the quality of sleep.

N=60

SCORE	GROUP	Mean	Std. Deviation	t Value	p value
PRE-TEST	Exp	10.30	1.48	22.26	0.001
POST-TEST	Exp	3.13	1.43		

Table Revealed that there is a significant difference between the experimental group mean pre-test score 10.30 and mean post-test score 3.13 , the p value was showing that 0.001 and table value was showing 22.26. Hence the null hypothesis rejected and research hypothesis was accepted.

Discussion

The present study findings have been discussed in accordance with the objectives of the study.

The pre test level for quality of sleep among hospitalized patients in control group, maximum number of patients fall in n=24 (80%) were in poor sleep, followed by n=6(20%) were in difficult to sleep.The post test level for quality of sleep among hospitalized patients in control group, maximum number of patients fall in n=20 (70%) were in Poor sleep, followed by n=6(20%) were in difficult to sleep, followed by n=4(10%) were in Average sleep. Hence it is inferred that warm water foot bath therapy was required quality of sleep among hospitalized patients.

Conclusion

Hence it was concluded that warm water foot bath therapy is required to improve the quality of sleep among hospitalized patients.

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- fofHkUulkekftd ,ojktuhfrdç;klk d QyLo:io"k 1829 eefgykvk d fy, lfn;k l pyhvkjghlrhçFkk dk vr fd;kx;kA
- n;kunljLorh }kjkvk;lekt dh LFkkiukdjlektl/kkj d ç;klfd;x;A
- 26 tuojh 1950 dkHkkjreukxfjdkdkvf/kdkjnu d fy, Hkkjrh; lfo/kkuykxfd;kx;kA
- o"k 1952 efØfeuyVkbYl ,DV ykxfd;kx;kA
- o"k 1955 efgUnefgykvk d vf/kdkjk d lc/k eegRoi.k ?kk"k.kk, dh xbA
- o"k 1989 evulfprtkfr ,ovulfprtutkfrlj{k.kdkuuykxfd;kx;kA
- o"k 1993 eipk;rh jkt lLFkkvk dh LFkkiuk dh xbtkfdehy dk iRFkjlkfcrgbA
- o"k 1993 eghjk"Vh; ekuokf/kdkjvk;kx dh LFkkiuk dh xbtkfdekuokf/kdkj l lcf/krlokPplLFkkgA
- o"k 2005 elpuk dk vf/kdkjvf/kfu;eykxfd;kx;kA
- o"k 2005 ejktxkj ,olekftdmRFkku d mnn';l ^egkRekxk/khxkeh.kjktxkjvf/kfu;e^ ykxfd;kx;kA
- o"k 2011 eghiLrkforU;kf;dlj{kk fcyvkjçLrkforykdikyfcylnuei'kfd;kx;kA

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2. Lor=rk dk vf/kdkj
3. 'kk"k.k d fo:} vf/kdkj
4. /kkfed Lor=rk dk vf/kdkj
5. lLdfr ,of'k{kk lc/kkvf/kdkj
6. lEifÙk dk vf/kdkj
7. lo/kkfudmipkjk dk vf/kdkj

lfo/kku d 44 l'kk/ku d rgr ^lEifÙk d vf/kdkj^dkeyvf/kdkj dh J.kh l lekIrdjfn;kx;kgAvr% vcHkkjr d ukxfjddklfo/kku }kjk N% eyvf/kdkjikIrgAHkkjrh; lfo/kku d rrh; Hkkx d fofHkUuvuPNnkeeyvf/kdkjk l lcf/krçko/kku bl idkjg&

1. **lerk dk vf/kdkj&**

- **fof/k d le{k lerk& vuPNn¼14½** d rgr lHkhukxfjdkdkfof/k d le{k lerk dk vf/kdkjfn;kx;kgA bl vuPNn d vulkjjkT; fdlhHkhukxfjddkfof/k d le{k lerkvFkokdkuu d lekulj{k.k l ofprughdjxkA
- **HknHkko dk vr & vuPNn¼15½** d vulkjjkT; fdlhHkhukxfjd d lkFk /ke] fyx] tUe] tkfrvFkokeyo'k d vk/kkjijHknHkkoughdjldxkA
- **ljdkjhukdfj;kelekuvolj& vuPNn¼16½** Hkkjr d lHkhukxfjdkdk /ke] tkfr] eyo'kj fyxvFkoktUeLFkku d vk/kkjijfcukfdlhHknHkko d ljdkjhinkijfu;fDr d lekuvoljçnkudjrkgA
- **vLi';rk dk vr & vuPNn¼17½**d rgr NvkNr l lEcfU/kr fd;k x;k fdlh Hkh idkj dk xyr vkpj.k n.Muh; vijk/k ekuk x;k gA
- **mikf/k;k dk vr & vuPNn¼18½**jkT; dk bl ckr d fy, ikcn djrk g fd og luk vkj fo|k d vfrfjDr dkb vU; mikf/k inku ugh dj ldrkA

2. **Lor=rk l lcf/kr vf/kdkj &**

Hkkjrh; lfo/kku d Hkkx 3 d vuPNn 19 l 22 e ukxfjdk dk Lor=rk l lcf/kr fuEu vf/kdkj inku fd; x; g &

- **vfHk0;fDr dh Lor=rk & vuPNn¼19½**d rgr çR;d ukxfjd dk Lor=rk l lcf/kr fuEu vf/kdkj çnku fd; x; g &

- ckyu ,o vfHk0;fDr dh vktkmhA
- lxBu ,o l?k cuku dh Lor=rkA
- 'kkfriod lHkk ,o lEeyu dju dh Lor=rkA
- Hkkjr d fdlh Hkh jkT; e fuokl dju dh Lor=rkA
- Hkkjr d fdlh Hkh fgLl e ?keu dh Lor=rkA

- Hkkjr d fdlh Hkh {k= e 0;kikj ,o dkjkckj dju dh Lor=rkA

- U;k; dh Lor=rk & vuPNn½20¼d vulkj fdlh Hkh 0;fDr dk rc rd vijk/kh ugh Bgjk;k tk ldrk tc rd vijk/k djr le; mlu ykx fdlh dkuu dk mYy?ku ugh fd;k gkA ;g vuPNn ;g Hkh of.kr djrk g fd fdlh Hkh 0;fDr dk ,d vijk/k d fy, ,d gh ckj nf.Mr fd;k tk ldrk gA

- nfgd ,o ik.k dh Lor=rk & vuPNn½21¼ d rgr fcuk fdlh dkuuh ifØ;k d fdlh Hkh 0;fDr dk viu çk.k ;k 'kkjhfjd Lor=rk l ofpr ugh fd;k tk ldxkA

- cnhdj.k l lj{k.k & vuPNn½22¼ ;g of.kr djrk g fd fdlh Hkh 0;fDr dk fcuk fdlh dkuuh ifØ;k l vf/kd le; rd cnh ugh j[kk tk ldrk gA

3- 'kk"k.k d fo:) vf/kdkj &

lfo/kku d vuPNn 23 rFkk 24 e ukxfjdk dk "kk"k.k d fo☺ vf/kdkj inku fd; x; gA

- cxkj ij jkd & lfo/kku d vuPNn½23¼ d }kjk eu";k d Ø;&foØ; vkj cxkj dk i.kr;k ifrcf/kr fd;k x;k gA

- cky Je ij jkd & vuPNn½24¼ cky Je dk fu"k/k djrk gA bl vuPNn d rgr 14 o"k dh vk; l de cPpk dk dk; ij ugh yxk;k tk ldrk gA

4- /kkfed Lor=rk l lcf/kr vf/kdkj &

Hkkjrh; lfo/kku d vuPNn 25 l 28 e ukxfjdk dk /kkfed Lor=rk d vf/kdkj fn;k x; g] tk fuEu idkj g &

- vuPNn½25¼& bl vuPNn d rgr Hkkjr d iR;d ukxfjd dk viuh bPNk d vulkj fdlh Hkh /ke dk viuku dh Lor=rk inku dh xb gA

- vuPNn½26¼& ;g vuPNn /kkfed lLFkkvk dh LFkkiuk vkj lpkyu dju dh Lor=rk inku djrk gA

- vuPNn½27¼& bl vuPNn d }kjk /kkfed dk;k e 0;; dh tku okyh jkf'k dk dj l eDr fd;k x;k gA

- vuPNn½28¼& ;g vuPNn ljdkjh fo|ky;k ,o dkytk e /kkfed f'k{kk ij i.kr;k ikcnh yxkrk gA

5- lLdfr ,o f'k{kk l lcf/kr vf/kdkj &

Hkkjrh; lfo/kku d vuPNn 29 o 30 e Hkk"kk] lLdfr ,o f'k{kk l lcf/kr vf/kdkjk dk o.ku fd;k x;k g] tk fuEu idkj g &

- vuPNn½29¼& Hkkjr d iR;d ukxfjd dk viuh Hkk"kk] lLdfr puu vkj mud fodkl d leku volj inku djrk gA

- vuPNn½30¼& d rgr lHkh ljdkjh f'k{k.k lLFkkvk e o'k] tkfr vkj Hkk"kk d vk/kkj ij ço'k l ofpr dju ij jkd yxkb xb gA

6- lo/kkfud mipkjk dk vf/kdkj

Hkkjrh; lfo/kku dk vuPNn½32¼ Hkkjr d iR;d ukxfjd dk viu fuEu vf/kdkjk d j{kk gr U;k;ky; dh 'kj.k e tku dh vuefr nrk g &

- cnh çR;{kdj.k& U;k;ky; fdlh Hkh vijk/k d fy, cnh cuk; x; 0;fDr dh ikFkuk ij fdlh Hkh cnh cuk; x; 0;fDr dk mld lkeu iLrr dju dk vkn'k inku dj ;g tkp dj ldrk g fd mldh fxj¶rkjh o/k g vFkok ughA

- çfr"k/kk& ;g vkKk i= U;k;ky; }kjk viu gh v/khuLFk U;k;ky;k dk mud dk;{k= l ckgj dk;okgh ij jkd yxkrk gA

- **ijekn'k**& U;k;ky; fdlh Hkh lLFkk] 0;fDr ;k inkf/kdkjh dk lkotfud dÙko; d fuogu gr vkn'k ndj ml ekuu d fy, ck/; dj ldrk gA
- **mRç{k.k**& bld rgr fdlh dl dh dk;okgh l lcf/kr dkxtkr dk uhp d U;k;ky; l Åij d U;k;y; e y tku dh vuefr inku dh xb gA
- **vf/kdkj iPNk**& bld rgr ;fn dkb 0;fDr vo/kkfud :i l ;fn dkb in ikIr dj yrk g rk U;k;ky; ml viuh 'kfDr dk ç;kx dj in l gVk ldrk gA

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ekuokf/kdkjk dh j{kk grjk"Vh; ,ovUrjk"Vh; Lrjijdbi;klfd;x;gvkjfd;Hkhtkjggr Fkkdbljdkjh ,oxjljdkjhlxBuekuokf/kdkjk dh j{kk grvktHkkç;kljrgAekuokf/kdkjk dh j{kk d fy, fo'oLrjijfd;x;fofHkUuç;klkdk ,frgkfld nf"Vdk.k l fuEufcUnvk }kjk le>k tkldrk g^2&

- l;Drjk"V }kjkefgykvk d jktuhfrdvf/kdkjk dh j{kk d fy, o"k 1952 e ,d dUo'kuvk;kftrfd;kx;kA
- o"k 1954 e ;jkih; ekuokf/kdkjvk;kx dh LFkkiukA
- o"k 1959 el;Drjk"V egklHkk }kjkckyvf/kdkjk d lc/k eegRoi.k ?kk"k.kk dh xb] lkFkghdik"k.k] ckyJe d fo:) dBkjfu;ecuku dh ckr dh xbA
- o"k 1961 e ,euLVhbVju'kuy dh LFkkiuk dh xbtkvktekuokf/kdkjk l lcf/kr ,d tkuhigpkuh lLFkkgA
- o"k 1974 euohuvUrjk"Vh; vFk0;oLFkk dh LFkkiukgrfo'o d ukxfjdk dh Hkkxhnkjh lfuf'pr dh xbA
- fnlEcj 1975 efodykx0;fDr;k d vf/kdkjk l lcf/kr ?kk"k.kk dh xbA
- uoEcj 1976 eukxfjdvkjjktuhfrdvf/kdkjk d fy, ekuokf/kdkjlfefr dh LFkkiuk dh xbA
- o"k 1978 eekuokf/kdkj l lcf/krlclegRoi.klLFkká;eujkbVlokp dh LFkkiuk dh xbA
- o"k 1992 el;Drjk"V }kjkjk"Vh; ,otkrh;] /kkfed o Hkk"kk;hvYil[;dk l lcf/krekuokf/kdkjk dh ?kk"k.kk dh xbA
- tu 1993 efo'oekuokf/kdkjlEeyu dk vk;ktufo;ukefd;kx;kA
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1- tk'kh] vkj-ih-] ¼2009½] ekuokf/kdkjvkjdÙk0;] vfHkuoidk'ku] vtej] i-l- 23A
2- vxoky] ,p-vk-] ¼2010½] á;eujkbVl] ykifCyd'ku] bykgkckn] i-l- 26A
3- ehuk] Mk- tud flg] ¼2013½] ekuokf/kdkj % ldYiuk ,o ;FkkFk] jktLFkkuxUFkvdkneh] tk/kij] i-l- 58A
4- QfM;k] dynhi] ¼2011½] l;Drjk"V l?k ,oie[k vUrjk"Vh; lxBu] lkfgR; Hkouifcyd'ku] vkxjk] i-l- 2&7A
5- ik.M;] t; ukjk;.k] ¼2013½] Hkkjr dk lfo/kku] lUVyyk ,tUlh] bykgkckn] i-l- 224A

6- 'kek] c tfd 'kkj] ¼2008½] Hkkjr dk lfo/kku& ,d ifjp;] ih,pvkbifyf'kxgkml] ubfnYyh] i-l- 96&102A
7- cl] Mh-Mh-] ¼2013½] Hkkjrh; lfo/kku& ,d ifjp;] ukxij] i-l- 93&112A
8- ekFkj] Mk- d".kekgu] ¼2011½] Lor=kUkkrjHkkjreekuokf/kdkj] Kkuifcyf'kxgkml] ubfnYyh] i-l- 13A
9- dkULVhV; 'kuvkQbf.M;k] Hkkx 3A
10- dkULVhV; 'kuvkQbf.M;k] Hkkx 4A
11- d';i] lh- lHkk"k] ¼2010½] g;eujkbVl ,.M ikfy;ke.V] i-l- 20A
12- c;j ,DV] Hkkjr dk lfo/kku] dkuuidk'kd] tk/kij] i-l- 27&30A
13- d';i] lh- lHkk"k] ¼2013½] gekjk lfo/kku] u'kuycd VLV bf.M;k] ubfnYyh] i-l- 112A

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COVID 19 AND TECHNOLOGY ADAPTATION - A STUDY AMONG COLLEGE TEACHERS WITH SPECIAL REFERENCE TO TRISSUR DISTRICT

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Abstract

The Covid-19 pandemic and the social distancing that followed have affected all walks of society, also education. In order to keeps education running, educational institutions have had to quickly adapt to the situation. This has resulted in an unprecedented push to online teaching and learning. The use of Information and Communication Technology (ICT) has acquired immense prominence in the field of education over the last two decades. Many past researches have revealed that students accept technology easily, but implementation of the same by the teachers has been inconsistent with the requirements. During covid pandemic it becomes the necessity for the teachers to adapt with technology. It has changed the traditional education system to the educational technologies (EdTechs) model, where teaching and assessments are conducted online. The surveys show that more than 80 percentages of online classes are moving smoothly. The present study wants to investigate the factors influencing the technology adaptation among the college teachersduring COVID-19 19 pandemic and aims to identify the barriers faced by teachers during online teaching. The primary data were collected from 100 teachers working in different colleges in Thrissur. The survey shows that the organizational factors, social factors, personal factors and demographic factors have the significant influence on the technology adaptation along with the mediating influence of Technology Acceptance.

Keywords: Organizational Factors, Social Factors, Personal Factors, Demographic factors Technology Acceptance, Technology Adaptation.

I.Introduction

Various sectors have seen tremendous growth after COVID-19 breakdown. The Covid-19 pandemic and the social distancing that followed have affected all walks of society, also education. In order to keeps education running, educational institutions have had to quickly adapt to the situation. This has resulted in an unprecedented push to online teaching and learning. The use of Information and Communication Technology (ICT) has acquired immense prominence in the field of education over the last two decades. As in many countries worldwide, as part of the consequences of the COVID-19 pandemic lockdown, thousands of schools were closed in March 2020. Consequently, teachers face significant challenges in adapting to online teaching, and maintaining at least a minimum of communication with students and supporting students' learning and development. However, the extents to which teachers have successfully mastered these challenges and which factors are most relevant remain unknown. Many past researches

have revealed that students accept technology easily, but implementation of the same by the teachers has been inconsistent with the requirements. During COVID-19 pandemic it becomes the necessity for the teachers to adapt with technology. It has changed the traditional education system to the educational technologies (EdTechs) model, where teaching and assessments are conducted online. Teachers had to change to online teaching, requiring them to use various digital tools and resources to solve problems and implement new approaches to teaching and learning. Beyond instructional goals, teachers were also required to maintain contact with their students to account for the social integration of their learning groups.The present study wants to investigate the factors influencing the technology adaptation among the college teachers during covid 19 pandemic and aims to identify the barriers faced by teachers during online teaching.

Statement of Problem

As in many countries worldwide, as part of the consequences of the COVID-19 pandemic lockdown, thousands of schools and colleges were closed in March 2020. Consequently, teachers face significant challenges in adapting to online teaching, and maintaining at least a minimum of communication with students and supporting students' learning and development. Many past researches have revealed that students accept technology easily, but implementation of the same by the teachers has been inconsistent with the requirements. During covid pandemic it becomes the necessity for the teachers to adapt with technology. It has changed the traditional education system to the educational technologies model, where teaching and assessments are conducted online. The COVID-19 situation requires not only knowledge and skills but also confidence regarding success in online teaching. Over and above the organizational factors, social factors, personal factors and demographic factors have the significant influence on the technology adaptation along with the mediating influence of Technology Acceptance. So, conduct a study based on this context deserves much significant.

Objectives

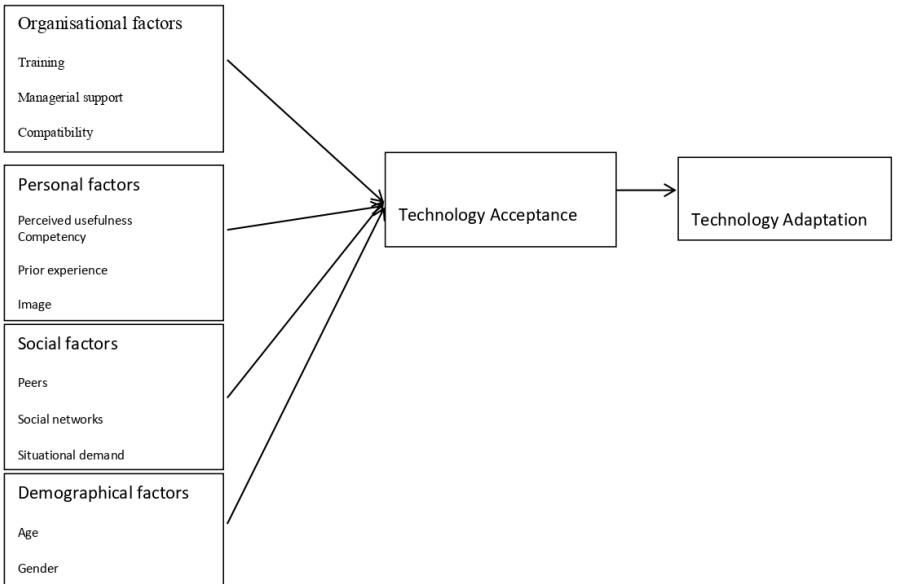
1. To analyse the level of influence of Organisational Factors, Personal Factors, Social Factorsand demographic factors on the technology adaptation among college teachers.

Hypotheses

1) Technology acceptance mediates the relationship organizational factors and Technology adaptation.
2) Technology acceptance mediates the relationship personal l factors and Technology adaptation.
3) Technology acceptance mediates the relationship social factors and Technology adaptation.
4) Technology acceptance mediates the relationship demographical factors and Technology adaptation.

The Conceptual Model

On the basis of variables identified, a conceptual model developed for the study is shown in the figure 1.1.



Methodology of the Study

The present study is both descriptive and explanatory in nature and both secondary and primary data were collected and used for the study. The population of the study covers the teachers ofgovernment, aided and self-financingcolleges in Trissur District. The primary data required for the study were collected from 100 respondents using convenient sampling method. A well-structured questionnaire was developed for the collection of primary data.

Tools used for Analysis of Data

The collected data were tabulated and analysed with the help of SPSS 21.0. The statistical techniques used for analysis include Multiple Regressions Analysis. The reliability of the scale of measurement used was assessed using Cronbach's Alpha coefficient, which was above the minimum acceptable level 0.7, there by confirmed the reliability of the scale of measurement used in the study.

Limitations of the Stud*y*

The technology adaptation is analyzed only among college teaches due to paucity of time. It is also noted that since the study depends mainly on the views of the individual, there are chances for their personal bias while responding to the questions; even then maximum care has been taken while analysing and interpreting the data to draw appropriate and logical conclusions.

IIReview of Literature

Johannes König , Daniela J. Jäger-Biela & Nina (2020) conducted a study on study on "Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany." The paper presents the results of a survey of early career teachers conducted in May and June 2020. First, we analysed the extent to which they maintained social contact with students and mastered core teaching challenges. Second, we analysed potential factors (school computer technology, teacher competence such as their technological pedagogical knowledge, and teacher education learning opportunities pertaining to digital teaching and learning). Findings from regression analyses show that information and communication technologies (ICT) tools, particularly digital teacher competence and teacher education opportunities to learn digital competence, are instrumental in adapting to online teaching during COVID-19 school closures. Implications are discussed for the field of teacher education and the adoption of ICT by teachers.

Veena Shenoy, Sheethal Mahendher and Navita Vijay (2020) in their study on "COVID 19 Lockdown Technology Adaption, Teaching, Learning, Students Engagement and Faculty Experience" investigated the the technology adoption, teaching and learning process, student engagement and faculty experience towards virtual classrooms during Lockdown due to COVID 19, India. Inductive reasoning used in this study and qualitative research methods are used to collect the data from faculties associated with Higher education institutions in Bangalore and teaching courses such as PGDM, M.B.A, M.Com, M.C.A etc. The finding of the study suggests that during the lockdown period faculty have undergone the process of technology adoption and students are involved with various online modes of learning. There was lots of fear, anxiety and consciousness among students and faculty regarding COVID 19. This study is confined to the positive side of COVID 19 and change in the education sector by adapting to technology and engaging students with various virtual sessions. The current study is limited to the sample frame of 20faculty from Higher education institutions at Bangalore, India, hence finding of this study cannot be generalized for entire India. The emotions and perceptions of faculty towards the usage of technology and experience are different for different users. Even though COVID 19 has created cognitive dissonance in students and faculty mind towards various situations they have faced in their day to day life in association with the society, family, and teaching and learning. It has created the revolution in Indian higher education, as there was lots of resistance in teaching fraternity towards adapting to technology and virtual engagement of students. Due to the situation, most of the higher education in Bangalore has widely adopted the technology and students' involvement is more than the regular class engagement.

Zamira Hyseni Duraku and Linda Hoxha (2020) conducted a study on "The impact of COVID-19 on education and on the well-being of teachers, parents, and students: Challenges related to remote (online) learning and opportunities for advancing the quality of education". The aim of this study is to explore and describe the concerns of students, parents, and teachers related to the circumstances caused due to social isolation, and the perspectives of teachers and parents with regard to remote or online learning. This study adopted the qualitative research design. In the framework of this study, the case studyresearch strategy was used. For data collection, semi-structured

interviews were used, which were conducted with (N = 13) parents, and (N =11) teachers. Study participants are an active part of pre-university public institutions within (n = 14) municipalities from (n = 7) regions of Kosovo. According to the findings of this study, the new circumstances created due to the spread of COVID-19, including changes in education, have caused a number of concerns among students, parents, and teachers in Kosovo. The findings from the study confirm the common concerns of the two reporting groups in the study in relation to student assessment, worries and overload, as well as evaluations of the incompatibility of the learning conducted so far. The findings of this study confirm the readiness and motivation of teachers to advance their knowledge and skills, as well as to contribute with the aim of advancing the quality of education. Opportunities to advance the quality of online learning, the support of teachers, parents, and families, coupled with practical suggestions for parties involved in the field of education, are also included.

Majharul Talukder (2020) in his study on "Factors affecting the adoption of technological innovation by individual employees: An Australian study "investigates the determinants of the adoption of technological innovation by individual employees within an organizational context in Australia. In order for an organization to be successful in bringing innovation to the workplace, an understanding of potential adopters and the factors influencing their adoption decision is important. The study uses the theory of reasoned action (TRA) and the technology acceptance model (TAM) as a basis of the theoretical framework. Survey questionnaires were used to collect data from an Australian organization. The findings indicate that perceived usefulness and managerial support are the two dominant variables in explaining adoption. The results show that individual adoption of innovation is also influenced by two social factors – peers and social network. The results also indicate that individual adoption of innovation is influenced by demographic factors. The research model provides a valuable alternative and comprehensive theoretical basis for improving our understanding of individual users' acceptance of innovation. The study contributes to knowledge and has practical implications for organizations concerned with adoption of technological innovation.

Hamed Taherdoost (2018) in the study "A Review of Technology Acceptance and Adoption Models and Theories" Recognition the needs and acceptance of individuals is the beginning stage of any businesses and this understanding would be helpful to find the way of future development, thus academicians are interested to realize the factors that drive users' acceptance or rejection of technologies. A number of models and frameworks have been developed to explain user adoption of new technologies and these models introduce factors that can affect the user acceptance. In this paper, an overview of theories and models regarding user acceptance of technology has been provided. The existing review will emphasize literature that tries to show how developers and researchers presage the level of admission any information technology will attain.

David Fonseca, Ernesto Redondo, Francesc Valls and Sergi Villagrasa (2017) conducted a study on "Technological adaptation of the student to the educational density of the course. A case study: 3D architectural visualization. The main objective of this study was to assess the degree of students' adaptation to two types of courses on

applications of architectural spatial representation. With the same semester lengths, the first proposal involved lectures on 4–5 applications, whereas the second covered approximately 20 applications, all of which were focused on the three-dimensional (3D) representation of the architectural project. Both proposals were based on applications and technological innovations that allow better use of active learning, which is the basis of architectural education. After an initial study of the students' profiles and motivations, both courses were implemented (throughout the 2014–2015 academic year), and quantitative and qualitative data were collected. This mixed approach provided us with a better understanding of the results of students' motivation and satisfaction. It also allowed us to evaluate the extent to which they adapted to the designed proposals and how our proposal affected the pace and number of the applications presented throughout the two courses.

Md Athar Imtiaz and Nurazean Maarop (2014) conducted a study on "A Review of Technology Acceptance Studies in the Field of Education". Technology acceptance studies are a common medium of determining approval and predicting future use of technologies in the field of Information Systems. Numerous technology acceptance studies have been done in the area of education however there still remain hindrances in the use of computer in education. The aim of this study is to analyse published research materials in the area of technology acceptance in education and identify the currentresearch patterns. Upon identifyingthese patterns, a future research path is presented. For this purpose, initially the popular technology acceptance theories are studied so as to build a firm base for examining the technology acceptance works in education domain. The technology acceptance researchworks werethoroughly scrutinizedto identifyimportant aspects like acceptance theory used, constructs used, causal relationships and user types. Based on all these aspects a future research pathway is suggested

III. Analysis on Mediating Effect of Technology Acceptance on Technology Adaptation

Test of Reliability

The reliability of the instrument used in the study was tested by computing Cronbach's Alpha (α) value for each of the five variables as well as for the entire set. The test result is presented in the Table1.1.

Table 1.1 Test of reliability

Sl. No.	Variables	No of items	Cronbach's Alpha (α)
1	Organisational Factors	10	0.870
2	Personal Factors	11	0.847
3	Social Factors	9	0.791
4	Demographic Factors	4	0.867
5	Technology Adaptation	6	0.903
6	Technology Acceptance	5	0.832
7	Total	45	0.952

Multiple Regression Analysis results for organizational factors, social factors, personal factors and demographic factors and Technology Acceptance with Technology Adaptation

Table 1 Multiple Regression Analysis

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta (β)		
Training	.572	-.320	-122	-2.744	.235
Managerial support	.667	-.065	104	-2.304	.987
Compatibility	.889	.089	.129	5.124	.001
Perceived usefulness	.304	.097	.234	2.145	.000
Competency	.765	.045	.044	1.456	.002
Prior experience	.213	.034	.067	.662	.000
Image	.124	.066	.053	1.186	.009
Peers	.234	.077	.030	1.136	.005
Social networks	.789	.054	.056	2.789	.345
Situational demand	.897	.043	.076	1.568	.000
Age	.342	.056	-.058	1.345	.000
Gender	.102	.076	-.015	.543	.457

The results show that the technology acceptance can be explained by training, managerial support, compatibility, perceived usefulness, competency, image, prior experience, situational demand, Age, gender with peers and social network variables. The Durbin-Watson statistics shows that there is no problem regarding autocorrelation. The model is a significantly better predictor of dependent variable Technology Adaptation. From the magnitude of the beta-statistics we can see the perceived usefulness has a higher impact, followed by situational demand, competency, prior experience, image and social network. Results of regression analysis are shown in table 1.

IV Findings

- 74% respondents accepted the fact that their life has become more dependable on Technology during Covid-19
- The awful impact of ferocious pandemic embedded terror and fears in the lives of people and forced them to stay inside which made them addicted to digital technology.
- The findings revealed four categories of barriers that are faced by teachers during online teaching and assessments. Under home environment settings, a lack of basic facilities, external distraction and family interruption during teaching and conducting assessments were major issues reported.

- Teachers' personal problems including a lack of technical knowledge, negative attitude, course integration with technology and a lack of motivation are identified as major hindrance for the technology adaptation.
- From the magnitude of the beta-statistics the perceived usefulness has a higher impact, followed by situational demand, competency, prior experience, image, age and social network.

V Conclusion

During COVID-19 pandemic it becomes the necessity for the teachers to adapt with technology. Beyond instructional goals, teachers were also required to maintain contact with their students to account for the social integration of their learning groups.Over and above the organizational factors, social factors, personal factors and demographic factors have the significant influence on the technology adaptation along with the mediating influence of Technology Acceptance.

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EFFICACY OF SPEECH KIT ON THE DEVELOPMENT OF PHONEMES IN CHILDREN WITH HEARING IMPAIRMENT

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Abstract

Speech development in children with hearing impairment is a complex process due to delay in speech milestones. The purpose of this study is to investigate the efficacy of speech kit to develop phonemes in Children with Hearing Impairment. The study was conducted using purposive quasi-experimental method by selecting 10 students with hearing impairment at the age of 10-15 years from two inclusive schools in Coimbatore district and also performed pretest, intervention and post-test using speech tools and speech kit for the selected samples. Data were collected to analyze the impact of speech kit and development of phonemes in the participants. It mainly focused on development of 7 phonemes in Tamil language (பமவதலடச) using Speech kit containing four major components such as Respiratory kit, Auditory kit, Articulatory kit, and Phonatory kit. The results indicated that the speech kit implemented during the intervention has a higher efficiency in developing phonemes in Children with Hearing Impairment. This study supports parents, special educators, general educators and any care takers of children with hearing impairment on preparing own speech kit and train basic phonemes in them.

Keywords: Hearing Impairment, Phonemes, Speech Development, Speech Kit, Tamil Language.

Introduction

Speech is a mode of communication that only a human being can possess. The speaking skill is a hard and highly coordinated process which involves Respiratory, Phonatory, Articulatory, Resonatory and Regulatory systems for the use of production of speech. When the child hears more, the development in speech is high, but it is hard to develop speech in hearing impaired children due to limited hearing or no hearing. The capacity in perceiving and reproducing the oral language is affected due to impairment in hearing. Children with auditory deficit at birth leads to delay in speech milestones (Sininger et al., 2010). Children with difficulty in hearing may lack in getting auditory awareness and understanding speech due to hearing loss. The child also struggles to hear his/her own voice. For developing or acquiring the speech in child with auditory deficit, speech therapy is essential (Moeller et al., 2010). Speech therapy acts as a process of dealing with communication and speech disorders. It involves increasing an efficiency of the oral-motor muscles through speech drills and to improve clarity in articulation.

Speech therapy includes speech kit containing speech tools and materials to enhance the child's speech production by correcting the speech errors and providing drill practice.
Current speech and language therapies for deaf and hard-of-hearing children include a broad spectrum of approaches and techniques (Bergeron et al., 2020). To enhance speech, the base is to strengthen the phonemes in all languages. Speech kit plays a crucial role in speech training to strengthen the speech and phoneme acquisition.Thus, the present research work focuses on preparing and implementing a speech kit for developing phonemes in Children with Hearing Impairment (CWHI). The study concentrates on developing phonemes in Tamil language using speech kit containing a specific set of speech tools and materials along with instructional packages. (Vassilyev, 1970) states that a phoneme is invisible language unit of sound that differentiates one word of grammatical for from another grammatical form of same word. Each single speech sound, which distinguishes meaning is known as Phoneme. At present, verbal therapy and speech therapy is costly, many children at low economic status is not able to make use of it. Parents are also not aware of providing a basic, phoneme training in their native language at home which is very essential for CWHI to develop their speech skill at early years. To support this difficulty aroused, the current study is recommended to make utilize a handmade speech kit to develop phonemes among children who have difficulty in hearing.

Literature Review

More studies in the relevant literature (Abraham, 1989; Babel, 2012; Hogberg, 1996; Meline, 1997; Sterne & Goswami, 2008) examines the study on phonemic awareness and phonological development in children with hard of hearing. (Blaiser& Lamb, 2013) have investigated on speech production tool for hearing impaired children. In specific, (Rao, 2011) has been described the prosody model for developing speech systems in Indian languages. Similar studies conducted in Tamil language to recognize the speech and conversation analysis of children with hearing impairment (Harinath& Raghunathan, 2017; Jeyalakshmi& Revathi, 2017; Rathinavelu, Anupriya, &Murugavel, 2007). Difficulties with speech sound production include problems with the articulation of vowels and consonants. There exist an articulatory error such as substitutions, omissions and distortions due to difficulty in phoneme (speech sound) production (Hudgins & Numbers, 1942). These problems are accompanied by a significantly slower rate of general speech sound awareness (phonological development) in children with hearing loss (Subtelny, 1983). It is evident that many deaf or hard-of-hearing people with oral communication can correctly produce phonemes in isolation, but they might have difficulty in producing phonemes during connected speech. Accordingly, the present study will contribute to the existing research to shed light upon some aspects such as phonemic development through speech kit for children with hard of hearing.

Need for the study

Children with hearing impairment face many difficulties in speech and language development. They are not able to recognize the sound letter association and their meaning. Every children acquire speech at early years by hearing and speech reading but is a higher implication for hearing impaired children to hear the speech

sound and understand it correctly. They also faces the following difficulties in development of speech.

- Difficulty in perceiving the speech sounds
- They require proper speech therapy from the professionals in order to develop speech which is highly expensive
- The child face problems in learning specific speech sounds based on their speech threshold frequencies
- Difficulty in communicating with other peers through speech
- Speech training for hearing impaired children varies by their level of speech acquisition and age of the child. It requires differentiated instructions and materials.

For the reasons mentioned above children with hearing impairment face many difficulties in speech production. Hence there is a need for parents and teachers of children with hearing impairment to aware about speech training and preparation of speech kit at low cost.

Objectives of the Study

The major objectives of the study are

- To find out the phonemic level of understanding phonemic problems among the children with hearing impairment using the speech tool
- To develop the skill of speaking phonemes especially in Tamil language through speech kit
- Correct articulatory error such as substitution, omission, distortion and addition using speech kit
- To stimulate the speech organs involved in speech production using speech kit to make an ease of speech and encourage the child to speak voluntarily
- To improve the speech sounds, letters, and words among hearing impaired children with the efficacy of speech kit.

Hypothesis of the study

The study explore the hypothesis as

- There is no significant difference between children with hearing impairment in terms of phonemic development through speech kit before and after intervention

Limitation of the Study

The limitation of the study were following as

- ✓ The study administered only to the inclusive schools
- ✓ The study carried out only for children with hearing impairment at upper primary level.

Methodology

Selection of the sample The samples were selected based on the purposive sampling technique. The samples for this study consists of ten hearing impaired students together with 5 boys and 5 girls between the age group of 10 to 15 years.

Selection of method

The study was carried out by quasi-experimental method to find out the efficacy of speech kit on the development of phonemes in children with hearing impairment. Data were collected from the children with hearing impairment who were enrolled in inclusive schools.

Procedure

Data collection took place in the middle of the academic year (2019-2020). The tests were administered by special educators and the investigator. The study was planned to conduct under five phases. In first phase the investigator collected the data through survey. This process is carried out by gathering information from parents, teachers and also through case profiles. The tool was carried out in normal children for the purpose of standardization. Then the pre-test was conducted for the selected sample. After that intervention was given using the speech kit by the researcher. Then the post-test was conducted by administering the tool. Statistical analysis has done to identify the efficacy of speech kit on development of phonemes for the hearing impaired children before and after intervention.

Scoring

The tool for impact of speech kit on development of phonemes had two points namely Responding and Not Responding. If the children attain correct production of phonemes with correct response, score '1' was given and if the children does not produce the phonemes score '0' was given.

Description of the Speech kit

The speech tool was adapted from the study, "Impact of instructional package on phonological development in children with hearing impairment" by (Shanthi &Kowsalya, 2019). This tool consists of 30 words on the basis of 14 phonemes especially in Tamil language. Based on that, the investigator developed the speech kit for the development of phonemes in children with Hearing Impairment Phonemes focused on this study are "ப, ம, த, ல, வ, ச, ட". As the speech production process involves major 5 mechanisms such as Respiration, Phonation, Articulation, Resonation and Regulation. This Speech kit is developed to enhance the above mechanisms and energize the production of phonemes effectively.

Table 1 Speech kit materials

Respiratory Kit	**Phonatory Kit**	**Articulatory Kit**	**Auditory Kit**
Balloon Candle Whistle Thermo balls & Straw Bubbles	Powder Paper Cuttings Cotton Tissue Ball	Honey Spoon Sugar Lollipop Ice-cream stick Mirror Torch Artificial mouth	Drum Jingles Sand Pepper Cumin (Seeragam)

		model	
Cue cards Booklet (Picture cards)			

From Table 1, speech kit consist of 25 items which are categorized into four components based on its function such as Respiratory kit, Phonatory kit, Articulatory kit and Auditory kit. To produce each speech sounds one or more following tools can be used. E.g., to train / ப / phoneme and related words, speech tools like powder, paper cuttings, tissue paper, candle, mirror, cue cards and picture cards were used. Tactile cue of this phoneme was Keeping hand in the front of the mouth to feel the airflow. Similarly, the remaining phonemes were developed among the participants by using the speech kit based on their individual requirements.

Classification of Phonemes

We selected basic 7 consonant sounds producing phonemes which are essential in the Tamil language to develop simple words in children with speech difficulties. These 7 phonemes (ப, ம, த, ல, வ, ச, ட) were categorized into four areas based on place and manner of articulation namely Bilabial, Labiodental, Alveolar, and Fricative.

Results and Discussion

Table 2, displays the phonemic development among children with hearing impairment through speech kit before and after intervention. It reveals that during the pretest children with hearing impairment misarticulate the phonemes பமவதலடச. But after getting proper intervention through speech kit, speech errors were rectified and the performance of the children were improved. Most of the children shown improper response in alveolar sounds(லட) with 10% and fricative sound(ச) with 20% before intervention. Especially the sound, 'ட' is very difficult to produce because it is an invisible phoneme whose place and manner of articulation is hard for the child to imitate. The study proves that proper utilization of speech kit have an impact on the development of phonemes among children with hearing impairment.

Table 2 Phonemic development through speech kit in:Children with Hearing Impairment

S.No	Areas of classification (Consonants)	Phonemes	R (%) in Pretest (CRP)	R (%) in Posttest (CRP)
1.	Bilabial	ப	70%	100%
		ம	40%	100%
2.	Labiodental	வ	80%	100%
3.	Alveolar	த	80%	100%
		ல	10%	100%

		∟	10%	80%
4.	Fricative	∱	20%	90%

R = Responding; CRP= Correct Response Percentage

From table 3, it is evident that the study has proved the efficacy of speech kit developed by the researcher. This test scores were calculated using t-test. Significant level of this study was 0.05. Statistical data of the study compares the effectiveness of phonemic development between the age groups of 10-12 years and 13-15 years. Comparatively, CWHI at the age of 13-15 yrs has acquired better production of phonemes through proper intervention using speech kit. During intervention, speech errors such as addition, substitution, omission and distortion of phonemes are corrected using speech kit. Then the selected sample resulted in higher improvement in the production of phonemes in post-test of the study.

Table 3 Comparison of Phonemic development among CWHI through speech kit before and after intervention with respect to Age Group

Age	Testing	Respond-ing Score	Respond-ing (%)	Mean	SD	t- value
10-12 yrs (5)	Pretest	18	51.43	2.571429	1.511858	0.001722
	Posttest	33	94.29	4.714286	0.48795	
13-15 yrs (5)	Pretest	13	37.14	1.857143	4.857143	0.001411
	Posttest	34	97.14	1.772811	0.377964	

CWHI: Children with Hearing Impairment

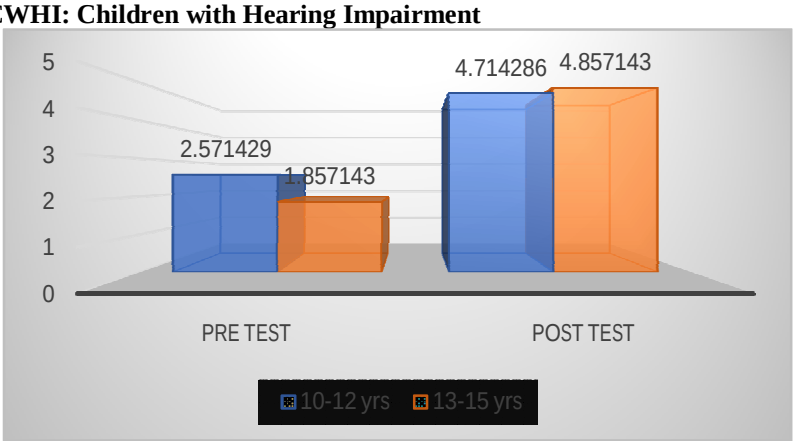

Figure 1 Comparison of Phonemic development among Children with Hearing Impairment through speech kit before and after intervention with respect to Age Group

From the result, it was apparent that the study has achieved the objective of achievement in phonemic development through speech kit in CWHI. Data collected have supported to prove the hypothesis of having a significant difference in impact of speech kit on the development of phonemes in children at the age of 10-15 years. To enhance the need of children with speech difficulties, the same study can be done with larger samples of CWHI, Parents, and Special education teachers in future to develop all phonemes in Tamil language using this speech kit.

Conclusion and future scope

The study results clearly indicated there is a need of the speech kit to develop speech in children with hearing impairment through phonemic development. This study is novel in the area of phonemic development in a Tamil language using speech kit in children with hearing impairment. It also supports the special educator to provide speech therapy with help of speech kit along with instructional package, for the purpose of developing phonemes. Due to economical constrain the parents of the hearing impaired are not able to spend money for speech therapy and at the same time, the parents, and the teachers of children with hearing loss is not aware of the development of phonemes which is essential for speech production. This study becomes a hope to parents, teachers and special educators of children with hard of hearing to train their children to speak at an early stage by preparing efficient speech kit on their own and able to provide speech training at home under the guidance of para professionals. When the child gets proper training and intervention by using speech kit at the right time, certainly they will develop their speech effectively. The study is recommended to continue further research on application of this speech kit to develop oral language in children with hearing impairment. In the future, it can be used as a significant tool in speech development for all children with speech problems.

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EMOTIONAL MATURITY OF THE UNDERGRADUATE AND POST GRADUATE STUDENTS OF ASSAM, INDIA: A COMPARATIVE STUDY

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Abstract

Emotions occupy a place of great importance in human life because they make our life infinitely varied, interesting, pleasurable, thrilling, existing and beautiful. Emotional maturity is not only the affective determinant of personality pattern, but also helps to control the growth of individual development. Emotional maturity depicts our capacity to manage and to check our emotions, to evaluate other's emotional state and to persuade their judgment and actions. The objectives of the present study was to study and compare the level of emotional maturity among the undergraduate and postgraduate students of Assam, India. In order to collect the required data for the study, Descriptive survey method was adopted. The samples for the study were selected by using both simple random and incidental sampling technique. The results of the study revealed that the undergraduate and postgraduate students of Assam are extremely emotionally immature. The study also pinpointed that there is no significant difference on emotional maturity among the undergraduate and postgraduate students of Assam.

