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Research Papers

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TECHNOLOGY READINESS OF E-GOVERNANCE BENEFICIARIES: A STUDY ON SELECTED SOUTH INDIAN STATES

A. S. Kalyana Kumar[1] and Mishra Ram Kumar[2]
Assistant Professor[1], Director[2] & Senior Professor, Institute of Public Enterprise, Hyderabad

ABSTRACT

With the adoption of the 2030 Agenda, at the United Nations Summit in New York during September 2015, a common transformative vision based on solidarity, accountability and shared responsibility, has been guiding governments, civil society, the private sector and other stakeholders in their efforts to eradicate poverty and promote a better world for all. Agenda explicitly highlights the need to build peaceful, just and inclusive societies, which provide equal access to justice and are based on respect for human rights (including the right to development), effective rule of law and good governance at all levels, and transparent, effective and accountable institutions. Across the globe, technology readiness of governments through good governance practices has been evolving and progressing, to enhance the trust of its citizens.

In contemporary India, with the digital divide and diversity, the novel Information and Communication Technologies (ICTs) and E-governance, facilitate easier creation, communication, dissemination and management of social and economic needs of the society for better governance, service delivery, and communication between government agencies, citizens and businesses. Technology readiness of both government and its citizens is the key aspect of e-Governance readiness. In the backdrop of these developments, the broader objective of the study is to examine the role of ICT in the socio-economic development of the nation in select south Indian States. The study is aimed to assess public awareness of e-governance schemes, measures technology readiness of e-Governance beneficiaries and also highlights opportunities for deploying ICT and e-governance in building resilient societies that have not yet been fully exploited besides setting out necessary preconditions, and outlining ways through which e-government can advance the implementation.

This paper deliberates a part of my study project, which has got funding from Indian Council of Social Science Research (ICSSR), and as a principle investigator it is a proud moment for me to submit this work.

Keywords: Information and Communication Technologies, e-Governance services, Technology readiness

1. INTRODUCTION

World leaders, in the United Nations Summit held in New York during September 2015, adopted an ambitious road map to guide the sustainable development of all countries, with agenda “Transforming our world: the 2030 Agenda for Sustainable Development” for next 15 years, through 17 Sustainable Development Goals (SDGs) and 169 targets to stimulate actions for people, planet, prosperity, peace and partnerships. Adoption of 2030 agenda, envisages a world in which “democracy, good governance and the rule of law, as well as an enabling environment at the national and international levels, are essential for sustainable development, including sustained and inclusive economic growth, social development, environmental protection and the eradication of poverty and hunger”. The deployment of information and communications technologies (ICTs) in support of good governance build effective, accountable and inclusive institutions, through coherent public sector-wide policies closely aligned with the broader national policies aimed at delivering the SDGs. E-governance improves public services, citizen engagement, transparency and accountability of authorities at the local and national level besides strengthening resilience and sustainability thereby aligning local government operations with national digital strategies. According to the United Nations Department of Economic and Social Affairs Survey 2018, three most commonly used online services in 2018 are utilities payment, submission of income taxes, and registration of new businesses. Service availability through emails, feed updates, mobile apps and SMS (short message service, or texts) has doubled globally, especially in the health and education sectors.

Traditionally in India, communication between a citizen and a government agency took place in government offices. Indian government, like its global counterparts, uses ICT for providing E-governance through service centers available in proximity as unattended kiosks in government agencies, kiosk located closer to client, use of a personal computer or mobile devices in home or office resulting in enhanced productivity and integrated socio-economic development which is affordable, accessible, and relevant. The purpose of e-Governance, an application of ICT, is to deliver government services, exchange information, communicate transactions, integrate various stand-alone systems thereby enabling services between Government-to-citizen (G2C), Government-to-business (G2B), Government-to-Government (G2G), Government-to-employees (G2E) as well as back-office processes and interactions within the entire Government framework. The main objectives of E-governance initiatives include enhanced access to Government's services, improved service delivery and modernized day-to-day Government operations. Despite the rising public use of technology in India, not all citizens are comfortable in accessing services online and not all areas of the country are adequately connected (Cecchini, 2004).

1.1. E-RESILIENCE & ITS LINKAGES TO E-GOVERNANCE: GLOBAL AND NATIONAL PERSPECTIVES

Differing access to E-government services through technology contributes to socio-economic stratification or inclusion. Given today's complexities (humanitarian crises, migration patterns, challenges of the urban and rural poor), use of emerging technologies are offering an opportunity to the shifting needs of Governments, by enhancing access to information and public services, as well as promote better public policy decision-making, thereby stimulating greater social inclusion. Digital divide is no longer considered to be lack of access to ICT infrastructure nor have a division between high and low income societies, rather new digital divides have emerged such as speed, quality of digital infrastructure, digital literacy or the know how to use them.