Keywords: Emotional Maturity, Undergraduates, Postgraduates.

1.0 Introduction

In the present era of globalization and technological revolution, education is considered as a first step for every human activity. Education is a process of human enlightenment and empowerment for the achievement of a better and higher quality of life. Although education develops the individual like a flower which distributes it's fragrance all over the environment and drags a person from darkness, poverty, and misery by developing his individuality in all it's aspects, yet emotional aspects plays a significant role on guiding and directing our behaviour. Emotions occupy a place of great importance in human life because they make our life infinitely varied, interesting, pleasurable, thrilling, existing and beautiful. Emotion is an agitated state of our mind and body. It is the complex psycho physiological experience of an individual's state of mind as interacting with biochemical or internal and environmental or external influences. The expression "maturity" refers to a significant phase in the growth of a living organism. Maturity is achieved when individual growth is completed and the organism is ripe for propagation. A person is called psychologically mature after he has reached a certain level of intelligence and emotional outlook.

Emotional maturity is the outcome of healthy emotional development. Emotional maturity is not only the affective determinant of personality pattern, but also helps to control the growth of individual development. Emotional maturity is something that we must develop in our lives by knowing how to respond to situations in a mature and responsible manner. Emotional maturity implies controlling our emotions rather

than letting our emotions. Emotional maturity depicts our capacity to manage and to check our emotions, to evaluate other's emotional state and to persuade their judgment and actions. Emotional maturity implies proper emotional control, which means neither repression nor violet expression. A person who is able to keep his emotions under control, who is able to break delay and to suffer without self-pity, might still be emotionally stunned and childish. In brief, a person can be called emotionally matured if he is able to display his emotions in appropriate degree with reasonable control at the appropriate time.

2.0 Review of Related Literature

Subbarayan, and Visvanathan (2011) conducted "A study on emotional maturity among college students". The objectives of the study were to study the level of emotional maturity of college students and to study the difference in emotional maturity between the college students with reference to their gender, religion, community, and type of family. The results of the study revealed that, Emotional Maturity of college students was extremely unstable. It was also found that there was a significant difference between the college students with respect to gender, religion, community, and type of family.

Tiwari (2012) conducted "A comparative study of emotional maturity among 8^{th} to 12^{th} class students with reference to internet surfing." The objectives of the study were to study the differences of emotional maturity between Internet users and not users student, and to study the difference of emotional maturity between internet user boys and girls students. The major findings of the study revealed that there was a significant difference between students who are using internet and not, the level of emotional maturity of not users is better than users. There was also a significant difference in emotional maturity between the boys and girls who are not using internet. The level of emotional maturity of boys was better than girls.

Resmy, and Sujatha (2012) conducted "A comparative study on emotional maturity of adolescent boys and girls". The major findings of the study revealed that adolescent girls have higher emotional maturity than adolescent boys and there was significant association between emotional maturity and selected variables like gender, aggregate marks in previous year, educational status of fathers, educational status of mothers, occupation of mothers and monthly family income.

Dutta, Chetia, Soni (2013) conducted a "A Comparative Study on Emotional Maturity of Secondary School Students in Lakhimpur and Sonitpur Districts of Assam". The objectives of the study was to study and compare emotional maturity of secondary school students in relation to their gender, locality, and type of school (government/private) of Lakhimpur and Sonitpur districts of Assam. The findings of study showed that there are major differences in the emotional maturity of secondary school students of both districts whether they belong to rural and urban male/female, government and private male/female, secondary schools students. This study also showed that there was no difference between urban male/female, private male/female and secondary students of both the districts on emotional maturity.

Nuzhat (2013) conducted "A Comparative Study on Emotional Maturity of Male and Female Kashmir University of India Distance Learners". The objectives of the

study was to assess and compare the emotional maturity of Male and Female University Distance Learners. The major findings of the study indicate that female University distance learners and male University distance learners do not differ significantly on emotional maturity on composite score.

Sarita, et. al., (2016) conducted "A comparative study on emotional maturity of undergraduate and post graduate students". The objectives of the study were to compare the emotional maturity of under graduate and postgraduate art students in relation to their locality (rural and urban). The major findings of the study revealed no significant difference in emotional maturity between undergraduate and postgraduate students. There was no significant difference in the emotional maturity of rural undergraduate and urban undergraduate students. Moreover, there was no significant difference in the emotional maturity of rural postgraduate and urban postgraduate students.

3.0 Title of The Study

The present study has been entitled as "Emotional Maturity of the Undergraduate and Post graduate Students of Assam, India: A Comparative Study."

4.0 Significance of The Study

The Indian society is becoming increasingly materialistic. Apparently, man appears to be happy but internally, he is full of conflicts. In the present circumstances, youth as well as children are facing difficulties in life. Youngsters of today are well and easily exposed to vast, unlimited and most importantly censored information and are subject to high pressure because of ever increasing competition and expectations from their family and peers. This give rise to many psycho-somatic problems such as anxiety, tensions, frustrations and emotional upset in day to day life. Therefore, the study of emotional life is emerging as a descriptive science, comparable with anatomy. Students are the pillars of the future generations; their value pattern of emotional maturity are vital. The younger generation, especially, the educated citizens are supposed to be the future leaders, decision makers, and builders of the nation. Therefore, youngsters need to be emotionally matured in their dealings in order to overcome efficiently the emotional stressors and shape their future as well as that of the nation. Therefore, the present study has been undertaken to study and compare the level of emotional maturity of the undergraduate and postgraduate students of Assam, as they constitute a large fraction of the future leaders of the nation. It is to be noted that very few study has been conducted on the present construct under consideration with the present population. Therefore, the present study bears immense significance.

5.0. Objectives of the Study

The present study has been undertaken to fulfil the following stipulated objectives:

5.0.1 To study the level of emotional maturity of the undergraduate students of Assam.

5.0.2 To study the level of emotional maturity of the post graduate students of Assam.

5.0.3 To compare emotional maturity of the undergraduate and post graduate students ofAssam.

6.0 Hypothesis of The Study

By considering the above stated objectives of the study, following hypothesis has been formulated:

H0: There is no significant difference on emotional maturity among the undergraduate and post graduate students ofAssam.

7.0 Conceptual and Operational Definitions of the Key Terms

7.01 Emotional Maturit

7.01 .01. Conceptual Definition: Emotional maturity implies the capacity to manage and to check our emotions, to evaluate other's emotional state and to persuade their judgment and actions.

7.01.02. Operational Definition*:*In the present study, lower score on the Emotional Maturity Scale by Yashvir Singh and Mahesh Bhargava means higher level of emotional maturity and gradual increase in the scores on the same scale indicates increase in the level of emotional immaturity or lower level of emotional maturity of the respective respondent.

7.02 Undergraduate Students

7.02 .01 Conceptual Definition: An undergraduate is a college or university student who is not a graduate student or who does not yet have an undergraduate degree, but is studying to earn one.

7.02.02 Operational Definition*:*In the present study, undergraduate students refers to the group of students who are studying at arts stream at the general degree colleges of Jorhat district affiliated to Dibrugarh University.

7.03 Post-graduate students

7.03.01. Conceptual Definition: Post- graduate students means the group of students who have completed their under-graduate programmes and are enrolled in higher studies, usually in an university, for the post-graduate degree.

7.03.02. Operational Definition*:*In the present study, Post Graduate students refer to the group of students studying in the Post Graduate programmes of arts stream of Dibrugarh University.

8.0 Delimitations of the Study

The study being exploratory in nature, had the following delimitations:

8.01 The study was delimited to the undergraduate and postgraduate students of Dibrugarh University only.

8.02 The study was delimited to the undergraduate and postgraduate arts stream students only.

8.03 The study was delimited to the 1st Semester students of both undergraduate and postgraduate programmes.

9.0 Methodology and Procedure

9.01. Method: In the present study, descriptive survey method has been adopted by the researcher considering the nature and objectives of the study.

9.02. Population: All the Post Graduate students of Arts stream of Dibrugarh University batch of 2018-2020 and all the undergraduate students of Arts stream studying in the colleges of Jorhat district, affiliated to Dibrugarh University batch of 2017-2020 constitute the population for the present study.

9.03. Sample: Five departments from Arts stream of Dibrugarh University and five Arts colleges from Jorhat District were selected randomly by using lottery method. Those students who were present at the time of visiting the respective departments and colleges were taken as sample by using incidental sampling technique. Finally, the sample comprised of a total of 200 (80 Postgraduates and 120 undergraduates) students of Dibrugarh University.

9.04: Statistical techniques: The collected data has been analyzed by using both descriptive and inferential statistics. These are:

9.04.01: Descriptive Statistics: Mean (M), and Standard Deviation (SD).

9.04.02: Inferential Statistics: 't' value.

9.05: Tools Used: Emotional Maturity Scale (EMS) by Yashvir Singh and Mahesh Bhargava was adopted to collect data. EMS has 48 items in question form. EMS is a self-reporting five point scale. Higher the sore on the scale, greater the level of emotional immaturity and vice –versa. The obtained score of the respondents are interpreted as below:

Table: 1. Norms for the interpretation of Level of Emotional Maturtiy

Scores	Interpretation (level of maturity)
50-80	Extremely Emotionally Mature
81-88	Moderately Emotionally Mature
89-106	Emotionally Mature
107-240	Extremely Emotionally Immature

9.06: Procedure of Data Collection: For the collection of the required data, the researcher went to the sampled departments of Dibrugarh University and selected colleges of Jorhat district, after taking permission from the respective Head of the Departments and Principals of the colleges. After establishing a good rapport with the students, the researchers enumerated the objective of her study and gave oral instructions to let them to complete the booklet of the scale and thereafter the filled copies of the booklet were collected.

10.0 Analysis and Interpretation of Data

Following are given the objective wise results and analysis of the present study:

Objective 1:

To study the level of emotional maturity of the undergraduate students of Assam.

Table: 2. Level of Emotional Maturity of the Undergraduate Students

N	M	SD	SK	KU
120	108.15	25.35	0.66	0.10

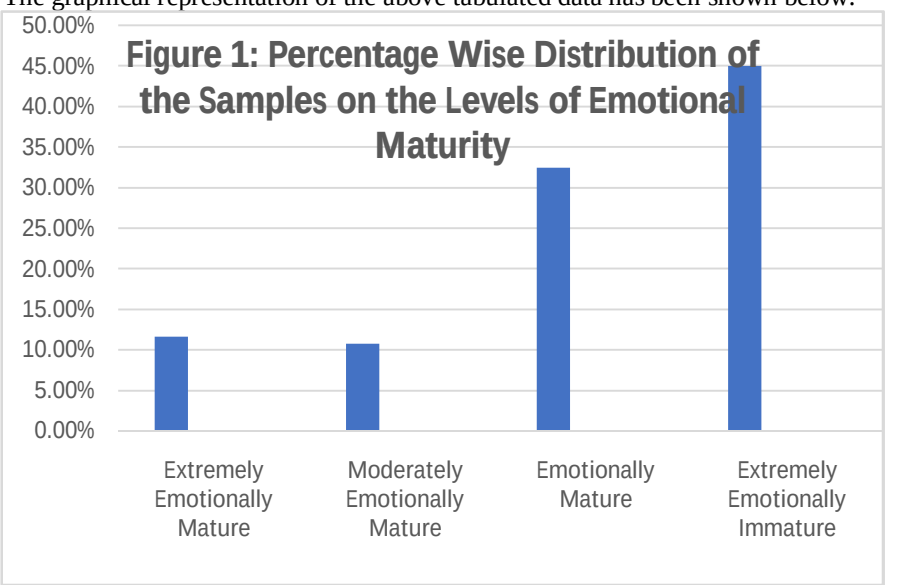
Table 2 reveals that the calculated value of Mean (M) and Standard Deviation (SD) of the scores on emotional maturity obtained by the undergraduate arts stream students of Dibrugarh University are 108.15 and 25.35 respectively. Therefore, it can be said that the average of the scores on emotional maturity 108.15 ≈ 108, falls under the category of Extremely Emotionally Immature, as evident from the table 1.

The computed value of skewness of the distribution is 0.66, which indicates that the distribution is positively skewed to the right, which means that the scores are massed at the low or left end of the scale, and are spread out gradually toward the right or high end. The Kurtosis value of the distribution is 0.10, which indicates that the distribution of scores is leptokurtic, i.e., the distribution is more peaked than the normal. Table 3 shows the total number of percentage of the undergraduate arts stream students of Dibrugarh University falling under different levels of emotional maturity.

Table: 3. Categorization of Samples on Different Levels of Emotional Maturity

Levels of Emotional Maturity	Total No. of Students	Total Percentage (%) of Students
Extremely Emotionally Mature	14	11.67%
Moderately Emotionally Mature	13	10.83%
Emotionally Mature	39	32.5%
Extremely Emotionally Immature	54	45%

The graphical representation of the above tabulated data has been shown below:



Therefore, from the perusal of the Table 3 and Figure 1, it can be concluded by saying that the undergraduate students of Assam are extremely emotionally immature.

Objective 2:

To study the level of emotional maturity of the postgraduate students of Assam.

The results of the study regarding the level of emotional maturity of the postgraduate arts stream students of Assam are presented below:

Table: 4. Level of emotional maturity of the postgraduate students

N	M	SD	SK	KU
80	109.83	22.96	-0.39	0.27

Table 4 shows that the calculated value of Mean (M), Standard Deviation (SD) of the scores on emotional maturity obtained by the postgraduate arts stream students of Assam are 109.83 and 22.96 respectively. Therefore, it can be said that the average of the scores on emotional maturity i.e.,109.83≈ 110, falls under the category of Extremely Emotionally Immature, as evident from the Table 4.

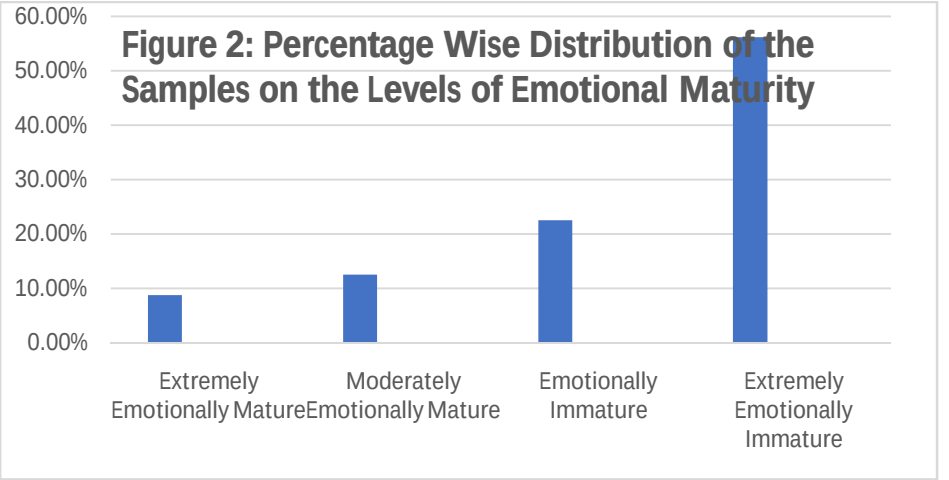
The computed value of Skewness (SK) of the distribution is -0.39, which indicates that the distribution is negatively skewed to the left, which means scores are massed at the high or right end of the scale, and are spread out gradually towards the low or left end. The Kurtosis value of the distribution is 0.27, which indicates that the distribution of the scores is leptokurtic, i.e., the distribution is more peaked than the normal.

Table 5 shows the total number of percentage of the postgraduate arts stream students of Assam falling under different levels of emotional maturity.

Table: 5. Categorization of Samples on Different Levels of Emotional Maturity

Levels of Emotionally Maturity	Total No. of Students	Total Percentage (%) of Students
Extremely Emotionally Mature	7	8.75%
Moderately Emotionally Mature	10	12.5%
Emotionally Mature	18	22.5%
Extremely Emotionally Immature	45	56.25%

The graphical representation of the above tabulated data are given below:



Therefore, from the perusal of the perusal of the Table 5 and Figure 2, regarding the level of emotional maturity of the postgraduate students of Assam, it can be concluded by saying that they are extremely emotionally immature.

Objective 3: To Compare Emotional Maturity of the Undergraduate and Postgraduate Students of Assam.

Hypothesis: There is no significant difference on emotional maturity among the undergraduate and post graduate students ofAssam.

Table 6 illustrates the scores obtained by the sampled students, both undergraduates and postgraduates, on the Emotional Maturity Scale.

Table: 6Comparison of emotional maturity between the undergraduate and post graduate students of Assam

	M	SD	SEM	SED	df	't' Value	Significance
Undergraduates	109.83	22.96		3.41	198	0.49	Not significant at .05 level
Postgraduates	108.15	25.35					

Table 6 shows that the 't' value came out from the two groups of students, viz., undergraduates and postgraduates, is 0.49 which is smaller than the table value 1.97 (at .05 level of significance) leads to the acceptance of the null hypothesis i.e., "There is no significant difference on emotional maturity among the undergraduate and post graduate students ofAssam." Therefore, the results of the study revealed that the undergraduate and postgraduate students of Assam do not differ significantly as far as their level of emotional maturity is concerned.

11.0 Discussion

The study reveals that majority of the undergraduate and postgraduate students of Assam are extremely emotionally immature. Present study also highlighted that there is no significant difference on emotional maturity among the undergraduate and postgraduate students ofAssam. Therefore, the findings of the present study throws light on the fact that students of that (undergraduate and postgraduate) level of emotion are not sufficiently mature, as today's circumstances and ever-growing materialistic world demand. Therefore, policy makers should give due consideration while preparing educational policies. Curriculum should be enriched with such subjects and contents which may boost the level of emotional maturity among students.

12.0 Conclusion

As far the present study is concerned; it was found that most of the undergraduate and postgraduate students of Assam are extremely emotionally immature. It may be due to the environment in which the students have been nurtured. Because, in the present era of industrialization, and modernization, due to the constantly changing mindset and broad outlook of people as well as due to the increasing demand of money, most of the parents are busy in their own business or in earning livelihood. Many of them cannot offer the care, love and affection, and emotional warmth which is of immense importance for the development of emotional life. But for a happy, successful

personal and professional life, human beings have to choose emotional maturity as a conscious choice.

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INDIGENOUS SOIL CONSERVATION AND FERTILITY MAINTENANCE PRACTICES: THE CASE OF GANJI WOREDA, WESTERN OROMIA

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Abstract: Soil is the basic natural resource for sustenance of life on this planet and it is affected by erosion and degradation from time to time by different agents. The main objective of this study was to investigate indigenous soil conservation practices in Ganji Woreda, Western Oromia. Cross-sectional survey design was used in this study. Purposive and stratified sampling techniques were employed to obtain rural kebeles and 332 farmer household heads respectively. Primary data is collected through questionnaire, focus group discussion and observation from the sample population whereas secondary data is collected from published and unpublished materials. By using SPSSsoftwareversion20, the researcher analyzed data through descriptive statistics and it revealed that indigenous soil conservation practices of the study area include contour plowing (100%), traditional waterways (93.4%), traditional cutoff drains (79.8%), furrows (100%), zero tillage (23.8%), mixed cropping (44.3%), leguminous crops (36.1%), crop rotation (19.3%), agroforestry (54.5%), grass strips (50.3%), planting trees (47.9%) and crop cover (64.2%). The indigenous fertility maintenance practices include fallowing (16.9%), manure (43.7%), mulching (20.2%) and garbage from the house (98.5%). Of these practices contour plowing, furrows and garbage from the house are practiced highly while fallowing, crop rotation, mulching and zero tillage are very low. Therefore, it is recommended that agricultural experts should support household head farmers of the study area to practice appropriately in equilibrium way. Additionally, farmer households should improve the applicability of indigenous soil conservation practices on their farmland so as to make consistence and sustainable.

Keywords: Erosion**,** Household Head**,** Indigenous, Soil Conservation.

Introduction

Nowadays, most of the people in the world remain heavily depend on soil resources as their main livelihood that leads to soil degradation. Soil degradation has been a problem since humans settled the land and started to cultivate the soil and grazed domesticated animals. Pimentel (2006) argued that the reduction in water availability due to land degradation and soil erosion is the major global threat to food security and the environment. In addition to this, Hurni (2009) notified that in each year, 75 billion metric tons of soil from agricultural land is eroded by water and wind. This shows that huge amount of soil part is vulnerable to water and wind erosion throughout the year that needs conservation.

As it is revealed by Tesfaye (2011), Zimbabwe invests 3% of its annual budget for applying fertilizer to replace nutrients lost by erosion. This also magnifies

that if soil is not preserved, it requires another budget in order to rehabilitate that in turn puts burden on country's economy and development. According to Menale et al., (2008), soil erosion is the major problem facing farmers that limit their quality to increase agricultural productivity and production in Ethiopia. About 1.9 billion tons of Ethiopia's top soil is washed away from the highlands every year and it has been estimated to cost billions of Ethiopian birrs per year as it is noted by Chuchu et al., (2011). For example, annually, Ethiopia loses over 1493 million tons of top soil due to erosion, which could reduce about 1.5 million tons of grain to country's harvest (Erkossa et al., 2015). This shows the tremendous declining of productivity is due to serious problem of soil erosion taking place by different agents.

Badly eroded soil loses all of its top soil side by some of its subsoil, and it is no longer productive as farmland. According to Cerda et al., (2016), on cultivated lands, appropriate adoption of soil conservation mechanisms supported with vegetation are efficient strategies to control soil loss. As much the land is covered by dense vegetation, its vulnerability to erosion become very low. Soil conservation maintains or enhances the productive capacity, moisture and fertility of soil especially in erosion prone areas. According to David (2004), soil conservation is about solving the problem of soil degradation, particularly soil erosion.

Even though considerable efforts have been made to overcome soil problem, various reasons made obstacle as not to be succeeded. Among these factors, the most commonly stated include failure to consider indigenous land management, high initial costs which are not afforded by poor farmers and applying of uniform techniques in different agro-ecological areas are some the stated obstacles (Akililu, 2006).

Indigenous soil conservation practices have been practiced for many years in some parts of Ethiopia (Nyssen et al., 2007; Watson and Currey, 2009). The terracing practice by Konso peoples found in southern part of Ethiopia that is registered by UNESCO and recorded around 400 years ago was the best example. This shows that there was different indigenous knowledge of soil conservation practices in different places of our country through which people conserve their soil according to their locality.

Ganji woreda, where this study was undertaken is found in Western Oromia, embraced under south-western highlands. It is associated with high rainfall and soil erosion that in turn leads to lose of soil fertility and productivity. In this study area, different indigenous soil conservation and fertility maintenance practices are being taking place on the farmer's farmland to curb soil erosion and degradation in different ways. Nevertheless, there was no study conducted concerning this issue to show the indigenous knowledge of these farmers. Therefore, the main purpose of this study was based on profound identification of the indigenous agronomic, vegetative and physical soil conservation as well as fertility maintenance practices with some of their respective figures found in the study area. The study also puts the extent application of these soil conservation practices from one another in the study area.

Research Methods or Methodology

Description of the study area

Ganji woreda is about 510km away from Addis Ababa in west and 72km from west wollega zone, Ghimbi in southwest. Its total area coverage is 37,457km^2. It is astronomically located in the range of 08^{o}56'00''N and 09^{o}08'00''N latitudes and 35^{o}31'00''E and 35^{o}43'00''E longitudes. It shares boundaries with Guliso woreda in northwest, Yubdo woreda in the west, SeyoNole woreda in the southeast, Haru and Homa woreda in the east and Lalo Asabi woreda in the north directions (Figure1).

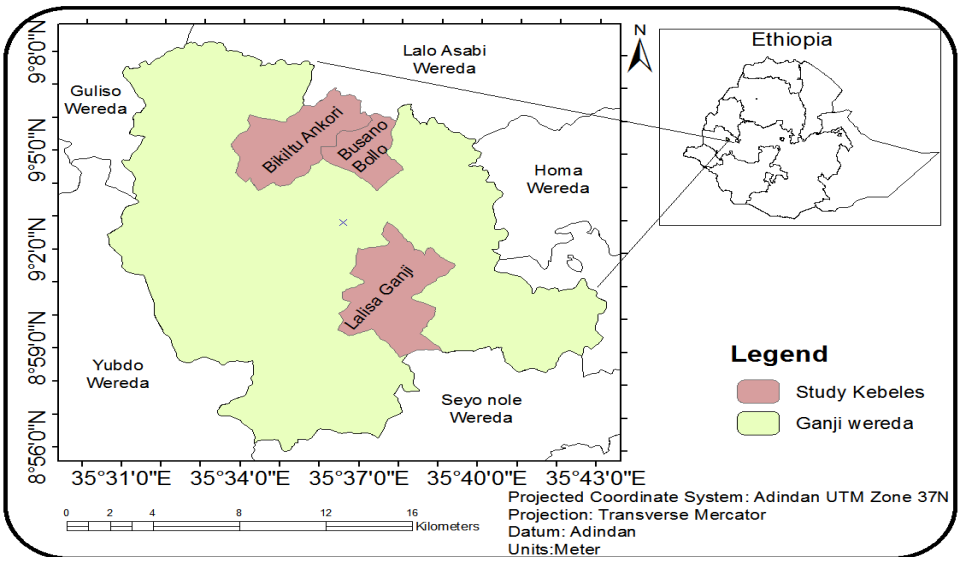

Figure1: Map of the study area (Source: Own manipulation based on EMA data)

The annual rainfall of the study area ranges between 1500 and 2000mm while the average annual temperature is about 25^{o}c (Basaznew et al., 2012). The largest, (97%) of this woreda experiences sub-tropical climate while its small area proportion (3%) has a semi-arid type. Its high temperature is recorded in March, April and May where as its cold is known in November to January. Soil of the study area is mostly loam sandy soil and nithosols is also known to this study area.

The researcher selected the cross-sectional survey design whereby data was collected at a single point from a sample to represent a large population. In this way, the researcher followed both qualitative and quantitative approaches with more of the qualitative. The paradigm behind this research is pragmatism. Pragmatism approach rejects the idea that qualitative and quantitative research are pragmatically incompatible, rather it sees the combination of these two research approaches as an eligible way to answer research questions (Ary et al., 2010). Regarding data types, both primary and secondary data were used. The primary data included different indigenous soil conservation practices obtained from the sample household head

farmers and the field. Secondary source of data were collected from concerned offices, journals and books that are published and unpublished.

Ganji woreda has 21 kebele administrations and 3 of them were purposively selected based on severity of soil erosion found and these include LalisaGanji, BikiltuAnkori and Busano Bollo. LalisaGanji has 7568 total population with 4454 male, 3114 female and 844 household head including 740 male and 104 females. BikiltuAnkori has 5788 total population with 2778 male, 3010 female and 750 household head with 654 male and 96 females. Lastly, Busano Bollo has 2501 total population with 1033 male, 1468 female and 374 household head with 334 male and 40 females (SVERA, 2016). The total number of these kebele households was 1968 of which 332 sample population were taken by using the statistical formula $n=\frac{N}{1+N(e)^2}$ (Yemane, 1967 cited in Israel, 2012). Where;

n- Sample size
N- Population size
e- Level of precision = 0.05 i.e. 95 % level of confidence.

$$n=\frac{1968}{1+1968\,(e)^2}=\frac{1968}{1+1968\,(0.0025)}=332$$

In order to select sample household head from each three selected kebele administrations, stratified sampling formula (n/N) was used. Where;

n=Sample size $\frac{332}{} = 0.1687$

N=Number of total HH heads i.e. 1968

Here, the result 0.1687 indicates the equal chance respected for each individual household head in the three kebele administrations unit to be included in sample size (Table1).

Table1: Sample size of farmer household head in the study area

S/N	Sample kebeles	Total household head			Sample size household head		
		M	F	Total	M	F	Total
1	LalisaGanji	740	104	844	125	18	143
2	BikiltuAnkori	654	96	750	110	16	126
3	Busano Bollo	334	40	374	56	7	63
Total		1728	240	1968	291	41	332

Source: Social Vital Events Registration Agency, 2016

The main methods designed to collect data were questionnaire, focus group discussion (FGD) and field observation. The researcher decided to distribute open and closed ended questionnaires for the selected households in order to obtain primary data including physical, vegetative and agronomic indigenous soil conservation and fertility maintenance practices. The questionnaire was translated to the local language (Afan Oromo) for household head farmers to make the question clear and common understanding that led to gather relevant information. The researcher selected 3

enumerators purposively from agricultural experts based on their educational status and experience in order to collect data from the sample under close supervision of the researcher.

For focus group discussion, 3 model and 6 farmers based on their farming experience were purposively selected from the sample kebeles thinking that they had more concepts about soil conservation. As a result, the FGD is made by a group having 9 members. Accordingly, the checklist with different open-ended questions was prepared and presented to these individuals to express their response regarding what they are asked. The discussion is made for 1 hour and 20 minutes at Farmers Training Centre (FTC) and data gathered through this manner is analysed in this study qualitatively.The researcher also made field observation openly by using checklist having its own form to assess what type of indigenous soil conservation and fertility maintenance practices were visible on the farmland and their photograph is taken by digital camera. The quantitative data collected through questionnaire is coded, edited and entered in to the SPSSversion20software while FGD and field observation data are analysed in the form of thematic narrations in order to support questionnaire data.

Results and Discussions

Soil erosion and degradation is a serious problem that highly affects soil quality and quantity. In order to manage such problems, soil conservation practice is needed utmost. In this chapter, the result obtained concerning indigenous soil conservation practices in the study area through household survey, focus group discussion and field observation are presented.

Indigenous soil conservation practices in the study area

Table2: Household heads' indigenous physical and vegetative soil conservation practices

	Practice		Not Practice	
a) Physical measures	Frequency	Percentage	Frequency	Percentage
Contour plowing	332	100	-	-
Traditional waterways	310	93.4	22	6.6
Traditional cutoff drains	265	79.8	67	20.2
Furrows	332	100	-	-
Zero tillage	79	23.8	253	76.2
b) Vegetative measures				
Not cultivating grass strips	167	50.3	165	49.7
Planting trees	159	47.9	173	52.1
Crop cover	213	64.2	119	35.8

Source: Field survey

Physical soil conservation measures

According to table 2, from all indigenous physical measures, contour ploughing and furrows are practiced in 100%. This means, directly or indirectly all household heads use these two indigenous soil conservation practices on their land. Yeshambel (2013) in his study justified that most farmers of country of Ethiopia practice contour ploughing practice. The focus group discussants stated that all farmers use contour plowing on their farmland, but sometimes farmers vertically till nearby side of the land when it is left without cultivated so as to make their plot totally cultivated. Such vertical tilling sometimes leads to soil erosion. In addition to this, one of the focus group discussants justified his idea as follows.

> "Different indigenous soil conservation practices have been used in this area. Some of them include contour plowing, traditional waterways, furrows and traditional cut-off drains. Specially, farmers cultivating teff and millet are very known by practicing furrows in order to divert runoff. Agricultural experts told us not to use practices such as furrows as it leads to gully erosion, but still farmers are using because it is preferable to divert soil mostly at stepped areas"

The other 93.4% of the total respondents practice traditional waterways, but 6.6% of them did not. Cut-off drains are practiced by 79.8% while 20.2% were not practitioners of it (Table2). Zero tillage is practiced by 23.8% of the total respondents and 76.2% were not familiar with such practice. According to the study made by John et al., (2013) practice such as zero tillage increases soil porosity. Besides to this, old roots left in the soil make hole that facilitate water drainage, averts pulverization of soil aggregate and also leads to formation of pans. Figure 2(a) shows how farmers of the study area practice furrows using oxen and figure 2(b) shows traditional waterways using hoe most of the time in order to divert runoff. Figure3 (a) also implies traditional cut-off drains practiced by farmers either individually or in group by using hoe at the heading of their farmland. Figure 3(b) also shows zero tillage that farmers do by cutting straws under the standing maize to sow pea, barely and other short term seeds in the study area.

a) b)

Figure2: Furrows and traditional waterways practices in BikiltuAnkori kebele respectively
Source: Photo taken by the researcher

a)  b) 

Figure3: Traditional cut-off drains and Zero tillage in Busano Bollo kebele
Source: Photo taken by the researcher

Vegetative soil conservation measures

Table2 reveals the indigenous vegetative soil conservation practices in the study area. Crop cover is one of this that serves as reducing erosion; maintaining soil organic matter; suppress excessive weed pressures; break pest and minimizes soil compaction. From the total household head respondents, it is practiced by 64.2% while 35.8% of them do not apply. Grass strip is also one of indigenous vegetative soil conservation practice found on stepped land in their farm. Some farmers leave such land without tilling because it prevents erosion. Accordingly, 50.3% of the total respondents apply it and 49.7% were not familiar of, i.e. they dig or hoeing it, even if it is impossible to be cultivated by oxen. In addition to this, planting trees is followed by 47.9% of the total respondents whereas 52.1% were not taking part. This is in which farmers have been using to handle cliffs or gullies by planting trees that have good capability of preventing runoff, especially at summer season. According to the idea of focus group discussants, some farmers plant trees such as eucalyptus and false banana where their land is being affected by runoff.

Table3: Indigenous agronomic soil conservation and fertility maintenance practices.

a) Agronomic measures	Practice		Not practice	
	Frequency	%	Frequency	%
Mixed Cropping	147	44.3	185	55.7
Leguminous crops	120	36.1	212	63.9
Crop rotation	64	19.3	268	80.7
Agro-forestry	181	54.5	151	45.5
b) Fertility maintenance				
Fallowing	56	16.9	276	83.1
Manure	145	43.7	187	56.3
Mulching	67	20.2	265	79.8
Garbage from house	327	98.5	5	1.5

Source: Field survey

Agronomic soil conservation measures

As it is indicated on table3, from all agronomic measures of soil conservation practices in the study area, agro-forestry is practiced by 54.5% of the total respondents where 45.5% did not apply. Mixed cropping is the activity of planting two or more crops on the same plot of land. This type of conservation practice is applied by 44.3% of household heads and 55.7% of them not practice. Leguminous crops are nitrogen fixing crops and are followed by 36.1% of farmer households but 63.9% of them not practice such nitrogen fixing crops on their farmland (Table3).

According to table3, crop rotation is practiced by 19.3% while 80.7% of them are not. Accordingly, crop rotation was one of the lowest practiced conservation practices in the study area. Teklu and Gezahegn (2003) revealed that crop rotation is used for the purpose of soil fertility maintenance and improvement of crop yield by farmers. Additionally, the study made by John et al., (2013) implies, crop rotation and permanent soil cover by residues (mulching) are the pillars of conservation agriculture and increase soil biological activity. Figure4 shows how famers of the study area practice different crops such as beans and sunflower in their plot of farmland. This is also good practice because different crops have different ability of preventing erosion, especially when they are together on plot of land. Figure5 also shows how they use beans as nitrogen fixing crops as well as crop rotation. In addition to this, as the researcher made field observation, peas and oats are also used as crop rotation or as leguminous crop after removing maize or barely straws after its readiness.

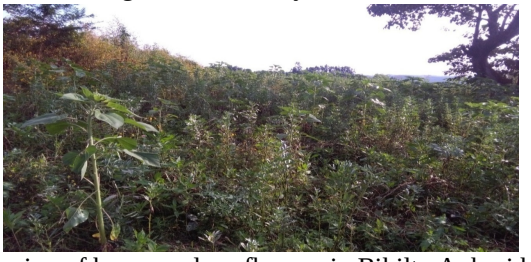

Figure4: Mixed cropping of beans and sunflowers in Bikiltu Ankori kebele
Source: Photo taken by the researcher

Figure5: Beans as leguminous crops and crop rotation practice in Busano Bollo kebele respectively
Source: Photo taken by the researcher

Fertility maintenance measures

According to table3, some indigenous soil fertility maintenance practices are found in the study area. From these, discarding garbage from the house to their farmland is very common practice and it covers 98.5% that only1.5% of them discard it to the garbage hole. Focus group discussants implied that taking garbage to their farmland is habituated by most farmers. They revealed that some farmers accumulate ashes and apply it on their farmland including different house cleaned garbage and this improved their productivity at where they use than not used place.

Manure is the practice of using animal dung and urine on the farmland through kraaling or cow barn activity after three or four days or applying only their dung from where they sleep at night in the constructed home to the farmland. In this study area, such activity is practiced by 43.7% of the total household heads whereas 56.3% were not practitioners (Table3). Figure 6 also shows how farmers of the study area use manure by constructing cow barn on their farmland to increase soil fertility.

Mulching is the practice of covering the land by crop residues or by grass after harvesting. It eliminates soil erosion, reduces water evaporation and humus after decomposition. Though it has such advantage, it is practiced by 20.2% of the total respondents, where 79.8% of them were not familiar with such practice on their land (Table3). Figure7 (a) shows how some household heads of the study area cover their land by straws under coffee tree. Figure 7(b) also shows how they leave crop residues after harvesting on their farmland. Focus group discussants justified that some farmers leave the residues of crops on their farmland and protect the cattle not to eat. Other farmers do not give attention and allow it to be eaten by the cattle or use for firewood. They justified as moisture of the land covered by residues is good when compared with that of uncovered one.

The other type of soil fertility maintenance in the study area is fallowing. According to response got from sample household heads, fallowing is only practiced by 16.9% of the total respondents, but 83.1% were not practice it (Table3). According to the study made by Teklu and Gezahegn (2003), fallowing practice is applied when the nutrient of soil become exhausted and yield become declined by leaving the land idle without cultivation for two or three years until it regains its fertility. According to the discussion made with focus group discussants, farmers that have ample farmland mostly do fallowing while it is no much recognizable those with small land farm.

Figure6: Manure practice by using cow barn (kraaling) in Busano Bollo kebele
Source: Photo taken by the researcher

Figure7: Mulching practice under coffee tree and on farmland respectively in Lalisa Ganji kebele
Source: Photo taken by the researcher

Conclusion

Soil is the most important resource for mankind and other living organisms. It is vulnerable to different erosion and degrading agents most of the time if it is not conserved. In the study area, different types of indigenous soil conservation practices were introduced by farmer households. However, the implementation toward the practice is limited in increasing its application and sustainability in future from one farmer to another. From indigenous soil conservation practices in the study area, zero tillage, leguminous crops, mulching, manure, fallowing, crop rotation and mixed cropping are being practiced by less than half per cent even though their contribution for conservation or fertility maintenance is high. The other contour plowing, furrows, traditional waterways, traditional cut-off drains, crop cover, agroforestry, not cultivating grass strips are practiced by greater than half per cent respectively as conservation practices including garbage from the house as fertility maintenance practice. Despite of its low contribution in soil conservation, furrows is highly being practiced by farmers of the study area as diverting way of runoff.

Recommendations

In this study, the researcher tried to assess varieties of indigenous soil conservation and fertility maintenance practices in the study area and then forwarded the following recommendations:

- Though some indigenous soil conservation practices are good, agricultural experts should identify the inappropriate indigenous soil conservation practices such as furrows that affect the soil and should make the farmer households not to apply on their farmland by any means.
- The agricultural experts should follow and even supervise farmers when they are working at their farmland to orient them what to do or not to do.
- The practice of appropriate indigenous soil conservations should be continuous and sustainable activity by the farmers of the study area.
- Farmers who have good practice of indigenous soil conservation on their farmland should be given incentives by agricultural experts and broaden their understanding

through giving experience to other areas where there is poor practice of soil conservation.

- Farmer household should take guidance of agricultural experts and ask them if skill gap is there before applying soil conservation practices to know the problem behind.

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EFFECTIVENESS OF SPACED-RETRIEVAL AND A COMPREHENSIVE HOME MANAGEMENT PROGRAM ON MEMORY IN MILD COGNITIVE IMPAIRMENT OF ELDERLY

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Abstract

Introduction: Aging causes impairment in various aspects of cognitive function. One of the extremes of this decline is represented by dementia. Forgetfulness at older age is often equated with decline in cognition. Age associated memory loss leads to inhibition of social, emotional and physical abilities of the elderly. So, there is a need to devise an effective approach using learning physiology to help the patients.

Research Methods &Methodology: This prospective interventional study was conducted in Bala Pritam OPD and residents of Model town, Dehradun India.36 subjects above age of 60 years were selected with score 16-24 on Montreal Cognitive Assessment Scale. Group A(n=18) & Group B(n=18) comprehensive home management program. MoCA was used to assess the outcome. SPSS 2.0 version was used for statistical analysis.

Results: Analyzed data showed significant result within group A and Group B with T values 2 & 4 respectively and p value <0.05. Between group comparison showed no significant differences with U value 86 and 76 respectively and p value > 0.05.

Conclusion:Both Spaced-retrieval and comprehensive home management program can be used to improve memory.

Keywords: Cognition, Comprehensive, Memory, Spaced -Retrieval

Introduction

Aging causes impairment in various aspects of cognitive function. One of the extremes of this decline is represented by dementia[1.]Forgetfulness at older age is often equated with decline in cognition - a public health issue that goes beyond memory lapses and one that can have significant impacts on independent living and healthy aging[2].

There are various physical, psychological and neurological changes with the brain which affect its cognitive functions[3.] There is gradual reduction in weight and volume of brain with age. The reason thought to be loss of neurons. Studies estimate that adults lose as many as 100,000 neurons a day. Cell loss of neurons is minimal in some areas (example, brainstem nuclei, supra-optic and para-ventricular nuclei) but it is as great as 10 to 60% in others for example, hippocampus). From age 20 or 30 to 90,brain weight decline about 10%[4].Concentration of acetylcholine, nor-epinephrine and dopamine decline in course of normal ageing. Also, the concentration of Gama Amino Butyric Acid has been shown to decline with age, particularly in Frontal cortex[3]. Decreases are greater in certain areas of the brain example, the prefrontal cortex and are greater in gray matter than in white matter[5]. Memory is the first component of cognition to get affected. Age-related memory decline affects approximately 40% of older adults

and is characterized by a self-perception of memory loss and a decline in objective memory performance[8]. To assess the decline in memory (a component of cognition),there has been many tools that are devised to detect the same. These are: MoCA, MMSE, Mini-Cog, IQCDE, MIS,naturally occurring interactions[10]. Memory training programs exist within the larger context of cognitive training, which is based on the notion that cognition is plastic in older age.Mental stimulation that consists of cognitive challenging activities is a means to facilitate neural plasticity[11]. Learning and mental activity are associated with improved cognitive functioning and/or lower dementia risk. For example, people with advanced education and professional accomplishments tend to have greater density of neuronal connections in brain areas involved in complex reasoning. Increased frequency of engaging in everyday mental or leisure activities (e.g., reading, watching the news, dancing, or playing board games) is associated with significantly reduced risk for developing dementia. Age associated memory loss leads to inhibition of social, emotional and physical abilities of the elderly. So, there is a need to devise an effective approach using learning physiology to help the patients. Though, most studies incorporating strategies for Memory impairment are significant, still programs where assisted strategies involving treatment by the Therapist and strategies involving only the subjects himself were to be studied. Hence this study tries to find out the role of professional supervised Spaced-Retrieval strategy and independent subject participating in Comprehensive Home Management program in improving memory in Cognitive impaired elderly.

Review ofliterature

AGING AND MEMORY

Ward E, Berry C, Shanks D. (2013) Age effects on explicit and implicit memory; Frontiers in Psychology described that explicit memory (e.g., recognition) declines with age. There is apparent sparing of implicit memory (priming) with age in the face of a clear decline in explicit memory in the memory systems debate. They stated that the two forms of memory are qualitatively distinct and driven by and neural systems.

Gopie N, Crack F, Hasher L. (2011) A double dissociation of Implicit & Explicit Memory in younger & older adults Psychological Science;634-640.examined whether age-related differences in cognition influence later memory for irrelevant, or distracting, information. They found older adults had greater implicit memory for irrelevant information than younger adults performed better than older adults on an explicit memory.

SPACED-RETRIEVAL

Kang S.H. (2016); Spaced Repetition promotes efficient and effective Learning. Behavioral and Brain sciences; 3(1):12-19 spaced Retrieval-absolute spacing enhances learning regardless of relative spacing. Repeated retrieval with long intervals between each test produced a 200% improvement in long-term retention relative to repeated retrieval with no spacing between them.

Maxwell M. T,Carney R. N, Buchana E.M Real W.P. (2014);The Face-Name Mnemonic Strategy-Learning face-name pairs using abstract &concrete keywords. The researcher14-17. selected 30 portraits of individual from Goolgle.com and paired them with 30 surnames selected from an online surname bank. Then both aconcrete and

abstract keyword were created for each of the 30 face-name pairs. They found that concrete keywords facilitated the better recall when using face-name mnemonic strategy than abstract word.

HOME EXERCISE

Jeong J.H, Na Hae, Choe S, Kim j, Seo S, Chin J et al. (2016) Group and Home - Based cognitive intervention for patients with Mild Cognitive Impairment. Psychotherapy and Psychosomatics; 85:198-207 298 patients with a mild cognitive impairment from 18 nationwide hospitals were randomised:98 to group cognitive impairment (GCI),98 to Home Cognitive Impairment (HCI)group and 99 to the control group. Training manuals, education resources such as power point files, mobile apps were given to patents in HCI group. They concluded GCI &HCI both resulted in improvement in cognitive functions.

PHYSICAL EXERCISE

AntusH.K,MelloM.T,Galduroz R.F, GaldurozJ.C,LemosV.A,Tufik et al(2015); Effects of physical fitness program on memory and blood viscosity in sedentary elderly men;48(9):805-812 46 healthy inactive men, aged 60-75years randomly distributed into 2 groups -control(n=23) and experimental(n=23). Participants underwent blood analysis,physical and memory evaluation before and after 6months of physical exercise. There was a significant improvement in memory.

3. Methodology

(3.1) STUDY DESIGN Prospective experimental study

(3.2) RESEARCH SETTING:

Bala Pritam Gurudwara OPD, Dehradun

Residents of Patel Nagar Dehradun (home-to-home approach)

(3.3) DURATION OF STUDY: The duration of the study is 1year between September 2017 to September 2018.

(3.4) POPULATION: Target- All population above 60years of age with mild cognitive impairment.

(3.4) SAMPLING METHOD: Cluster Sampling

(3.5) SAMPLE SIZE: 36 samples.

(3.6) SELECTION CRITERIA

INCLUSION CRITERIA:

1. Subjects above 60yrs of age, who can read and write English.
2. Subjects with score between 16-24 on MoCA.

EXCLUSION CRITERIA:

1. Subjects with severe cognitive disabilities (score< 16 on MoCA)
2. Subjects with diseases like chronic diabetes Mellitus, Hypertension affecting cognition.
3. Alcoholics
4. Past or present history of neurovascular disorders like stroke, neurodegenerative disorders like Parkinson's disease, Alzheimer's disease or severe systemic disease.
5. Subjects with severe auditory loss.

6. Subjects with chronic pain.
7. Subjects undertaking medications affecting cognition like anti-epileptic drugs, sedatives etc.
8. Non-cooperative subjects.

(3.7) VARIABLES OF THE STUDY

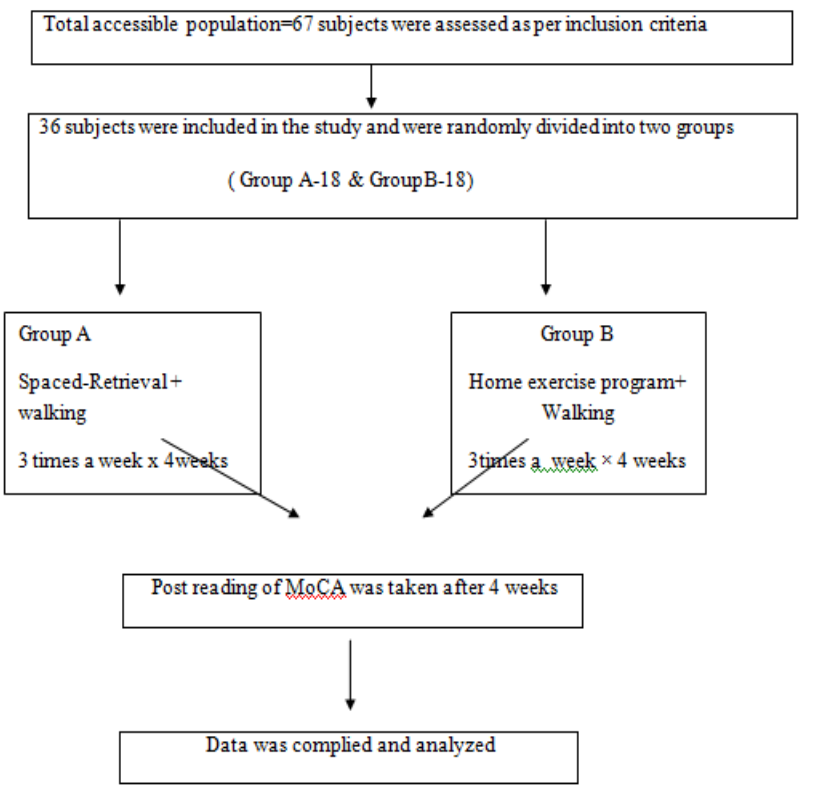
INDEPENDENT VARIABLE: Spaced-retrieval intervention, Comprehensive home management program.

DEPENDENT VARIABLE: Montreal Cognitive assessment scale

(3.8) INSTRUMENTATION

Montreal Cognitive Assessment(MoCA): The Montreal was designed as a rapid screening instrument for mild cognitive dysfunction. It assesses different cognitive domains: attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. Time to administer the MoCA is approximately 10 minutes. The total possible score is 30 points; a score of 26 or above is considered normal. MoCA is a reliable and valid cognitive tool**(*r*=0.87, *p*<0.001)Tasha Smith, Nadia Gildeh, Clive Holmes; The Montreal Cognitive Assessment: validity and utility in a memory clinic setting**

PROTOCOL



GROUP A-

Face-Name Recall-

Step1:Subjects were seated in comfortable position on a chair in front of the table.

Step 2: 6 photographs were shown to the subject and name was told and discussed.

Step3: Subjects were made to remember all names by using mnemonics and with cueing.

Step4: Subjects were asked to recall names of the Faces shown immediately after 30seconds,1min,2min,5min,10min&20min (Spaced-Retrieval).

Step5: One new face was added per session. In next session,the subjects were asked to recall the faces rehearsed in previous session and then proceeded further.

1. **Number-Recall-**

Step1: Phone Number to remembered is presented in verbal and written form to the subjects.

Step2: Number was discussed and subjects were asked to divide the number in chunks of 3 or 4 digits and were asked to generate mnemonics or associations of these chunks, so that these associations can assist in recall.

Step3: Same Phone number was presented and the subjects were asked to correctly identify them. a decrease the cues until the subjects correctly identifies them.

Step4: After thissubjects were asked to recall phone number after 30s, 1min, 2min, 5min, 10min & 20min.

Step5: If the subjects were failed to recall then, correct number was told to them & then same interval was repeated

2. **Story-Recall-**

PQRST method was used.

- Preview the material to be recalled
- Question-Ask key question about the text.
- Read-Read the material carefully to answer the questions.
- State-State the answer.
- Test-Test regularly for retention of the information.

  Subjects were asked to read a particular column from THE TRIBUNE newspaper (Page no. 10) and were asked about the main points.

3. **Aerobic Exercise**-Walking 30min per day in subject's normal walking speed.

GROUP-B -

1-Working with Money-15-20 coins(for ex- Rupee1, Rupee2, Rupee5, Rupee10)were placed on a table by hiding their denomination in front of the subject. Subjects were asked to identify the denomination of coin and stack the coins.

After this, subjects were asked to put coins into his/her pocket or a small bag and were asked to pick out a coin(ascommanded) just by touching with fingers.

2-Puzzles

- A picture from a newspaper was cut down into 10-15 pieces and subjects were told to identify and arrange the pieces.
- Progression was done by increasing the number of pieces to 20 to 25 pieces.

3-Recall of Pictures and Places

Subjects were asked for any album of his/her or any of the family member. Subjects were shown pictures from the album and were asked to recall faces and places.

4-Search and Find

Level 1-2 glasses of uncooked rice were poured into a bowl and 2 small objects(for. example a key, a coin) are mixed with the rice. Subjects were asked to find the objects without looking.

Level 2- Four small objects were added for ex- ascrew, smallstone, toothpick, macaroni noodles) and subjects were asked to find out the objects without looking.

5-Number Sequence

Level 1-Subjects were asked to subtract 2 consecutively 5 times from 100 for example 100-2=98, 96, 94 ,92,90

Level 2-Subjects were provided with first four digits of sequence on a paper and asked to write next three digits of sequence, for ex- 3,7,11, 15,, ,

Level 3- subjects were asked to multiply the same digits or squaring of digits for ex- 1x1,2x2,3x3....

6-Locating Information

Level 1-Subjects were asked to locate information such as classifieds, sports news or health section in newspaper.

Level 2-Subjects were asked to find out the phone no. of a person from phone as commanded.

7-Clock Work

-Subjects were asked to adjust hands of the clock as per the command.

8-Physical Exercise- Walking 30 minutes a day in subject's normal walking speed.

Figure showing Face-name Recall

4-Results and Discussion-

The mean and standard deviation of age of participants of Group A and Group B were 66$\pm$5.42 and 65.64$\pm$5.52 respectively. Mean and SD of pre and post readings of MoCA were calculated for both Group A & Group B. For Group A, pre and post readings of Mean & SD were 21.3$\pm$2.02 and 22.9$\pm$1.8 respectively. For Group B, pre and post reading Mean & SD were 20.42$\pm$1.86 and 21.6$\pm$1.78 respectively.

Within Group A: comparison between pre and post readings of MoCA were done using Wilcoxon signed rank test. At Z=2.0, p value was <0.01, hence the result was found to be highly significant.
Within Group B: comparison between pre and post readings of MoCA were done using Wilcoxon signed rank Test. For Z=4, p value was found to be <0.01, hence the result was highly significant suggesting differences in the variables.
Between Group A and Group B: comparison of pre (v/s) pre of 0day readings and post vs post readings after 4 weeks of MoCA were done using Mann-Whitney U test. for pre (v/s) pre comparison, U=86 and "p" value was found to be >0.05, with the result being non significant suggesting that the variables were homogenous.
comparison of post(v/s)post readings of MOCA after 4 weeks using Mann Whitney U Test, the U value was 76 and at a confidence interval of 0.05 the "p" value was found to be >0.05, suggesting that the changes in MoCA between groups were non significant
Subjects were compared for scores of MoCA between Group A and Group B. After the analysis, the U value for pre readings between both groups and post readings of both group were 86 and 76, p value >0.05 suggesting no significant differences in scores of MoCA between Spaced - Retrieval and a comprehensive Home Exercise Program groups. The findings of the study suggest that though both regimes produce significant effects on memory separately but when compared, both of them showed no significant differences in their effects. This may be due the fact that spaced-retrieval technique emphasizes on memory aspect of cognition whereas comprehensive home management program incorporates different aspects of cognition like attention, orientation, memory, reasoning, etc. Furthermore, the outcome variable in the study utilizes various aspects of cognition in diagnosing and prognosing for level of cognition. Techniques specific to single aspect of cognition might not improve cognition as a whole. also transfer of memory to tests not frequented by the subjects might produce different outcome.

Conclusion: Both spaced-retrieval and a comprehensive home management program are effective in improving memory and no single intervention is found to be more effective than other when compared for differences. Both spaced-retrieval and a comprehensive home management program can be used simultaneously to improve memory. Hence, we can accept alternative hypothesis partially.

Limitation of the Study

- Study was not conducted in a strict controlled environment in home of subjects and mundane aspects of daily life might have affected the outcome.
- Prior to the inclusion of care takers/guardians, proper training in for of a seminar/workshop would have brought better influence.
- Dietary factors and lifestyle were not controlled

Future Scope of the Study

- This Study can be conducted using different scales which assess a particular aspect of cognition. Most of the scales to assess cognitive decline are foreign based, so there is a need to design such scale that is reliable and valid for Indian population.

- Other memory rehabilitating strategies like visual imagery, vanishing cues, exercises, pharmacological can be used.
- A comprehensive strategy for all graduates can be generated that can help in rehabilitating patients with cognitive impairment in clinical setting.

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ROLE OF BEST PRACTICES IN ASSESSMENT ANDACCREDITATION BY NAAC

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Abstract

For the attainment of quality in higher education, establishment of National Assessment and Accreditation Council (NAAC) is definitely a milestone. NAAC acts as a lodestar and catalyst for ensuring quality education in colleges and universities. Quality check by NAAC also improves the efficiency of functioning of higher educational institutions. NAAC has set a framework for quality assurance of higher education institutions and Best practices are one of the criteria for assessment. Every institute has a vision and mission and to achieve that, they follow a large number of practices and in due course of time some of them become their best practices. Best practices are the projection of an institution; they not only promote human values but are also like a support system, a ventilator for the progress of the institution. It is like a weapon which can remarkably sway the longevity of an institution. Best practices, to some extent, may act as determinants for grading and ranking of an institute. Any practice which an institute is following for a long time and is significant in accomplishing their vision and mission can be a best practice, it can be cent percent completion of syllabus, nurturing of scientific aptitude, community service, sports etc. to mention a few. Institutions of good repute and prestige maintain a balance in academics and social welfare, which may be their best practice also, to assure that their students are a perfect blend of knowledge and social consciousness.

Keywords: Best Practice, NAAC, Higher Education, Vision and Mission, Values, Scientific Aptitude, Social Consciousness.

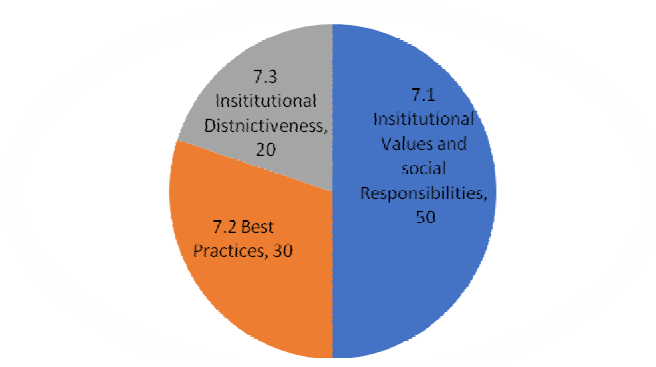
Introduction

In India assessment and grading of higher educational institutions by NAAC is mandatory as it provides formal recognition across the country and helps in receiving funds and grants from various external agencies.

Quality education, innovative pedagogy, designing and updating the curriculum are demand of higher education system. No doubt, all these are the need of the hour for current education system. Today's generation is GEN-Z (generation Z)- a digital generation and this generation of students cannot resonate with the traditional system of teaching; they need additional supplements to become fully equipped for facing the challenges of new world. "Delimiting the domain of cases in space and time to define a complete and exhaustive set best approximates completeness" [1]. As per Ms. OrdettaMandoza, 'a teacher should devote time in improving communication skills, leadership skills and personality development of his/ her students.' The revised NAAC framework of institutional assessment covers all these standards of higher learning. New

platforms for online learning like, MOOC, NEPTL, SWAYAM etc. aid in enhancing the domains of best practices [3]. In best practices "best" implies values and standards [5] Best practices are one of the key indicators of criterion seventh of NAAC assessment framework, carrying a weightage of 30 marks, out of 100 marks allotted for this whole criterion.

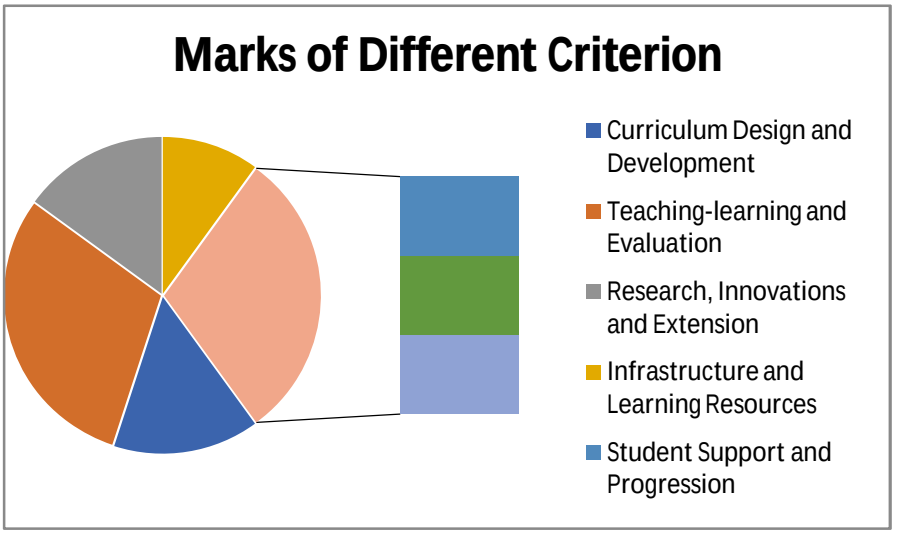
7	7.1	7.2	7.3
Institutional Values and best Practices	Institutional Values and social Responsibilities	Best Practices	Institutional Distinctiveness
Marks	50	30	20



NAAC has also suggested some of the best practices which colleges can adopt and achieve excellence. India is a developing nation and is on its mission to achieve excellence in education but due to certain limitations like availability of financial resources,poverty, overpopulation etc., the target is still distant. However, NAAC is playing a pivotal role in improving the quality of higher education through the framework proposed by it which contains questions asking about different parameters of education and character building of students, on the basis of which institutions are assessed and graded. A quality teacher education programme is reflected in the best practice of an institution [2]. Lakshmi, Rama and Hendrikz define best practice as: "Best Practice with reference to a programme may pertain to specific aspects/ practice within the programme or to the entire programme" [4].

According to NAAC distribution of marks for various criterion as follow

Chapters	Curriculum Design and Development	Teaching-learning and Evaluation	Research, Innovations and Extension	Infrastructure and Learning Resources	Student Support and Progression	Governance, Leadership and Management	Institutional Values and Best Practices
Marks	150	300	150	100	100	100	100



As per the requirement of NAAC framework, higher education institutions are now focusing not only on teaching-learning but also on other facets of education which will be crucial in gradual evolution of a generation which will carry values along with educational degree. Such a generation will be significant in creating a harmonious society which in turn can build a strong, self-reliant Nation. Public management by a scholar can be improved by searching, observing and thinking hard about best practice [6, 7]. An innovative teaching approach can be a best practice.

When an institute is going to contemplate about its best practice it should earnestly focus on the above-mentioned facts and aspects of education and then very carefully decide on it as best practices are the reflection of an institution. A best practice must provide innovative and creative solutions to common problems [8].

While deciding on a best practice the following questions can be taken note of

1. Is this practice consistent over a period of time?
2. Is this practice absolute or relative?
3. Is it useful in maintaining quality and benchmarking?
4. Does it produce results that are superior to those achieved by other means?
5. The impact of the practice on overall performance of the institute.

Objectives of the Study

1. To understand the meaning of best practice from the perspective of students, teachers and stake-holders
2. To realize the usefulness and need of a best practice for a particular institute
3. To recognize the applicability and limitations of a best practice
4. To analyze the requisite of a best practice in holistic development of an institution

Relevance of Best Practices

Like a heat engine where source, sink and working substance determine the efficiency of its working, the success of a best practice depends on input efforts, processing i.e implementation and output, in the form of impact of institutional performance. Appropriate implementation of a best practice is a pre-requisite in achieving all its benefit in higher education which in turn can prove worthwhile in NAAC assessment and accreditation.

A practice can be considered as a best practice only if it is consistent and contributes remarkably in achieving the vision and mission of the particular institute.

Recognition of a Best Practice

Recognition implies identification of a practice as best practice taking into accounts its role in enhancing quality of education and its compatibility with social, economic, cultural and historical context of a region. In higher education, academic growth of students and teachers is of prime importance but, in today's changing scenario this only is not sufficient. Present generation needs to be armed and attired with other attributes of life also, like- values, emotions, communication skills, spiritual quotient etc. which, in true sense, will be complete education. All these together will help an individual to face the virtues and woes of life.

According to the International Network of Quality Assurance Agencies in Higher Education (INQAAHE), best practices should promote efficiency and performance, recognize diversity and should be dynamic. Best practice should be revised and renovated periodically and monotony should be avoided. Amalgamation of academics with technology and social conscience can be a good best practice for an institution.

S. NO	Some of the practices which can be acclaimed as best practices are
1	Curriculum design
2	Faculty Development Program
3	Feedback by stake-holders
4	Community service
5	Academic excellence through technology
6	Value education
7	Personality development through extra-curricular activities
8	Development of human resources
9	Library and information services
10	Skill development courses
11	Women empowerment with education and ethics

Sustainability of Best Practice

A best practice should be feasible for a long term as it serves as an important parameter in institutional benchmarking. For benchmarking, a best practice is evaluated and compared with that of other institutions. A best practice must have a noteworthy

impact on the performance of an institution. Team spirit and integrity are the key factors for sustainability of a best practice. An enduring best practice leads to formation of outstanding alumni, who will carry the name of the institution and act as brand ambassadors.

Institutional location and diversity in socio-economic status of the stake-holders exerts a great impact on the sustainability of a best practice. If an institute needs to change its best practice then it should be in accordance with Newton's second law which states that, the rate of change is directly proportional to the applied force. This implies that we need to put in a lot of effort in renovating a simple practice into a best practice.

Propagation of a Best Practice

What is the best method of learning? Learning is a continuous process that leads to change as a result of experience. It has no limitations, one can learn anything from anywhere, may be from another person, nature or surroundings. An institute can grow by learning from other institutes also. Learning from others can add in academic, social, cultural and ethical growth of an institute. The best practice of an institution should always be such that it stands as a role model for others. One of the best platforms for learning and propagation of best practices can be staff-student exchange programs where two different socio-economic-cultural groups interconnect and reciprocate their ideas. Such programs can be a source of new and innovative Ideas. Exchange programs may also serve as amplifiers in rejuvenation of existing best practices. An institute must always encourage novel, creative and futuristic ways of teaching and learning. For example, in addition to regular teaching, introduction of online teaching imbued with colorful pictures, 3-D animations etc. can elicit interest in students for a particular subject. So, institutions should always be vigilant about what latest is taking place in the education world and accordingly must embrace the change for nurturing and propagating a better class of citizens who will be proficient enough to make this world a better place to live.

Authenticity of Best Practices

A best practice should not be considered as a question or point to write about for NAAC criteria. It should be something which exists and is actually practiced by a particular institution. A best practice is an indicator in checking the parameters of an institute's performance in academics, infrastructure, administration and social responsibilities. So, institutions must take care that whatever they are describing as their best practice must prevail.

Malleability of Best Practice

A best practice must be pliable, it should not be stringent. There must always be a scope of reformation in a best practice. Like properties of a crystal can be improved by doping which makes it act like a spine in electrical appliances, so should be the essence of a best practice so that it can always be upgraded. An institution should be liberal and receptive to new ideas which can add-up to the quality of malleability of a

best practice. When a best practice is malleable then only new dimensions can be achieved in higher education.

Conclusion

From the above discussion it can be concluded that the best practices are of paramount importance in the functioning of an institution. They serve as a foundation stone for an institute on which the longevity of it will depend. Best practices are also decisive in assessment and accreditation by NAAC. So higher education institutes must contemplate this and should come up with something authentic and unique as their best practice.

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पंडित लक्ष्मीनारायणमिश्र के समस्या नाटकों में चित्रित प्रेम और यौन संबंध : नूतन रागात्मक उपलब्धि की अभिव्यक्ति

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पंडित लक्ष्मीनारायण मिश्र हिन्दी के प्रमुख नाटककार हैं । आप को समस्या नाटककार के रूप में अधिक ख्याति मिली है । मिश्रजी की साहित्यसाधना अनुपम है । सामाजिक और - समस्या नाटकों द्वारा उन्होंने नाट्य साहित्य में नये युग की अवतारणा की । युगचेतना इनके समस्या नाटकों में स्पंदित हो रही है । मिश्रजी तत्वदर्शी कलाकार के रूप में समाज और व्यक्ति की समस्याओं पर प्रकाश डालकर अपने विचारों को प्रस्तुत करना चाहते हैं ।

प्रेम और यौन की नवीन विचारण का उद्घाटन सर्व प्रथम पंलक्ष्मी नारायणम.िश्र के नाटकों में हुआ । उनके समस्या नाटकों के नारीमात्र यौन आदर्श के संबंध में अधिक - व्यावहारिक एवं बौद्धिक हैं ।'संन्यासी' ,'राक्षस का मंदिर' ,'मुक्ति का रहस्य' ,'राज योग' , 'सिन्दूर की होली' और 'आधीरात' नाटकों में 'प्रेम और यौन'के नवीन दृष्टिकोण का प्रतिफलन हुआ है । पंपत्नी के अतिरिक्त उनका संबंध एक अन्य तृतीय पुरुष और नारी के -मिश्र ने पति. संदर्भ में चित्रित किया है ।

'संन्यासी' की किरणमयी एक शिक्षिता एवं आधुनिक नारी है और स्वतंत्रता संग्राम के सेनानी परंतु परिस्थितिवश,से प्रेम करती है (मुरली धर)उसे एक प्रौढ व्यक्तिदीनानाथ से विवाह - करना पडता है । प्रौढ़ दीनानाथ को देखकर किरणमयी को'उसके पिताजी याद पडते है ।'[i] अतः वह अपने पति से स्वतंत्रता की माँग करती है । और पति भी उदारता पूर्वक उसकी माँग को स्वीकार कर लेते है ।[ii]

'मुक्ति का रहस्य' में आशा देवी उमाशंकर से प्रेम करती है किन्तु विवाह नहीं कर सकतीक्यों कि उमाशंकर विवाहित है और उसकी पत्नी जीवित है । आशादेवी एक डाक्टर से , जहर लाकर उमाशंकर की पत्नी को रुग्णावस्था में पिला देती है । इस प्रकार वह उसका मार्ग निष्कंटक बनाने की चेष्टा करती है। किन्तु विष प्रदान करने से पूर्व डॉत्रिभुवननाथ आशा से . समर्पण -स्वरूप आशा देवी को शरीर-पत्र लिखवा लेता है जिसके अनुसार जहर के मूल्य-एक वचन त्रिभुवन आशा देवी को उसके वचन .करना होगा । अतः श्रीमती उमाशंकर की मृत्यु के बाद डॉ की याद दिलाता है । एक बार तो आशा मना कर देती है पर जब डॉत्रिभुवन यह पत्र . त्रिभुवन .तब आशा देवी को लाचार होकर अपना शरीर डॉ ,उमाशंकर को बताने की धमकी देता है

धर्म लुटे जाने पर वह उमाशंकर से -तृष्णा को समर्पित करना पडता है । अपना शरीर-की काम त् .विवाह करने का साहस नहीं जुठा तकती और अंततः उसे तथाकथित डॉरिभुवन से ही विवाह करना पडता है ।

'सिंदूर की होली' की मनोरमा बाल्यावस्था में ही विधवा हो जाती हैजबकि उसकी दृष्टि , प्रस्फुटित ही न हो सकी थी । उसकी दृष्टि में पति एक ही -संबंध की अनुभूति-में किसी पुरुष प्रेमी अनेक भी हो सकते हैं । इसीलिये वह ,होना चाहियेमनोजशंकर से एक जगह कहती है - 'मैं तुम्हें अपना दूल्हा तो नहीं बना सकतीलेकिन प्रेमी बना लूँगी । ,'[iii] इस प्रकार नाटककार वैधव्य के प्रति परंपागत विचार को केवल व्यावहारिक उपयोगिता की दृष्टि से देखता हैसैक्स , की मर्यादावादी दृष्टि से नहीं । मनोरमा रजनीकांतका चित्र भी खींचती हैइससे स्पष्ट होता है , कि वह रजनीकांत के प्रति भी प्रेमाकृष्ट हुई थी । रजनीकांत के दर्शन मात्र से ही चंद्रकला के शैय्या पर पडे हुये रजनीकांत से विवाह -भावना तरंगे बने लगती हैं और वह मृत्यु-हृदय से यौन कर समाजानुमोदित विवाह की चुनौती देती हुई तो प्रतीत होती है । मिश्रजी ने अपने नाटकों में प्रेम को एक शाश्वत तत्व माना हैअतएव प्रेम की अभिव्यंजना उनके नायकों में विशुद्ध रूप में , स्त्री ,प्रस्फुटित हुई है । वे स्त्री को भी प्रेम के कारण दूषित नहीं ठहरा सकते । प्रेम पवित्र है की जन्मजात प्रवृत्ति हैअतः बुराई का तत्व तो उसमें है ही नहीं । चंद्रकला से प्रेम का उत्तर , देते हुये नाटक का नायक मनोजशंकर चंद्रकला से पिता मुरारीलाल को प्रेम की पवित्रता के विषय -- में स्पष्ट करता है'प्रेम करना विशेषः स्त्री के लिये कभी बुराई नहीं स्त्री जाति ..... की स्तुति केवल इसीलिये होती है कि वे प्रेमं करती हैं स्त्री ..... प्रेम के लिये ही उनका जन्म होता है..... उसका सबसे बडा तत्व प्रेम माना गया है और उस पर भी यह तो ,चरित्र की सबसे बडी विभूति उसका पहला प्रेम है । उसमें बुराई कहाँ है । प्रेम वकील से राय लेकर जज से अधिकार पत्र .... ,वह तो चरित्र का गुण है ,प्रकृति है ,लेकर तो किया नहीं जाता । जो बात स्वतः स्वभाव है अवगुण नहीं' ।[iv] द्विवेदी युग में प्रेम की परिभाषा को इस प्रकार से खुले रूप में नहीं बाँधा जा सका था । एक स्त्री अजाने पुरुष से यदि बात भी करे तो सामाजिक दृष्टि से पाप करती है। उस युग का नायक इस बात को कभी भी मानने केलिये प्रस्तुत नहीं है कि नारी का प्रकृतिजन्य गुण प्रेम करना हैभावना प्रकृतिजन्य प्रवृत्ति -नाटकों में यौन-इस लिये वह पवित्र है । समस्या, इसलिये वह पवित्र है ऐसी व्यावहारिक न ,हैैतिकता इन बुद्धिवादी नाटककारों की देन है । ऐसे प्रमे को वे मात्र छलना नहीं मानते । यही कारण है कि मनोजशंकर चंद्रकला को न पाकर भी उद्विग्न नहीं होता और न कोई ऐसा आयास करता है जिसमें चंद्रकला किसी दूसरे की भी न हो सके । मुरारीलाल ने चंद्रकला के प्रेम की वकालत करना नये नैतिक मूल्यों को स्थापित करता है । इसमें अधपतन और व्यक्तिवादी नैतिक चेतना अधिक स्पष्ट हुई है ।

लक्ष्मीनारायणमिश्र कृत 'राक्षस का मंदिर' में यौनसंबंधी कुंठा को उजागर किया गया है - को तभी से अपने पास र (अश्करी) पुत्री-। वकील रामलाल एक वेश्याख रहा है जब वह

बाल्यावस्था में थी । वृद्ध रामलाल और भी वृद्ध हो जाता है किन्तु अश्करी का यौन प्यास अनुभव करने लगता है । ऐश्वर्य की दृष्टि से रामलाल अश्करी को सबल कुछ दे सकता है किन्तु एक नव यौवना के लिये रूप या ही सर्वस्व नहीं होता । फलतः अश्करी रामलाल के पुत्र रघुनाथ की ओर आकृष्ट होती है किन्तु रघुनाथ अपने पिता की रखैल की ओर आँख फेरना भी पाप समझता है । रामलाल का सहायक मुनीश्वर अश्करी की खारीरिक तथा भौतिक लालसाओं की तृप्ति नाटक में प्रेम और विवाह के अतिरिक्त जो जीवन का रूप उभरा है वह केवल वासनात्मक है ।

मिश्र जी के 'राजयोग' में भी 'प्रेम और यौन' की परिधि में कई पात्र कुंठाग्रस्त हैं । नायिका चंपा अपने सहपाठी नरेन्द्र से प्रेम करती है किन्तु उसे परिस्थितिवश राजकुमार शत्रुसूदन सिंह से विवाह करना पडता है । इधर नरेन्द्र चंपा की प्राप्ति न होने से परेशान है और भटकता फिरता है । अंत में जाकर राज परिवार के नौकर गजराज सिंह के एक क्षत्राणी से अवैध संबंध होने के रहस्य का भी उद्‌घाटन होता हैइस प्रकार चंपा गजराज सिंह की ही अवैध संतान है , गुंत्थियों से उ-संपूर्ण नाटक यौन-किन्तु उसकी मालिकिन है । प्रारंभ से विकास तकलझा हुआ है जो नाटक के अंत में जाकर सुलझती है ।

मिश्र जी के अंतिम नाटक 'आधीरात' की मायावती पाश्चात्य नारीविषयक दृष्टिकोण से - प्रभावित होकर प्रारंभ में स्वच्छंद प्रेम और यौन को महत्व देती है किन्तु उसके जीवन केलिये वह अतः अंत में वह इस वि ,फलदायी नहीं होताचारधारा का विरोध एवं भारतीय दांपत्यजीवन को - प्रतिष्ठित करने का आग्रह करती है ।'मायावती विदेशी प्रेम पद्धति में पडकर ही स्वयं अपने को किसी घाट नहीं लगा पाती तथा अपने दोनों प्रेमियों को मौत के घाट भेजती है – एक गोली का शिकार बनता है और दूसरा वाले पानी का यात्री । इस प्रकार ऐसे का अंत प्रेमियों का ही अंत कर देता है जिसका कारण विकृत प्रेमदृष्टि है।-'[v]

जहाँ एक ओर मिश्र जी ने मायावती द्‌वारा स्वच्छंद प्रेम की आलोचना करवायी हैवहीं , दूसरी ओर उनके एक अन्य नाटक'सिन्दूर की होली' में मनोजशंकर द्‌वारा इस प्रवृत्ति को समर्थन दिया है । मनोजशंकर एक जगह मनोरमा से कहता है -'प्रेम वकील से राय लेकर ..... पत्र-जज से अधिकार ' लेकर तो किया जाता । जो बात स्वतः स्वभाव हैवह तो .... प्रकृति है , अवगुण नहीं ।,चरित्र का गुण है'[vi] मिश्र जी के नाटकों में यत्रतत्र इस प्रकार की अंतर्-विरोध की स्थिति-उस युग की विकट उलझन का परिणाम है । तत्कालीन कालेजों की शिक्षा तथा रहन , जिससे शिक्षित युवकों में नई मान्यताओं के प्रति ,सहन पर पाश्चात्य वातावरण का प्रभाव था आकर्षण एवं पुरातन संस्कारों एवं धारणाओं के प्रति अविश्वास के भाव उद्भूत हुये । उन्हीं युवकों के मातापिता एवं उनके पूरे परिवार प्राचीन संस्कारों आबद्ध थे । युवकों पर इन दोनों - परस्पर विरोधी आदशों का प्रभाव पड़ा । न वे अमिट संस्कारों से मुक्त हो सके और नहीं शिक्षा

के दुर्दम प्रभाव से । शिक्षा और संस्कार का यही परस्पर विरोधी स्वभाव समाज में उलझने एवं विकृतियाँ भी उत्पन्न करने लगानैतिक प्रश्न भी खडे करने लगा और दूसरे व्यक्तित्वों का , बब्बन त्रिपाठी के शब्दों में.निर्माण करने लगा । डॉ'पंलक्ष्मी नारायणमिश्र भी ऐसे ही . अंतर्विरोधपूर्ण दुहरे व्यक्तित्वों की एक कडी है ।'[vii]

इस प्रकार हम देखते हैं कि 'प्रेम और यौन' को लेकर मिश्रजी के नाटकों में निरंतर परंपरागत मूल्यों से हटकर एक प्रकार की नूतन रागात्मक उपलब्धि की अभिव्यक्ति हो रही है । यौनयुवतियाँ विवाह पूर्व -संबंधों की परंपरागत मान्यताएँ क्षीण होती जा रही है फलतः कई युवक-ही यौन जीवन के व्यावहारिक क्षेत्र से परिचित होने लगे हैं । विवाह पूर्व-'डेटिंग' का प्रयोग भारतीय उच्च वर्ग में भी स्वीकृत हो चुका है । इस प्रकार आधुनिक युग में सहभोग संतानोत्पत्ति के लिये नहीं वरन् मानसिक तुष्टि के लिये होता है ।

'संन्यासी' नाटक में वस्तु के माध्यम से स्त्रीपुरुष के संबंधों की भौतिकता को स्पष्ट - – करते हुए उक्त संघर्ष तत्व को विस्तार देने तथा प्रेम समस्या के यथार्थवादी पक्ष को उजागर करने की दृष्टि से कथावस्तु की मार्मिक योजना की गई है । इसी नाटक में प्रेम की व्याख्या के संदर्भ में रोमान्स और यथार्थ के धरातल पर व्यक्तिसम्बन्धों और सामाजिक तथ्यों का विश्लेषण - शिल्प के अनुरूप अपनी धारणाओं की सापेक्षता को रचना -करते हुए मिश्र जी ने यथार्थवादी रचना लब्धि के रूप में दर्शाया है ।-की वस्तुगत उप'राक्षस का मंदिर' नाटक की कथावस्तु के माध्यम से प्रेम की व्याख्या के संदर्भ में सद्असद् वृत्तियों का निरूपण करते हुए जीवन की यथार्थ - स्थितियों पर वस्तु का नियोजन किया गया है ।'मुक्ति का रहस्य' की कथावस्तु में समाज में प्रचलित विभिन्न समस्याओं के आदर्शवादी समाधान ढूँढने का प्रयास हुआ है । इस नाटक की कथावस्तु में प्रेमसम्बन्धों का रूपायन स्वच्छंदतावादी एवं यथार्थवादी मूल्यों के संघर्ष व समन्वय - पूर्वक करने में मिश्र जी की आशातीत सफलता मिली है । चिरंतन नारी -के नेपथ्य में कुशलता की समस्या को लेकर रचे गये'राजयोग' नाटक में सामाजिक लांछन व तिरस्कार के नेपथ्य में प्रधान समस्या को उजागर करने की दृष्टि से संघर्ष के तत्वों को विस्तार देने तथा घटनाओं को प्रकाशित करने को प्राथमिकता दी गई है । 'सिंदूर की होली' की कथावस्तु में नारी के वैधव्य-जीवन की समस्या के सैद्धांतिक एवं व्यावहारिक पक्ष का विश्लेषण प्रस्तुत किया गया है । चिरंतन नारीत्व की समस्या को उजागर करने वाली इसकी कथावस्तु में रोमानी वृत्तियों के साथ मानवीवृत्तियों के संघर्ष का प्रत्यांकन किया गया है । भारतीय समाज पर पाश्चात्य संस्कृति के - दुष्प्रभाव को अभिदर्शित करते हुए मिश्र जी ने'आधीरात' नाटक की कथावस्तु में सामाजिक धरातल पर रोमानी और अतिमानसिकता की अभिसृष्टि निराले ढंग से की है । इस प्रकार मिश्र जी के सभी नाटकों में प्रेम और यौन संबंधों का अंकन परंपरागत रूप में न होकर नूतन रागात्मक उपलब्धि की अभिव्यक्ति के रूप में हुआ है । मिश्र जी जीवन के चिरंतन तत्वों को

महत्व देते हैं और वे जीवन में विरोधीप्रवृत्तियों के द्वंद्व को आवश्यक मानते हैं । ये ही उनके - – समस्या नाटकों की कथावस्तु के मूल स्वर हैं ।

संदर्भ संकेत:

[i] मैं जेल खाने में 'नही' रह सकती । x xx तुम इधर-उधर मिस और मेमों से मिला करते हो । मुझे भी अपने मित्रों से मिलने दो । - लक्ष्मीनारायणमिश्र - संन्यासी - पृ.सं.99

[ii] .....तुम्हारी तबीयत मेरे साथ नहीं लगती तो तुम किसी के साथ रह सकती हौ । - लक्ष्मीनारायणमिश्र - संन्यासी - पृ.सं.107

[iii] लक्ष्मीनारायणमिश्र - सिंदूर की होली - पृ.सं.42

[iv] लक्ष्मीनारायणमिश्र - सिंदूर की होली - पृ.सं.59

[v] डॉ.बब्बन त्रिपाठी - हिन्दी नाटक और लश्रीनारायणमिश्र - पृ.सं.376

[vi] लक्ष्मीनारायणमिश्र - सिंदूर की होली - पृ.सं.59

[vii] डॉ.बब्बन त्रिपाठी - हिन्दी नाटक और लश्रीनारायणमिश्र - पृ.सं.27

सहायक ग्रंथ सूची:

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पत्र पत्रिकाएँ :

1. आजकल 1999 मार्च -
2. आलोचना 2000 सितंबर -
3. विशाल भारत 1998 जनवरी -
4. साहित्य संदेश 1997 मई -

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TO ASSESS THE PSYCHOSOCIAL DIFFERENCE AMONG FOREIGN LANGUAGE LEARNERS DURING PANDEMIC

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Abstract

In India, there is craze for learning foreign language at school and college level. Majority of private schools and colleges are offering French language courses. Similarly, in Punjab the trend towards immigration and foreign language learning is also at peak among students. However, the pandemic situation and lockdown period put a pause on effective learning. Although, number of online courses and websites are available for learning but a state of uncertainty and lack of support may show psychological symptoms among them. This study was designed to assess the stress and anxiety among students learning foreign language during lockdown period. The sample was collected from 60 students, out of them 30 were males and 30 were females. The sample was collected with the help of standardized tools. The outcomes of this study reveal male students were higher on stress as well as on anxiety as compare to female students.

Keywords: Pandemic, Lockdown, French Language, Stress, Anxiety.

Introduction

Language is the common method to convey or communicate and learning any foreign language is not an easy task especially for the beginners at senior secondary level. French language has complex grammatical structure which requires classroom monitoring not only for reading and writing but also for correct pronunciation. The students under middle adolescent age are found to produce repetitive language and spend sufficient amount of time conversing in same language with peer group or within society (Reed, 2005). So, the way to pronounce the words in French language also require learning environment for learner which is not best conveyed through online teaching.

In Punjab, numbers of students are aspirants to go abroad and spending huge amount on learning foreign language to increase the score and to get admission in best International Institutes. The financial burden on parents and competitive environment leads to positive and negative stress among students while learning second language and a feeling of anxiety also prevails at some point of time.Feeling of anxiety and stress is associated with second language learning because during learning feeling of tension or nervousness is higher while listening and speaking (Horwitz et al, 2014). It is the primary role of language teacher is deemed utmost important in order to create creative and inductive environment in the classroom for high level of performance and

long-term achievement (Tanveer, 2007; Young, 2016).

During Covid-19 Pandemic, the non-availability of teacher or virtual classroom learning is creating problem among beginner level learners were not adapted to this option. Moreover, unlike English language, French language has variations for every living or nonliving thing and has its own gender as it falls in either masculine or feminine category. This kind of complexity can be learning effectively through the presence of teacher to clarify doubts and to rectify mistakes which is not possible during online or virtual classroom situation. At present situation, learning may depends on gender and many other psychosocial factors such as family environment, coping skills and trait of student. However, stress may prevail among foreign language learners as a result of serious personal problems such as a lack of parents' support, serious illness or a stressful situation (Santrock, 2003).

There is dearth of studies related to learning foreign language and psychological impact during lockdown period. This study was designed to measures the variables for developing coping interventions for students during this situation.

Objectives

1. To assess the difference for level of stress among male and female students learning French language.
2. To assess the difference for level of anxiety among male and female students learning French language.

Methodology

The sample is comprised with 60 students, 30 are males and 30 are females studying French language in private schools of Punjab. The students who are studying in 11 and 12th standard were included between the age of 15-17 years. The standardized questionnaires were used and online data was filled on the basis of inclusion criteria.

Tests & Tools

1. Spielberger's anxiety scale (Spielberger, Sharma & Singh)
2. Stress scale (Singh, Kaur & Kaur).

Results

Table1: Shows t-value for stress and anxiety among male and female school students learning French language

Measures:	Males		Females		
	Mean	S.D.	Mean	S.D.	t-value
Anxiety	23.39	3.3	21.87	3.25	2.84**
Negative Stress	10.37	1.52	9.81	1.68	2.13*
Positive Stress	6.23	1.41	11.21	1.48	2.01*

***** $p<0.01$ ** $p<0.05$

The findings of this study reveals that male students are higher on anxiety as compare to female students and significant difference was found at $p<0.05$. Further, male students who are foreign language learners are high on negative stress as compare to female students and even significant difference was found at $p<0.01$ level. Lastly, under positive stress, females were higher in comparison to males and significant difference was found at $p<0.01$ level.

Discussion

The study was designed to explore the stress and anxiety among students learning foreign language during lockdown phase. The standardized tools were used to assess the variables and online data was collected from 60 students. The results revealed that that male students are higher on anxiety as compare to female students and significant difference was found at $p<0.05$. Cebreros, (2003) proposed that language acquisition is comprised with fear of evaluation and perfectionism. The beginner level aspirant wants to be perfect in language which can be adaptive or maladaptive (Frost et al, 1990). However, the result shows that male students were feeling more anxiety as compare to female students. The reason behind is that female students can better cope with the situation and have more motivation to learn foreign language in any conditions. However, they show performance anxiety during examination in comparison to male students (Oxturk&Gurbuz, 2013). Further, Campbell & Shaw (1994); Zhang (2000) were found that females are less anxious and stressed while learning foreign language. Similarly, the female students in this study showed less anxiety for leaning French language during this pandemic situation as compared to boys.

Further, male students who are foreign language learners are high on negative stress as compare to female students and even significant difference was found at $p<0.01$ level. Negative stress or distress occurs when people are unable to perform and cope up with the situation and it causes anxiety and if this condition may persist for more than three weeks it may lead to mental health problems and other psychological disorders (Dhanoa&Dhanoa, 2018). Studies supported the results of this study that anxiety and distress act as learning barriers and also lower the confidence level of students while learning in new situation (Gregerson, 2003; Jackson, 2008). In addition to it, Khan et al (2015) conducted study to find out gender difference among learners in novel situations and it was found that girls scored lower as compared to boys because of least expectations from parents and also because of self-problem solving skills.

Lastly, under positive stress, females were higher in comparison to males and significant difference was found at $p<0.01$ level. Singh, Kaur &Shrivastva, (2017) found that female students are higher on positive or eustress and eustress is beneficial and also important for achievements in life. This word was coined by Hans Selye; according to Selye Eustress produces positive feelings of excitement, fulfillment, satisfaction and wellbeing. Gardner & Lambert, (1983); Ozturk (2013) found that female French learning students have higher level of

motivation and even females shows positive attitude towards obstacles and try to solve them in better way as compare to boys.Similarly, the females of this study reveal higher eustress as compared to boys.

Conclusion: The present study points to need for the better intervention strategies for students to handle novel situations or pandemic period for effective learning. The special provision or alternative way should be adapted by the students to learn and teachers must play vital role to help the students to overcome from stress and anxiety not only during learning in classroom but also during pandemic like situation. Government should take initiative and education boards/UGC/AICTE must provide special trainings to teachers in form of FDP for better online skills and also develop online platform which may provide ample knowledge without any restrictions and internet problems. Although, it is accepted that classroom teaching is more effective for long term performance and achievements but still there is requirement to build better infrastructure for online/virtual classroom learning to avoid any consequences during the time of pandemic or other phase of life. Further, Psychologists or hospitals settings must introduce and provide coping intervention programs at school and college levels through education boards.

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"kkjhfjdf"k{kk rFkk [kyeu'; d thou dk egRoi.k vx gA"kkjhfjdf"k{kk l tMgku d dkj.k"kkjhfjd {kerk dk "kkjhfjdf"k{kk d {k= evR;UregRoi.kLFkkugA"kkjhfjdf"k{kk fdlh0;fDrRoelEi.kifjoruykrhgA"kkjhfjdf"k{kk dk mnn"; "kkjhfjdfodkldjukgAcpiu l c<kirdeu'; fofHkUuidkj d [kyfØ;kvkvkfndk "kkjhfjd ,oekufld:i l djrkg] mlemlvkuUn dh vuHkfrgkrhg ,o "kjhjHkhlUnj ,oLoLFkjgrkgAvxj [kyeu'; d thou e u gkrkoguhjlgktk;xk] "kjhj o eu dk fodkldjurFkklekt o okrkoj.keviuvkidklek;kftrdju d fy, eu'; d thou e [kycgr t:jh gAekuo dh iR;dfØ;k dk eyvk/kkjmldk "kjhjgAmldhcf) ,ofodkl e "kkjhfjdxR;kRedfØ;kvk dk ie[k iHkkojgrkgAekuo d fØ;kdykipkgopkfjdgkvFkokvkfxdnkukemld "kjhj dh eklif"k;kfdlh u fdlh :iegypy ;k fØ;k"khygkdjdk;djrhgA ;gheklif"k;k dh xfr ;Drdk;tkckyd d tUe l ydje R;rdpyrkjgrkgAmld "kkjhfjd ,oekufldfØ;kvk d lefUorfodkl dk vk/kkjgA ^LoLFk"kjhjeLoLFkefLr'dokldjrkg* bl eyfopkj dk vk/kkj"kjhj ,oeu d ikjLifjdlcU/kkelefUorxfr dh if'Vdjrkga

pkyl ,0 cpj ¼**1973**½ [ky d vud :lkgkrgyfdulHkh [kykedk"kyin"kuiklrdjugrmldh "kkjhfjd {kerk dk i.k :i l mi;kx e ykuk [kyrFkkvU; ØhMk Li/kkelHkhtxgrkdr] piyrk] xfr d lkFk&lkFklgu"khyrk dk Hkhgkuk t:jh gAyEchvof/k d ØhMk Li/kkvkdki.k :i l dju d fy, f[kykfM;k dk fo"k'kLFkkugkrkgAftldvk/kkjijyEchvof/k dh ØhMk Li/kkvkdkvPN<x l fd;ktkldA ,d LoLFk0;fdroghgtkviudkifjfLFkfr;k d vulkjvPNhrjg l lek;kftrdjldAftld "kjhj o efLr'd d chpUryugkrFkktkviuhlkekU; ekxk dh ifrdjue "kkjhfjd o ekufldFkdku dk vuHko u djrkgkA "kkjhfjd {kerk0;fDr d vo;okijHkhfuHkjdjrhgrFkkdk"kY;kijHkhfuHkjdjrhgA de l de fuf"prek=k dh "kjhfjd {kerk bl ckrijfuHkjgkrhgfd0;fDrfdlidkj dk dk;djrkgA

FkkeløVj ¼**1971**½ofndvk/kkjijekuodkfØ;k"khy ik.kh ekuktkrkgAblhdkj.k ;g dN u dNfØ;k,djrkjgrkgrFkkekuolektejgu d dj.kleg d chpdN u dNdk;djrkjgrkgAftruHkh [kyk dh lf'Vgbog lHkhblh dh nudgtkldrgA

tkuMCy cu ¼**1968**½ "kkjhfjdf"k{kk] "kkjhfjdfØ;kvkvkj "kjhj "kkL= dk cgrxgjklEcU/k gA "kjhjjpuk "kkL= "kkjhfjdfØ;kvk }kjkiHkkforrFkkifjlhfergkrgvkj "kkjhfjdfØ;k,Hkh "kjhjjpuk "kkL= }kjkiHkkforgkrhgA0;k;kek dk "kjhj "kkL=h; ?kVdkij ,dne l iHkkoiMrkgAvr% "kjhjfØ;kvkj "kjhjjpuk "kkL= dk vkilexgjklEcU/k gA "kkjhfjdfØ;kvk d }kjkghLoLF;rkcurhgA "kkjhfjdf"k{kk eNk=k l

vyx&vyxidkj d 0;k;kedjk;tkrg] ftldk "kjhj "kkL=h; ?kVdkijiHkkoiMrkgA "kkjhfjdf"k{kk eyxkrkjHkkxyu l "kkjhfjdn"kkvkel/kkjgkrkgvFkkr fu'iknu {kerk c<rh gA

ihVj vk0 lhxjl½1950½ u yphykiuvkj [kydfrRo d e/; fdrukIEcU/k gbldk irk yxku d fy; ,FkyfVDl f[kykfM;k d Âij"kk/kdk;fd;kx;kAmUgkuviu bl "kk/kdk;evkjxkufo"ofo|ky; d ,FkyfVDl f[kykfM;keyphykiuifj{k.k }kjk n[kk] ftldfy, nkrjg d f[kykfM;k dk p;ufd;kx;kA

v½ Ldylfoldkld ,FkyfVDl f[kykMh

c½ Ldy ,FkyfVDlVhe d f[kykMh

bu f[kykfM;kefofo/k lfU/k;keyphykiu n[kk x;kx;kA 12 lfU/k;keLdylfoldkl d ,FkyfVDl f[kykMhLdy ,FkyfVDlVhe d f[kykfM;k dh vi{kk yphykiu ;Drfeyrkldy ,FkyfVDlVhe d f[kykMhlkbVVdvkjfgi ¶yD"kuelfoldkl d ,FkyfVDl f[kykfM;k l vPNfudyAifj{k.k d nkjku ;g Hkhik;kx;kfdLdy ,FkyfVDlVhe d f[kykMhnk;k ?kVukvkjdykbeck; ?kVurFkkdykb d vi{kk vf/kdyphyfeyAlfoldkl d ,FkyfVDl f[kykfM;keck;vkjnkfgurjQ d ekiuedkbfo"k'kvUrjughlk;kx;kAfu'd'k d rkjijik;kx;kfdlfoldkl d ,FkyfVDl f[kykMhLdy ,FkyfVDlVhe d f[kykfM;k d vi{kk vf/kdlfU/k;krFkkvf/kd {k= evf/kdyphygA

dfygj ½1960½ u ioikfdLrkuNk=k ijØklocjVLV d Âij ,dfjikVeyMdkrFkkyMfd;k dh "kkjhfjd {kerk dk v/;;u fd;k A ifj.kkeebUgkuik;kfdikfdLrkuhyMd&yMfd;k dh "kkjhfjd {kerk ;jkfi;un"kk d yMd&yMfd;k dh {kerk l de gA

cu ½1962½eldUMjhLdy d Nk=kdh ;kX;rk ,o"kkjhfjd {kerk dk eY;kdufd;kA ;kdkgkekvkjokf"kxVu d d{kk 7 ,o 8 d Nk=kelkekU; ixfrfn[kkbnhA

¶YkkjUl ½1963½U;fu;jigkbLdy d Nk=k dh "kkjhfjd {kerk c<ku d fy, 4 i)fr;k dh ryukdhAdyLFkfud] vk;lkfefVd] 0;k;kejLlh&dnvkj"kkjhfjdf"k{kk ikxke dk 4 i)fr;keifj{k.kfd;kA 3 ekgcknekVjfQVulVLVnkgjk;kftleik;kx;kfdlHkhlegk dk ifj.kkevPNkjgkA

cfjV ½1963½ u lufM;kxkLdye"kkjhfjd {kerk dk ryukRed v/;;u fd;kAbldfy, mUgkudfyQkfu;kfQftdyijQkeUlVLV dk mi;kxfd;kA 1800 lhfu;jyMdftUgku 3 lky dh "kkjhfjdf"k{kk dk dklijkfd;kFkkRkFkk 125 yMdftUgku 3 lky dk fefyVhlkbUl dk dklijkfd;kFkk] dk bl v/;;u d fy, pukAfu'd'keik;kfd"kkjhfjdf"k{kk d fo|kFkh] fefyVhlkbUl d fo|kfFk;k l vf/kdvPNFkA

cfu;k ½1964½rhok d v/;;u l ;g ik;kx;kgfddk;dykifu'iknu d fy;dU/kk dk ¶yD"ku] vkj ,DlVU"ku dk yphyiuvkj"kfDrbuelUryugkuk t:jh gA v/;;u d fy;ftUgku"kkjhfjdf"k{kk ;g e[; fo'k; pukFkk ,lfo"ofo|ky; 22 fo|kfFk;k dk cy vkjyphykiuukikx;kAdetkjckt dkllrkgerhuckj dh nj l ikpllrkgrdvk;lkefV 0;k;ke dk if"k{k.kfd;kx;kAif"k{k.kfn;g;ckt dh "kfDr c< x;hvkjgypy dk foLrkjekuHkhFkkMk c< x;k] "kkfDrvkjyphyiu d chpcgr de egRoi.kIEcU/k ik;kx;k A

cky ½1967½etfu;jgkbLdyxYl d "kkjhfjd {kerkfodklpkji)fr;k dh ryukRed v/;;u fd;k ftleijh{k.kpkji)fr;kefd;kx;kAigyhDyLFyhd l ryuk] vk;lkefVdfd;k jLlh&dnfu;fer"kkjhfjdfØ;kvk d fy, mRrtd0;k;kedjuk A rhuekg d cknxked {kerkijh{k.k l iukofRr dh xbftllfu'd'keikIrgvkfdDyLFkuhdfØ;kvk l ifj.kkevfrfodkl 0-05 Lrjdkiklrfd;kA

gjeu ½1967½evcuvkj :jyNk=k dh "kkjhfjd {kerk dk ryukRed v/;;u fd;k A bldfy, mUgku 100 vcuvkj 100 :jyNk=k dk v/;;u fd;kfu'd'kebUgkucrk;kfdvcuNk=k dh "kkjhfjd {kerk :jyNk=k l vf/kdgA

ekxjV ½1973½ u "kkjhfjd {kerk d v/;;u d fy, 45 ;fuoflVh d f[kykfM;ke l ifj{kkfFk;k dk jUMei)fr l pukofd;kA bl idkjfu;=.k legdkpukx;kçk;kfxdlegdkllrkgerhufnu 5 ?k.VrdckLdVcky dk vH;klfn;kx;kvkj 10 bVjdkyft;V [kybUgku [kyçf"k{k.k l iorFkkIk"pkr nkuklegk dk ijh{k.kfd;kx;k] ftlefIV&vll] ofVdytEt] 600 xtnkM] efMluckyFkk] gkFk dh idM] LdkVfjp] ,chfyVh dk leko"kFkkA

Øtoj½1976½ u dufM;urFkknf{k.kvfQdk d Ldyk d cPpk dh "kkjhfjd {kerk dk ryukRed v/;;u fd;kAbldfy, mUgkuvkQj ;FkfQftdyfQVulijh{k.kfd;kAmUgkuviu v/;;u d ifj.kkeeik;kfdnf{k.kvfQdk dh "kkjhfjd {kerk] dukMk d Ldy d cPpk l vf/kdgA

tuluvkjfipu ¼1979½ u dbvUo'k.kd }kjk"kjhj d fofHkUuvxk dh yphyiuvkjdfrRo d chpe de vkjukdjkRed lEcU/k fn[kk;kgA blfoijhrdejvkjtk?k dh lfU/k dk yphykiuvkjfofHkUudk;dyki d dfrRo d chpeegRoi.klEcU/k ik;kx;kgA

v/;;u d m)";%&
bl v/;;u dk e[; m)"; vUrjfo"ofo|ky; ,ojkT; Lrjh; dcìhf[kykfM;k dh "kkjhfjd {kerkvk dk ryukRed v/;;u djukA

ifjdYiuk%&
vul/kkudRrku ;gifjdYiuk dh Fkhfdv Urjfo"ofo|ky; ,ojkT; Lrj d dcìh f[kykfM;k dh "kkjhfjd {kerkvkelkFkdvUrjik;ktk;xkA

"kkjhfjd {kerk d dkjd%&
1- **rkdr%&** "kjhj d cy i;kx dh {kerkdkrkdrdgrgADykd d vulkj] ^eldyjikoj dk vFkg de l de le; le; eeklif"k;k }kjkvf/kd l vf/kd cy mRiUudju dh {kerkgA**
2- **piyr%&**piyrk"kjhj dh og {kerkgftle"kjhj ;kmldvxk dh fn"kkdkvpkudcnyktkldrkgA
gyu ,e- ,dkV d vulkj& ^piyrk"kjhj dh og {kerkgftlddkj.kog"kjhjdk ;k mldfdlh vx dkLQfr l fuf"prfn"kkecnyktkldrkgA**
3- **lgu"khyr%&** [kydk [kyr le; cgrnjrdFkdkoVughvkukvkjFkdkoVvku d ckn HkkLQfrvku dh {kerkdklgu"khyrkdgrgA
4- **xfr%&** ;g0;fDr dh og ;kX;rkgftld }kjkyxkrkj ,d d ckn ,d vFkokvudfØ;krhoxfr l djrkgA

gjkYM ,e0 cjk d vulkj& ^xfr0;fDr dh og ;kX;rkvFkok {kerkgftlddkj.kog ,d ;k yxkrkjgypyleku :Ik l rth l djldueleFkgkrkgA**

vkdMk d L=kr% &ejBfo"ofo|ky; d vUrxrvkuokyfofHkUuegkfo|ky;kei<u okydcìh f[kykfM;kij ;g v/;;u fd;kx;kA

fo'k;k dk p;u% &bl vul/kkudk; d fy;vkdfLedU;kn"ki)fr dk ç;kxfd;kx;kAvFkkr lfo/kkiodmiyC/k nkuklegk d 20&20 dcìh f[kykfM;kij ;g v/;;u fd;kx;kA

v/;;u fof/k%&ejBfo"ofo|ky; d vUrxrvkuokyfofHkUuegkfo|ky;kei<u okydcìh f[kykfM;kij ;g v/;;u fd;kx;kA bl vul/kkudk; d fy;vkdfLedU;kn"ki)fr dk ç;kxfd;kx;kAvFkkr lfo/kkiodmiyC/k nkuklegk d 20&20 dcìh f[kykfM;kij ;g v/;;u fd;kx;kA "kkjhfjd {kerkvk dk v/;;u dju d fy;Lofoodkulkjmiyc/k lfo/kkvk d vk/kkjijfofHkUuifj{k.kk dk pukofd;kj tkfuEuçdkj l g%&

"kkjhfjd {kerk dk ijh{k.k%&
1- rkdr ¼trength%&
¼v½ifj{k.k & flV&vllA
mí"; & iV dh rkdrukiugrA
midj.k & LikiokpA
fof/k%&Nk= tehuijhB d cy yVrkgAnkukgkFkxnu d ihNj[krkgrFkknkukijkdk ?kVuk l ekMrkgA ,d lgk;dNk= d nkukijkdkidMdj j[krkgANk= dkfun"kfn;ktkrkgfdogkviuflj l viu ?kVukdkNu dh dkf"k"kdjA bl çdkjNk= ,d feuVeftruhckjHkh ,lkdjrkgAmlvfdrdjfy;ktkrkgA bl çdkj ,d&,ddjdlHkhNk=k dh iV dh rkdrekihtkrhgA

½c½ ifj{k.k & fpu&vlA
mí"; & dU/kk dh rkdrukiugrA
midj.k & gkfjtUVyckj] LVkiokpA

fof/kk& vul/kkudrkLo;çn"kudjrkgrFkk lkFkgh ;g fun"knrkgfdokjij>yukughgrFkkokj dh Åijh /kM dkviuhBMMh l Nu dk ç;kldjukgrFkkijhrjguhpyVdukgA bl çdkjNk= viuh {kerkvulkjftruhckj ,lkdjrkgmlfxudjvfdrdjfy;ktkrkgrFkk ,d&,ddjdlHkhNk=k d dU/kk dh rkdrukihtkrhgA
½l½ ifj{k.k & ckMtEiA
mí"; & ijk dh rkdrukiugrA
midj.k & ViA

fof/kk& lerytxgijykbu [khpdjNk= dkmldihN [kMkfd;kx;kArRi"pkr mlnkukgkFkkdkvkx&ihNfgykdjvkx dh rjQdnudkdgkx;kAmld }kjkdnhxbnjhdkukikx;kAblhçdkjçR;dNk= dk 3&3 voljçnkufd;x;Arhukdnke l ftldn dh njhvf/kdFkkmlvfdrfd;kx;kA

2- piyrk ½Agility½&
ifj{k.k & "kVyjuA
mí"; & piyrkukiugrA
midj.k & Likiokp] Vi] ydMh d xVdA

fof/kk& Nk=k dh piyrkukiugrlerytehuij 10 xt dh njhijnklekukUrjj[kk, [khphxb] ,d j[kk ijNk= dk [kMkfd;kx;krFkknljhj[kk ijydMh d xVd j[kx; ^xk* d vkn"kijnljhj[kk dh rjQnkMrkgrFkkfcuk :d ,d&,ddjdnkukxVdkdknljhj[kk d ikj j[krkgA bl fØ;kdkdjueftruk le; yxrkgmlvfdrdjfy;ktkrkgA bl çdkjçR;dNk= dh piyrkukihtkrhgA

3- xfr ½peed½&
ifj{k.k & 50 xtnkMA
mí"; & xfrukiugrA
midj.k & Vi] LVkiokpvkfnA

fof/kk& leryenkuij 50 xt dh njhijnklekukUrjykbu [khphxbAçkjfEHkdykbuijNk=kdkcyk;kx;kArhu&rhuNk=kdknkMk;kx;kANk=kdk ^xk* dk vkn"kfn;kx;krFkklkFkghLVkiokp "k: dh xbANk=k d vfUrej[kk ijigprghLVkiokpcUndjnhxbrFkk le; vfdrfd;kx;kA

4- lgu"kh yrk ½C.R.E.½&
ifj{k.k & 12 feuVnkM ,opkyA
mí"; & lgu"kh yrkukiugrA
midj.k & Vd] LVkiokp] Vi] lhVhvkjDyijA

fof/kk& Vddk 100&100 ehZ d vUrjkyefoHkkftrfd;kx;kANk=kdkçkjEHkj[kk ij ,df=r fd;kx;krFkkmUgifj{k.klEcU/kh vko";d lpuk,nhxbAi"pkr ^xk* d vkn"kijnkM çkjEHk dh xb] lkFkgh ?kMhHkhçkjEHk dh xbAçR;d f[kykMh d fy, 1&1 yiLdkjjfu;Drfd;kx;kAftlu 12 feuV d nkjkuNk= }kjkyxk;x;pDdjkdkKkrfd;kAifj{k.k d nkjku f[kykMhviuh&viuhnkMu dh xfrdk de ;k vf/kddjldrkFkkrFkkinyHkhpyldrkFkkAfQjHkh f[kykfM;kdkvPNkdfrRonu d fy, çfjrfd;kx;kA 12

feuVijgkuijVkbedhij }kjk ,d yEchlhVhctkbxbrFkk f[kykfM;k u nkMukcUndjfn;kvkjviu&viuLFkkuij [kMgkx;AyiLdkjj }kjk f[kykfM;k }kjkfd;x;i.kpDdjrFkkm ldckn dh 100 ehZ d utnhd dh r; dh xbnjhdkKkrfd;kx;kA

lkf[;dh; i)fr&çklrvkdMk dk e/;eku] Lrjh; fopyuvUrjrFkk ^^Vh** vuikrfudkykx;krFkkmueegRoi.kvUrjKkrdju d fy, fMxhvkQQhMe 38E ij 0-05 d fo"oluh; Lrjijçklr ^^Vh** eY; rFkk lkj.kh; ^^Vh** vuikr dh ryuk dh xbgA

vkdMk dk fo"y'k.k&vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh "kkjhfjd {kerkvk dk rykukRed v/;;u djukgh v/;;u dk çe[k mf"; FkkAblfy, çklrvkdMk dk ^^Vh** VLV }kjklkf[;dh; fo"y'k.kfd;kx;kAftldvk/kkjijvUrjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh "kkjhfjd{kerkvk dh ryuk dh xbrFkkmuefHkUurk,Kkr dh xbA

vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh "kkjhfjd {kerkvk dh ryukRed v/;;u lkj.kh&

Øe	pj	e/;eku		lrŒfopyu		eŒvUrj	Vhvuikr
		vŒfoŒ	jkŒlrŒ	vŒfoŒ	jkŒlrŒ		
1-	LihM	7-07	7-36	0-26	0-45	0-29	2-9
2-	lh-vkj-b-	2725	2565	157-71	142-39	160-0	3-36
3-	,ch- ,l-	38-15	36-35	2-05	4-16	1-8	1-75
4-	,vkj- ,l-	11-2	10	1-12	1-26	1-2	3-33
5-	,y- ,l-	2-31	2-23	0-22	0-53	0-08	6-6
6-	,thfyVh	10-22	10-53	0-62	0-72	0-31	1-82

egRoi.kLrjh&0-05 d fo"olfu;rkLrjij 38EvkQQhMeij lkj.kh; ^T* dk eY; 2-03 gA

vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh "kkjhfjd {kerk dh ryukRed v/;;u lkj.kh&

lkj.kh & 1
vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh iV dh rkdrukiugrryukRed v/;;u lkj.kh&

	e/;eku	LrŒfopyu	eŒvUrj	Vhvuikr
vŒfoŒ	38-15	2-05	1-8	1-74
jkŒLrŒ	36-35	4-16		

^Vh* dk eY; 38E ij 0-05 d fo"olfu;rkLrjij 2-03 gA
mijkDrlkj.kh }kjkLi'Vgkrkgfdv Urjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh iV dh rkdreegRoi.kvUrjughgAD;kfdlkf[;dh; fo"y'k.k d i"pkr ^Vh* vuikr ½1-74½ gtkfd ^Vh* eY; ½2-03½ l de gA

lkj.kh & 2

vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k d gkFkk dh rkdr dh ryukRed v/;;u lkj.kh%&

	e/;eku	LrŒfopyu	eŒvUrj	Vhvuikr
vŒfoŒ	11-2	1-12	1-2	3-33
jkŒLrŒ	10-0	1-26		

^Vh* dk eY; 38^{lE}ij 0-05 d fo"olfu;rkLrjij 2-03 gA mijkDr lkj.kh }kjkLi'Vgkrkgfdv Urjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh gkFkk dh rkdreegRoi.kv UrjgAD;kfdlkf[;dh; fo"y'k.k d i"pkr ^Vh* vuikr ¼3-33½ gtkfd ^Vh* eY; ¼2-03½ l vf/kdgA

lkj.kh & 3

vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k d ijk dh rkdr dh ryukRed v/;;u lkj.kh%&

	e/;eku	LrŒfopyu	eŒvUrj	Vhvuikr
vŒfoŒ	2-31	0-22	0-08	6-66
jkŒLrŒ	2-23	0-53		

^Vh* dk eY; 38^{lE}ij 0-05 d fo"olfu;rkLrjij 2-03 gA mijkDr lkj.kh }kjkLi'Vgkrkgfdv Urjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh ijk dh rkdreegRoi.kv UrjgAD;kfdlkf[;dh; fo"y'k.k d i"pkr ^Vh* vuikr ¼6-66½ gtkfd ^Vh* eY; ¼2-03½ l vf/kdgA

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vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh piyrk dk ryukRed v/;;u lkj.kh%&

	e/;eku	LrŒfopyu	eŒvUrj	Vhvuikr
vŒfoŒ	10-22	0-62	0-31	1-82
jkŒLrŒ	10-53	0-72		

^Vh* dk eY; 38^{lE}ij 0-05 d fo"olfu;rkLrjij 2-03 gA mijkDr lkj.kh }kjkLi'Vgkrkgfdv Urjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh piyrkeegRoi.kv UrjughgAD;kfdlkf[;dh; fo"y'k.k d i"pkr ^Vh* vuikr ¼1-82½ gtkfd ^Vh* eY; ¼2-03½ l vf/kdgA ;g

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vUrjfo"ofo|ky;hu ,ojkT; Lrjh; dcÏh f[kykfM;k dh xfr dh ryukRed v/;;u lkj.kh%&

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vŒfoŒ	7-07	0-26	0-29	2-9
jkŒLrŒ	7-36	0-45		

^Vh* dk eY; 38^{lE}ij 0-05 d fo"olfu;rkLrjij 2-03 gAmijkDr lkj.kh }kjkLi'Vgkrkgfdv Urjfo"ofo|ky; ,ojkT; Lrjh; dcÏh f[kykfM;k dh xfreegRoi.kv UrjgAD;kfdlkf[;dh; fo"y'k.k d i"pkr ^Vh* vuikr ¼2-9½ gtkfd ^Vh* eY; ¼2-03½ l vf/kdgA

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vŒfoŒ	2725	157-71		

jkŒLrŒ	2565	142-39	160	3-36

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2- bl idkj dk v/;;u efgykoxijfd;ktkldrkgA
3- bl idkj dk v/;;u vyx&vyxvk;oxijfd;ktkldrkgA
4- bl idkj dk v/;;u cMhtul[;k ijfd;ktkldrkgA
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AN EVALUATION OF THE SCHEDULED TRIBES AND OTHER FOREST DWELLERS ACT (FRA), 2006 IN GUJARAT: CHALLENGES AND OPPORTUNITIES

Dr Deba Ranjan Hota

Abstract

The scheduled tribe constitutes of 15% of total population in the state of Gujarat basically in habiting in northern, southern and central region. The development model followed in Gujarat has no doubt resulted into good human development but still areas of land rights for the tribal population are far from reality at implementation level. The present study has tried to dig deep into the concerns of the tribal population at the level of state, bureaucratic institution and community at large. It has attempted to explore the secondary literature available at public domain by analyzing existing reports and other web and non-web sources. The land is critical in the sense that prevalence of oral traditions which forms a important part in identity formulation and mobilization to certain extent to claim their rights against the state. The importance of the study has been an attempt to raise some pertinent question for future state policies for the betterment of the tribal as whole.

Keywords: FRA, human development, cultural capital, customary rights, pendency

1. Background

In the colonial era, the British diverted abundant forest wealth of the nation to meet their economic needs. While procedure for settlement of rights was provided under statutes such as the Indian Forest Act, 1927, these were hardly followed. As a result, tribal and forest-dwelling communities, who had been living within the forests in harmony with the environment and the ecosystem, continued to live inside the forests in tenurial insecurity, a situation which continued even after independence as they were marginalised. The symbiotic relationship between forests and forest-dwelling communities found recognition in the National Forest Policy, 1988. The policy called for the need to associate tribal people in the protection, regeneration and development of forests. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, was enacted to protect the marginalised socio-economic class of citizens and balance the right to environment with their right to life and livelihood.

A large number of people especially the scheduled tribes have lived in and around forests for a long period in symbiotic relationship. This relationship has led to formalized or informal customary rules of use and extraction, often governed by ethical beliefs and practices that have ensured that forests are not too degraded. During the colonial time the focus shifted from the forests being used as a resource base for sustenance of local communities to a State resource for commercial interests and development of land for agriculture. Several Acts and policies such as the 3 Indian Forest Acts of 1865, 1894 and 1927 of Central Govt and some state forest Acts curtailed centuriesold, customaryuse rights of local communities. This continued even after independence till much later until enactment of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

The act recognize and vest the forest rights and occupation in Forest land in forest Dwelling Scheduled Tribes (FDST) and Other Traditional Forest Dwellers (OTFD)who have been residing in such forests for generations. The act also establishes the responsibilities and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance of FDST and OTFD. It strengthens the conservation regime of the forests while ensuring livelihood and food security of the FDST and

OTFD. It seeks to rectify colonial injustice to the FDST and OTFD who are integral to the very survival and sustainability of the forest ecosystem.

The act identifies four types of rights:

- **Title rights**

- It gives FDST and OTFD the right to ownership to land farmed by tribals or forest dwellers subject to a maximum of 4 hectares.

- Ownership is only for land that is actually being cultivated by the concerned family and no new lands will be granted.

- **Use rights**

- The rights of the dwellers extend to extracting Minor Forest Produce, grazing areas, to pastoralist routes, etc.

- **Relief and development rights**

- To rehabilitation in case of illegal eviction or forced displacement and to basic amenities, subject to restrictions for forest protection

- **Forest management rights**

- It includes the right to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use.

The acts looks to right the wrongs of government policies in both colonial and independent India toward forest-dwelling communities, whose claims over their resources were taken away during 1850s. The act also has potential of sustainably protecting forest through traditional ways along with providing tribes means of livelihood. It expands the mandate of the Fifth and the Sixth Schedules of the Constitution that protect the claims of indigenous communities over tracts of land or forests they inhabit. The alienation of tribes was one of the factors behind the Naxal movement, which affects states like Chhattisgarh, Odisha and Jharkhand. The act through identifying IFR and CFR tries to provide inclusion to tribes. It has the potential to democratise forest governance by recognising community forest resource rights over an estimated 85.6 million acres, thereby empowering over 200 million forest dwellers in over 1,70,000 villages. The act will ensure that people get to manage their forest on their own which will regulate exploitation of forest resources by officials, forest governance and management as well as tribal rights etc.

There is also enactment of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Rules, 2007 and Guidelines on the implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 which complements the main FRA. Hence, this triangle of law works comprehensively for the implementation of FRA and rights enunciated in it. All the three enactments works hand in hand to secure and observe the object of FRA.

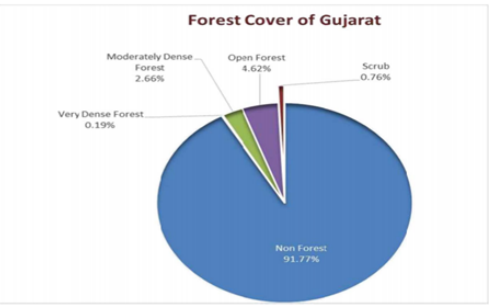
2. **Area covered under FRA**

Table 1 provides comparative figures for total geographical area and total forest area in the Scheduled Area districts of the state, as per Forest Department data as well as Census 2011 data. Thus, according to the Forest Department data, the Scheduled Area districts of the eastern tribal belt of Gujarat have a total forest area of about 10.65 lakh hectares (Ha.), which is 18.19% of the total geographical area of 58.51 lakh Ha of the state. Of this, about 9.07 lakh Ha. (85.27%) comprises of Reserved Forests, 0.24 lakh Ha. (2.29%) is Protected Forests and 1.32 lakh Ha. (12.44%) consists of is Un-classed Forests. But, as per 2011 Census data, these districts have a total forest area of about 8.35 lakh Ha., which is 15.47% of the total geographical area of about 53.97 lakh Ha. There is, thus, a huge discrepancy between these two data sets, not only in the figures of forest area (2.29 lakh Ha.), but also in the total geographical area (4.54 lakh Ha.). The Forest Department figures are based on Gazettenotifications under the Indian Forest Act (IFA), which have details of each survey number in all the villages sought to be declared as forest area under it.

The Census figures are largely derived from the land use data from the village revenue records, which may or may not be regularly updated. I checked the validity of the Census-based information with village level data in one district – Narmada, for which we have first-hand knowledge as well as access to actual notifications and Working Plans of the FD. It was found that the FD data is more accurate than the census data. With regard to total geographical area, we compared these figures with the actual geographical area of these districts, as calculated from the district boundaries. It was found that the figures given by the FD are more accurate than that of the census.

AREAS IN HECTARES								
		Forest Department Data					2011 Census Data	
Sr. No.	District	Geographical Area of District	Reserved Forest	Protected Forests	Un-classed Forests	Total Recorded Forest Area	Total Geo Area	Total Forest Area
1	Banaskantha	1,075,700	51,974	1,326	57,445	110,745	1,020,701	77,658
2	Sabarkantha	739,000	72,541	122	53,974	126,637	699,165	96,718
3	Dahod	364,600	87,079	369	930	88,378	357,854	81,128
4	Panchmahals	522,000	118,962	460	1,975	121,397	504,840	93,988
5	Vadodara	754,900	69,724	570	3,854	74,148	713,235	59,332
6	Narmada	275,500	108,353	127	6,289	114,769	268,234	79,261
7	Bharuch	652,700	23,338	0	6	23,344	507,684	19,504
8	Surat	441,800	46,174	6	1,485	47,665	367,481	32,870
9	Tapi	323,900	91,268	197	2,558	94,023	300,500	92,678
10	Navsari	220,900	60,627	0	3,233	63,860	214,094	27,061
11	Dangs	176,400	86,417	19,071	358	105,846	171,306	92,086
12	Valsad	303,500	91,529	1,859	322	93,710	271,856	83,077
	Total	5,850,900	907,986	24,107	132,429	1,064,522	5,396,950	835,362

Source: Gujarat Forest Department website for FD data and Census 2011 for Census data



Following table gives state-wise approved claims.

S. No.	States	No. of Claims received upto 30.04.2018			No. of Titles Distributed upto 30.04.2018			Extent of Forest land for which titles distributed (in acres)		
		Individual	Community	Total	Individual	Community	Total	Individual	Community	Total
		1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	1,70,437	4,043	1,74,480	91,758	1,372	93,130	2,24,262	4,50,380	6,74,642
2	Assam	1,48,965	6,046	1,55,011	57,325	1,477	58,802	NA	NA	NA
3	Bihar	8,022	0	8,022	121	0	121	NA	0	NA
4	Chhattisgarh	8,56,150	31,515	8,87,665	3,98,181	18,178	4,16,359	8,36,502	18,36,959	26,73,461
5	Goa	9,758	372	10,130	17	8	25	29	6	35
6	Gujarat	1,82,869	7,187	1,90,056	83,699	3,516	87,215	1,29,572	11,61,351	12,90,923
7	Himachal Pradesh	2,053	170	2,223	129	7	136	6	4,671	4,677
8	Jharkhand	1,05,363	3,667	1,09,030	58,053	2,090	60,143	1,02,918	99,782	2,02,700
9	Karnataka	2,75,446	5,903	2,81,349	14,667	1,406	16,073	20,814	28,156	48,969
10	Kerala	36,140	1,395	37,535	24,599	NA	24,599	33,018	NA	33,018
11	Madhya Pradesh	5,77,472	39,618	6,17,090	2,22,051	27,280	2,49,331	8,03,537	13,20,990	21,24,527
12	Maharashtra	3,52,950	11,408	3,64,358	1,06,898	5,748	1,12,646	5,77,026	44,35,945	50,12,971
13	Odisha	6,09,164	13,712	6,22,876	4,15,319	6,460	4,21,779	6,17,176	3,41,572	9,58,747
14	Rajasthan	73,455	704	74,159	37,317	92	37,409	56,828	500	57,328
15	Tamil Nadu	34,302	803	35,105	3,797	225	4,022	5,417	0	5,417
16	Telangana	1,83,252	3,427	1,86,679	93,639	721	94,360	3,00,284	4,54,055	7,54,339
17	Tripura	2,00,358	277	2,00,635	1,27,029	55	1,27,084	4,59,985	91	4,60,076
18	Uttar Pradesh	92,520	1,124	93,644	17,712	843	18,555	18,854	1,20,802	1,39,657
19	Uttarakhand	3,574	3,091	6,665	0	0	0	0	0	0
20	West Bengal	1,31,962	10,119	1,42,081	44,444	686	45,130	21,014	572	21,586
	TOTAL	**40,54,212**	**1,44,581**	**41,98,793**	**17,96,755**	**70,164**	**18,66,919**	**42,07,241**	**102,55,831**	**144,63,072**

As per figures of Census 2011, there are 3200 villages with forest areas in the 50 Scheduled Area blocks of these districts. These villages have 875,759 households and a population of 47,51,773. All these people are potential right holders under the FRA, especially of CR and CFR rights. About 75% of this population is that of Scheduled Tribes, while the rest is that of OTFDs. Estimating the potential number of rights holders having individual rights on forest lands is difficult. But about 183,000 families from these villages have already filed claims for individual rights under the FRA. Most of these claims were filed in 2008, as people were generally aware about this Act and

the administration also took proactive measures. There are reports of some families who could not file claims. But their number is not expected to be large. One can safely say that potential claimants for individual rights would be around 190,000 families.

3. Key Implementation Lapses in Gujarat

The report "Forest Rights, Legal Wrongs: Grassroots Realities and the Forest Rights Act (FRA), 2006 in Gujarat", published by the IDEAL-Centre for Social Justice, Ahmedabad, outlines implementation of FRA across 10 villages in Meghraj and 15 villages in Dang over the past 2 years.

Excerpts:

Since March 2008, the Government of Gujarat had begun issuing forms A and B under the Forest Rights Act (FRA) – forms required for filing claims of Individual Forest Rights (IFRs) and Community Rights (CRs, such as wells, temples, graveyards, etc.). Simultaneously, Sub-Divisional Committees (SDLCs), District Level Committees (DLCs), and village-level Forest Rights Committees (FRCs) were set up with such speed and intent that, by 2009, the FRCs were in advanced stages of verification of IFR claims.

But at this initial stage itself, the Government of Gujarat asserted that only about 10% of claims for recognition under the Act were valid. Considering most claims at this point of time (in 2009-10) had not even moved beyond FRC verification, the assertion was dubious at best, and sinister at worst. Such statements did portend a difficult implementation process.

Up until 2013, several dilutions were made to the implementational framework of FRA that resulted in widespread disentitlement. The cut-off year – the year on which a prospective claimant must prove possession – was changed to 1980 from 2005, reflecting the extant position under a Government Resolution made in 1993 to regularise forest land holdings. Alongside this, a strict adherence to government-record-backed evidences for IFR claims meant that by April 2010, only 17,000 of a total 182,000 IFR claims were accepted.

Thereafter, increasing reliance began being placed on the use of satellite imagery as a means to establish possession/use of forest land. This process was itself fraught with hurdles. Satellite images were little to no help in identifying cultivated land in forests, and poor resolution mixed with hasty, careless assessment led to widespread rejections.

By June 2011, a further 19,000 claims were approved, while close to 113,000 claims were rejected. Such a haphazard and lackadaisical approach was bound to face challenge in the Courts. In 2013, the Gujarat High Court pronounced a momentous judgement, ordering the state to reexamine all rejected claims for IFRs and striking down the unfair reliance on satellite imagery as proof of possession.

Despite this scathing indictment of state apathy, the implementational machinery remained steeped in inertia. In fact, the implementational machinery moved beyond simple inertia and toward active violations of the law, accompanied by the curbing of any communitarian voice that attempts to demand accountability.

That is not to say that judicial pronouncements have had no impact – in the aftermath of the 2013 judgement, the government approved a further 84,540 claims of forest land as far as 2016 – but the spirit in which the judgement was delivered has not filtered into the implementation of FRA. Several thousand claims that were approved upon reexamination were granted rights over a tiny fraction of the land claimed (and indeed, over the land in possession). Several were also rejected once again, often on baseless and illegal grounds.

Consistent community engagement revealed several key lapses in the implementation of FRA in Dang and Meghraj. What emerged were also deep-rooted institutional and policy concerns. Such concerns manifested themselves in specific issues in the passage of claims, such as the ones we highlight below. At the same time, emerging specific illegalities in the rejection of claims resulted in the recognition of further institutional/policy gaps and shortfalls that needed to be remedied.

Through extensive field visits, campaigns and legal camps, the NGO Centre for Social Justice (CSJ) identified several specific illegalities in the process of filing of claims, their verification and their approval/rejection.

4. Grounds of Rejection

4.1 Rejection on account of submitting no evidence supporting the claim:

In Dang, several claimants have had their claims rejected at the SDLC on account of producing no evidence of occupation/cultivation supporting their claims. The interactions with such claimants and examination of copies of claims they have submitted revealed that the required evidences as per the provisions of the FRA Rules, 2008 were indeed submitted with the claim.

The SDLC had summarily disregarded these evidences in arriving at its decision. Rule 13 of the FRA Rules makes it clear that any claimant must submit any two of a list of valid proofs of occupation/cultivation in support of their claim. The claimants engaged with had submitted – almost uniformly – significantly more than 2 documents as evidence. This particular issue is also closely linked with others, since the very meaning of appropriate evidence as defined by the SDLCs in practice (as opposed to the law in principle) has meant that even legally valid evidence of occupation/cultivation is in practice deemed invalid.

4.2 Rejection on account of not producing fine receipts:

In both Meghraj and Dang, engaged with claimants who had their claims rejected – including on appeal – on account of not possessing fine receipts issued by the Forest Department for encroachment on forest land. The receipts themselves are constitutive evidence of forest land possession/cultivation but are not the only – or the primary – evidence for the same. In several parts of Gujarat – including in Dang and Meghraj, forest department officials often do not issue receipts for fines levied, since that allows them to keep the quantum of money for themselves.

In Dang especially, several claimants did not possess fine receipts and that became the sole ground for rejection. In most cases – on account of the 2013 Gujarat High Court judgement – the lack of a fine receipt was not mentioned explicitly on the rejection letter, but instead was couched in other terms, such as there being no evidence produced to support the claim. The primacy given to fine receipts was only discovered through discussions with the DLC at the appeal stage.

Rejection on account of no recent evidence of cultivation:

The FRA was designed not as a land redistribution scheme (as it is often misrepresented), but as a legislation to recognise rights already held. There is thus a historicity intrinsic to the Act itself. As a result, the provisions establish that in order to be valid, any claimant must establish possession of forest land prior to the 13th of December, 2005. The law, thus, does not require claimants to establish cultivation at a more recent point in time.

It is merely to be established that the claimant was in possession of the claimed land in 2005, whether such land is cultivated thereafter is not of significance. Indeed, to establish a bonafide livelihood need evidence of cultivation/occupation of the land is necessary. But, in practice, the latter is rejected on account of not producing any recent

evidence of cultivation; this despite providing evidence of possession of land in 2005, and of cultivation of land at that time (through photographs), along with a host of other forms of evidence.

In arguendo, even if evidence of recent cultivation is required/mandated, common sense dictates that such evidence must be gathered at a time when cultivation is underway. In CSJ's experience in Dang, photographs of claimants' land are taken during the summer months when land is left fallow. This is also evidenced from identifying nearby flora (such as particular kinds of trees) in such photographs. There is thus no visible cultivation on the land, and consequently, claims are rejected.

4.3 Rejection on account of purportedly not being in possession of land claimed:

Across Meghraj and Dang, scores of claims have been rejected because the claimant is purportedly not in possession of land claimed. The logic behind such rejections closely mirrors the logic underlying the issue of evidence of recent cultivation. The fact of possession (or dispossession) is determined merely by assessing whether the land claimed is cultivated.

Thus, satellite images (though these are of decreasing relevance after the Gujarat High Court's judgement in 2013) and photographs of the land taken during periods of time when it is left fallow are constituted as indicating that the claimant is not in possession. This is a serious illegality since the procedure for taking photographs and assembling satellite maps is coordinated by the forest department and the DLC respectively. Both of these, especially the forest department, hold strong vested interests in whether claims get approved or not.

5. Legal Domain

5.1 Inordinate delays and pendency in claims:

Even where "legitimate" claims have been filed and approved by Gram Sabhas, the process of vesting has not been smooth. Indeed, this is not limited to "legitimate" claims, since establishing legitimacy is itself the outcome of disposal by the DLC. Across the villages where CSJ's work is situated a huge majority of claimants have heard nothing on the status of their claims. While a lack of access to information is a part of this, the real issue lies in the gross delays in disposal by the SDLCs and the DLCs.

Claimants are left in the dark because a decision on their claim simply hasn't been taken. Concerns over pendency have been exacerbated by the 2013 judgement of the Gujarat High Court. The large majority of pending claims are awaiting disposal at the DLC level. Interestingly, in CSJ's experience, such delays on part of district and block-level authorities are condoned while even marginal delays by claimants themselves result in disentitlement.

Extensive delays also result in the fact that notices – if and when they are issued – are sent by post to the claimant only a day prior to the expiry of the statutory appeals period. This in effect debars the claimant from her right to appeal, forcing her to file – alongside her appeal – an application for condonation of delay. These condonation applications are decided at the discretion of the DLC, meaning that the claimant's right to appeal is reduced to a mere request.

Similarly, in Dang, CSJ identified that claimants would receive notices (of rejection) during periods of time when the local population would migrate to Maharashtra in search of labour. This once again disentitles the claimant, making her dependent on the "leniency" of the DLC to have her appeal heard. Such experiences do question the fundamental assumption behind delays and pendency, moving from a logic of administrative ineptitude to administrative strategy.

5.2 Occupation of claimed lands under the Compensatory Afforestation Fund Act, 2016:

Issues of pendency before the DLC could, in principle, be repudiated by pointing to the lack of human resource and infrastructural capacity to handle the large number of IFR claims. But, this line of argument ceases to carry any weight when we move beyond isolated principled positions. Across Dang, and in a few villages in Meghraj, the implementation of the FRA (itself prolonged inordinately) has come into conflict with the implementation of the Compensatory Afforestation Fund Act (CAFA), 2016.

Afforestation activities by the Forest Department have been initiated and carried forward at break-neck speed. This has naturally meant the disentitlement of forest-dependent communities. In Dang, scores of claimants have complained of the Forest Department encroaching their fields for afforestation activities. Forest guards have been responsible for the destruction of standing crop, fencing of agricultural lands and digging holes to plant saplings. All these activities are being carried out on land claimed under the FRA and is in clear violation of Section 4(5) of the FRA.

Two connected issues begin to develop here, the pendency of claims as a means to disentitlement, and the lack of a legislative-administrative structure that brings consonance between disparate legislations pertaining to the same geographic-political subjective landscape. We delve into these later.

Service of eviction notices from land on which claims were unduly rejected:

Several claimants who CSJ continues to support have received notices demanding they evict themselves from the land to which their claims under the FRA have been rejected. These notices – that are received by claimants within days of their claims being heard at the DLC – demand dispossession within 15 days. Failing to do so, would result in a forcible evacuation. The issue of such a notice is itself in violation of the law.

Section 4 (5) of the FRA makes it abundantly clear that, no claimant can be evicted/dispossessed of their lands, until the procedure for verification is complete. While ostensibly an order of the DLC rejecting a claim does indicate that the procedure of verification of claims is complete, the same does not hold true when we account for contextual factors that have a bearing on the verification process. In Dang, hearings at the DLC were – and are – conducted in a summary manner with no time given to claimants to state their case.

In such an instance, Section 7 of the FRA does provide a remedy to claimants and other aggrieved by appealing against such negligence of the law to the State-Level Monitoring Committee. Thus, the process of verification continues till the Monitoring Committee issues an order. In this light, the eviction notices issued by the DFO, Dang remain in violation of the law.

5.3 Non-recording of recognised rights into revenue records:

Where claims have been approved, there has been a glaring gap in actualising the rights vested. Orders of the DLC recognising rights are issued uniformly, but such rights over the land are – in most cases – not transmuted onto revenue records. In the small number of cases where revenue record reflects newly recognised rights, they do so incompletely.

That is, several hundred right-holders names are reflected as owners over the same compartment number. The delimitation of boundaries within each compartment number – and more fundamentally, the entry of rights vested into the revenue record – are of crucial importance because several state-run welfare schemes (especially those for agricultural entitlements) are designed and apportioned based on a criterion of one beneficiary for each survey number. Naturally, this results in widespread disentitlement and conflict.

5.4 Rejection of claims of single women and widows:

Among communities in Dang and Meghraj, filial bonds remain strong. This often results in daughters not receiving a share in the property of their maiden homes on account of the fact that they receive a share in their husband's property upon marriage. The brother of a woman's mother (called the Mama) plays a crucial role here. Being the man at her maiden home, and thus the de facto owner of family land, he is closely involved in the nexus that denies ownership to single women and/or widows.

Conventionally, the woman is given a series of gifts – each far lower in value than her right to a share in the land – that are understood to be in lieu of her share in family property. This in itself amounts to a gross disentitlement of women, however, in cases where such a husband dies, or where the woman remains unmarried, complications arise that result in further disempowerment.

Single women have – as CSJ identified – faced significant hurdles in ensuring their rights over forest land are recognised. This occurs in two ways. Firstly, widows cannot claim rights over the forest land that they possess (that was jointly held with their husbands) since rights over the same parcel of land are claimed by (and in many cases vested in) relatives of her deceased husband such as an uncle or a brother.

Similarly, single women are also thus disentitled owing to the fact that land under their possession is claimed by one of her male relatives, most often the Mama. This occurs because revenue records do not bifurcate ownership. Shares in property are not recognised within the revenue record and the names of all right-holders are written together. Thus, where the Mama files a claim to forest rights, the single woman/widow is precluded.

Additionally, where rights have been recognised, the records formulated do not bifurcate land holdings. That is, several rights-holders have their names registered on the same parcel of land. This is not to say that there exist competing claims, but that each right-holder enjoys rights over a part of the given parcel of land. This further disentitles single women/widows since land records where their names occur alongside the names of her relatives make it impossible for her to claim her rights independently.

Women are strongly discouraged to file claims and where they do file claims, conflicts arise as the two claims over the land compete for legitimacy. The statutory mandate to record the names of both spouses in the Record of Rights over forest land has largely been followed in practice, as CSJ's own experiences show. But, this distinct facet of the disentitlement of women from land that they own and possess remains unaddressed.

The FRA is clear: it imposes absolutely no restriction on those employed by the government or by a private entity in claiming rights to forest land under its terms. It only requires that the piece of land in question have been possessed prior to October 13, 2005, and that there have been a bona fide use of forest land for livelihood needs (section 2(c) of the Act). So there is no rationale to the forest department's insistence that those employed by the government are exempt from the FRA. In fact, the Ministry of Tribal Affairs and the UN Development Programme have published a 30-page FAQ on implementing and utilising the FRA, and it agrees (p. 9): the Act does not discriminate against government employees, whether civilian or military, or their spouses.

District- and block-level officials seem to be arguing that those who are employed elsewhere can't be dependent for their livelihoods on forests – but this is neither fair nor logical. Several households have one member with a job and another utilising forest resources to augment their income.

In similar vein, the FRA also does not allow the forest department or any public institution to grab land the way *sipahis* have been in Dang. Section 4(5) of the Act categorically states that "no member of a forest dwelling scheduled tribe of other

traditional forest dweller shall be evicted or removed from forest land under his occupation till the recognition and verification procedure is complete" – effectively disallowing the utilisation, transfer, acquisition, etc. of any land to which a claim under the Act is pending, and leaving the forest department's actions stranded.

Such brazen violation of the law betrays a systematic attempt to dilute the FRA, reducing it to a symbol rather than a tool of empowerment. By limiting the eligibility of claimants, often on frivolous and illegal grounds, and by forcibly denying access to claimed lands, the local government is trying to bring down the number of FRA claims and bring down the number of approved claims further. A 2016 study by the Community Forest Rights – Learning and Advocacy Group pointed out that by 2016, only 44% of individual claims to forest rights had been approved in Gujarat – a fraction the study called "inadequate" if only because the number of pending claims exceeded 100,000.

6. Other Burdens

6.1 FRA violation: plantation on adivasi land

The Act also has no provisions for appropriate community participation or engagement, and afforestation activities are designed to be carried out in a centralised, bureaucratic fashion. The afforested areas would also then serve as a forest resource base for industry. Forest lands over which rights of adivasis have been recognised or are pending recognition have been usurped for carrying out plantations under the CAFA. Plantations were being carried out rampantly by state forest departments, even prior to the passage of this act, which has now legitimied carrying out of plantations on forest land.

While the criticisms for the NFP, 2018 and the CAFA differ slightly in form, the basis for both remain the same: both contribute to a systematic violation of the FRA and PESA.

It is pertinent, in this light, to look at experiences in the interface between the FRA and the CAFA in order to develop not only a more holistic understanding of the two, but to see in stark contrast, the disentitlement of entire communities, as a progressive law is slowly diluted.

6.2 Farmers duped

The state of Gujarat has the third highest land utilised for afforestation. However, government data for plantations and afforestation is in stark contrast to the ground reality in the districts of Aravalli and Dang.

In the villages of Jamgadh, Kadvadi, Navagam, and Jharda, Meghraj block, Aravalli district (an erstwhile part of Sabarkantha district), the forest department has begun plantations under CAFA. Large-scale plantation of teak and eucalyptus has occurred and where once there existed scrubland, now there are dense forests of water-intensive species.

Leaving aside the disastrous environmental impact of widespread eucalyptus cultivation in arid, hilly terrain, these plantations are raising far more 'fundamental' concerns. In several areas, the forest department has planted trees under the compensatory afforestation system on private land.The trees have been planted on land claimed under the FRA, land that is under the customary ownership of community members and is being actively farmed. This practice is in clear violation of Section 4(5) of the FRA and guidelines established thereunder, which debars the utilisation, transfer, acquisition, etc. of any land to which a claim under the Act is pending.

There emerges a very clear *modus operandi* on part of the forest department to engage in this patently illegal act. In between cropping cycles, land is usually left fallow. At this stage, the farmer is approached by officials from the forest department. She is told

that since her land is lying vacant, the department would like to grow a few saplings, which they would remove once she wanted to farm her land again. After a few months, when the farmer chooses to farm her land, she is told by the forest department that it is now illegal to fell these trees. The farmer is thus duped. The trees are only cleared when the forest department chops them down for sale, but even then the stumps are left in the ground, which effectively destroy soil fertility and suitability for agriculture. The farmer here receives no payment for the use of her land, nor any compensation for the damage done to it.

6.3 Use of violence

In Neempada village, Ahwa block of Dang district, where adivasis comprise 95 per cent of the population, all the Individual Forest Rights (IFR) claims filed by 26 residents, remain pending with the District Level Committee (DLC) since 2016. Dang is classified as a Schedule V area in the Indian Constitution.

Since the last week of April, the forest department illegally dug up forest lands of 10 of these claimants to carry out plantations while the claims were pendant. An application was submitted to the Collector on the March 30, 2018 requesting for appropriate action, but was never responded to, claim villagers. Despite the submission of such application, preparation for digging lands of remaining claimants continued to take place.

Currently, the forest department is undertaking steps to build a fence around these dug up lands to prevent claimants from accessing them. The officials have also been resorting to violence and issuing threats to the claimants. “They beat guards threatened to beat us up if tried to get anywhere close to our lands,” SomabhaiBarde, one of the claimants whose land has been dug up and illegally captured told us.

7. Conclusion

From Ancient India, the Adivasis are depended on forest resources for their livelihood and basic amenities of life. Historically, from cruel invaders to greedy colonials, they encroached the rights and vandalized property of the Adivasis. The rights of Adivasis and forest resources are the subject of encroachment by greedy colonial rulers to meet their economic interests. Due to Independence, there was hope to reemergence and betterment of Adivasis. These hopes were shattered due to the unwillingness of leaders of the country to uplift Adivasis by setting their goal of economic growth through the progress of corporates.

But due to the enactment of FRA, it revived the hopes of Adivasis for upliftment. Laws and forest governance systems inherited from the colonial era have, for long, deprived people from using their forest resources, thus condemning them to extreme poverty and vulnerability. In the later decades, the Government of India introduced several rights-based, progressive legislations such as the FRA that recognize Adivasis’ and other forest dwellers’ rights over land. In 2006, the FRA recognized customary rights for Adivasis and forest-dwelling groups over their land. The landmark legislation laid the foundation for more democratic forest governance through recognition of individual and community forest and resource rights. As it is a history of every legislation in India, FRA also is subjected to lack of implementation machinery, the political will to implement forest dweller’s rights and executive authorities running amok due to high discretionary powers without proper checks.

Hence, from ancient feudalistic-rulers to modern democratic government, there is a systemic encroachment on the rights of Adivasis to fulfill the economic and political ambitions. As said by Hannah Arendt, “ In hope, the soul overleaps reality, as in fear it shrinks back from it and anger reveals and exposes the world”, the enactment of progressive legislation, lack of political will and problems of implementation and

coercive working of the executives lead to hope, fear and anger among the Adivasis and forest dwellers of Gujarat.

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गणितीय चिंताएं : कारण और निवारण

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सारांश:गणित जीवन का सुरीला संगीत है व हमारे जीवन के हर क्षेत्र में रची बसी है। समस्या तब आती है जब हर कोई गणित के नाम पर डरने लगता है व उसे जानने से दूर भागता है। हम गणित का जीवन भर उपयोग करते हैं लेकिन आनंद नहीं लेते, गणित में आनंद लेना सीखें। गणित में विचारों की स्पष्टता, तार्किक निष्कर्षों तक पहुंचने में पूर्वानुमानो पर कार्य करना होता है। गणित के नियम, सिद्धांत, सूत्र सार्वभौमिक, सर्वमान्य, संदेह रहित होते हैं। गणित की प्रतिबद्धता शुद्धता के प्रति है। गणित से डर की मुख्य वजह है इसकी संचई प्रकृति। यह यदि ठीक से समझ में आ जाए तो फिर गणित सरल व सुगम बन जाती है।

मुख्य शब्द: गणितीय क्लिष्टता, गणित का इतिहास, प्रारंभिक गणित, गणित की संचई प्रकृति।

गणित विषय का क्षेत्र इतना विस्तृत है कि जीवन के हर क्षेत्र में इसकी आवश्यकता पूर्णरूपेण है। गणित आज हमारे जीवन में यह चारों और उसी प्रकार व्याप्त है जैसे जल में मछली। हमारी दैनिक दिनचर्या में समय हो या काल, परीक्षा हो या परिणाम, व्यापार हो या रुपए पैसे की बात, शेयर मार्केट हो या गोल्ड-सिल्वर रेट, मेडिकल रिपोर्ट हो या जाँच, अन्तरिक्ष हो या सेटेलाइट की गति सभी कुछ गणित पर आधारित है। लेकिन । गणित का नाम आते ही अधिकांश बात करने से सभी कतराने लगते हैं। विज्ञान व इंजीनियरिंग के अन्य विषय तथा कला या वाणिज्य विषय तो पढ़ लिये जाते है लेकिन गणित पढ़ने-समझने से आज भी अधिकांश घबराते हैं। गणित के बारे में अक्सर यह ख्याल सुनने को मिलते हैं कि यह एक कठिन विषय है और समझ में नहीं आता। जबकि ऐसी स्थिति नहीं है।

ऐसा इसलिए होता है कि इस विषय पर गहन चर्चा नहीं होती और यह जानने की कोशिश नहीं होती कि क्या कारण है जो इस विषय को कठिन बनाता है। क्या पाठ्यक्रम अथवा पुस्तकें कठिन है या गणित जानने के, पढ़ने के तरीके उपयुक्त नहीं है। क्यों हम आज गणित के एक ही सवाल के उत्तर तक सीमित रहते हैं। पूरे विषय को जानने की सोच और प्रक्रिया को देखने की कोशिश नहीं करते। हम पीढ़ी दर पीढ़ी गणित संबंधी डर को आगे बढ़ाते जा रहे हैं। डर की रोकथाम तभी संभव है, जब हम सब यह देख पाएंगे कि गणित आसपास किस तरह से हममें रच-बस गई है। तभी हम इसे महसूस कर पाएंगे या आपस में इस विषय पर बात कर पाएंगे।

गणित जीवन का पर्याय है। इसका ज्ञान केवल मानव को ही नहीं है वरन समस्त प्राणी जगत भी इसी में जीता है। प्रत्येक प्राणी को संख्याएं दूरी का ज्ञान होता है। यदि किसी मां के

चार बच्चे हैं और एक गुम हो गया है तो माता उसे लगातार ढूंढती रहती है।अंदर से उसे ज्ञात है कि उसके चार बच्चे थे व एक बच्चा गायब है। इसी प्रकार यदि बिल्ली चूहे का शिकार करती है तो उसे पूरी तरह से दूरी वह गति का ज्ञान होता है । तभी वह शिकार में सफल हो पाती है अन्यथा चूहा बच निकलता है। अर्थात बिल्ली का गणित का पूर्ण ज्ञान है। जो पूरी तरह से किसी के जीवन या मरण से जुड़ा है।इसी प्रकार गौर से देखें तो चीटियां भी पूरी तरह से श्रेणी बंद होकर समान दूरी बना कर चलती है। मधुमखियों को भी षठकोणीय आकृति का छत्ता बनाना बखूबी आता है। कौवे भी वस्तुएं गिन लेते है। अतः जानवरों की यदि कोई भाषा है तो वह सिर्फ गणित ही होगी।

आवश्यकता

जीवन में आवश्यक सभी संक्रियाओं, मात्राओं, मापन, भिन्न, प्रतिशत, अनुपात आदि का ज्ञान संख्यात्मकता के रूप में हम गणित से ही प्रारंभ करते हैं। लेकिन गणित का अच्छा विकास तभी हो सकता है जब हम इसका चिंतन करें। तभी गणित ठीक तरह से स्पष्ट हो पाती है। गणित में विचारों की स्पष्टता, तार्किक निष्कर्षों तक पहुंचने में पूर्वानुमानो पर कार्य करना होता है। सोचने के कई तरीके हैं। गणित कार्य करने की अनेक विधियां देता है गणित समस्याओं को हल करने की योग्यता प्रदान करता और ज्यादा सामान्य रूप में समस्या समाधान के लिए सही अभिवृत्ति और सभी प्रकार की समस्याओं को व्यवस्थित रूप से हल करने की योग्यता देता है जो जीवन में आवश्यक रूप से अनिवार्य है आज जीवन में समस्याएं बहुत हैं तरहतरह की समस्याएं आती हैं और उन को व्यवस्थित कर हल प्राप्त करना अगर गणित से किया जाता है तो आसानी से किया जा सकता है जीवन के हर क्षेत्र में गणित उतरी हुई है और लगातार इस और प्रयासरत है कि मानव जीवन सरल बने सुगम बने।गणित विषय प्रारंभिक शिक्षा में ही एक अनिवार्य विषय के तौर पर पढ़ाया जाता है और बच्चा इसको आनंददायक रूप में पड़े यह बहुत आवश्यक है।हम गणित का जीवन भर उपयोग करते हैं लेकिन आनंद नहीं लेते गणित में आनंद लेना सीखे। गणित में रटना उसे दूभर बनाता है अगर आपस में बात कर एक दूसरे से चर्चा कर और समझ कर कार्य करें तो फिर गणित आनंददायक बन जाता है। प्रारंभिक गणित में अंकगणित बीजगणित ज्यामिति और त्रिकोणमिति आदि बताए जाते हैं या पढ़े जाते हैं इसमें संरचना निर्माण और सामान्य करण की क्रियाविधि प्रदान की जाती है गणित के क्षेत्र में शक्ति के महत्व हमारी समाज की प्रवृत्तियों को अदितीय रूप से बढ़ाती हैं

इतिहास

गणित में रुचि अल्पविकसित रही है विभिन्न तरह की संख्याएं विभिन्न आकृतियां तिथियां या काल की गणना करने में अथवा खगोल विज्ञान की जानकारी प्राप्त करने में गणित का उपयोग किया जाता था अंकगणित तथा खगोल विज्ञान पुराने समय से ही गणित के मुख्य अंग थे धार्मिक क्रियाकलापों में भी वेदी हवन कुंड बलि देवी आदि की ज्यामिति अथवा ईद की

आकृति बनाया जाना मुख्य था। गणित, हमारे जीवन के भूत- भविष्य- वर्तमान का लेखा-जोखा, जन्मपत्री भी अपने में दो नक्षत्र 9 ग्रह 8 दिशा 12 राशि तथा 12 भाव जिनमें प्रथम (लग्न) चतुर्थ (सुख) सप्तम (स्त्री) व दशम (व्यापार) प्रमुख हैं, समेटे बैठा है। गणित मुख्य रूप से मानव जीवन को सरल बनाने हेतु कार्य कर रही है। यह है हमारे जीवन में तभी आ जाती है जब हम इस दुनिया में आते हैं । हमारा जन्म दिन, दिनांक और समय उसी से वहीं से शुरु हो जाता है। जन्म प्रमाण पत्र में लिखी गई तिथि से शुरू हुआ हमारा जीवन, आधार कार्ड के दर्जनभर अंको से हमें स्थिर पहचान दिला देते हैं।

शुरू में मानव को ज्ञान नहीं था वह जंगल में भेड़े चराता था तो उनके गिनने के लिए अंको का विकास हुआ अब उसे पता रहने लगा कि उसके पास कितनी जानवर है जैसे जैसे समाज बना उसमें जोड़ना, घटाना, गुणा करना अथवा भाग देना आ गया। जैसे-जैसे मानव की आवश्यकता है बढ़ती गई वैसे वैसे उन्हें पूर्ण करने का कार्य गणित करती गई चाहे वह टेलरिंग हो या मकान बनाने का कार्य या हलवाई का कार्य। खेती का मापन, बढ़ई का कार्य, कुम्हार का कार्य या अन्य कोई भी कार्य हो सब में गणित किसी न किसी रूप में उसकी सहायता करती गई। गणित की भाषा आज पूरे विश्व में समान है। प्रश्न चाहे यहां हल करें या अमेरिका में, उत्तर एक ही आता है। इसलिए गणित हमेशा परम सत्य से साक्षात्कार भी कराती है। गणित एक ऐसा विषय है जो जीवन को उसकी वास्तविकता से साक्षात्कार कराती है। गणित के नियम सिद्धांत सूत्र सार्वभौमिक सर्वमान्य संदेह रहित होते हैं गणित की प्रतिबद्धता शुद्धता के प्रति हैकिसी भी क्षेत्र के कार्य के क्रियाकलापों के लिए चिंताएं और गणनायें, मानव खुद कर सके यह गणित सिखाती है। गणित हमेशा से सहयोग करती आई है लेकिन इससे डर और असफलता का भाव, हमें इससे दूर बनाए रखता है जबकि छोटी छोटी चीजों को जानने से भय और असफलता हमेशा दूर ही रहती है।

चिंताओं के कारण

गणित विषय से भय अथवा डर की मुख्य वजह है - गणित की संचई प्रकृति। यदि किसी को दशमलव में कठिनाई है तो फिर उसे प्रतिशत निकालने में भी कठिनाई आएगी। यदि प्रतिशत कठिन लगता है तो फिर बीजगणित में भी कठिनाई होगी और जब बीजगणित में कठिनाई है तो आगे की पढाई भी उसे कठिन लगेगी। दूसरी इसमें मुख्य कठिनाई आती है इसकी प्रतीकात्मक या सांकेतिक भाषा। उच्च शिक्षा की किताबें पाठक को आगे या पीछे से खोल कर देखने पर एक समान नजर आती है। उसमें केवल सांकेतिक अंक या अक्षर लिखे होते हैं। इससे घबराहट और निराशा पैदा होना स्वाभाविक है। गणित केवल भाषा के रूप में नहीं होती यह संकेत के रूप में कार्य करती है क्योंकि इसमें ज्यादा लिखा नहीं जाता, लघु रूप में सारे अंक और शब्द काम में लिए जाते हैं जो हर एक को ज्ञात नहीं होते इसलिए गणित लोगों की समझ की असफलताओं को और अधिक गहरा कर देती है। गणित मुश्किल नहीं है लेकिन शुरू से प्रारंभ से थोड़ी समझ के साथ इसे पढ़ा जाए तो बहुत आसान है। यदि कहीं कोई अध्याय छूट गया तो

उससे संबंधित अन्य अध्याय समझ में नहीं आ सकते। अगर प्रारंभिक शिक्षा में ही कहीं कमी रह गई तो उच्च शिक्षा प्राप्त करने में कठिनाइयां आएंगी ही। हमारी हमेशा यह प्रवृत्ति रहती है कि जितना जरूरी हो उसे जान लें। उसकी व्यापकता का अभाव हमें गणित विषय की जानकारी या इसमें समझ लाने का विरोध होता है।

वास्तव में वस्तुस्थिति यह है कि गणित का लगातार विकास होता जा रहा है। उस विकास को लगातार छोटी कक्षाओं में उतारा जाता है लेकिन कई जगह पाठ्यक्रम में कुछ हटा दिया जाता है अथवा काट दिया जाता है जिससे विद्यार्थी समय पर पूर्ण वस्तुस्थिति या विश्लेषण नहीं कर पाते इसके कारण आगे की कक्षाओं में उन्हें और समस्याओं का सामना करना पड़ता है। उच्च शिक्षा में जहां ज्यामिति में विद्यार्थियों को गोला, शंकु, बेलन, सकेंद्र शान्क्वज पढ़ाए जाते हैं लेकिन उससे पहले उन्हें घन और घनाभ के बारे में ज्यादा कुछ नहीं बताया जाता। ये आकृतियां मानव द्वारा रचित ऐसी आकृतियां हैं जो पूरे ब्रहमांड में कहीं नहीं दिखाई देती तथा इनका विश्लेषण या समीकरण ज्ञात करना आज भी कठिन है। इसलिए गणित को समझना मुश्किल होता जाता है।

गणित जीवन के हर क्षेत्र में उतरी हुई है जैसे बात व्यापार की करें तो समीकरण सिद्धांत में, जिससे हम व्यापार के खर्चे को कम से कम करते हुए अधिक से अधिक मुनाफा कमाने की विधियां गणित द्वारा ज्ञात कर सकते हैं। इसी प्रकार राशियों या आंकड़ों की ज्ञान से हम आगे का भविष्य का अनुमान लगा सकते हैं। जैसे किसी देश की जनसंख्या पिछले सालों में किस प्रकार बढ़ रही है, इसके आंकड़ों से हम भविष्य में वह जनसंख्या कितनी होगी इसका ज्ञान बड़ी आसानी से लगा लेते हैं।

निवारण

गणित की इसी उपयोगिता के कारण आज इस विषय को बंद नहीं किया जा सकता। इसका कौशल विकसित करने की आवश्यकता है। संख्याओं, आकारों आदि में इसकी गणना करना आसान बनता जा रहा है। उच्च गणित की प्रक्रिया को समझने का महत्वपूर्ण बिंदु उसकी संक्षिप्त व सुस्पष्ट भाषा का प्रयोग, कठिन सूत्र का गणितीय व्यवहार में उपयोग, गणित में विशिष्ट शब्दावली का उपयोग, सजग और विशिष्ट शैली से होता आ रहा है। अगर उसको ठीक तरह से समझ लें तो फिर गणित विषय मुश्किल या डर पैदा नहीं करेगा। चिंताओं को दूर करने के लिए हमें बेसिक कॉन्सेप्ट पर ध्यान केन्द्रित करना, समय देना, रटना छोड़ कर अधिक प्रैक्टिस करना, फोर्मुले याद करना का मुख्य रूप से ध्यान रखना चाहिए। यदि एक बार इन पर ध्यान देकर गणित गणित समझना शुरू कर दें तो फिर सारी समस्याएँ बड़ी आसानी से हल की जा सकती हैं।

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व्यक्तित्वविकासाय उपनिषदः योगदानम्

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सुविदितमेव यत् शिक्षया सर्वाङ्गीणविकासः जायते । शिक्षाप्रक्रियया समाजेन अनेकानि लक्ष्याणि निर्धार्यन्ते । एतेषु लक्ष्येषु छात्राणां व्यक्तित्वविकासोऽपि विशिष्टम् आधारभूतञ्च लक्ष्यम् अपि सम्पूर्यतेति सर्वैः शिक्षाविद्भिः अपि तु समाजेन अपि स्वीक्रियते । गुरुः छात्रस्य स्तरानुगुणं तं विविधोदाहरणैः बोधयति । समयानुगुणं तं परीक्षत्यपि । तद्वारा छात्रस्य एकाग्रतायाः, बुद्धिकौशलस्य, समयस्फूर्तेः परीक्षापि करोति स्म गुरुः । पुरा विविधपद्धत्या पाठनं, पठितांशस्य पर्यवेक्षणं, पुनः मूल्याङ्कनकरणं च इति प्रक्रिया आसीत् । यदि छात्रः विषयावगाहने किञ्चिद्यान्यं प्रदर्शयति चेत् तदा गुरुः तस्य स्तरानुगुणमध्यापयति स्म । अत्र गुरुः सर्वदा मित्रवत् आचरति । उक्तञ्च -

- ॐ सह नाववतु ।
  सह नौ भुनक्तु ।
  सहवीर्यं करवावहै ।
  तेजस्विनावधीतमस्तु मा विद्विषावहै ।
  ॐ शान्तिः शान्तिः शान्तिः ।।

अनेन मन्त्रेण गुरुशिष्ययोः मध्ये स्नेहवात्सल्यादिभावना दृरिदृश्यते । उपनिषदाधारेण एतस्मिन् विषये अस्मिन् प्रबन्धे किञ्चित् विचारयामः ।।

दशोपनिषदः –

ते च –

- ईश-केन-कठ-प्रश्न-मुण्ड-माण्डूक्य-तैत्तिरीय ।
  ऐतरेय च छान्दोग्य-बृहदारण्यकस्तथा ।। इति ।

उपनिषत्सु विद्यायाः स्वरूपम् –

"या विद्या सा विमुक्तये"[1] इति विद्यायाः मुख्योद्देश्यम् अस्ति विमुक्तिः । तामेव आध्यात्मिकज्ञानमित्यपि कथयामः । उपनिषदपि आध्यात्मिकज्ञानं बोधयति एवम् जिज्ञासुः अपराविद्यायाः विषये प्रेरयति ।

विद्यायाः प्रभेदाः -

ईश-छान्दोग्य-तैत्तरीयोपनिषदि विविधविद्यायाः विषये उक्तम् । यदा नारदः सनत्कुमारस्य सविधे विद्यार्जनाय गतवान् तदा स्वाधीतविद्याविषये तेनैवमुक्तम् –

[1] वि. पु. 1.19.49

- "स होवाचग्वेंदं भगवोध्येमि यजुर्वेदं सामवेदमाथर्वणं चतुर्थमितिहासपुराणं पञ्चमं वेदानां वेदं पित्र्यं राशिं दैवं निधिं वाकोवाक्यमेकायनं देवविद्यां ब्रह्मविद्यां भूतविद्यां क्षत्रविद्यां नक्षत्रविद्यां सर्पदेवजनविद्यामेतद्भगवोध्येमि।"[2]

ईशावास्ये विद्या एवम् अविद्याविषये एवमुक्तम् । यस्य ज्ञानाज्ञानयोः मध्ये भेदज्ञानं अथवा विवेकः भवति सः अविद्यारुपमृत्युं तीर्त्वा विद्यारुपम् अमृतमवाप्नोति । उक्तञ्च –

- "विद्यां चाविद्यां च यस्तद्वेदोभयं सह । अविद्यया मृत्युं तीर्त्वा विद्ययामृतमश्नुते ।"

मुण्डकोपनिषदि द्विविध आध्यात्मिकविद्याविषये उक्तम् – परा, अपरा चेति । यथा –

- द्वे विद्ये वेदितव्ये इति ह स्म यद्ब्रह्मविदो वदन्ति पर चैवापरा च । तत्रापरा ऋग्वेदोयजुर्वेदः सामवेदो अथर्ववेदः शिक्षाकल्पोव्याकरणं निरुक्तं छन्दोज्योतिषमिति ।

भारतीयपरम्परानुसारेण शिक्षया मनुजः आध्यात्मिकज्ञानं तथा सर्वोत्तमात्माविषयज्ञानं प्राप्तुं सहकरोति।

शिक्षायाः उद्देश्यम् –

शिक्षायाः मुख्योद्देश्यं भवति व्यक्तेः बौद्धिक एवं शैक्षणिकप्रतिस्पर्धायाः वर्धनम् । शिक्षणं तर्कसङ्गतमेवं चिन्तनशीलप्रक्रिया अस्ति ।

गुरुशिष्यसम्बन्धः –

उपनिषदः गुरुमाध्यमेन अभ्यसितुं प्रेरयन्ति । अनया मानवसम्माननं, व्यक्तिगतनिरपेक्षता, आत्मज्ञानं, आत्मानुशासनं, दानाभ्यासः, सत्यकथनम्, धार्मिकानुपालनमित्यादयः अंशाः बोध्यन्ते ।

- ऊँ सहनाववतु । सह नौ भुनक्तु । सहवीर्यं करवावहै ।
  तेजस्विनावधीतमस्तु मा विद्विषावहै ।।[3]

अनेन श्लोकेन ज्ञायते यत् गुरुशिष्यसम्बन्धः कथं भवेत्, कथं न ? द्वयोः मध्ये मैत्रीभावना भवेत्, द्वेषपूर्णवातावरणं न भवेदिति । एवमेव तैत्तरीयोपनिषदि शिक्षावल्यां गुरुशिष्यसम्बन्धविषये बोधनविषये च एवमुक्तम् –

- अथाधिविद्यम् । आचार्यः पूर्वरूपम् ।
  अन्तेवास्युत्तररूपम् । विद्या सन्धिः ।
  प्रवचनं सन्धानम् । इत्यधिविद्यम् ।

अत्र शिक्षकः पूर्वरूपः, शिष्यः उत्तररूपः, विद्या अन्योर्मध्ये सन्धिः एवं प्रवचनं सन्धानञ्च ।

अध्ययनाऽध्यापनम् –

अध्ययनाऽध्यापनविषये तैत्तिरीयोपनिषदि नवोन्वाके बलं दत्तम् । यथा –

- ऋतं च स्वाध्यायप्रवचने च ।
  सत्यं च स्वाध्यायप्रवचने च ।
  तपश्च स्वाध्यायप्रवचने च ।
  दमश्च स्वाध्यायप्रवचने च ।

[2] छा. उ. 7.1

[3] कठो. निष.

शमश्च स्वाध्यायप्रवचने च ।[4]

विद्यायाः बोधनविधानम् –

प्रभावी शिक्षकः वाकोवाकस्य कृते प्राधान्यं ददाति । बौद्धिक-चिन्तन-आन्तरिकज्ञानादिमाध्यमैः अध्यापयति । छात्राणां रुचिं, योग्यतां ज्ञात्वैव अध्यापयति । अत एव उपनिषदि आदर्शशिक्षकाः शिष्याश्च उपलभ्यन्ते । यमनचिकेतः, उद्दालक-श्वेतकेतुः, सत्यकामजाबाला-उपकोसला कमलायना, हरिद्रामाता गौतमः एवं सत्यकामजाबाला एकः आदर्शशिक्षकशिष्यरूपेण प्रसिद्धौ ।।

कठोपनिषदि नचिकेतं भगवान् यमः सांसारिकसुखं प्रदास्यामि इति उक्तवान् परन्तु नचिकेतः आध्यात्मिकज्ञानाय रुचिं प्रददर्श । तेन सन्तुष्टः यमः तस्मै विद्यामादात् । अत्र यमः नचिकेतस्य परिक्षां कृत्वा तस्य रुचिं, क्षमतां, धारणाशक्तिं, आत्मसंयमनं, चातुर्यमित्यादि परिशील्य तस्मै ब्रह्मविद्यामुपदिदेश । अत्र यमनचिकेतमाध्यमेन कुशलशिक्षकमेवम् आज्ञाकारी शिष्यविषये प्रदर्शितम् । यथा –

- येयं प्रेते विचिकित्सा मनुष्येऽस्तीत्येके नायमस्तीति चैके।
  एतद्विद्यामनुशिष्यस्त्वयाहं वराणामेष वरस्तृतीयः ।।[5]

नचिकेतः जिज्ञासया मृत्योः विषये ज्ञातुमैच्छत् । परन्तु भगवता यमेन तद् बोधयितुं निराकृतम् ।

- देवैरत्रापि विचिकित्सितं पुरा न हि सुविज्ञेयमणुरेष धर्मः।
  अन्यं वरं नचिकेतो वृणीष्व मा मोपरोत्सीरति मा सृजैनम् ।।

यमः नचिकेतमन्यद्विकल्पं प्रददात् । परन्तु कुशलः, दृढसङ्कल्पी च नचिकेतः पुनः स्वानुरोधमप्रकटयत् -

- देवैरत्रापि विचिकित्सितं किल त्वं च मृत्यो यत्र सुविज्ञेयमात्थ।
  वक्ता चास्य त्वादृगन्यो न लभ्यो नान्यो वरस्तुल्य एतस्य कश्चित्।।

मूल्यशिक्षां विना अध्यापनं सम्पूर्णं न भवति । अतः धार्मिकजीवनेन सह मूल्यशिक्षामपि बोधयन्ति स्म । दीक्षान्तवेलायां मूल्यसम्बन्धितांशान् बोधयति अध्यापकः ।

- "सत्यं वद। धर्मं चर।
  स्वाध्यायान्मा प्रमदः।
  सत्यान्न प्रमदितव्यम्।
  धर्मान्न प्रमदितव्यम्।
  भूत्यै न प्रमदितव्यम्।
  स्वाध्यायप्रवचनाभ्यां न प्रमदितव्यम्।
  देवपितृकार्याभ्यां न प्रमदितव्यम्। "

अतः छात्रः पूर्वोक्त कर्मसु निष्ठः इति गुरुः यदि विश्वासति तदा शिष्यानुकम्पया सः विद्याम् उपदिशति अन्यथा न । तादृश विश्वाससम्पादन-हेतुभूते सच्चारित्र्यापरनामके सदाचारे शिष्यः निरतः भवेत् ।

एवं व्यवहार-सम्बन्धी दिशानिर्देशमपि कुर्वन्ति –

- "मातृदेवो भव । पितृदेवो भव ।
  आचार्यदेवो भव । अतिथिदेवो भव ।"

[4] तै. उप.

[5] कठो. नि. १.१.२१-२२

चरित्रं कथं स्यात् –

चरित्रे नष्टे सर्वं नष्टम् इति भवति । अतः मे श्रोत्रे उत्तमं श्रुणुथः, मे चक्षुषी उत्तमं पश्यथः, स्तुतं गीतं ते स्तोत्रं मे, अङ्गानि सुदृढानि सन्तः नियमितायुष्कालं यापयथ । उत्तमं कुर्मः , भगवत्कार्ये स्वात्मानम् अर्पयामः । [6]

- ऊँ ईशावस्यामिदं सर्वं यत्किञ्चित् जगत्यां जगत् ।
  तेन त्यक्तेन भुञ्जीथा मा गृधः कस्यस्विद्धनम् ।।[7]

इति ईशावस्योपनिषदः आदिमन्त्रे उक्तं यथा - परस्वत्वं न स्वकीयम् अतः तद्द्रव्यम् लोष्टवद् भावयित्वा तस्य परित्यागः करणीयः न तु तस्य काङ्क्षा इति । एवं सन्मार्गे मे धनार्जनं भवतु इति **अग्ने नय सुपथा राये अस्मान्** इति मन्त्रं सूचयति । सर्वभूतेषु हितचिन्तनं बोधयति **भूतेषु भूतेषु विचित्य धीराः प्रेत्यास्मांल्लोकादमृता भवन्ति** ।[8] एवमेव आत्महत्या न कार्या यतो हि आत्महतकाः मरणोत्तरम् अन्धकारयुक्तं जन्म अनुभवन्ति ।

- असुर्यानाम ते लोका अन्धेन तमसावृताः ।
  तां स्ते प्रेत्याभिगच्छन्ति ये के चात्महनो जनाः ।[9]

एवमेव अतिथेः महत्त्वमधिकमासीत् । वदन्ति यत् – यस्मिन् गृहे अतिथिपूजनं न भवति तस्य गृहस्य स्वामिनः बुद्धिः नश्यति, काङ्क्षा विनश्यन्ति, सत्साङ्गत्यफलं नश्यति, सर्वाणि पुण्यकर्माणि विनश्यन्तीति वदति -

- आशाप्रतीक्षे सङ्गतं सूनृतां चेष्टापूर्ते पुत्रपशूंश्च सर्वान् ।
  एतद् वृङ्क्ते पुरुषस्याल्पमेधसो यस्यानश्नन् वसति ब्राह्मणो गृहे ।।[10]

गर्वो न कार्यः, एवं वित्तमोहो न कार्यः इत्यादि ।

सत्यविषये –

- सत्यमेव जयते नानृतं सत्येन पन्था विततो देवयानः ।
  येनाक्रमन्त्यृषयो ह्याप्तकामा यत्र तत्सत्यस्य परमं निधानम् ।।[11]

अनेन ज्ञायते चरित्रनिर्माणे सत्यात् ऋते न किमपि वर्तते मुख्यसाधनम् ।

ब्रह्मचारिणः लक्षणम् –

- तस्मै स विद्वानुपसन्नाय सम्यक्
  प्रशान्तचित्ताय शमान्विताय ।
  येनाक्षरं पुरुषं वेद सत्यं प्रोवाच
  तां तत्त्वतो ब्रह्मविद्याम् ।।[12]

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[6] भद्रं कर्णेभिः श्रुणुयाम----

[7] ई. उप. १

[8] केनो. उप. २.५

[9] ईशा. उप. ३

[10] कठो. उप. प्रथमवल्ली. ८

[11] मुण्ड. उप. ३.१. ६

उषःकाले सस्वरं प्रणवोच्चारणेन सकलसिद्धिः –

कौषीतकिना स्वपुत्रं प्रति उवाच – "हे वत्स! मया निष्ठया ॐकारोपासनां कृत्वा त्वाम् अलभे । अतः त्वं सूर्यस्य किरणान् पूजय, मुहुर्मुहुश्चिन्तय । एषा अधिदैवोपासनेति जानीहि ।" अतः प्रातःकाले उत्थातव्या इति ज्ञायते ।

शिक्षणपद्धतयः –

शिष्यः स्वज्ञानं प्रकारत्रयेण विस्तारयति – अवलोकनेन, प्रयोगेण, परीक्षणेन । अध्यापकः विभिन्नशिक्षणविधिभिः आध्यापयति । सर्वास्वप्युपनिषत्सु शिक्षकः स्वशिक्षणकौशलानि प्रदर्शयति छात्रबोधनाय । अधः कानिचन विधानानि अवलोकयामः –

परस्परचर्चया –

चर्चायामस्यां शिक्षणः अधीतांशस्य विषयस्य परीक्षणं करोति विविधरूपेण येन छात्रस्य चिन्तनाशक्तेः विकासः भवेत् । नारदः प्रश्नकरणसत्रे सनत्कुमारऋषितः निर्देशं प्राप्नोति । एवमत्र भाषणम् - मनः, गर्भाधानविचार-ध्यानावगहनशक्ति-भोजन-पेय-वैभव-अन्तरिक्ष-स्मृति-आशाश्वासादि विविधांशाः परस्परचर्चया अवबोधयति ।

पर्यवेक्षणमाध्यमेन –

उपनिषदः सर्वदा पर्यवेक्षणस्योपरि बलं ददाति । अत्र शिष्यं शिक्षकस्य गुणानानुपालयितुं स्वजीवने तानुसरितुं बोधयति।

- "यान्यनवद्यानि कर्माणि तानि सेवितव्यानि नो इतराणि। यान्यस्माकं सुचरितानि तानि त्वयोपास्यानि।" तैत्तिरीयोपनिषत्।

उत्तमकार्याणि एव सेवनीयानि, करणीयानि च नो इतराणि । अनेन ज्ञायते ज्येष्ठानां कार्याणि गुणानि च अवलोकनीयानि।

उदाहरणमाध्यमेन –

विषयावबोधनाय तदानीमेव उदाहरणानां प्राधान्यमधिकं ददति स्म । अनया एव पद्धत्या शिक्षकः शिष्यान् उदाहरणानि उक्त्वा तानि निरीक्ष्य विश्लेषयितुं वदति । उपनिषदः आध्यात्मिकज्ञानाधारितं भवन्ति । तदधिगन्तुं क्लेशायते । यथा -

- आत्मानं रथिनं विद्धि शरीरं रथमेव तु। बुद्धिं तु सारथिं विद्धि मनः प्रग्रहमेव च ।

उदाहरणस्य भावः स्पष्टः । गहनांशमपि सुलभतया बोधयितुं सरलोदाहणानि उपनिषदि विद्यन्ते । यथा -

- द्वा सुपर्णा सयुजा सखाया समानं वृक्षं परिषस्वजाते।
  तयोरन्यः पिप्पलं स्वाद्वत्त्यनश्नन्नन्यो अभिचकाशीति।[13]

अत्र आत्मविषये सुलभतया उक्तम् । एवम् अनेकानि उदाहरणानि भारतीयदर्शनस्य मार्मिकांशान् अबोधयति ।

मौखिकसञ्चारविधिना –

वेदाः अपौरुषेयाः मौखिकाश्च । पारम्परिकविधिना वंशपरम्परया आगच्छति । मौखिके उच्चारस्य प्राधान्यं वर्तते । पाठानां स्वरस्थानानामुच्चारणे प्राधान्यमधिकमासीत् । अनेन एकाग्रतायाः, इन्द्रियनिग्रहस्य, धैर्यस्य, भक्तेः, विश्वासस्य, श्रद्धादि उत्तमगुणानां प्राधान्यं दरीदृश्यते ।

क्रियाकलापविधिना –

[12] मुण्ड. उप. १. १३

[13] मुण्ड. उप. ३.१. १

कमपि विषयं पाठयितुं, चिरकालपर्यन्तं स्मृतिपथे भवितुमयं विधिः प्रयुज्यते । ऋषिः उद्दालकः स्वपुत्रं न्यग्रोधफलमानेतुं वदति । आनयनानन्तरं तं भेत्तुं वदति । तत्र किमिति परिशीलयितुं वदति । श्वेतकेतुः तत्र बीजानि सन्तीति प्रत्युत्तरं दत्तवान् । तदानीम् उद्दालकः तानि छिन्दि तत्र किमिस्तीति परिशीलयितुं वदति । अत्र किमपि नास्तीति उक्तवान् । तदा उद्दालकः लघुबीजेन महान् वृक्षः आगच्छति । अयं संसारः श्रेष्ठतम आत्मना जायते । अनेन श्वेतकेतुः आध्यात्मिकज्ञानं सुलभतया अवगन्तुं शक्तवान् ।

प्रासङ्गिकाधारितप्रश्नकरणेन –

प्रसङ्गानुगुणं प्रश्नकरणं तस्य समाधानञ्च उत्तमचिन्तनाय प्रेरयति । अन्तर्निहितसन्देहान् उपशमयति । केनोपनिषदि यमनचिकेतयोः संवादः अस्य मुख्योदाहरणं भवति ।

- केनेषितं पतति प्रेषितं मनः केन प्राणः प्रथमः प्रैति युक्तः ।
  केनेषितां वाचमिमां वदन्ति चक्षुः श्रोत्रं क उ देवो युनक्ति ।[14]

कस्य प्राणेन अयं मनः विषयावलोकं करोति । केनेषितं अयं श्वासः स्वीकरोति । केनेषितां वाचं वदन्ति, चक्षुः श्रोत्रं च कार्यं करोति । कः सः अमूर्तेश्वरः विद्यते ? ।

छान्दोग्योपनिषदि यदा श्वेतकेतुः पाञ्चालराजस्य आस्थानं प्राप्तवान् तदा जाबालि प्रवाहनस्य अध्ययनविषय प्रश्नं पृष्टवान्-

- श्वेतकेतुर्हारुणेय पञ्चालानां समितिमेयाय तदा प्रवाहणो जैवलिरुवाच कुमारानु त्वाशिषत्पितेत्यनु हि भगव इति।
  पित्रा निर्दिष्टो भवान् ?
  प्रत्युत्तरे उक्तवान् - आम्
- वेत्थ यदितोधि प्रजाः प्रयन्तीति न भगव इति वेत्थ यथा पुनरावर्तन्त इति न भगव इति वेत्थ पथोर्देवयानस्य
  पितृयाणस्य च व्यावर्तना इति न भगव इति।

अनन्तरं जीवपरमात्मविषयकाः अनेकाः प्रश्नाः पृष्टाः । तेन असम्पूर्णज्ञानेन किमपि न सिद्यति इति ज्ञात्वा श्वेतकेतुः पितरं तद्विषये संसूच्य राज्ञः सविधे अध्ययनमनुवर्तितवान् ।

एवं प्रकारेण प्रश्नकरणमाध्यमेनापि स्वमेधायाः , विषयस्य च स्थितिं ज्ञातुं शक्यते ।

यदा कात्यायन कबन्धी पिपलादं प्रजाः कथं प्रजायन्त इति पृष्टे तस्य समाधानत्वे एवमब्रवीत् -

- "तस्मै स होवाच प्रजाकामो वै प्रजापतिः स तपोतप्यत स मिथुनमुत्पादयते ।
  रयिं च प्राणां चेत्येतौ मे बहुधा प्रजाः करिष्यत इति ।"[15]

परियोजनाविधिः –

इयं विधिः गहनाध्ययनाय छात्रान् प्रोत्साहति चिन्तनशक्तिञ्च वर्धयति । ऋषिः उद्दालकः श्वेतकेतुम् एकां परियोजनां दत्तवान् । जले लवणं मेलय इति । तदा शिष्यः गुरोः आज्ञाम् अपालयत् । गुरुः तद् जलं पीत्वा कथमस्तीति पृष्टे सति शिष्यः तज्जलं पीत्वा सम्पूर्णजलं लवणमयमिति उक्तवान् । तदा गुरुः लवणं जले गलति पुनः न आगच्छति तथैव सर्वोच्चात्मा अपि सर्वव्यापि भूत्वा पुनर्न भवति । एवं प्रकारेण शिक्षणे बहूपकरोति परियोजनाविधिः । सत्यकाम जाबालेन यदा गौतमसविधे आध्यात्मिकज्ञानं प्राप्तुमिष्टवान् तदा गौतमः तस्य गोत्रं पृष्टवान् । जाबालस्य सत्यकथनेन सन्तुष्टः सन् तस्मै पशुचारणस्य कार्यं दत्तवान् । अनेन शिक्षया सह सांसारिकधर्मान्यपि बोधितवान् ।

[14] केन. उप.

[15] प्रश्न. उप.१

- तं होवाच नैतदब्राह्मणो विवक्तुमर्हति समिधं सोम्याहरोप त्वा नेष्ये न सत्यादगा इति तमुपनीय कृशानामबलानां चतुःशता गा निराकृत्योवाचेमाः सोम्यानुसंव्रजेति ता अभिप्रस्थापयन्नुवाच नासहस्रेणावर्तयेति स ह वर्षगणं प्रोवास ता यदा सहस्रं सम्पेदुः।।[16]

शिक्षायाः विधानम् -

- अत्र विद्यायाः मुख्योद्देश्यमासीत् व्यक्तित्वविकासः, आत्मसंयमनं, पराविद्यायाः ज्ञानम्, अज्ञानस्य दूरीकरणञ्च।
- मनोवैज्ञानिकपद्धत्या एवं छात्रकेन्द्रिता आसीत् । अत्र व्याख्यान-प्रत्यक्ष-अनुमान- उदाहरणादिविविधपद्धत्या अध्यापयन्ति स्म ।
- अत्र शिक्षणसूत्राणि एवं विधानि सन्ति । यथा - सूक्ष्मात् कठिनं प्रति, अनुमानादुपमानं प्रति , अज्ञानात् ज्ञानं प्रति इत्यादयः।
- छात्रस्य सम्पूर्णविकासाय बलमधिकं ददति स्म । तत्र विषयस्य अर्थावगहनेन सह विषयप्रस्तुतीकरणे अपि महत्त्वमधिकमासीत् ।
- मूल्याङ्कनं विविधरूपेण स्वीकुर्वन्ति स्म । यथा – कुत्रचित् स्थलेषु कण्ठस्थीकरणेन, कुत्रचित् शलाकया, कुत्रचित् सूत्रविधिना, कुत्रचित् व्याख्यानेन , कुत्रचित् तर्कविधिना । समयानुगुणं परीक्षणमपि कुर्वन्ति स्म । छात्रस्य प्रगतिं दृष्ट्वा पाठनस्य पुरोगतिर्वा पाठनपद्धतिर्वा परिवर्तनं कुर्वन्ति स्म ।

उपसंहारः -

एवमेव उपनिषदः अवलोकनेन यत् शिष्यादिभ्यो विषयावबोधनम् अध्यापनं भवति । तत्कर्ता अध्यापकः । अवबोधनकार्यकुशलः भवेत् अध्यापकः । अर्थिनं परीक्ष्य योग्यतामवगम्य तस्मै विद्या उपदेष्टव्या । अस्मिन्विषये यास्केनोक्तम् "उपसन्नाय तु निर्ब्रूया यो वाऽलं विज्ञातुं स्यान्मेधाविने तपस्विने वा"[17] । एवं शिष्यम् न उपेक्षितव्यम् । एवं शिष्यस्य व्यक्तित्वविकासाय गुरुः सततं प्रयतते ।।

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[16] छान्दोग्योपनिषत् – ४. ४.५

[17] या. निरु.

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FAIRS AND FESTIVALS-AN EFFECTIVE TOURISM MARKETING LEVER FOR ECONOMIC DEVELOPMENT AND HERITAGE CONSERVATION

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Abstract

Purpose – This paper aims to discuss the opportunities and challenges that India offers in terms of leveraging the cultural and economic potential of the fairs and festivals. This paper sets the tone for the theme by evaluating "fairs and festivals" being organized all year round for attracting tourists in different parts of the country, as drivers of economic growth and cultural continuity with special focus on Kumbh mela at Prayagraj. Practical implications – There are a number of practical implications for practitioners and policymakers that will allow India to optimally leverage the huge cultural and economic potential through effective tourism policies that the various fairs and festivals offer. This requires a holistic understanding that will ensure that aspirations and concerns of all key stakeholders are taken into account. Originality/value – The research through this theme issue will document the cultural and economic impact of a specific fairs and festivals in India like Kumbh mela whose success story will go a long way to design innovative tourism marketing strategy to create a synergy of development of local community and conservation of cultural heritage. Can these cultural resources be sustained and deployed effectively to have a positive economic impact on the lives of communities connected?

Keywords: leverage, fairs and festivals, synergy, tourism

Overview

The fair is an age old tradition, and many communities hold such fairs on grounds dedicated for such events; others celebrate in public places, including streets and town squares, or even in large private gardens. Fairs are often held in association with a significant event, such as the anniversary of a local historical event, a seasonal event such as harvest time, or with a holiday or a festival or some auspicious occasion such as Makar Sankranti or Nandashtami or Vaisakhi etc.The word fest derives from the Latin word festivus borrowed from Anglo-Norman French. Festival was first recorded as a noun in 1589. Before it had been used as an adjective from the fourteenth century and it means to celebrate a church holiday. Festivals which have religious importance

are known as as religious festivals.

Uttarakhand is rich in culture and heritage. Fairs (called Mela in Hindi) are celebrated with full pomp and show. They are an inherent part of the social and cultural life of Uttarakhand. Fairs and festivals showcase the cultural diversity of this state. It is at these fairs that gives a platform to traditional art forms that are on the verge of extinction revive, so that they can be appreciated and supported. People from all section of the society come together in these Melas and one can see the cultural harmony among the masses, reflected in the collective pleasure experienced by one and all.

Fairs and festivals can make a remarkable contribution to the economic development of a region. They can create awareness and raise economic value of the regions where they are celebrated and hosted. There are social advantages as well. Communities can earn a handsome living; it creates a strong bond of harmony and unity. These festivals help to conserve and strengthen cultural roots and values and enable communities to protect their traditions too. The paper addressed the question: "How can the economic and heritage of region fairs and festivals in India be leveraged?" To explore the question, research focussed on Kumbh mela, a mega fair in India which catapults Uttarakhand tourism culturally and economically.

According to Harsh Bijoor a Bangalore based brand expert "Religion and size is a fantastic combination and Kumbh has both. Imagine Woodstock or soccer leagues in Brazil and the UK, and multiply the scale by 10."

RESEARCH OBJECTIVE

The main objective of the research is to analyze the economic leverage of the KumbhMela 2019, held at Prayagraj, to Uttarakhand tourism and culture preservation. The study is an aims to examine empirically the

local perception of effect of fairs and festivals rather than measure of actual impact. For the analysis of the economic and cultural impact community group's residents were selected at various points of Prayagraj.Through measurement of the attitudes of the local people towards tourism development indicated descriptive statistic analysis was used. Respondents were asked to give answer on each indicator which was measured by percentage method.

SCOPE OF THE RESEARCH

The Kumbh Mela is taken into account because the biggest gathering of humans at a time on the earth. It was given an identity of a district for two months period. The estimated worth of Maha KumbhMela 2019 was a revenue of Rs 1.2 lakh crore for Uttar Pradesh. Although the Kumbh Mela is spiritual and non secular in nature, the economic activities connected with it generated employment for over 6 lakh workers across various sectors and thus justifying the scope of the study. There was a big scope to study the social and economic aspects of the demography, which was attracting the researchers from all over the world.

LITERATURE REVIEW

Kumbhamela and Economics

The Kumbhamela has transformed social, economic and political conditions (Lochtefeld 2006) so this event is very much associated with economy and this is a true observation. It has marked as a place of spiritual tourism as a study by Tomar& Yadav (2015) where they confirmed that in 2019 Kumbha more than 100 million people assembled there to celebrate spiritual time. So Kumbhamela is not only a spiritual event but there is some economic significance in it. In this connection The CII report published which said Rs 1.2 lakh crore revenue generated for Uttarapradesh.Therefore economy and spirituality relating to Kumbhamela has a deep relationship. So some other prominent festivals Kumbhamelas catch a boost up in economy (Sonone 2015).

Kumbhamela and Spirituality

In India the modern spirituality can be easily traced back 2500 years in written form (Kroeber 1944) when it is understood that Kumbhamelas have started to inception from the first millennium CE. In Indian consideration human spirituality denotes to meet with God after death (Inbadas 2017) and the people believe that certain practices are needed for realizing the ultimate. Kumbhmela is also known as simhasta parva as Jupiter (Guru) and Sun (Surya) enters in Leo (Simha) zodiac sign and the astrology is an exemplary spirituality in India. Spirituality can define happiness (Dhar, chaturvedi& Nandan 2011) and a mela (fair) means a place where people can seek equal treatment (Google Online Dictionary) therefore Kumbhamela is a place where unity speaks on the sweetness of internality or soul. It is a belief that a dip in river Ganga during a Kumbha can serve sort of panacea for all and empirical evidences tell that spirituality can act on palliative care as an adjunct relief (Narayanasamy 2007). Nonetheless Kumbhamela is a place of pilgrimage which is important and purposive for life and spirituality (Maheshwari & Singh 2009) so Kumbhamela is very impactful on the field of spiritual wellbeing.

RATIONALE OF THE STUDY

Kumbhamela is not only a simple a theoretical religious practice which may be termed as spiritual. But it is a great to realize with intelligentsia as it is a good habitat practice for a superb nexus of economy, environment and spirituality. Here the study is taking a place in policy document storage. The study has used several previous works in analytical and comprehensive practicality. This study is needed as it has told about the spiritual understanding for social sustainability with two most valuable components of society and culture.

KUMBH MELA: A BRIEF DESCRIPTION

In India, mass bathing practice is evident in the gangetic plains where a massive fair is organised popularly known as Kumbh Mela. It is a mass congregation of pilgrims either from the homeland or overseas with the object of dipping into the sacred river. The etymological meaning of Kumbh can be traced from Sanskrit where „Kumbh" means pitcher . The Kumbh Mela 2019 is the Ardh Kumbha Mela held at Triveni Sangam . The Mela started from 15 January to 4 March 2019 with three Shahi snan (royal bath) and three snan.

The Kumbh Mela is broadly classified into five types :

a. Maha Kumbh Mela

The Maha Kumbh Mela is held every 144 years in Prayagraj (Allahabad).

b. Purna Kumbh Mela

The Purna Kumbh Mela is held after every 12 years in Prayagraj (Allahabad).

c. Ardh (half) Kumbh Mela

The Ardh Kumbh Mela is held in every 6 years at Haridwar and Prayagraj (Allahabad).

d. Kumbh Mela

The Kumbh Mela is a very vital occasion that takes place every 3 years following four locations in India: Prayagraj (Allahabad), Haridwar, Ujjain and Nasik.

e. Annual Mini Kumbh Mela

The Annual Mini Kumbh Mela, also known as the Magh Mela is held every year at Prayagraj (Allahabad), except the years of Purna Kumbh Mela and Ardha Kumbh Mela.

- ECONOMIC IMPORTANCE

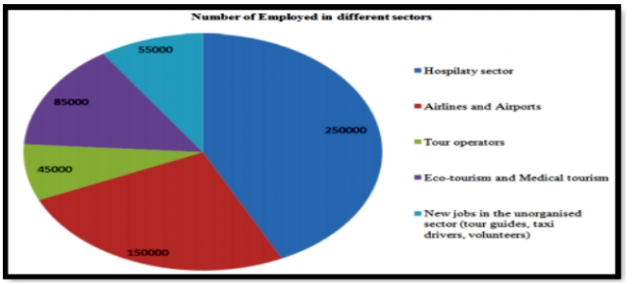
The economic importance of Kumbh Mela can be understood from the revenue generation of the different sectors involved directly or indirectly and the employment opportunities associated with the Kumbh Mela across various sectors.

➤ Hotel industry was at 100% occupancy rate for Maha-Kumbh which

previously was 70% on an average and witnessed a growth of 25% during Maha-Khubh from previous growth rate of 15% including small, budget and luxury hotels. National and international media will arrive in large numbers. Duration of foreign tourists stay in India will be 20-30 days. These are likely to employ over 6 lakh skilled and unskilled workforce.

- A tentative assessment of the tourism-implication of the Ardh Kumbh Mela of 2019 was made by the Confederation of Indian Industry (CII). Uttar Pradesh government provided Rs 4,200 crore for the 50-day Kumbh Mela2019, which is over three times the budget of the Maha Kumbh in 2013, making the mega pilgrimage perhaps the expensive ever.
- According to CII, this grand Mela of 2019 generated revenue of Rs. 1.2 lakh crore for the State. Further CII reported that there was approximately six lakh workers associated with the Mela at various ancillary sectors.
- The hospitality sector employed 2, 50, 000 people, airlines and airports around 1, 50,000 and tour operators around 45,000. The employment numbers in eco-tourism and medical tourism estimated at 85,000.Apart from this, there were 55,000 new jobs in the unorganized sector comprising of tour guides, taxi drivers, interpreters, volunteers etc.This lead to increase in income levels for government agencies and individual traders.
- Neighbouring states like Rajasthan, Uttarakhand, Punjab and Himachal Pradesh also benefitted from the increased revenue generation with a large number of national and foreign tourists visiting other destinations.

The breakdown of employment in various sectors is depicted in the following chart:



Source: Compiled from Economic Times

The chart showed the employment levels increased in income for the businesses as well as local people. Besides the Mela, not only saw a huge crowd of people coming from all parts of India, but it also draw huge number of pilgrims as well as visitors from other countries of the globe. The countries included UK, Canada, Malaysia, Singapore, Australia, South Africa, New Zealand, Mauritius, Zimbabwe and Sri Lanka among others.

Table;1 Economic pointers of fairs and festival

S.No	Positive points	Negative points
1.	Opportunity for work	High cost of land and housing
2.	Rise in the number of hotels	Rise in general price of goods and services
3.	Rise in the income of residents	
4.	. Opportunity for shopping	

For analysis of economic impact of Kumbh mela on the local responses were collected at selected tourist's center in Prayagraj. Influence of fairs and festivals is calculated through percentage given in the Table no.2

Distribution of % of attitude of local in Prayagraj(Economic impact)

S. No	Pointers	Yes	No
1.	Opportunity for work	80.94	19.06

2.	Rise in number of hotels	78.44	21.56
3.	Rise in the income of resident	70.35	29.65
4.	Opportunity for shopping	84.17	15.83
5.	Rise in the cost of land and housing	74.27	25.73
6.	Rise in general price of goods and services	65.35	34.65
	Total	75.58	24.42

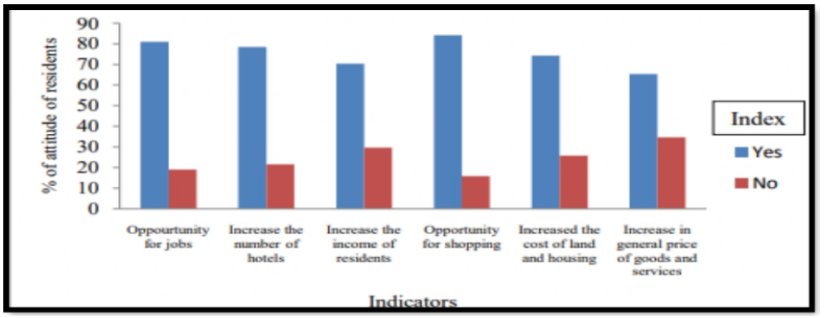


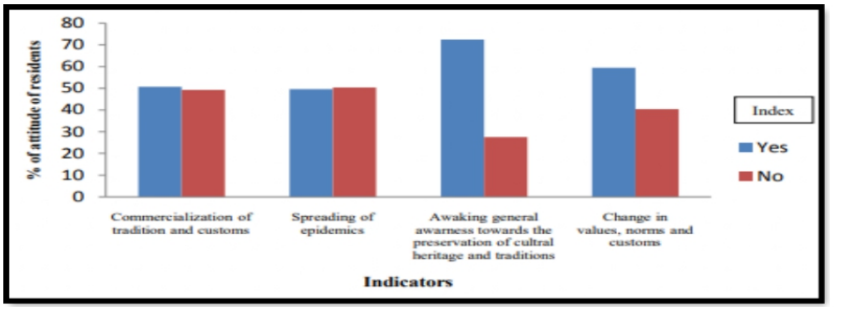
Table indicate a big effect on economy through Kumbh mela because maximum local people depend on tourism activity. So, there is no alternative for economic developments of this area.Prayagraj are self significant as cultural, natural, historical and religious attractions. It is observed that the impact of Kumbh mela on the local economy of Prayagraj is nearer to equal and has good effect. That indicate the positive effects help to develop the economy of the region such as increase in income of the residents, increasing jobs and shopping facilities.

Table No. 3 Cultural impacts pointers

S.No	Positive points	Negative points
1.	Stimulate general awareness towards the conservation of cultural heritage and traditions	Commercialization of tradition and customs
2.	Spreading of diseases	Change in values, norms and customs

Table no :4 Perception of local people response to cultural Impact

S. No	Indicators	Yes	No
1.	Commercialization of tradition and customs	48.47	51.53
2.	Spreading of diseases	49.63	50.37
3.	Stimulate general awareness towards the conservation of cultural heritage and traditions	72.41	27.59
4.	Change in values, norms and customs	59.46	40.46
	Total	57.29	42.71



The positive cultural indicators show good sign for the development of tourism at Prayagraj. The local economy of the place depends on tourism activity through Kumbh mela. Majority of domestic and foreign tourists visit to Prayagraj during holy snan at Prayagraj.

FACILITIES PROVIDED FOR THE KUMBH MELA 2019

The facilities provided by the Prayagraj Mela Authority are listed below:

1. 800 additional trains by the Indian Railways: The Indian railways have proposed running 800 special trains from various stations of Allahabad district in addition to the regular trains run by the North Central Railway.

2. Application of Artificial Intelligence (AI): The Railways used technology, including artificial intelligence (AI), in an big way to fight the huge crowd of passengers to the holy city during the Kumbh Mela. IBM Intelligent Video Analytics was used for crowd control at the stations and its adjoining areas. In addition, a new mobile app called Kumbh Rail

Seva was launched to broadcast information to train users and others relating to Kumbha Mela. This made the Kumbha Mela 2019 as a Digital Kumbh.

3. Disaster Management: A Disaster Management Control Cell (DMCC) was set up for providing services across the Mela premises. In addition, a vector control unit was formed to counter infectious diseases. In order to fight epidemic, fire hazard, flood, stampede, etc, dedicated team was formed and procedures designed accordingly.

4. Setting up of Lost-and-Found digital centre: As the Mela city was spread across 3200 hectares, it was likely that people get lost. To mitigate this issue, digital lost-and-found centres was set up. All centres were interconnected with a central server. Information of lost and found pilgrims was broadcasted with photos on LED screens at each centre. This made the Kumbha Mela 2019 as a Safe Kumbh.

5. Public accommodation: More than 20000 public accommodations was built by the Mela authority for the pilgrims with facilities of overnight stay along with safety measures. In order to deal with multitude, authorities built a mini-city of quite 4,000 tents. The city was being lit by installing over 40,000 LED lights, say local authorities. Tent city with five-star hotel like facilities geared up to host 15 crore pilgrims. The tent city in Prayagraj was designed to accommodate all those who wished to stay away from the Kumbh Mela rituals and enjoy the Mela and witness India's rich culture and heritage. These tents were crafted keeping in mind the number of visitors and guests of Pravasi Bharatiya Divas. The tent city was extended on a place of 100 hectares and built by six companies. The tent city also consisted of villas, dormitory style tents within the Arail ghat area. These tents could be booked online. Tourists booked these tents by logging on to – https://kumbh.gov.in/en.Nearly 1,200 cottages were built to accommodate tourists. The tent city was divided into three categories — cottages- deluxe, super deluxe and villa. Villas were the most expensive ones due to the dimensions of bedrooms. Each villa consists of 2 bedrooms and a common area. It is located near

the river Ganga.The entrance of villa goes through a drawing room. On its left and right are two bedrooms with attached bathrooms. Tourists were able to enjoy the view of river Ganga right from this villa. For one night here, one had to pay Rs 32,000.

6. Ganga Pandal: A state-of-the-art cultural hall was set up for the pilgrims with a seating capacity of 10000 people. Various cultural events were showcased at the Ganga Pandal with artists coming from across the country.

7. Convention Halls: Six convention halls were set up in the Mela area with more than 500 cultural programmes and 5000 artists. This made the Kumbha Mela 2019 as a Sanskritik Kumbh.

8. Media Center: Ultra modern international media center was set up for the media persons and journalists coming to the Kumbha from across the globe.

9. Vending Zones: There were more than 900 stalls of food items, utensils, grocery, clothing, etc in selected vending zones to cater to the needs of pilgrims. Five star restaurants were built for pilgrims and tourists. All such restaurants served only holistic food. Besides, they served speciality cuisines of all Indian states.

10. Amusement Zones: Three amusement zones was set up with 3D projection theatres, variety of attractive games and other engaging activities.

xi. Paint My City: This mission was launched with more than 20 lakh square feet of the city have been painted by various artists. This presented the entire city as a gorgeous bride.

xii. Waste management and cleanliness: About 1, 15,000 toilets were installed and around 1500 swaccha grahis busy in the monitoring of the operations and usage of dustbins and toilet. In order to make awareness for the protection of the biodiversity of the river Ganga, various roadshows, workshops, etc were organised and banners, hoardings, etc were distributed to disseminate information regarding the importance of cleanliness. This makes the Kumbha Mela 2019 as a Swacch Kumbh.

- CONCLUSION

The Kumbha Mela 2019 has set a standard for the future events. Similar practices have to be conserved or at best upgraded for the upcoming Kumbha Mela in 2021 at Haridwar. More the freedom more is the resurgence of peoples" interest and participation. Besides, the implication of such assembly of religious tourists from the perspectives of growth and potential of the tourism industry is colossal. Curiously, even though the Kumbh Mela has been going on from time immemorial, there have been only sparse efforts to understand what such a statistics -defying event does to local economics within the region where it is held. But it might be time to understand the Kumbh Mela for what it really is – a strong boost to local economies in parts of India which are most cash-and-job-strapped (north and central). It is also a major leg up to travel industries as many people travel from great distances to arrive at the Kumbh.

The work and money the Kumbh Mela generates, therefore, is of unthinkable value – it ought to be considered a means of transferring money to those who need it the most, both from the government and from private industry.

In fact, I might argue that since this festival has a distinct record of being one of the, if not the largest peaceful assembly of people in the world, it delivers a threefold benefits. It creates jobs, transfers money to those who need it the most, and provides an engaging and uplifting socio-cultural activity that keeps the peace.

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Migration from the Hills and Sustainable Remedial Measures: Case Study of Patiya Village Cluster in Almora District, Uttarakhand

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Abstract

Migration has been an essential part of human progress. Both 'push' and 'pull' factors in tandem determine this process. In the modern age of Globalization and improved communication, these factors have assumed new dimensions. India is very much a part of this trend with large number of intra and inter-state migration taking place every year bringing about demographic changes both ways. However, in India, migration from the hill regions have assumed serious proportions turning many villages in the rural part of the hills into 'ghost' villages with no population. There is an urgent need to address this issue with sustainable development measures to stop further out-migration and possibly induce reverse migration. The present Covid 19 pandemic situation has forced many migrants from the hill regions to go back to their villages. This is the ideal time to introduce developmental measures to retain these migrants by improving their 'life chances'. The case study presented in the paper is based on a primary survey of eight villages (Patiya Village Cluster) from two blocks Hawalbagh and Takula of Almora district covering 307 households. The present study (based on a survey report) is aimed at analysing the reasons and patterns of migration taking a case study of a village cluster in Almora district, Uttarakhand as well as to suggest measures to prevent further migration and retain the migrants fleeing from the cities to their native villages.

Key words: Climate Change, Geo-Tourism, Human Wild Life Conflict, Out-Migration, Village Tourism, Subsistence.

Declarations:

Funding: The study has been financially funded by the Patiya Cluster Village Project, National Mission on Himalayan Studies (NMHS), Ministry of Environment, Forest and Climate Change

Conflicts of Interest: There was no conflict of interest between the authors

Availability of data and material:

Introduction

Migration in terms of physical movement from one place to another in search of improved livelihood and security has continued to be a major phenomenon in the history of human kind since the Paleolithic times. Humans have chosen to migrate whenever the region inhabited by them outlived its "carrying capacity" (due to demographic expansion or ecological changes) or when they came into conflict with another dominant human community who competed for the same set of economic resources. However, in the modern age of liberalization, privatization and globalization, causes of migration have assumed new dimensions and it has become a global phenomenon with positive as well as negative impact for the migrants. Human migration determines the change in the demography of a region. The change in residence caused by migration can be either permanent, semi-permanent or temporary (Premi, 1990).

Internal migration is also an important factor that influences both social and economic development of the countries like India. However, in present day India, migration, particularly from the hill regions, has assumed gigantic proportions posing a serious challenge to any developmental schemes sought to have been implemented through governmental or non-governmental efforts. Population in many villages has come down to double figures and some villages are devoid of any population and have turned into uninhabited places or "Ghost" villages. In these regions where economy is based primarily on agriculture and partly on animal husbandry, migration of people from villages to towns is very common. It has been argued that due to limitations of subsistence economy in these regions, a large proportion of adult male population out-migrates in search of livelihood (Maithani, 1996; ICIMOD, 2010). In the last decade or so climate change and its impact on water reserves, vegetation etc. has also played an important role in the out-migration of residents of the hilly areas.

Divided into two broad geographical regions--Garhwal and Kumaon, Uttarakhand comprises of 13 districts of which four districts (Nainital, Haridwar, Dehradun and Udham Singh Nagar) have large areas in the plains, whereas the other nine districts (Chamoli, Pauri, Tehri, Uttarkashi, Rudraprayag, Almora, Pithoragarh, Champawat and Bageshwar) largely cover the hill region of the state. The state is further split into sub-divisions and development blocks. This geographical differentiation between the hills and the plains divides the state critically in terms of resources, infrastructure as well as livelihood opportunities. The distinctive socio-economic features,

ethnicity, climatic variability and human activities, separate the plains and mountain ecosystem from each other. Growth of industries in the plains has created jobs. The hill region districts, on the other hand are less developed in terms of infrastructure, i.e., electricity, roads and irrigation. The inter-district inequality in infrastructure has led to increasing disparity in terms of income and livelihood between the hills and the plains. Low levels of income not only result in low levels of consumption and material deprivation, but also constrain human potential by restricting access to education and health facilities, thereby creating a vicious cycle of poverty.

In Uttarakhand, migration has been a part of a historical process. The hill regions in Uttarakhand witnessed a massive in-migration from neighboring areas during the 11th and 12th centuries. This impacted demographic and ethnographic configuration of this region. Over the centuries, native and migrant populations worked hard to clear jungles and develop farmland for cultivation. During British rule, the local youth could find more stable and reliable employment opportunities in the Garhwal and Kumaon Army Regiments. This changed the demography further. However, the outmigration of local youth was limited to their service tenure. Besides, there was also seasonal migration of male population to clear the jungles in lower ranges of the Shivalik hills. Thus, a livelihood based on migration gained wider acceptance.

In recent decades, however, situation has changed drastically with large number of village inhabitants migrating out permanently with their families from the Hill Regions of the state mainly in search of better livelihoods and career of their children. Change in the climatic condition (an important determinant of inclusive development of the region) is another one of the strong reasons behind the migration, which has adversely affected soil and water conservation. More than three-fourth of Uttarakhand's total population depends on agriculture for their livelihood. However, small and fragmented land holdings, unavailability of new techniques, lack of high yield variety seeds, increasing human wildlife conflict and limited irrigation facilities are some of many problems which has forced majority of the rural population (particularly in the hills) either to survive on subsistence agriculture or migrate to other parts of the country for employment and better livelihood.

Lack of industrial infrastructure in the hilly regions is one of the biggest constraints in their development. The first mineral-based industry of the region namely Kumaon Iron Works Company had failed due to lack of infrastructural support facilities. The cold climate of the hill areas is suitable for the setting up of electronic industries. Setting up of H.M.T. unit at Ranibagh, Uptron T.V. and electronic units at Bhimtal and Industrial estates were very much a part of this thought process but lack of efforts to give boost to these industries led to their closure. Thus, one of the major challenges of the hilly region in Uttarakhand is to promote livelihood opportunities and generation of additional income to improve the quality of life, which in the long run may succeed in preventing outmigration. The main objective of the study is to know the reasons of out-migration, analyze the recent trends and recommend measures to curb migration from mountainous rural areas of Uttarakhand with case illustration of Patiya Village cluster located in the Lesser Himalayan Ranges of Uttarakhand.

Literature Review and Discussion with villagers of the project area

In recent times, incidents of increase in human-wildlife conflict, decrement in water resources and other problems are also contributing to the poor economic condition of hilly terrain. Many of the farmers are unable to grow enough crops to meet their annual household requirements due to climate change largely caused by increasing temperature and irregular rainfall, which is producing drought like conditions in the area thereby depleting forest cover and acreage. This has also reduced the water level further adding to declining acreage and the dry conditions. Recent studies have revealed that climate change has brought along with it a change in plant life cycle, intrusion of invasive species and change in soil characteristics, which has adversely affected the agricultural production along with forest resources. Studies also suggest that agricultural land all across the Himalayan States is further declining due to various reasons like population growth, depletion of natural resources and rapid urbanization. The inadequacy of land to carry out sustainable agriculture can be gauged by the fact that while a minimum of 0.2 hectares per capita arable land is necessary for practicing agriculture on a sustainable basis in Himalayan region, the average availability of cultivated land is merely 0.16 ha/person, in mountainous parts of Uttarakhand (Ashish, 1983).

Discussion with the villagers has revealed several factors (other than the climatic ones) that have impacted agricultural production in the hill regions. One of them is the government Public

Distribution System (PDS) which provides cheap ration to the below poverty line (BPL) population of the state. Availability of cheap ration has made villagers complacent, as they do not want to put in hard labour in the fields. This has created shortage of labour and even if available, they demand high charges, which further demotivate farmers from taking up cultivation. Few farmers indeed want to diversify their crops with improved tools but are discouraged due to lack of support from the government departments like agriculture and irrigation. As a result, no sooner than most of these farmers get other alternative livelihoods they are willing to abandon less rewarding agricultural operations. In addition, destruction of crops by wild animals (who come to these villages due to lack of wild resources) such as monkeys, wild boars, porcupines, leopards etc. have further impacted already declining agricultural activities. The younger generation of the villages, looking at the reduced livelihood opportunities and under the influence of easily accessible social media, look towards cities for a comfortable life. But lack of quality education and skills forces them to take lowly jobs (in hotels, roadside *dhabas* and small factories) in the cities. Here they earn negligible income that too at the cost of their health with practically no savings. The recent reverse migration of the villagers in the face of Corona pandemic substantiates the above argument.

Population studies corroborated by official documents suggest remarkable changes in population pattern in the Uttarakhand state, particularly during 2001–2020 when the state attained high economic growth. The available data pertaining to the years 2001–11 reveal that an overall growth of the population in the state has been 1.74%, whereas, the mountainous part of Uttarakhand recorded only 0.70% growth, which was much lower as compared to plains districts of the state where the population increased 2.82% during the same period. Similarly, the growth of the population in foothills was much higher compared to the growth of the population in the mountainous part of Uttarakhand. Almora and Pauri districts, located in the mountainous parts of Uttarakhand, registered an absolute decline in population with negative compound annual growth of −0.13 and −0.14 respectively during the period 2001–2011 (Mamgain and Reddy, 2015; Office of the Registrar General and Census Commissioner, 2013).

Studies related to the dynamics of out-migration and its impact on the local economy have suggested out-migration from Uttarakhand usually of longer duration and mainly to big cities and towns both intra as well as inter-state (Bora, 1996; Mamgain, 2004; Awasthi, 2012). The Migration

Commission of Uttarakhand, 2017 reported that about three-fourth (74%) of out-migrants from this state comprised of longer duration migrants as migrants took up salaried jobs either in government or in the private sector. This is at variance with the pattern of migration in the other parts of India where this process has been found to be cyclical in nature with peasants migrating to agriculturally prosperous regions for duration of 2 to 6 months.

Rural migration from Uttarakhand has been both intra and inter-state. The three tables given below based on The Migration Commission Report, 2018, displays the pattern of intra and inter-state migration, reasons for migration as well as the age factor of the migrants from two blocks of Almora district.

Table 1: Intra and Inter-state migration from Two Blocks of Almora District

Block	Destination of migrants (%)					
	Neighbouring Town	District Headquarter	Other Districts of the State	Outside the state	Outside the country	Total
Hawalbagh	6.25	12.50	35.00	46.25	0.00	100.00
Takula	2.31	15.04	29.80	52.67	0.18	100.00

Source: Migration Commission Report, 2018

Table 2: Reasons for Rural Migration from the two Blocks

Block	Reasons for migration (%)								
	Lack or employment (%)	Inadequate medical facilities (%)	Limited Educational opportunities (%)	Lack of Infrastructure (Roads, Electricity, Water, etc.) (%)	Low Farm Production and Productivity (%)	Cumulating family, Relative etc. for migration (%)	Crop losses caused by wild animals (%)	Other reasons(%)	Total
Hawalbagh	41.15	10.15	11.85	4.44	8.44	1.11	8.96	13.89	100.00
Takula	60.71	6.81	15.71	2.95	4.16	2.29	4.94	2.43	100.00

Source: Migration Commission Report, 2018

Table 3: Age of Migrants from the two Blocks

Block	Block wise age of Migrants (%)			
	Age <25 years (At Present)	Age 26-35 years (at present)	Age >35 years (at present)	Total
Hawalbagh	12.58	44.56	42.86	100.00
Takula	26.60	45.50	27.90	100.00

Source: Migration Commission Report, 2018

As the above Table 1 clearly shows that most of the migration from these two blocks has been inter-state. The Table 2, displays reasons of migration and highlights livelihood and employment as the major factor behind these migrations. While Table 3 indicates that tendency to migrate is most visible in the age group between 26-35 years and above 35 years.

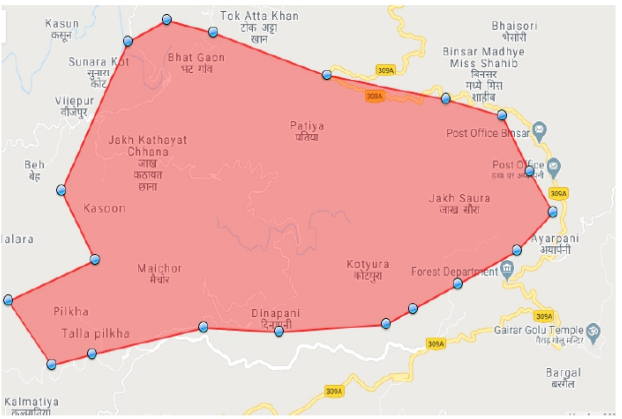
Materials and Methods

For understanding the recent patterns of migration, a total of 8 villages' viz. Maichor, Kasun and Pilkha from Hawalbagh block and Patiya, Jakhsaura, Kotyura, Bhetuli and Bhatgaon from Takula block were surveyed for the study, which will be henceforth addressed as "Patiya Village Cluster". The main objective of the study is to analyze the recent trends of out-migration in the mountainous rural areas of Uttarakhand with case illustration of Patiya Village cluster located in the Lesser Himalayan Ranges of Uttarakhand, at a distance of around 12 km from Almora. The cluster covers a geographical area of nearly 12.792 km^2 lying between an elevation of 1,300 m to1,550 m (Census 2011) including forest, barren land, cultivable and non-cultivable land. As per 2011 census figures, the total population of this cluster is 3927 out of which 1877 is SC population.

A sample of 307 households were selected from 831 households (Census 2011) covering eight villages around "Patiya Village Cluster" in Almora district with 4.44 margin of error and 95% confidence level. The sampling technique used for the socio-economic survey of the Patiya village cluster was Quota sampling technique which is used when the population is divided into groups on the basis of characteristics such as age, gender, nationality, job profile, educational level etc. so that the strata or sub-groups are heterogeneous in between and homogeneous within and the sampling units (household) do not overlap. The sample selected represents the whole population. Also, the population of each village is further divided into two categories i.e. SC and the other category which comprises of Brahmins and Rajputs. Households from each village were selected

in proportion to the total household of the village (Census 2011). A structured questionnaire was used as a base method for collecting primary data so that the sample is representative of the population of the cluster. The questionnaire included questions regarding the place of origin, place of migration, educational qualification and reasons for migration. The primary data was obtained through focused group discussion and door to door questionnaire survey conducted during October 2019 with the help of students of Ram Lal Anand College. Out of the 307 households, which were surveyed, there was no migration reported in 120 households.

An obvious limitation of this kind of door to door survey is that it generally relies on the subjective perception of the people and withholding information particularly related to monthly income of individual family members, family yearly income, landholding, etc. Therefore, data collected through this method suffers from usual limitations and margin of errors. The data collected were tabulated and analyzed using simple statistical tools like frequency, percentage, and ranking.



Map 1: Geographical Area of the selected sites

Results and Discussion

Table 4 below depicts the distribution of the total population sampled and the number of people that have migrated from the area. It was observed that Jakhsaura village of Takula Block showed maximum migration followed by Pilkha belonging to Hawalbagh block and Bhetuli and Patiya belonging to Takula block in the selected sample.

Table 4: Village-wise Distribution of Surveyed and Migrated Households (Hh) and Individuals

Name of Village	No. of Households (Census 2011)	No. of Households surveyed	Total No. of individuals in the surveyed households	No. of Households reporting migration	Percentage of Households reporting migration	Total No. of individuals migrated	Percentage of individuals migrated
Patiya	141	51	331	36	19.25	72	16.66
Bhetuli	147	54	341	32	17.11	72	16.66
Jakhsaura	113	42	280	26	14	77	17.8
Bhatgaon	36	12	63	7	3.7	11	2.5
Kotyura	143	55	340	33	17.64	59	13.65
Pilkha	121	45	302	27	14.4	77	16.66
Kasoon	83	33	221	21	11.22	53	12.26
Maichor	47	15	87	5	2.6	11	2.5
Total	831	307	1965	187	100	432	100

Source: Survey report

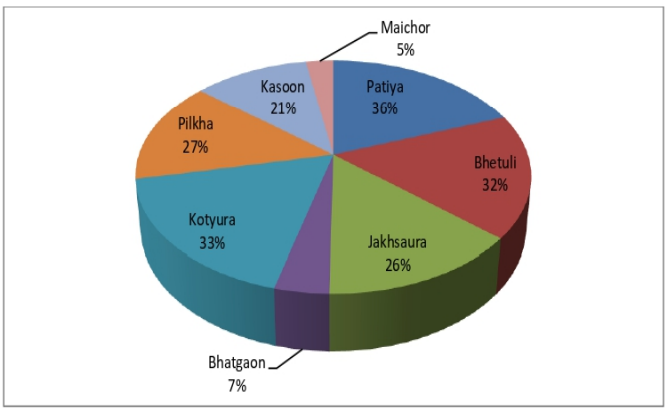


Fig. 2: village-wise distribution of migrated Hh migrated

Distribution of Migrants on Gender Basis: Table 5 depicts the study of the distribution of migrants on gender basis in rural hill areas. It was revealed that the majority of the migrants (75.2%) were male and only 24.8 percent of the migrants were female. This would suggest men opting out of agricultural activities and looking outside for jobs that generate more and quick money. A much lower percentage of women migrating indicate that majority are left behind to take care of children, old parents and pursue agricultural activities too thus overburdening themselves.

Table 5: Gender Distribution of Migrants

Name of Village	No. of Male migrants	% of Male migrants	No. of Female migrants	% of Female migrants	Total No. of Migrants
Patiya	52	72.22	20	27.77	72
Bhetuli	60	83.33	12	16.66	72
Jakhsaura	55	71.42	22	28.57	77
Bhatgaon	7	63.63	4	36.36	11
Kotyura	48	81.35	11	18.64	59
Pilkha	58	75.32	19	24.67	77
Kasoon	36	67.92	17	32.07	53
Maichor	9	81.81	2	18.18	11
Total	**325**	**75.2**	**107**	**24.8**	**432**

Source: Survey report

Place-wise distribution of migrants: Table 6 indicates that out of the total migration from the sampled villages, Inter-state migration is 69% (Delhi NCR's share being 45%) which is more than double of intra-state migration which is 31%. Apart from substantiating the Migration Commission Report, it also indicates inability of the state to generate enough employment opportunities for rural folk.

Table 6: Distribution of Migrated Population Based on Place of Migration (Inter-state, Intra-state and Outside Country)

	No. of Families							
Name of the Village	Intra-state Migration		Inter- state		Outside the country	Total migration outside the state	Percentage of migrations outside the state	Total
	No of Intra-state Migrants	Percentage of Intra-state Migrants	Interstate other than Delhi- NCR	Delhi - NCR)				
Patiya	22	30.6	20	30	0	50	69.4	72
Bhetuli	13	18	21	38	0	59	82	72
Jakhsaura	29	38	21	23	5	49	63.6	77
Bhatgaon	8	72.7	1	2	0	3	27.3	11
Kotyura	9	15	7	42	1	50	85	59
Pilkha	27	35	20	28	2	50	65	77
Kasoon	20	37.7	5	28	0	33	62.3	53
Maichor	7	63.6	1	3	0	4	36.4	11
Total	**134**	**31**	**95**	**195**	**8**	**298**	**69**	**432**

Source: Survey report

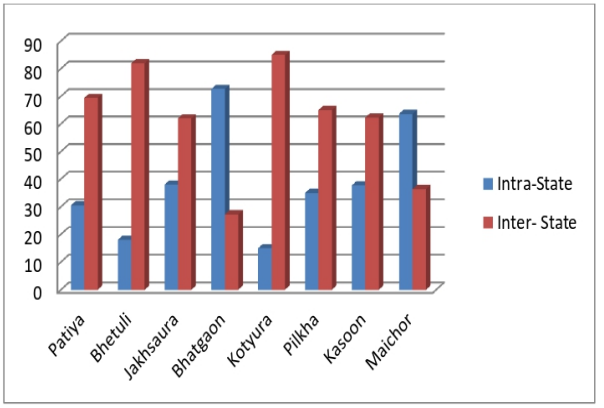


Fig 3: Distribution of Intra- state and Inter-state migrants

Distribution of Migrants based on Age: Table 7 indicates distribution of migrants based on age in rural hill areas. The survey revealed that majority of the migrants (49.8%) belonged to the age group of 15-30 years (49.8%) followed by the age group of 31-50 years (34.2%) suggesting that the productive age of the village has out migrated leading to the demographic downfall of the hilly area. It has been argued that draining away of productive human resource from mountains has serious implications not only for the economic development but also for the enrichment of socio-cultural life in the region (Maithani, 1996).

Table 7: Distribution of Migrants Based on Age

Name of Village	Age Distribution of Migrants					
	15-30 years	% of migrants in the age group 15 – 30 years	30 to 50 years	% of migrants in the age group 30 – 50 years	Above 50 years	% of migrants above 50 years of age
Patiya	40	55.55	16	22.22	10	13.88
Bhetuli	34	48.57	30	42.85	3	4.28
Jakhsaura	27	35.06	35	45.45	2	2.6
Bhatgaon	7	70	2	20	1	10
Kotyura	30	52.63	16	28.07	7	12.28
Pilkha	40	52.63	30	39.47	2	2.63
Kasoon	27	51	14	26.4	4	7.5
Maichor	6	66.6	2	22.2	1	11.1
Total	**211**	**49.8**	**145**	**34.2**	**30**	**7.1**

***Remaining 9% consists of the Age group of 0-14 presumed to be dependent on migrants.**

Social Categories of migrants: Importance of social categories in migration is widely acknowledged as it is an important indicator of socio-economic push and pulls factors of rural-urban migration. The social composition of the survey area of Patiya village Cluster (Table 8) is primarily made up of Brahmins, Rajputs and schedule caste. Survey report finds that the majority of the migration (50.3%) occurred from the households belonging to SC category. The lowest incidences of migration were reported from Brahmin households (23.0%). The primary reason behind larger migration from SC households appears to be unavailability of land holdings for farming, which is a major livelihood option in hilly areas.

Table 8: Social Category of Households with Migrants (N=187)

Name of Village	No. of families having one or more migrants						
	Brahmin	%of Brahmin families	Rajput	% of Rajput families	Schedule Caste (SC)	% of SC families	Total (N)
Patiya	9	24.32	7	18.9	21	56.75	37
Bhetuli	9	31	10	34.5	10	34.5	29
Jakhsaura	5	20	7	28	13	52	25
Bhatgaon	7	100	0	0	0	0	7
Kotyura	5	14.7	4	11.7	25	73.52	34
Pilkha	0	0	6	23	20	77	26
Kasoon	3	14.3	13	62	5	23.8	21
Maichor	5	62.5	3	37.5	0	0	8
Total	**43**	**23**	**50**	**26.7**	**94**	**50.3**	**187**

Source: Survey report

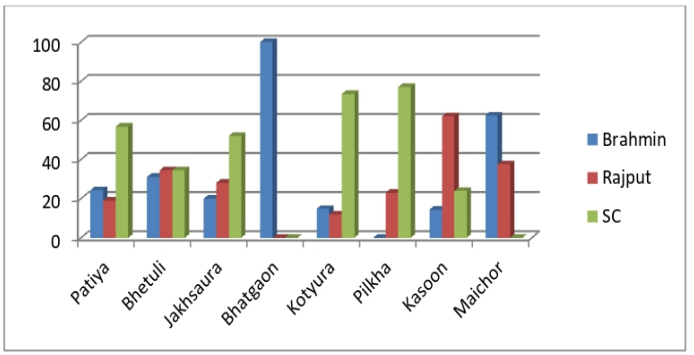


Fig 4: Distribution of migration based on Caste

Family-wise number of migrants from Rural Hill Areas: Our study (Table 9) shows that almost 60% of the families selected for the survey are affected by migration. It was found that majority of the families have 1 migrant member (51.30%) followed by families with 2 to 3 migrant members (33.20%) and families with more than 3 migrant members (15.5%). Bhatgaon and Kotyura show maximum migration followed by Patiya in 1 migrant category. It would be important to add here that during the survey, a number of houses in these villages were found to be empty and secluded as whole families have migrated from the hill village to the plains, indicating larger percentage of migration than the survey can depict.

Table 9: Distribution of Number of Families Based on Number of Migrant Members from the Family

Village	No. of Families						
	Families with 1 migrant member	% of families with one migrant	Families with 2-3 migrant members	% of families with 2-3 migrants	Families with more than 3 migrant members	% of families with more than 3 migrants	Total (N)
Patiya	23	63.88	9	25	4	11.11	36
Bhetuli	15	46.87	13	40.62	4	12.5	32
Jakhsaura	8	30.76	13	50	5	19.23	26
Bhatgaon	5	71.42	2	28.57	0	0	7
Kotyura	22	66.66	8	24.24	3	9.09	33
Pilkha	12	44.4	10	37.3	5	18.51	27
Kasoon	9	42.85	5	23.8	7	33.33	21
Maichor	2	40	2	40	1	20	5
Total	**96**	**51.3**	**62**	**33.2**	**29**	**15.5**	**187**

Source: Survey report

Distribution of Migrants based on Purpose of Migration: Our study (Table 10) showed that 274 out of 432 individuals migrated in search of better employment or due to unavailability of employment opportunities, followed by financial reasons (augmentation of income etc.) and better educational facilities.

Migration from Households based on Landholding: Our survey (Table11) has revealed that most of the migration (61.5%) occurred from the households having more than 4 Nali (Nali is unit of measurement used in Uttarakhand, where 1 Nali = .05 acre) of land followed by households having less than or equal to 2 Nali of land (22.5%). The lowest incidences of migration were reported from households possessing no land (0.50%). The study revealed that people who have migrated own more land, which directly affects the agriculture practices of the region as after migration

their agricultural land is either given to their relative or on a rental basis, and most of the time is left barren.

Table 10: Distribution of migrants based on Purpose of Migration

Name of Village	Purpose of Migration						
	Employment	Percentage	better education	Percentage	Financial	Percentage	Total (N)
Patiya	46	63.9	12	16.7	14	19.4	72
Bhetuli	51	70.8	7	9.7	14	19.4	72
Jakhsaura	46	59.7	6	7.8	25	32.5	77
Bhatgaon	5	45.5	2	18.2	4	36.4	11
Kotyura	44	74.6	2	3.4	13	22	59
Pilkha	41	53.2	9	11.7	27	35.1	77
Kasoon	32	60.4	11	20.8	10	18.9	53
Maichor	9	81.8	1	9.1	1	9.1	11
Total	**274**	**63.4**	**50**	**11.6**	**108**	**25**	**432**

Source: Survey report

Table 11: Distribution of Families with Migration Based on Size of Landholding (N=187)

Name of Village	No. of Hh Sampled	Distribution of Families with Migration						
		Less than equal to 2 Nali	% of families with land holding <=2 Nalis	2-4 Nali	% of families with land holding 2 – 4 Nalis	More than 4 Nalis	% of families with land holding >= 4 Nalis	Total (N)
Patiya	51	5	13.5	8	21.62	24	64.8	37
Bhetuli	54	5	17.24	5	17.24	19	65.5	29
Jakhsaura	42	4	16	2	8	18	72	25
Bhatgaon	12	2	28.57	1	14.28	4	57	7
Kotyura	55	13	38.2	3	8.8	18	53	34
Pilkha	45	6	23	5	19.23	14	53.8	26
Kasoon	33	6	28.57	0	0	14	66.66	21
Maichor	15	2	25	2	25	4	50	8
Total	**307**	**43**	**22.9**	**26**	**13.9**	**115**	**61.5**	**187**

Source: Survey report *1 Nali = 1/20 acre

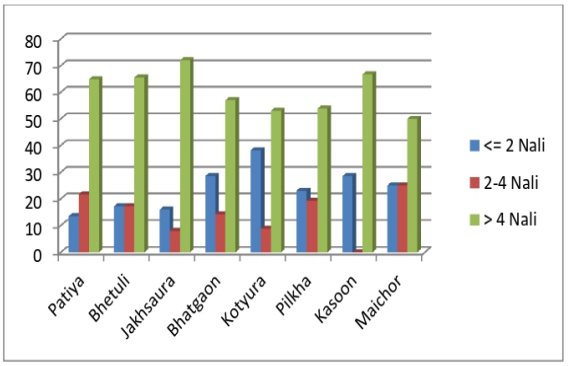


Fig 5: Distribution of migration on land Holding of Migrants

Distribution of migrants based on occupation: From Table 12, we observe that majority of the migrants (65.7 %) are in jobs in their respective places of migration. The rest of the migrants are housewives who migrate along with their family, children with parents or those looking for better educational facilities, others are those involved in small works like cooks, welding and labourers, etc. This situation prevails across all the villages.

A Chi-sq test between the educational qualification of the migrants and their occupation and also between educational qualification and their income was conducted. Both the statistics showed p-value = 0.000 which indicated that more educated or skilled a migrant is, better the job he will get which would automatically result in better income.

Table 12: Distribution of Migrants Based on Occupation (N=307)

Name of Village	House-wife	Percentage	Student	Percentage	Job	Percentage	Small Worker	Percentage	Any Other	Percentage
Patiya	8	11.1	13	18.1	48	66.7	0	0	3	4.2
Bhetuli	3	4.2	6	8.3	55	76.4	0	0	8	11.1
Jakhsaura	3	3.9	18	23.4	50	64.9	3	3.9	3	3.9
Bhatgaon	0	0	2	18.2	5	45.5	0	0	4	36.4
Kotyura	3	5.1	8	13.6	40	67.8	4	6.8	4	6.8
Pilkha	10	13	18	23.4	46	59.7	0	0	3	3.9
Kasoon	0	0	15	28.3	31	58.5	1	1.9	6	11.3
Maichor	1	9.1	1	9.1	9	81.8	0	0	0	0
Total	**28**	**6.5**	**81**	**18.8**	**284**	**65.7**	**8**	**1.9**	**31**	**7.2**

Source: Survey report

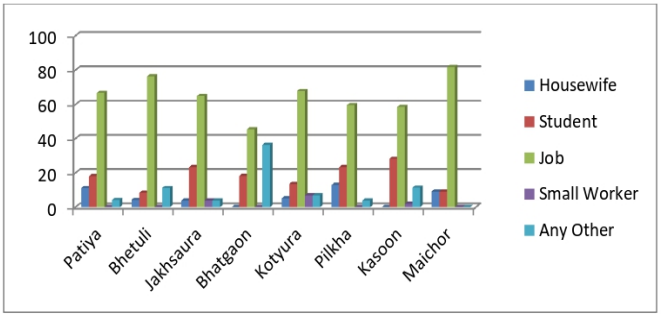


Fig 6: Distribution of migration based on occupation

Migration from Households based on Income Group: Distribution of household income of migrants shows (Table 13) that most of the migration (29.4%) occurred from the households having a monthly income of less than or equal to Rs 10000. There are only 11.8% of the migrant families whose monthly income is more than Rs 50000. This shows that for majority of the migrants, there has not been any change in the standard of living. This would suggest that if more income generating employment opportunities are created, government policies become more inclusive and attractive and some of the problems related to agriculture (like HWC) are mitigated, these migrants are likely to come back to their native places.

Table 13: Distribution of Households on the Basis of income (N=187)

Name of Village	No. of Hh Sampled	No. of migrated Families (%)				
		<=10000	10000-20000	20000-50000	> 50000	Total (N)
Patiya	51	38.88	22.2	16.66	8.3	36
Bhetuli	54	31.25	28.12	12.5	15.62	32
Jakhsaura	42	15.38	19.23	19.23	23.07	26
Bhatgaon	12	28.57	14.28	28.57	0	7
Kotyura	55	33.33	30.3	15.15	3	33
Pilkha	45	29.62	18.51	26	14.8	27
Kasoon	33	19	9.5	19	14.28	21
Maichor	15	40	60	0	0	5
Total	**307**	**29.4**	**23**	**17.6**	**11.8**	**187**

Source: Survey report

Households Category based on migration year Group: From our study (Table 14) on the year of migration, it shows that almost 60% of the migration from the Patiya Village Cluster took place after 2011, out of which maximum migration (82%) occurred from Bhatgaon whereas it was as

low as 18 % before 2011from the same village. The table also shows that at several villages of the cluster percentage of migration almost doubled after the year 2011.

Table 14: Distribution of Number of Household with Migration Based on Year of Migration (N=307)

Name of Village	No. of Migrants						
	1975–2000	2001- 2010	Before 2011	% of migration before 2011	After 2015	2011 onwards	% of migration after 2011
Patiya	9(12.5%)	14	23	32	19(26.38%)	49	68
Bhetuli	1(1.38%)	31	32	44.4	26(36%)	40	55.6
Jakhsaura	6(7.8%)	33	39	50.6	15(19.4%)	38	49.4
Bhatgaon	0	2	2	18.2	6(54.5%)	9	81.8
Kotyura	10(17%)	13	23	39	21(35.6%)	36	61
Pilkha	8(10.3%)	26	34	44	20(26%)	43	56
Kasoon	3(5.6%)	15	18	34.6	20(37.7%)	34	65.3
Maichor	2(18.18%)	4	6	54.5	3(27.3%)	5	45.5
Total	**39(9.0%)**	**138**	**177**	**41**	**130(30.1%)**	**254**	**59**

Source: Survey report

Measures to curb migration from the area

Discussion with villagers and literature from research papers suggests that villagers are no more interested in farming mainly due to climate change, HWC, lack of government policies to encourage farmers. In addition, no industrial infrastructure and lack of employment and better educational facilities are forcing them to move out in search of better job prospects and education. However, the villager's lack of educational qualification and necessary skills prevents them from getting better jobs in the area of migration and bring no change to their standard of living. Moreover, staying in polluted cities and in poor hygienic conditions affects their health. In such a scenario, many of them would like to migrate back to their villages provided they get better opportunities there. Table 15 shows that 57% of migrants are ready to come back to their native places.

The economic potential of the sampled villages is high but still not been realized due to lack of will power, financial instability, proper guidance and sustainable development plan. Through a proper development program based on an interdisciplinary and multi-faceted support plan, community work, self-help groups and additional employment opportunities created through a sustainable developmental approach, we can provide a viable plan for the development of the area.

Table 15: Village-wise Distribution of Number of Households and Population under Reverse Migration

Name of Village	No. of HH as per 2011 Census	No. of HH as per survey	No. of Households reporting migration	Total No. of individuals migrated	No. of individuals ready to come back	% age of those ready to come back	No. of Hh under Reverse Migration	No. of Individuals under Reverse Migration
Patiya	141	51	36	72	40	55.6	54	83
Bhetuli	147	54	32	72	43	59.7	28	36
Jakhsaura	113	42	26	77	40	51.9	37	52
Bhatgaon	36	12	7	11	11	100	29	46
Kotyura	143	55	33	59	40	67.8	51	90
Pilkha	121	45	27	77	34	44.2	66	119
Kasoon	83	33	21	53	30	56.6	24	44
Maichor	47	15	5	11	8	72.7	2	2
Total	**831**	**307**	**187**	**432**	**246**	**56.9**	**291**	**472**

Source: Primary Data collected by NMHS project staff by 02.06.2020

This in turn would partially rejuvenate the ecology and agricultural activity of the region, provide alternative livelihoods to the village inhabitants, and reduce the extent of out-migration. Therefore, we suggest a multifaceted approach (Fig. 7) for sustainable livelihood for these villages:

1. There is very little government intervention available in the hilly districts of Uttarakhand to help them mitigate the problem of HWC (Human-Wildlife Conflict). Solar powered fences, which provide pulsating current sending non-lethal shock waves to the animals on touching them, can provide some relief to the farmers. These shock waves create a psychological barrier. Advantage of using solar fences is human and animal safety, low cost, ease of construction, flexibility, long life and assurance of protection. The government may consider providing the farmers with solar fences, may be on a collective basis to save on the cost of fencing, for this panchayats should be encouraged to form self-help groups (SHG) and Cooperatives, so that the villages can go for collective farming, sharing their job responsibilities, cultivating together and finally selling the produce in the market through the cooperative and sharing the profit collectively. Some innovative ideas like use of Infra-Red cameras as sensors in combination with deterrents like audio (different sounds and hooters for alarm purpose) along with ultrasonic devices and bioacoustics, visual (smoke guns etc.) and taste deterrent scan also provide cost effective measures to mitigate HWC problem to a large extent.
2. Some of the non-forest land can also be used for the cultivation of medicinal plants, which are generally found in these foothills of Himalayas.

Figure 7: Model for mitigation of migration problem

3. Government with the help of its agencies like NMHS and NGOs can encourage constitution of village communities or groups for community orchards, where NGOs and other government agencies can carry out mobilization and provide technical knowhow to the villagers who would further implement the work in the orchards and finally market the produce through cooperatives.
4. Agriculture extension activities such as floriculture, herbal plants, fishery, dairy, mushroom cultivation, use of poly-houses to grow selected non-seasonal vegetables, flowers etc. should be encouraged on individual basis with help from government aids. The government can also provide the farmers with good quality seeds free of cost or at nominal charges for cash cum medicinal value crops like Gahat (Horse Gram: *Macroty-lomauniflorum*), Kala Bhat (Black Soyabean), Madira (*Echinochloafrumentacea*) etc. for good quality fruits saplings.
5. Rapid urbanization has led to a drastic reduction in the rocks exposed at several places. This has greatly reduced the availability of an important aspect of earth history preserved as a rock record. There is great demand globally to preserve geo-sites for future budding geoscientists. The geological heritage should be conserved and developed into a geo-

educational site. This would help not only in enhancing the understanding and concerns of the local people towards the environment but also provide an excellent opportunity to the students for learning and training on the geology of the Uttarakhand Himalaya. This would also attract many institutes to come for fieldwork and in turn provide a unique opportunity to the budget hospitality sector, which is in great demand among students and professionals. Uttarakhand govt. is already promoting the tourism industry, so if village tourism is encouraged near such sites it will serve a dual purpose and in addition, will provide tourism-based employment to the local inhabitants. In short, the government programs or policies should be such that they can utilize the untapped potential of the state for the development of the region and could check the prevailing problem of migration.

6. Migration from hilly areas can also be minimized by providing basic facilities like employment, medical, educational, easy government loans and resources for better livelihood in rural hilly areas. Both government and private agencies and NGOs must work in this direction and reduce the process of migration from the rural hills. Like the governmental policies to mitigate migration by increasing rural employment opportunities through livelihood intervention programs, such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in India.

Reverse migration in the scenario of COVID-19

Thousands of migrant laborers and workers were forced to take on unprecedented journeys back home after a nationwide lockdown was announced due to the outbreak of novel coronavirus pandemic. The Uttarakhand Rural Development & Migration Commission (URDMC) has recently published a set of recommendations to ensure that the migrant workers who returned to their respective villages due to the COVID-19 pandemic stay there permanently which can help reduce the ratio of Out-migration from this hilly state. The report stated that due to the COVID-19 crisis, 59,360 migrants from ten hill districts of Uttarakhand have already returned to their villages from different parts of the country and the world. The three hill districts, which witnessed the largest number of migrants returning due to COVID-19, are Pauri, Almora and Tehri as these are the districts having the largest number of migration cases.

The Uttarakhand government has sanctioned Rs.110 crore to all district magistrates to provide self-employment opportunities to migrant workers who have returned to the state.

The URMDC document also mentions that most of these returning migrants were involved in non-permanent jobs such as hotels, restaurants, private organizations and industries. The state of Uttarakhand has substantial prospects in the field of travel and tourism and thus these skilled workers can contribute to the state's economy in the long term. The Government is looking at this reverse migration as an opportunity to reduce out-migration from the state.

Table 15 (above) also depicts the number of households who migrated back to their native village after the COVID-19 crisis in the following sampled village. According to the following table, we observe that village Pilkha shows maximum number of reverse migrants followed by Patiya and Kotyura. Maichor has least number of reverse migrants.

It's the responsibility of the state government and agencies working in these areas to retain this population and use them in the development of the area and also to take this as an opportunity to reduce out-migration. This is the time for the government to convince reverse migrants to stay on and rebuild their lives in their native place by offering interest-free loans, subsidies and free electricity to set up eco-tourism and micro-enterprises. This is the time for rehabilitation of the villages that lost their people and turned into Ghosts Villages. Government can also provide support to them in terms of providing necessary help in setting up of ancillary units like food processing, jam, pickles, candies, juice (Rhododendron, lime, orange etc.) papad, badi making etc., encouraging cultivation of ginger, bay leafs and turmeric etc. Govt can also help them by providing latest tools and knowhow for agriculture. Uttarakhand_government has announced that loans worth Rs. 25 lakh in the manufacturing sector and Rs. 10 lakh in the service sector will be provided for projects under Mukhya Mantri Swarojgar Yojana through nationalised banks, scheduled commercial banks and co-operative banks.The state government has also added budget for employment-generating schemes such as the Veer Chandra Garhwali Yojana, which offers microcredit aimed to create sustainable employment opportunities in tourism and establish facilities to run taxis, buses, restaurants and tourism info centers. The schemes like home-stays, agro-farming, poly houses, geo-tourism, fisheries and mushroom cultivation can also help these migrants to stay at their native villages and live their remaining life in their own green pastures of the hilly state.

Conclusion

The present study deals with the migration pattern in hills covering various aspects of migration. The study identified a few factors directly associated with migration from hills as perceived by the villagers. The following findings were evident from the present study

- The majority of the rural hill families of the region have at least 1 migrant member from the family which is generally male in the age group of 15-30 years that comprises the workforce, thereby leaving behind women to look after, children, aged parents and fields.
- Migration was more common among the households belonging to the SC category. The majority of the migrants possessed more land that is more than 4 nali.
- The most important factor behind migration from hills is unemployment.
- Lastly, it has been observed that after the outbreak of COVID-19 huge number of villagers who were working in nearby cities or other states for better livelihood have returned to their native villages. This reverse migration can be taken as an opportunity to curb the problem of out-migration from the hilly villages by giving them employment and use the skills they have gained from their experiences.

The study suggested that more employment opportunities in terms of diversified farming, geo heritage tourism, agro-tourism, etc., should be promoted in rural hilly areas with supportive infrastructural facilities for education, health, market, electricity, drinking water, sanitation, etc., to retain the rural youths in these regions. The overall growth path of Uttarakhand has been impressive since its separation from Uttar Pradesh. However, this growth has created huge regional inequalities within the state. The growth process could hardly create productive employment and income opportunities in the hill region of Uttarakhand.

Implementation of new and applied schemes with the help of governmental and non- governmental institutions should be accelerated to reach a higher level of effectiveness along with the integrated development of the rural hilly area. An increase in farm income and provision of urban facilities in the hilly area may help in retaining youth from hills.

Acknowledgment

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n$\mathcal{I}_{\ddot{g}}$-CONTINUOUS FUNCTION IN NANO IDEAL TOPOLOGICAL SPACES

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ABSTRACT. In this article, we introduced n$\mathcal{I}_{\ddot{g}}$-interior, n$\mathcal{I}_{\ddot{g}}$-closure and study some of its basic properties. we introduced and studied n$\mathcal{I}_{\ddot{g}}$-continuous function, n$\mathcal{I}_{\ddot{g}}$-irresolute function and study their properties in nano ideal topological spaces.

1. INTRODUCTION

Let (U, $\mathcal{N}$, $\mathcal{I}$) be an nano ideal topological space with an ideal $\mathcal{I}$ on U, where $\mathcal{N} = \tau_R(X) and (.)_n^* : \wp(U) \to \wp(U)$ ($\wp$(U) is the set of all subsets of U) [9, 10]. For a subset A $\subseteq$U, $A_n^*(\mathcal{I}, \mathcal{N})$={x$\in$U : $G_n \cap$ A $\notin \mathcal{I}$, for every $G_n \in G_n(x)$}, where G_n={G_n | x$\in G_n$, $G_n \in \mathcal{N}$}is called the nano local function(brielfy n-local function) of A with repect to $\mathcal{I}$ and $\mathcal{N}$. We will simply write A_n^* for A_n^* ($\mathcal{I}$, $\mathcal{N}$). Nano ideal generalized closed sets were introduced and studied by Parimala et al [10]. Recently, Ganesan et al [6] introduced the notion of n$\mathcal{I}_{\ddot{g}}$-closed sets and investigated its fundamental properties. In this article, we first introduced n$\mathcal{I}_{\ddot{g}}$-interior, n$\mathcal{I}_{\ddot{g}}$-closure and study some of its basic properties. We introduced and studied n$\mathcal{I}_{\ddot{g}}$-continuous function, n$\mathcal{I}_{\ddot{g}}$-irresolute function. We also discuss some properties of n$\mathcal{I}_{\ddot{g}}$-continuous in nano ideal topological spaces.

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2. PRELIMINARIES

Definition 2.1. [8]

Let U be a non-empty finite set of objects called the universe and R be an equivalence relation on U named as the indiscernibility relation. Elements belonging to the same equivalence class are said to be indiscernible with one another. The pair (U, R) is said to be the approximation space. Let $X \subseteq U$.

(1) *The lower approximation of X with respect to R is the set of all objects, which can be for certain classified as X with respect to R and it is denoted by* $L_R(X)$. *Thatis,* $L_R(X) = \bigcup x \epsilon U\{R(X) : R(X) \subseteq X\}$ *where R(x) denotes the equivalence class determined by X.*

(2) *The upper approximation of X with respect to R is the set of all objects, which can be possibly classified as X with respect to R and it is denoted by* $U_R(X)$. *Thatis,* $U_R(X) = \bigcup x \epsilon U\{R(X) : R(X) \cap X \neq \phi\}$.

(3) *The boundary region of X with respect to R is the set of all objects, which can be neither in nor as not-X with respect to R and it is denoted by* $B_R(X)$. $(ie), B_R(X) = U_R(X) - L_R(X)$.

If (U, R) is an approximation space and X, Y ⊆ U, then

(1) $L_R(X) \subseteq X \subseteq U_R(X)$.

(2) $L_R(\phi) = U_R(\phi) = \phi$, $L_R(U) = U_R(U) = U$.

(3) $U_R(X \cup Y) = U_R(X) \cup U_R(Y)$.

(4) $U_R(X \cap Y) \subseteq U_R(X) \cap U_R(Y)$.

(5) $L_R(X \cup Y) \supseteq L_R(X) \cup L_R(Y)$.

(6) $L_R(X \cap Y) = L_R(X) \cap L_R(Y)$.

(7) $L_R(X) \subseteq L_R(Y) and U_R(X) \subseteq U_R(Y) whenever X \subseteq Y$.

(8) $U_R(X^c) = [L_R(X)]^c$ and $L_R(X^c) = [U_R(X)]^c$.

(9) $U_R(U_R(X)) = L_R(U_R(X)) = U_R(X)$.

(10) $L_R(L_R(X)) = U_R(L_R(X)) = L_R(X)$.

Definition 2.3. [8] *Let U be an universe, R be an equivalence relation on U and* $\tau_R(X) = \{U, \phi, L_R(X), U_R(X), B_R(X)\}$ *where* $X \subseteq U$. *Then by Property 2.2,* $\tau_R(X)$ *satisfies the following axioms*

(1) $U, \phi \in \tau_R(X)$.

(2) *The union of the elements of any sub-collection of* $\tau_R(X)$ *is in* $\tau_R(X)$.

(3) *The intersection of the elements of any finite sub collection of* $\tau_R(X)$ *is in* $\tau_R(X)$.

Then $\tau_R(X)$ *is called the Nano topology on U with respect to X.*

The space (K, $\tau_R(X)$*) is the Nano topological space. The elements of are called Nano open sets.*

Definition 2.4. [8]

If (U, $\tau_R(X)$*) is the Nano topological space with respect to X where* $X \subseteq U$ *and if* $M \subseteq U$, *then*

(1) *The Nano interior of the set M is defined as the union of all Nano open subsets contained in M and it is denoted by NInte(M). That is, NInte(M) is the largest Nano open subset of M.*

(2) *The Nano closure of the set M is defined as the intersection of all Nano closed sets containing M and it is denoted by NClo(M). That is, NClo(M) is the smallest Nano closed set containing M.*

Definition 2.5. [8] *A subset M of a space (U, $\tau_R(X)$) is said to be nano semi-open set if $M \subseteq$ Nclo(Ninte(M)). The complement of nano semi-open set is called nano semi-closed set.*

The Nano Nano semi-closure [2, 3] of a subset M of U, denoted by Nsclo(M) is defined to be the intersection of all Nano semi-closed sets of (U, $\tau_R(X)$) containing M.

Definition 2.6. *A subset M of a space (U, $\tau_R(X)$) is called*

(1) *Nano semi generalized closed (briefly, Nsg-closed) set* [2] *if Nsclo(M) $\subseteq$ T whenever $M \subseteq T$ and T is Nano semi-open in (U, $\tau_R(X)$). The complement of Nsg-closed set is called Nsg-open set.*

(2) *Nano ̈g-closed (briefly, N ̈g-closed) set* [12] *if Nclo(M) $\subseteq$ T whenever $M \subseteq T$ and T is Nsg-open in (U, $\tau_R(X)$). The complement of N ̈g-closed set is called N ̈g-open set.*

Theorem 2.7. [9, 10] *Let (U, $\mathcal{N}$) be a nano topological space with ideal $\mathcal{I}$, $\mathcal{I}'$ on U and A, B be subsets of U. Then*

(1) $A \subseteq B \Rightarrow A_n^* \subseteq B_n^*$.

(2) $\mathcal{I} \subseteq \mathcal{I}' \Rightarrow A_n^*(\mathcal{I}') \subseteq A_n^*(\mathcal{I})$.

(3) A_n^*=n-cl(A_n^*) $\subseteq$ n-cl(A) (A_n^* *is a nano closed subset of* n-cl(A)).

(4) $(A_n^*)_n^* \subseteq A_n^*$.

(5) $A_n^* \cup B_n^* = (A \cup B)_n^*$

(6) $A_n^* - B_n^* = (A - B)_n^* - B_n^* \subseteq (A - B)_n^*$.

(7) $V \in \mathcal{N} \Rightarrow V \cap A_n^* = V \cap (V \cap A)_n^* \subseteq (V \cap A)_n^*$ *and*

(8) $J \in \mathcal{I} \Rightarrow (A \cup J)_n^* = A_n^* = (A - J)_n^*$

Lemma 2.8. [9, 10] *Let* $(U, \mathcal{N}, \mathcal{I})$ *be an nano topological space with an ideal* $\mathcal{I}$ *and* $A \subseteq A_n^*$, *then* A_n^*=n-cl(A_n^*)=n-cl(A)

Definition 2.9. [9, 10] *Let* $(U, \mathcal{N})$ *be an nano topological space with an ideal* $\mathcal{I}$ *on* U. *The set operator* $n\text{-}cl^*$ *is called a nano* $\star$ *-closure and is defined as* $n\text{-}cl^*(A) = A \cup A_n^*$ *for* $A \subseteq X$.

Theorem 2.10. [9, 10] *The set operator* $n\text{-}cl^*$ *satisfies the following conditions:*

(1) $A \subseteq n\text{-}cl^*(A)$.

(2) $n\text{-}cl^*(\phi) = \phi$ *and* $n\text{-}cl^*(U) = U$.

(3) *If* $A \subseteq B$, *then* $n\text{-}cl^*(A) \subseteq n\text{-}cl^*(B)$.

(4) $n\text{-}cl^*(A) \cup n\text{-}cl^*(B) = n\text{-}cl^*(A \cup B)$

(5) $n\text{-}cl^*(n\text{-}cl^*(A)) = n\text{-}cl^*(A)$

Definition 2.11. [9, 10] *A subset A of a nano ideal topological space* $(U, \mathcal{N}, \mathcal{I})$ *is* $n\star$*-closed if* $A_n^* \subseteq A$.

Definition 2.12. [6] *A subset A of an nano ideal topological space* $(O, \mathcal{N}, \mathcal{I})$ *is said to be*

(1) $n\mathcal{I}_{\ddot{g}}$*-closed if* $A_n^* \subseteq V$ *whenever* $A \subseteq V$ *and V is nsg-open.*

(2) $n\mathcal{I}_{\ddot{g}}$*-open if its complement is* $n\mathcal{I}_{\ddot{g}}$*-closed.*

Remark 2.13. *The collection of all $n\mathcal{I}_{\ddot{g}}$-closed(resp. $n\mathcal{I}_{\ddot{g}}$-open) sets is denoted by $n\mathcal{I}_{\ddot{g}}$-$c(\mathcal{N})$ (resp.$n\mathcal{I}_{\ddot{g}}$-$o(\mathcal{N})$).*

Definition 2.14. [11] *A subset A of a nano ideal topolgical space $(U, \mathcal{N}, \mathcal{I})$ is said to be nano-$\mathcal{I}$-open (briefly, $n\mathcal{I}$-open) if $A \subseteq n\text{-}int(A^*_n)$.*

Remark 2.15. (1) *Every n-closed set is $n\star$-closed but not conversely* [1].

(2) *Every $n\star$-closed set is $n\mathcal{I}_{\ddot{g}}$-closed but not conversely* [6].

Definition 2.16. *A function f: $(K, \mathcal{N}, \mathcal{I}) \to (L, \mathcal{N}')$ is said to be $n\star$-continuous* [7] *if $f^{-1}(A)$ is $n\star$-closed in $(K, \mathcal{N}, \mathcal{I})$ for every n-closed set A of $(L, \mathcal{N}')$.*

3. $n\mathcal{I}_{\ddot{g}}$-INTERIOR AND $n\mathcal{I}_{\ddot{g}}$-CLOSURE

Definition 3.1. [4] *For any $M \subseteq O$, $n\mathcal{I}$-int(M) is defined as the union of all $n\mathcal{I}$-open sets contained in M. i.e., $n\mathcal{I}$-$int(M) = \cup \{G : G \subseteq M$ and G is $n\mathcal{I}$-open$\}$.*

Definition 3.2. *For any $M \subseteq O$, $n\mathcal{I}_{\ddot{g}}$-int(M) is defined as the union of all $n\mathcal{I}_{\ddot{g}}$-open sets contained in M. i.e., $n\mathcal{I}_{\ddot{g}}$-$int(M) = \cup \{G : G \subseteq M$ and G is $n\mathcal{I}_{\ddot{g}}$-open$\}$.*

Lemma 3.3. *For any $M \subseteq O$, $n\mathcal{I}$-$int(M) \subseteq n\mathcal{I}_{\ddot{g}}$-$int(M) \subseteq M$.*

Proof. The proof follows from Definition 3.1 and Definition 3.2.

The following two Propositions are easy consequences from definitions.

Proposition 3.4. *For any $M \subseteq O$, the following holds.*

(1) *$n\mathcal{I}_{\ddot{g}}$-int(M) is the largest $n\mathcal{I}_{\ddot{g}}$-open set contained in M.*

(2) *M is $n\mathcal{I}_{\ddot{g}}$-open if and only if $n\mathcal{I}_{\ddot{g}}$-$int(M) = M$.*

Proposition 3.5. *For any subsets M and P of $(O, \mathcal{N}, \mathcal{I})$, the following holds.*

(1) *$n\mathcal{I}_{\ddot{g}}$-$int(M \cap P) = n\mathcal{I}_{\ddot{g}}$-$int(M) \cap n\mathcal{I}_{\ddot{g}}$-$int(P)$.*

(2) $n\mathcal{I}_{\ddot{g}}$-$int(M \cup P) \supseteq n\mathcal{I}_{\ddot{g}}$-$int(M) \cup n\mathcal{I}_{\ddot{g}}$-$int(P)$.

(3) *If* $M \subseteq P$, *then* $n\mathcal{I}_{\ddot{g}}$-$int(M) \subseteq n\mathcal{I}_{\ddot{g}}$-$int(P)$.

(4) $n\mathcal{I}_{\ddot{g}}$-$int(O) = O$ *and* $n\mathcal{I}_{\ddot{g}}$-$int(\phi) = \phi$.

Definition 3.6. *For every set* $M \subseteq O$, *we define the* $n\mathcal{I}_{\ddot{g}}$*-closure of* M *to be the intersection of all* $n\mathcal{I}_{\ddot{g}}$*-closed sets containing* M. *i.e.,* $n\mathcal{I}_{\ddot{g}}$-$cl^*(M) = \cap \{F : M \subseteq F \in n\mathcal{I}_{\ddot{g}}c(\mathcal{N})$.

Lemma 3.7. *For any* $M \subseteq O$, $M \subseteq n\mathcal{I}_{\ddot{g}}$-$cl^*(M) \subseteq n$-$cl^*(M)$.

Proof. The proof follows from Remark 2.15(2).

Remark 3.8. *Both containment relations in Lemma 3.7 may be proper as seen from the following example.*

Example 3.9. *Let* $O = \{a, b, c\}$, *with* $O/R = \{\{c\}, \{a, b\}, \{b, a\}\}$ *and* $X = \{a, b\}$. *Then the Nano topology* $\mathcal{N} = \{\phi, \{a, b\}, O\}$ *and* $\mathcal{I} = \{\emptyset, \{a\}\}$. *Then* $n\mathcal{I}_{\ddot{g}}$*-closed sets are* ϕ, O, $\{a\}$, $\{c\}$, $\{a, c\}$, $\{b, c\}$. *Let* $A = \{b\}$. *Here* $n\mathcal{I}_{\ddot{g}}$-$cl^*(\{b\}) = \{b, c\}$, n-$cl^*(\{b\}) = O$ *and so* $A \subseteq n\mathcal{I}_{\ddot{g}}$-$cl^*(A) \subseteq n$-$cl^*(A)$.

The following two Propositions are easy consequences from definitions.

Proposition 3.10. *For any* $M \subseteq O$, *the following holds.*

(1) $n\mathcal{I}_{\ddot{g}}$-$cl^*(M)$ *is the smallest* $n\mathcal{I}_{\ddot{g}}$*-closed set containing* M.

(2) M *is* $n\mathcal{I}_{\ddot{g}}$*-closed if and only if* $n\mathcal{I}_{\ddot{g}}$-$cl^*(M) = M$.

Proposition 3.11. *For any two subsets* M *and* P *of* $(O, \mathcal{N}, \mathcal{I})$, *the following holds.*

(1) *If* $M \subseteq P$, *then* $n\mathcal{I}_{\ddot{g}}$-$cl^*(M) \subseteq n\mathcal{I}_{\ddot{g}}$-$cl^*(P)$.

(2) $n\mathcal{I}_{\ddot{g}}$-$cl^*(M \cap P) \subseteq n\mathcal{I}_{\ddot{g}}$-$cl^*(M) \cap n\mathcal{I}_{\ddot{g}}$-$cl^*(P)$.

Proposition 3.12. *Let M be a subset of a space O, then the following are true.*

(1) $(n\mathcal{I}_{\ddot{g}}\text{-}int(M))^c = n\mathcal{I}_{\ddot{g}}\text{-}cl^*(M^c)$.

(2) $n\mathcal{I}_{\ddot{g}}\text{-}int(M) = (n\mathcal{I}_{\ddot{g}}\text{-}cl^*(M^c))^c$.

(3) $n\mathcal{I}_{\ddot{g}}\text{-}cl^*(M) = (n\mathcal{I}_{\ddot{g}}\text{-}int(M^c))^c$.

Proof

(1) Clearly follows from definitions.

(2) Follows by taking complements in (1).

(3) Follows by replacing M by M^c in (1).

4. $n\mathcal{I}_{\ddot{g}}$-CONTINUOUS FUNCTION

Definition 4.1. [5] *A function f: $(O, \mathcal{N}, \mathcal{I}) \to (P, \mathcal{N}')$ is called $n\mathcal{I}_{\ddot{g}}$-continuous if $f^{-1}(V)$ is a $n\mathcal{I}_{\ddot{g}}$-closed set of $(O, \mathcal{N}, \mathcal{I})$ for every n-closed set V of $(P, \mathcal{N}')$.*

Proposition 4.2. *Every $n\star$-continuous is $n\mathcal{I}_{\ddot{g}}$-continuous but not conversely.*

Proof. The proof follows from Remark 2.15(2).

Example 4.3. *Let $O, \mathcal{N}$ and $\mathcal{I}$ be defined as Example 3.9. Then $n\star$-closed sets are ϕ, O, $\{a\}$, $\{c\}$, $\{a, c\}$. Let $P = \{a, b, c\}$ with with $P/R = \{\{a\}, \{b, c\}\}$ and $X = \{a, b\}$. Then the Nano topology $\mathcal{N}' = \{\phi, \{a\}, \{b, c\}, P\}$ and $\mathcal{J} = \{\emptyset\}$. Then $n\mathcal{I}_{\ddot{g}}$-closed sets are ϕ, O, $\{a\}$, $\{b, c\}$. Define f: $(O, \mathcal{N}, \mathcal{I}) \to (P, \mathcal{N}')$ be the identity function. Then f is $n\mathcal{I}_{\ddot{g}}$-continuous but not $n\star$-continuous, since $f^{-1}(\{b, c\}) = \{b, c\}$ is not $n\star$-closed in $(O, \mathcal{N}, \mathcal{I})$.*

Remark 4.4. *The composition of two $n\mathcal{I}_{\ddot{g}}$-continuous functions need not be $n\mathcal{I}_{\ddot{g}}$-continuous and this is shown from the following example.*

Example 4.5. *Let O, $\mathcal{N}$ and $\mathcal{I}$ be as in Example 3.9. Let P = {a, b, c}, with P/ R= {{a}, {b, c}} and X= {a}. Then the Nano topology $\mathcal{N}'$ = {ϕ, {a}, P} and $\mathcal{I}$={$\emptyset$, {a}}. Then n$\mathcal{I}_{\ddot{g}}$-closed sets are ϕ, P, {a}, {b, c}. Let Q = {a, b, c} with Q/ R= {{b}, {a, c}} and X= {b, c}. Then the Nano topology $\mathcal{N}'_*$= {ϕ, {b}, {a, c}, Q} and $\mathcal{K}$ = {$\emptyset$}. Define f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) by f(a) = b, f(b) = a and f(c) = c. Define g : (P, $\mathcal{N}'$, $\mathcal{J}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$) by g(a) = b, g(b) = c and g(c) = a. Clearly f and g are n$\mathcal{I}_{\ddot{g}}$-continuous but their g $\circ$ f : (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$) is not n$\mathcal{I}_{\ddot{g}}$-continuous, because V = {b} is n-closed in (Q, $\mathcal{N}'_*$) but (g $\circ$ f^{-1}({b})= $f^{-1}(g^{-1}(\{b\})) = f^{-1}(\{a\}) = \{b\}$, which is not n$\mathcal{I}_{\ddot{g}}$-closed in (O, $\mathcal{N}$, $\mathcal{I}$) .*

Proposition 4.6. *A function f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$) is n$\mathcal{I}_{\ddot{g}}$-continuous if and only if f^{-1}(U) is n$\mathcal{I}_{\ddot{g}}$-open in (O, $\mathcal{N}$, $\mathcal{I}$) for every n-open set U in (P, $\mathcal{N}'$).*

Proof. Lct f: (O, $\mathcal{N}$, $\mathcal{I}$) › (P, $\mathcal{N}'$) bc n$\mathcal{I}_{\ddot{g}}$-continuous and U bc an n-opcn sct in (P, $\mathcal{N}'$). Then U^c is n-closed in (P, $\mathcal{N}'$) and since f is n$\mathcal{I}_{\ddot{g}}$-continuous, $f^{-1}(U^c)$ is n$\mathcal{I}_{\ddot{g}}$-closed in (O, $\mathcal{N}$, $\mathcal{I}$) . But $f^{-1}(U^c) = f^{-1}((U))^c$ and so f^{-1}(U) is n$\mathcal{I}_{\ddot{g}}$-open in (O, $\mathcal{N}$, $\mathcal{I}$).

Conversely, assume that f^{-1}(U) is n$\mathcal{I}_{\ddot{g}}$-open in (O, $\mathcal{N}$, $\mathcal{I}$) for each n-open set U in (P, $\mathcal{N}'$). Let F be a n-closed set in (P, $\mathcal{N}'$). Then F^c is n-open in (P, $\mathcal{N}'$) and by assumption, $f^{-1}(F^c)$ is n$\mathcal{I}_{\ddot{g}}$-open in (O, $\mathcal{N}$, $\mathcal{I}$). Since $f^{-1}(F^c) = f^{-1}((F))^c$, we have f^{-1}(F) is n-closed in (O, $\mathcal{N}$, $\mathcal{I}$) and so f is n$\mathcal{I}_{\ddot{g}}$-continuous.

We introduce the following definition

Definition 4.7. *A function f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) is called n$\mathcal{I}_{\ddot{g}}$-irresolute if f^{-1}(V) is a n$\mathcal{I}_{\ddot{g}}$-closed set of (O, $\mathcal{N}$, $\mathcal{I}$) for every n$\mathcal{I}_{\ddot{g}}$-closed set V of (P, $\mathcal{N}'$, $\mathcal{J}$).*

Theorem 4.8. *Every n$\mathcal{I}_{\ddot{g}}$-irresolute function is n$\mathcal{I}_{\ddot{g}}$-continuous but not conversely.*

Proof. Let f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) be a n$\mathcal{I}_{\ddot{g}}$-irresolute function. Let V be a n-closed set of (P, $\mathcal{N}'$). Then by the Remark 2.15 (1) and (2), V is n$\mathcal{I}_{\ddot{g}}$-closed. Since f is n$\mathcal{I}_{\ddot{g}}$-irresolute, then f^{-1}(V) is a n$\mathcal{I}_{\ddot{g}}$-closed set of (O, $\mathcal{N}$, $\mathcal{I}$). Therefore f is n$\mathcal{I}_{\ddot{g}}$-continuous.

Example 4.9. *Let O = {a, b, c}, with O/ R= {{c}, {a, b}} and X= {a, c}. Then the Nano topology $\mathcal{N}$ = {ϕ, {c}, {a, b}, O} and $\mathcal{I}$ = {$\emptyset$}. Then n$\mathcal{I}_{\ddot{g}}$-closed sets are ϕ, O, {c}, {a, b}. Let P = {a, b, c} with with P/ R= {{c}, {a, b}, {b, a}} and X= {a, b}. Then the Nano topology $\mathcal{N}'$ = {ϕ, {a, b}, P} and $\mathcal{J}$ = {$\emptyset$, {a}}. Then n$\mathcal{I}_{\ddot{g}}$-closed sets are ϕ, P, {a}, {c}, {a, c}, {b, c}. Define f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) be the identity function. (i) Because V = {c} is n-closed on (P, $\mathcal{N}'$) it is clear that f^{-1}({c}) ={c} is n$\mathcal{I}_{\ddot{g}}$-closed set of (O, $\mathcal{N}$, $\mathcal{I}$). (ii) It is clear that {b, c} is n$\mathcal{I}_{\ddot{g}}$-closed set of (P, $\mathcal{N}'$, $\mathcal{J}$) but f^{-1}({b, c}) ={b, c} is not a n$\mathcal{I}_{\ddot{g}}$-closed set of (O, $\mathcal{N}$, $\mathcal{I}$). Thus f is not n$\mathcal{I}_{\ddot{g}}$-irresolute function. However f is n$\mathcal{I}_{\ddot{g}}$-continuous function.*

Theorem 4.10. *Let f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) and g : (P, $\mathcal{N}'$, $\mathcal{J}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$) be any two functions. Then*

(1) *g $\circ$ f is n$\mathcal{I}_{\ddot{g}}$-continuous if g is n$\star$-continuous and f is n$\mathcal{I}_{\ddot{g}}$-continuous.*
(2) *g $\circ$ f is n$\mathcal{I}_{\ddot{g}}$-irresolute if both f and g are n$\mathcal{I}_{\ddot{g}}$-irresolute.*
(3) *g $\circ$ f is n$\mathcal{I}_{\ddot{g}}$-continuous if g is n$\mathcal{I}_{\ddot{g}}$-continuous and f is n$\mathcal{I}_{\ddot{g}}$-irresolute.*

Proof. (1) Since g is a n$\star$-continuous from (P, $\mathcal{N}'$, $\mathcal{J}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$), for any n-closed set q as a subset of Q, we get g^{-1}(q) = G is a n-closed set in (P, $\mathcal{N}'$, $\mathcal{J}$). As f is a n$\mathcal{I}_{\ddot{g}}$-continuous function. We get $(g \circ f)^{-1}$(q)= $f^{-1}(g^{-1}(q))$ = f^{-1}(G) = S and S is a n$\mathcal{I}_{\ddot{g}}$-closed set in (O, $\mathcal{N}$, $\mathcal{I}$). Hence (g $\circ$ f) is a n$\mathcal{I}_{\ddot{g}}$-continuous function.
(2) Consider two n$\mathcal{I}_{\ddot{g}}$-irresolute functions, f: (O, $\mathcal{N}$, $\mathcal{I}$) $\rightarrow$ (P, $\mathcal{N}'$, $\mathcal{J}$) and g : (P, $\mathcal{N}'$, $\mathcal{J}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$) is a n$\mathcal{I}_{\ddot{g}}$-irresolute functions. As g is consider to be a n$\mathcal{I}_{\ddot{g}}$-irresolute

function, by Definition 4.7, for every n$\mathcal{I}_{\ddot{g}}$-closed set q $\subseteq$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$), $g^{-1}(q)$ = G is a n$\mathcal{I}_{\ddot{g}}$-closed in (P, $\mathcal{N}'$, $\mathcal{J}$). Again since f is n$\mathcal{I}_{\ddot{g}}$-irresolute, $(g \circ f)^{-1}(q) = f^{-1}(g^{-1}(q)) = f^{-1}(G)$ = S and S is a n$\mathcal{I}_{\ddot{g}}$-closed set in (O, $\mathcal{N}$, $\mathcal{I}$). Hence (g $\circ$ f) is a n$\mathcal{I}_{\ddot{g}}$-irresolute function.

(3) Let g be a n$\mathcal{I}_{\ddot{g}}$-continuous function from (P, $\mathcal{N}'$, $\mathcal{J}$) $\rightarrow$ (Q, $\mathcal{N}'_*$, $\mathcal{K}$) and q subset of Q be a n-closed set. Therefore $g^{-1}(q)$ is a n$\mathcal{I}_{\ddot{g}}$-closed set in (P, $\mathcal{N}'$, $\mathcal{J}$), by Remark 2.15 (1) and (2), $g^{-1}(q)$ = G is a n$\mathcal{I}_{\ddot{g}}$-closed set in (P, $\mathcal{N}'$, $\mathcal{J}$). Also since f is n$\mathcal{I}_{\ddot{g}}$-irresolute, we get $(g \circ f)^{-1}(q) = f^{-1}(g^{-1}(q)) = f^{-1}(G)$ = S and S is a n$\mathcal{I}_{\ddot{g}}$-closed set in (O, $\mathcal{N}$, $\mathcal{I}$). Hence (g $\circ$ f) is a n$\mathcal{I}_{\ddot{g}}$-continuous function.

Definition 4.11. *Let (O, $\mathcal{N}$, $\mathcal{I}$) be a nano ideal topological space. Let o be a point of O and G be a subset of O. Then G is called an n$\mathcal{I}_{\ddot{g}}$-neighbourhood of o (briefly, n$\mathcal{I}_{\ddot{g}}$-nbhd of o) in O if there exists an n$\mathcal{I}_{\ddot{g}}$-open set S of O such that o $\in$ S $\subseteq$ G.*

Proposition 4.12. *Let M be a subset of (O, $\mathcal{N}$, $\mathcal{I}$). Then o $\in$ n$\mathcal{I}_{\ddot{g}}$-cl*(M) if and only if for any n$\mathcal{I}_{\ddot{g}}$-nbhd G_o of o in (O, $\mathcal{N}$, $\mathcal{I}$), M $\cap$ $G_o \neq \phi$.*

Proof. Necessity. Assume o $\in$ n$\mathcal{I}_{\ddot{g}}$-cl*(M). Suppose that there is an n$\mathcal{I}_{\ddot{g}}$-nbhd G of the point o in (O, $\mathcal{N}$, $\mathcal{I}$) such that G $\cap$ M = ϕ. Since G is n$\mathcal{I}_{\ddot{g}}$-nbhd of o in (O, $\mathcal{N}$, $\mathcal{I}$), by Definition 4.11, there exists an n$\mathcal{I}_{\ddot{g}}$-open set S_o such that o $\in$ S_o $\subseteq$ G. Therefore, we have $S_o \cap$ M = ϕ and so M $\subseteq$ $(S_o)^c$. Since $(S_o)^c$ is an n$\mathcal{I}_{\ddot{g}}$-closed set containing M, we have by Definition 3.6, n$\mathcal{I}_{\ddot{g}}$-cl*(M) $\subseteq$ $(S_o)^c$ and therefore o $\notin$ n$\mathcal{I}_{\ddot{g}}$-cl*(M), which is a contradiction.

Sufficiency. Assume for each n$\mathcal{I}_{\ddot{g}}$-nbhd G_o of o in (O, $\mathcal{N}$, $\mathcal{I}$), M $\cap$ $G_k \neq \phi$. Suppose that o $\notin$ n$\mathcal{I}_{\ddot{g}}$-cl*(M). Then by Definition 3.6, there exists an n$\mathcal{I}_{\ddot{g}}$-closed set F of (O, $\mathcal{N}$, $\mathcal{I}$) such that M $\subseteq$ F and o $\notin$ F. Thus o $\in$ F^c and F^c is n$\mathcal{I}_{\ddot{g}}$-open in (O, $\mathcal{N}$, $\mathcal{I}$) and hence F^c is a n$\mathcal{I}_{\ddot{g}}$-nbhd of o in (O, $\mathcal{N}$, $\mathcal{I}$). But M $\cap$ F^c =ϕ, which is a contradiction.

In the next theorem we explore certain characterizations of n$\mathcal{I}_{\ddot{g}}$-continuous functions.

Theorem 4.13. *Let f: $(O, \mathcal{N}, \mathcal{I}) \to (P, \mathcal{N}')$ be a function. Then the following statements are equivalent.*

(1) *The function f is n$\mathcal{I}_{\ddot{g}}$-continuous.*

(2) *The inverse of each n-open set is n$\mathcal{I}_{\ddot{g}}$-open.*

(3) *For each point o in $(O, \mathcal{N}, \mathcal{I})$ and each n-open set V in $(P, \mathcal{N}')$ with $f(o) \in V$, there is an n$\mathcal{I}_{\ddot{g}}$-open set U in $(O, \mathcal{N}, \mathcal{I})$ such that $o \in U$, $f(U) \subseteq V$.*

(4) *The inverse of each n-closed set is n$\mathcal{I}_{\ddot{g}}$-closed.*

(5) *For each o in $(O, \mathcal{N}, \mathcal{I})$, the inverse of every neighbourhood of f(o) is an n$\mathcal{I}_{\ddot{g}}$-nbhd of o.*

(6) *For each o in $(O, \mathcal{N}, \mathcal{I})$ and each neighbourhood N of f(o), there is an n$\mathcal{I}_{\ddot{g}}$-nbhd G of o such that $f(G) \subseteq N$.*

(7) *For each subset A of $(O, \mathcal{N}, \mathcal{I})$, $f(n\mathcal{I}_{\ddot{g}}\text{-}cl^*(A)) \subseteq n\text{-}cl^*(f(A))$.*

(8) *For each subset B of $(P, \mathcal{N}')$, $n\mathcal{I}_{\ddot{g}}\text{-}cl^*(f^{-1}(B)) \subseteq f^{-1}(n\text{-}cl^*(B))$.*

Proof. (1) $\Leftrightarrow$ (2). This follows from Proposition 4.6.

(1) $\Leftrightarrow$ (3). Suppose that (3) holds and let V be an n-open set in $(P, \mathcal{N}')$ and let $o \in f^{-1}(V)$. Then $f(o) \in V$ and thus there exists an n$\mathcal{I}_{\ddot{g}}$-open set U_o such that $o \in U_o$ and $f(U_o) \subseteq V$. Now, $o \in U_o \subseteq f^{-1}(V)$ and $f^{-1}(V) = \cup_{o \in} f^{-1}(V)\ U_o$. By assumption, $f^{-1}(V)$ is n$\mathcal{I}_{\ddot{g}}$-open in $(O, \mathcal{N}, \mathcal{I})$ and therefore f is n$\mathcal{I}_{\ddot{g}}$-continuous.

Conversely, Suppose that (1) holds and let $f(o) \in V$. Then $o \in f^{-1}(V) \in n\mathcal{I}_{\ddot{g}}o(\mathcal{N})$, since f is n$\mathcal{I}_{\ddot{g}}$-continuous. Let $U = f^{-1}(V)$. Then $o \in U$ and $f(U) \subseteq V$.

(2) $\Leftrightarrow$ (4). This result follows from the fact if A is a subset of $(P, \mathcal{N}')$, then $f^{-1}(A^c) = (f^{-1}(A))^c$.

(2) $\Leftrightarrow$ (5). For o in $(O, \mathcal{N}, \mathcal{I})$, let N be a neighbourhood of f(o). Then there exists an

n-open set U in (P, $\mathcal{N}'$) such that f(o) ∈ U ⊆ N. Consequently, f^{-1}(U) is an n$\mathcal{I}_{\ddot{g}}$-open set in (O, $\mathcal{N}$, $\mathcal{I}$) and o ∈ f^{-1}(U) ⊆ f^{-1}(N). Thus f^{-1}(N) is an n$\mathcal{I}_{\ddot{g}}$-nbhd of o.

(5) ⇔ (6). Let o ∈ O and let N be a neighbourhood of f(o). Then by assumption, G = f^{-1}(N) is an n$\mathcal{I}_{\ddot{g}}$-nbhd of o and f(G) = f(f^{-1}(N)) ⊆ N.

(6) ⇔ (3). For o in (O, $\mathcal{N}$, $\mathcal{I}$), let V be an n-open set containing f(o). Then V is a neighborhood of f(o). So by assumption, there exists an n$\mathcal{I}_{\ddot{g}}$-nbhd G of o such that f(G) ⊆ V. Hence there exists an n$\mathcal{I}_{\ddot{g}}$-open set U in (O, $\mathcal{N}$, $\mathcal{I}$) such that o ∈ U ⊆ G and so f(U) ⊆ f(G) ⊆ V.

(7)⇔ (4). Suppose that (4) holds and let A be a subset of (O, $\mathcal{N}$, $\mathcal{I}$). Since A ⊆ f^{-1}(A), we have A ⊆ f^{-1}(n-cl*(f(A))). Since n-cl*(f(A)) is a n-closed set in (P, $\mathcal{N}'$), by assumption f^{-1}(n-cl*(f(A))) is an n$\mathcal{I}_{\ddot{g}}$-closed set containing A. Consequently, n$\mathcal{I}_{\ddot{g}}$-cl*(A) ⊆ f^{-1}(n-cl*(f(A))). Thus f(n$\mathcal{I}_{\ddot{g}}$-cl*(A)) ⊆ f(f^{-1}(n-cl*(f(A)))) ⊆ n-cl*(f(A)).

Conversely, suppose that (7) holds for any subset A of (O, $\mathcal{N}$, $\mathcal{I}$). Let F be a n-closed subset of (P, $\mathcal{N}'$). Then by assumption, f(n$\mathcal{I}_{\ddot{g}}$-cl*(f^{-1}(F))) ⊆ n-cl*(f(f^{-1}(F))) ⊆ n-cl*(F) = F. i.e., n$\mathcal{I}_{\ddot{g}}$-cl*(f^{-1}(F))⊆ f^{-1}(F) and so f^{-1}(F) is n$\mathcal{I}_{\ddot{g}}$-closed.

(7) ⇔ (8). Suppose that (7) holds and B be any subset of (P, $\mathcal{N}'$). Then replacing A by f^{-1}(B) in (7), we obtain f(n$\mathcal{I}_{\ddot{g}}$-cl*(f^{-1}(B))) ⊆ n-cl*(f(f^{-1}(B))) ⊆ n-cl*(B). i.e., n$\mathcal{I}_{\ddot{g}}$-cl*(f^{-1}(B)) ⊆ f^{-1}(n-cl*(B)).

Conversely, suppose that (8) holds. Let B = f(A) where A is a subset of (O, $\mathcal{N}$, $\mathcal{I}$) . Then we have, n$\mathcal{I}_{\ddot{g}}$-cl*(A) ⊆ n$\mathcal{I}_{\ddot{g}}$-cl*(f^{-1}(B)) ⊆ f^{-1}(n-cl*(f(A)) and so f(n$\mathcal{I}_{\ddot{g}}$-cl*(A)) ⊆ n-cl*(f(A)).

This completes the proof of the theorem.

Conclusion : We presented several definitions, properties, explanations and examples inspired from the concept of n$\mathcal{I}_{\ddot{g}}$-continuous function in nano ideal topological spaces. The results of this study may be help in many reserches.

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DYNAMICS OF BACKWARD CASTES' REPRESENTATION IN PANCHAYAT RAJ INSTITUTIONS IN TELANGANA

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Abstract

It is argued that absence of green revo-lution and rapid development of the productive forces such as irrigation is the main reason why the dominant castes could not strengthen their hold between 1960-96. On the other hand the backward castes and lower castes emerged to take political power for precisely the same reason. Most significant in reformining governance in India from particularly Dynaism of Backward Caste in Panchayat Raj institutions is one of the popular studies in the Political Sceince. This trend towards the emergence of the backward castes however is a nascent one and is limited to grass roots level only. This article argues that the further consoli-dation of backward and lower caste struggle for power needs another round of land reform which would reduce the unequal power held not only by upper castes but also by some backward castes. This research paper to be discussed about the Backward Caste Dynamism in Panchayat Raj Institutions.

Key Words: ***Political Dynamism, Emergency of Caste, Social Consciousness, Lower Caste Politics, Caste Solidarity, Political Power.***

Statement of the Problem

> ***Panchayats are effective ways to fulfil aspirations of People in Rural India. They are playing vital role in India's transformation***
>
> **Narendra Damodardas Modi**
> Prime Minister of India

The emergence of backward castes took place in nearly all the villages of the mandal roughly since 1970. Since then they have consolidated their position. This process was two-pronged. At the political level the backward castes challenged the authority of upper castes – mainly reddys; and succeeded to a large extent. At the economic level they challenged semi-feudal practices. Practices such as 'vetti' have completely disappeared. Now labour re-lations are almost entirely on the basis of free wage labour. The researcher could not find unfree labour or extra-economic coercion anywhere in the two village studies.

Commercialisation of the village politi-cal economy has also not led to the process of creation of 'capitalist landlords', who combine traditional caste power with modern economic power, for two reasons. First, there has been no drastic develop-ment of infrastructural facilities or pro-ductive forces such as irrigation canals, etc. Second, there were other pressing social reasons such as heavy dowries for upper caste endogamous marriages and division of landholdings among heirs. This led to decline of landlords economically, socially and politically.

At the political plane the periodic panchayati raj elections with reservations for OBCs and women have contributed much to the forming of caste solidarity among backward castes challenging up-per castes. The emergence of backward castes was confirmed by the fact that in the June 1995 gram panchayat elections 14 out of 20 villages in the Ramannapet mandal elected backward caste sarpanches; five elected scheduled caste sarpanches and only one village elected a forward caste candidate to a seat reserved for women. Thus by 1995, 19 out of 20 villages were under the political control of backward and scheduled castes. This was partly due to state intervention such as enforcement of panchayati raj and reservations partly due to autonomous lower caste development. The process was partly state-induced and partly historical. Finally, was there a proletarianisation/ polarisation process in the field area? The answer is no. The process observed was deconcentration of big landholdings and strengthening of small and middle hold-ings and thereby the backward caste peasants.

Semi-Feudal Class – Caste Dynamism

The semi-feudal class consists of upper caste landlords in the region. In the field area they come from the reddy and brahmin castes. It will be shown that their eco-nomic, social and political importance has declined owing to the emergence of back-ward castes. But we have also noted that the state could not carry out thorough-going land reforms and these semi-feudal classes still command some economic power though declining. But why such decline? Why does economic growth not benefit these classes more than it does the other classes?

Political economists like Utsa Patnaik have argued that after the green revolution the traditional semi-feudal landlords have become capitalist landlords. But we have noted that such a phenomenon did not take place in the field area. This is owing to a combination of reasons. The historical dilemma of the semi-feudal classes is that either they modernise and compete with the emerging classes, castes, or they decline under the pressures created by the larger polity, economy and society. In our field area the semi-feudal classes started to decline because they could not modernise – by modernisation we mean modernisation of productive forces – and thereby strengthen their economic posi-tion. The state has also not strengthened the productive forces by improving the infrastructural facilities such as irrigation and canals. The physical conditions of economic production have not changed much over the last 30 years. In these conditions the semi-feudal class could neither accumulate much capital nor re-invest existing capital. This is the reason why the reddy and brahmin landlords could not

become affluent capitalist landlords. This also explains why the phenomenon of capitalist landlordism is more pertinent to green revolution areas than to non-green revolution areas.

Semi-Feudal Politics

Thus the semi-feudal class in the study area had either to modernise – which it could not – or decline. As noted earlier the social pressures within these castes, such as heavy dowries during marriages and partitioning of family lands have con-tributed further to the decline of these classes/castes. The pressure to get the younger generation educated and placed in urban employment was added to this. Many landlords spoke with great anxiety about the difficulty of getting their sons and daughters educated and employed. So did the youth belonging to the landlord families for many of them have graduate or postgraduate degrees but no jobs. How do landlords ensure their survival? How do they ensure their reproduction? First, they make use of whatever 'free' labour is available. Second, they too make use of whatever advances have taken place in productive forces – electric pumpsets and tractors. It is by both making use of the capital-istic labour relations as well as the modest advances in productive forces that the landlords of the erstwhile semi-feudal class ensure their reproduction. For the back-ward castes family labour and the tradi-tional caste occupation are great strengths in ensuring reproduction. These arguments are illustrated in the two case studies below.

The ruler showed no interest whatso-ever in the development of the Community. He and his ancestors were primarily inter-ested in the land revenue and the product from their personally owned lands. They left the village largely to the vicissitudes of nature. Chronic drought, at times near famine conditions, prevailed. Failure of crops, inability to remit land revenue in time, were usual features of the condition of the peasantry. This as we see below led to the evolution and shaping of the agrar-ian structure in the village in the succeed-ing period. As the 'dora' (landlord) of the village Gulam Mohammed Khan performed three functions: (a) collection of the land rev-enue, (b) collection of various taxes, and general village administration. This included law and order administration. As an absentee landlord and according to the administrative system of the nizam, i e, the 'vatandari' system, Gulam Mohammed Khan appointed, on hereditary basis, three village officers. He ruled through these village officers. They were the 'patwari' (or a brahmin karnam); a 'mali patel' (reddy); and a 'police patel' (reddy).

Rural Politics in Telangana

It is during these 70 years that a single reddy family accumulated about 1,000 acres of land; its members acting as the village officers of Gulam Mohammed Khan. The 'patwari' or karnam (a brahmin) acting as the revenue officer accumulated about 200 acres of land. The method was often simple. Whenever a peasant could not pay the land revenue owing to drought, or some other misfor-tune, that land was transferred, in the records, into the account of either of the village officers. Oral accounts inform us

that exorbitant taxes of the dora were often the other reason why land shifted into the hands of the patels. The reddy patels would pay the dora the taxes of those who could not pay and then take control of the land of that taxpayer. Thus one family, the gampala reddys, acting as village officers accumulated around 1,000 acres of land (which was later partitioned among five brothers).

Caste was no hindrance to this predatory process. Often fellow caste members were also victims. But it was mostly the other backward castes and untouchable castes who bore this burden. As is well known through any study of Telengana of this period the domination of the patels (and of the doras) was not just economic, but was also social and political. Landowner-ship operated as the objective basis of socio-economic and political oppression.

The end of the dominance of the jagirdar came with one, the larger political struggle of the Telengana movement; and two, owing the abolition of zamindari by the central government. But Gulam Moham-med Khan did not relinquish his landed interests easily. Whatever was left by him was taken over by his erstwhile village officers. In the struggles that followed one patel was shot dead by the 'razaakars'. Eventually, the struggle ended in favour of the local reddy patels, particularly the gampala family of reddys. And the influ-ence of pateldom continued. Land con-tinued to be concentrated in the hands of five gampala reddy brothers. With the solidarity of fellow caste members they continued to dominate village affairs.

Not all reddy patels in Bogaram village were big landlords. By 1950 more than 50 per cent of the reddys owned land-holding of less than 25 acres. And often the land they owned was not productive. The absolute productivities of even big landholdings were dismal. It may be re-membered here that in pre-green revolu-tion period no Borlaug-packages were available. But what is important to note is that neither class differentiation nor low level of absolute standards of living af-fected caste solidarity. Considerable num-ber of reddy families were self-cultivating but when it came to social relations with the other lower caste families, they were certainly discriminatory or semi-feudal. There was a strong element of dominance at the superstructural level even when it did not exist at the economic level.

Dynamism in Village Politics

The period between 1950 and 1975 was a period of the continuance of the tradi-tional patron-client relations. Though the dora Gulam Mohammed Khan was dis-pensed with, the gampala patels continued to rule the village. In this the mobilisation of caste solidarity was quite important. The first gram panchayat elections were held after the formation of Andhra Pradesh state, in 1959. In these elections Gampala Ram Reddy was elected as sarpanch of the village. He continued as village sarpanch for another term. Thus the single gampala family continued to dominate, *de jure* from 1959 to 1970. And de facto till roughly around 1975. In this period, and till today, the gampala reddy family was, and is, associated with the Congress Party. The productive forces of the

village were not much developed during this period. The land was concentrated in the hands of patel reddy families. And the nature of productive forces supported this social structure. We can take irrigation for example. The entire village depended to a large extent on well irrigation. This means that in a period during which there was no electricity, it was the big landowners who took advantage of whatever techno-logy that was available. The oil engines which were used to pump water were within the means of big landholders only. Family farms and small holders certainly could not afford oil engines. The small peasants had to rely on 'mota bavis', a moat worked by oxen.

There was little or no state intervention to augment productive force. Electricity came to the village in 1982. State inter-vention even in other rural development programmes was minimal during this period. The gram panchayat sarpanches wielded political power, often backed by social domination, but they lacked public, governmental funds of any kind.

During this period the gampala reddy families, as headmen, arbitrated the village affairs and, quite importantly, the village disputes. Besides this they man-aged their own substantially big farms through, what appears to be semi-feudal labour relations. Vetti of the untouchable castes in particular seems to have contin-ued, in however feeble form, till 1970. Backward castes/classes in the village, though numerically preponderant, were not politically assertive during 1959-70. First, they were divided along caste lines. Secondly, the socially dominant and numerically important among them, the weavers, lacked economic power. During this period the weavers were only weaving cotton/handloom cloth for the local mar-ket which was not lucrative. The handloom industry had not yet found a world market. We will argue below how the globalisa-tion of handloom industry led to the crea-tion of a class structure among the weavers which in turn led to their political assertion. But we should hasten to add here that the assertion of the backward castes took place much before the political ascendance of the weaving caste. The political asser-tion of the backward castes occurred basically against the gampala reddys.

Backward Castes Identity

The first sarpanch Gampala Ram Reddy worked from 1959 to 1970. The de facto domination of the gampala reddy family continued till 1975. But the emergence of backward castes took place prior to 1975. In 1970 pachayati raj elections, all the backward castes worked against the vatandari gampala families. A toddy tap-per was elected as sarpanch and continued in the post till 1981. The weavers in the village were a numerous and politically important caste. But they were united against vatandari reddys. Weaving till 1980 was only meant for the local market. The raw materials yarn, chemicals, etc, used to be brought from Hyderabad and finished cloth used to be again marketed in Hyderabad. During the tenure of the toddy tapper sarpanch the most significant achievement was village electrification. This meant that even small peasants could buy pumpsets for their wells. This in turn meant that the back-ward class small peasants could strengthen their family farms. Interestingly during this period, from 1975

till as late as 1988, the party configurations did not change much. Both the vatandari gampala reddys and the backward caste leaders fought each other as different factions of the same Congress Party. The weaver caste which independently asserted itself in politics later was also a part of the Congress Party.

By 1980, the occupation of weaving became a lucrative one. The local weavers started sending their cloth to metropolitan cities such as Bombay, Delhi and Madras. The premium quality cotton cloth they produced was being exported from these metropolitan cities to America, Europe and Eurasia. Some cloth was also exported to Asian markets such as Japan. Along with cotton cloth of high quality they also produced silk cloth and saris. This process of internationalisation was complex and has produced a class structure among the weavers. This is at first reflected in the emergence of master weavers and then to a stratifi-cation among the weavers. Firstly, the enterprising among the weavers started bringing in the raw materials and distri-buting among the middle-working weav-ers. The middle-working weaver in his turn employed a worker-weaver from any labouring caste of the village. The work was divided up as follows: master weaver – distributes raw material and markets the finished cloth; middle-working weaver – applies colours, dye, etc, and hires labour; and wage-worker weaver – weaves the cloth on either daily wage basis or piece rate basis. This structure worked, and still works, in favour of the first category of master weavers. The second and third category of weavers do not get more than their daily wage. This wage fluctuates with the fluctuating prices of finished cloth in the world market. What this system produced between 1980 to roughly about 1990 is an affluent master weaver class which also started asserting its dominance over not only the weaver caste, but over all the backward castes.

The affluence of the master weavers is visible in their houses. They own modern trucks, scooters, refrigerators, air coolers, etc, and a phone is also to be found in the house of every master weaver to facilitate his communications with the local and metropolitan businessmen. None of these consumer durables are found either in reddy caste houses or in the houses of lower caste weavers. The standard of liv-ing indicated by these consumer durables is very high by local standards. More importantly the master weavers started investing their money into buying lands, mainly from the reddys and some-times also from other backward castes. Thus one master weaver who combines his government job with his master weav-ing activity has accumulated more than 100 acres of land. He is now one of the two big landlords of the village. The deconcentration of land among the dominant reddy families appears to have taken place owing to two important reasons. First, land partition among fam-ily members; second, increasing cash dow-ries during marriages. Dowries in reddy caste often run into lakhs of rupees. This is one important reason for the sale of lands by reddys.

Representation Dynamism from Community

The weavers of the village are also organised into a co-operative society. Elections do take place for the society. But the entire society is dominated by master

weavers. During the elections for the co-operative society money, liquor, etc, are lavishly used. The master weavers liter-ally invest in these elections and in turn later use the co-operative society for furthering their business interests. In these elections weavers do fight among them-selves on party basis. The master weavers were united under Congress Party and presently they are under the Telugu Desam Party.

Though the weavers are divided by class, when it comes to panchayati raj elections, they mobilise caste solidarity for electoral purpose. But even during the panchayat elections it is the handful of master weav-ers who dominate their fellow caste members. Since master weavers are en-gaged in the circulation of raw materials and marketing the finished product, they enter into patron-client relations with the other lower caste weavers. These patron-client relations help them in mobilising caste solidarity. Thus on its face it appears as if all the weavers belong to the same class and represent the same interests; but in reality they are divided into classes and contain inter-class exploitative relations.

In 1981 elections the master weavers asserted their political power. This time one master weaver got elected as sarpanch on Congress ticket defeating the toddy tapper candidate belonging to the rival faction of the Congress Party. It is clear that by this time though the vatandari gampala reddys in the village were sup-porting Congress Party they had lost their place in the political scenario of the vil-lage. Certainly, a decisive shift took place on the social basis of political power from reddys to that of backward castes; and within the backward castes in favour of the master weavers.

In 1988 gram panchayat elections, the earlier sarpanch and master weaver changed over to Telugu Desam Party and mobilised his caste as well. Thus the anti-reddy feeling has also turned into anti-Congress politics. One can see the photo-graphs of Congress leaders hanging on the walls in the houses of gampala reddy family but not in the houses of any back-ward caste villagers. Thus presently the backward castes are organised under the master weavers supporting the Telugu Desam Party.

Awakening of Consciousness in Downtrodden

The nizam had three types of ruling sys-tems: jagirdari, khalsa and sarf-e-khas systems. In the jagirdari system the jagirdar owned much or all the land of the village. In sarf-e-khas system the entire land was owned directly by the nizam's family and the land revenue went to their personal expenditure. In khalsa system, the land ownership rested with the villagers. It was much like the ryatwari system of the presidency areas under the British. The significant difference with the other two land systems was that the villagers owned the land in their names and the land rev-enue went neither to any individual jagirdar nor to the nizam but to the treasury of the nizam government.

Village administration in all three types of land systems was run through the vatandari system. It meant a system of village officers who consisted of the vatan: these were the patwari, the mali patel and the kotval or police patel. Janampally by 1990 had

vatandari system. Under the system the patwari or village revenue officer belonged to a brahmin-karanam on hereditary basis. The mali patel and police patel posts belonged to a reddy family which lived away from the village. By 1990 the mali patel and police patel vatans were transferred into the hands of local yadavas, regionally called the gollas. The yadavas' basic occupation is sheep graz-ing. But one family, the meda family of yadavas, accepted the vatans. While the brahmin-karanam family ran revenue matters, other matters concerning village administration were run by the meda family of yadavas. Thus in this village, backward caste leadership has existed for 95 years. Unlike in the case of Bogaram village, it cannot be said in Janampally that the backward classes, emerged in village politics at a particular time after independence.

Village Political Dynamism

In order to run the village administration the downtrodden educated themselves to some extent. But this is only true of the meda family of yadavas. The rest of the yadavas continued to be illiterate and backward.

Though the mali patel and police patel posts were held by the yadavas it is the brahmin-karanam and his family which dominated village politics from 1900 to as late as 1970. In this village there is no significant evidence that the vatandari families accumulated land during the nizam period under consideration, i e, 1900-50. Two reasons appear to be important for this: first, ownership of land existed in the name of the villagers, and second, the karanam patwari was himself a progres-sive man who participated in the struggles against nizam rule as a Congress Party worker under the umbrella of Andhra Maha Sabha. He even participated in armed struggle against the nizam. Thus unlike in Bogaram village the village officers did not resort to accumulation of lands or encroachment on lands.

The khalsa system itself allowed less room for accumulation of land by village officers. There was less arbitrariness in the land related accounts. This meant that in the Janampally village the possibilities of accumulation of land by village officers were much less than in the village Bogaram. Another reason for this was the village productive forces. The productive forces of Janampally village are better situated than that of Bogaram village. The village has 1,200 acres of land and a big tank and four small tanks. Both tank irrigation and well irrigation played important role in somewhat stable and assured subsistence for small peasants. Thus the politically progressive nature of local elites and better productive forces worked against the concentration of land in the hands of a few village officers. Thus in this village the agricultural scenario is characterised by the preponderance of the small peasants. Another important reason for the relative absence of much feudal or semi-feudal dominance is that village did not have dominant caste dora. Though there were some reddys in the village they were not the village officers and therefore their economic power was neutralised by the political power of the backward castes and therefore whatever upper caste domina-tion existed in the village was that of the brahmin-karanam. But the progressive and politically active nature of this village officer also diluted the semi-feudal content of the social

dominance. Thus the brahmin-karanam family had about 75 acres of land. They continued to dominate the village affairs partly.

Dynamics of Dominance

It was difficult to obtain much details about the period from 1990 to 1970 regarding social relations or political dynamics. It became clear that owing to the absence of the dora from the village scene semi-feudal practices like the vetti were not prominent. The upper caste domination was also unnoticeable because of the fact that the two village officer posts were in the hands of local yadavas.

In reputedpanchayat elections a brahmin was elected as sarpanch. Again in elections another brahmin-karanam was elected as sarpanch. Both won the panchayat elections as candidates of the Congress Party. It should be noted that it is these people who participated in Telengana armed struggle against the nizam under the Andhra Maha Sabha. So they carried the popularity of having fought against the nizam. By the same token, as the interviews with them show they were also conscious of upper caste domination – particularly of reddy domination. It would not be correct to hold that the reddy doras were alone oppressive. But the main cause which ignited the Telengana armed struggle was reddy oppression. Having been conscious of the causes and con-sequences of the armed struggle the brahmin-karanams of Janampally were more liberal.

Nevertheless, the brahmin patwari and other karnams continued to be the top landowners in the village; they owned more than 75 acres of land. But they culti-vated this land through hired labour rather than through tenants. This land was later partitioned within both the families.

Backward Caste Peasantry

The break with brahmin dominance came in 1970. In the 1970 panchayat elections a yadava sarpanch was elected. This yadava sarpanch came from the meda family of yadavas to whom belonged the mali patel and police patel vatans. Thus it is since 1970 that the backward castes came to the forefront of village politics.

The yadavas' or gollas' main caste oc-cupation is sheep grazing. In this village they combine it with agriculture. Most yadavas do own land and are small or middle farmers. Some yadavas own less than 10 acres and some less than five acres. The village productive forces are much better suited for the sustainability of dwarf holdings than in Bogaram. The village has four small tanks and one big tank as noted earlier. Most yadavas own their parcels of land under these tanks. (Since 1980 the four small tanks are used only as percolation tanks, i e, the water is stored and not used directly with the idea that the stored water would percolate into the wells dug in the ayacut area of the tanks. Thus tanks are used to enhance groundwater situation.) Much like Bogaram, in

Janampally also electricity came in the early 1980s. Since then almost all backward caste small peasants have acquired electric motors and pumpsets.

Yadavas are numerically the most pre-ponderant backward caste in the village. The next most important backward caste in the village is the weaver caste or the padmashalis. Weaving in the village is qualitatively different from that in Bogaram. We turn to this aspect below.

Apart from yadavas and weavers the third most important backward caste in the village is that of toddy tappers. Together these castes form a political block in the village. They are deeply conscious of their political, economic and social backward-ness and also conscious of their numerical strength.

Weavers in the Janampally village are basically subsistence weavers. They weave primarily for the home market. Cotton and silk cloth and saris are produced here. Unlike in Bogaram village there are no master weavers. Weaving is done by independent family units. The cloth is supplied to the local co-operative society. The local (village) co-operative society markets the woven cloth through Andhra Pradesh weavers co-operative (APCO). Each silk sari, for instance, sells for about Rs 1,000 to 1,500. It is precisely because there is no master weaver that there is little capital or land accumulation by weavers. In Bogaram village the master weaver system arose owing to the internationalis-ation of weaving. In contrast to this in Janampally village weaving is essentially for the national market.

Elections do take place for weavers' co-operative society. But the candidates do not use money, liquor, etc, for winning elections. The co-operative society chair-person is usually elected unanimously. Since liberalisation weavers have faced difficulties. As in Bogaram village, in Janampally also weavers face a rise in the prices of raw materials and stagnation in the prices of finished cloth. Besides this the weavers in Janampally also face com-petition from textile industry centred in and around Bombay. There is unequal competition between textile mills and handlooms. Often the market favours textile mills rather than handlooms. An inefficient system of marketing by local co-operative and APCO also aggravates the situation. The handloom weavers do not get payment promptly for the work done from APCO and consequently from the local co-operative. Padmashalis (weav-ers) of Janampally have not become land-lords unlike those of Bogaram. There is no internationalisation of handlooms; no master weavers; no three-tier structure of weaving; and no land accumulation.

What need to be done?

The most significant experiment in reforming governance in India from a participatory democratic decentralisation perspective has been the introduction of the *Panchayat* system through the 73rd Constitutional Amendment in the early 1990s. It was expected that the newly created *Panchayat* system, drawing strength from the Constitutional provisions, would emerge as an effective tool of local self-governance

and would strongly further the primary objectives of economic growth and social justice. Unfortunately, these expectations have remained largely unfulfilled. The journey of *Panchayati Raj* in India over the last decade has been extremely complex, slowed by institutional and bureaucratic resistance, lack of political will and support, lack of awareness and capacities at grassroots, inadequate finances and the continuing unequal and non-democratic sociopolitical organisation of rural society. The experiences of the *Panchayat* system across India have been varied, depending on several factors including political will, nature of bureaucracy and prevalent socio-economic conditions in the region.

Telangana is viewed by many as one of the better performing states with respect to its initiatives for democratic decentralisation through *Panchayati Raj*. The most significant reason for this impression is a strong political will at the top level for strengthening and supporting the *Panchayat* system to take its due place in the system of governance. The strong political will and government support to the *Panchayat* system can be clearly seen in the framing of progressive Acts, and continuous delegation and devolution of powers, authority and roles to *Panchayat* institutions. Despite these efforts and initiatives in Telangana , the *Panchayat* system continues to be plagued by immense difficulties and faces stiff resistance from several quarters.

This study strongly brings out the contradictory realities of the *Panchayat* system in Telanana. On the one hand, there is very progressive legislation, policies and guidelines for the *Panchayats* backed by strong political will. On the other hand the ground reality clearly indicates weak and ineffective implementation of the *Panchayat* system, leading to little progress on the path of real democratic decentralisation. The study clearly identifies three broad sets of issues that are hampering the development of an effective *Panchayat* system in the state. First is resistance and non-cooperation from the bureaucracy and the existing institutions of governance, evident inadequate financial devolution, the framing of rules contradicting the spirit of *Panchayats*, and red tapism and corruption. In effect it indicates that the state and the ruling classes are still not ready to devolve powers and authority to another level of governance due to diverse vested interests developed over time and therefore they use multiple strategies and mechanisms to stall the process of democratic decentralisation. The second set of factors are resistance from the political class, and the socio-economic and political elites of rural Telangana , which view *Panchayats* as a serious threat to their interests and hegemony.

Summing up

The study strongly presents the problems of the Dynamism of Backward Castes in *Panchayat* system. However, the study also brings out another layer of reality – the process of empowerment of representation of the marginalised and effective use of *Panchayats* for sincere participatory democracy, albeit not so forcefully. The cases of empowerment of women, *dalits*, collective community decision-making, altering the development priorities in favour of the people's needs and aspirations discussed in the

report are all very significant examples and raise hopes for the *Panchayat* system, despite its shortcomings. These achievements in the context of a state largely constructed on a colonial model and unequal nondemocratic social and political order are extremely significant. As proactive participants in the process of democratic decentralisation it becomes critically important to highlight these successes. In tune with this perspective, a large number of Dynamics of Downtrodden represented to civil society actors have identified the problems and successes of *Panchayats* and are working to consolidate the gains from the *Panchayat* system for people-centric development and effective democratic self-governance. Due credit has to be given to the government of Telangana for its dynamism representation sincerity, openness and commitment to democratic decentralisation.

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