Quality mobile devices, high-speed broadband access with greater bandwidth are necessary components in bridging the access divide by making ICTs more accessible and affordable. While citizens online are benefiting from improving e-government services, those without access are being excluded from such opportunities. Cultural or social acceptance of Internet use, particularly for women, is another aspect of the connectivity divide. Persons with disabilities, such as sight impairment are often excluded from access to e-government services because most websites are not adequately designed for users with disabilities. Deficiency of regulation or monitoring has been another challenge to web accessibility. Lack of education or digital skills among public-sector servants and citizens underpin the efforts to improve social inclusion. It is increasingly evident that there is a need to raise skill levels across different population groups, in response to the emerging technologies such as artificial intelligence, cloud computing, big data & analytics, and machine-learning which have the potential to improve the level of social inclusion in a society.

Bridging digital divide requires a strategic holistic view, and integrated policy actions across government agencies and local levels for ensuring equitable socio-economic opportunities.

1.2. NATIONAL E-GOVERNANCE PROJECTS

Indian Government initiated National e-Governance Project (NeGP) to facilitate ancillary services across the country with the support of State Government's. The NeGP consists of 44 Mission Mode Projects (MMPs) of which 15 are controlled by Central Government, 17 by State Government and control of 12 are Integrated. as presented in Figure 1 below.

Department of Electronics and Information Technology and Department of Administrative Reforms and Public Grievances, Government of India (GoI) plan to make government services available to its citizens via electronic media. State Governments have drawn up a roadmap for IT implementation and taken various innovative steps to promote e-Governance to its citizens online. Besides the MMPs initiated by GoI, State Governments have their own e-Governance initiatives. Presented below in Table 1 are e-Governance initiatives of select south Indian State Governments.

1.3 TECHNOLOGY READINESS FOR E-GOVERNANCE SUCCESS:

The technology becomes backbone to utilize the resources to provide the services to the people. People also could access the required services only minimum knowledge of the technology. This minimum knowledge of common people becomes deciding factor for the e-Governance success.

The Technology Readiness Index (TRI), a 36-item scale to measure people's propensity to embrace and use cutting-edge technologies, was published in the Journal of Service Research over a decade ago. Researchers have since used it in a variety of contexts in over two dozen countries. Meanwhile, several revolutionary technologies (mobile commerce, social media, and cloud computing) that were in their infancy just a decade ago are now pervasive and significantly impacting people's lives. After providing a brief overview of technology readiness and the original TRI, this article (a) describes the multiple research stages and analyses that produced TRI 2.0, a 16-item scale. By modifying as per our requirements and in line with TRI 2.0, we have designed the survey study to find out the technology readiness of common people of the selected state. (A.Parasuraman, Journal of Service Research,)

2. LITERATURE REVIEW

(MOSPI 2010) emphasizes the degree of contribution of ICT to economies and societies that vary according to their stage of development (developed, developing or underdeveloped), nature of political economy, availability of appropriate complementary infrastructure, etc. Irrespective of these inherent differentials, ICT acts as a catalyst of change, reducing the socio-economic and political inequalities across all countries. Though Governments are aware of the inherent benefits on employing E-governance for delivery of public services issues like impact, sustainability, advantages, lack of focus on assessing the readiness of the ecosystem etc., act as bottlenecks to the E-governance projects. (IIM Kozhikode Society & Management Review, 2, 1 (2013): 31–42)

E-participation index, an important measure to assess the quality of a country's E-services, quantifies the willingness of government to use ICT in order to provide high quality information and effective communication tools for the specific purpose of empowering people for able participation in consultations and decision-making, both in their capacity as consumers of public services and as citizens (UN E-Readiness Report, 2003).

3. STRUCTURE AND METHODOLOGY

This present study focuses on digital divide barriers to e-service delivery at the national level, including respondents with disabilities, women, youth, and senior citizens besides seeking opportunities available to bridge the gaps. Measurement of e-Readiness includes three components: ICT environment of a given state or community, Readiness of community's key stakeholders to use ICT and the actual usage of ICT among these beneficiaries. For the purpose of the study, research parameters are confined to pan-India patterns.

OBJECTIVES OF THE RESEARCH STUDY

The objectives of the research project are:

1. To assess the ICT environment of a given states, readiness of community's key stakeholders to use ICT and the actual usage of ICT among these beneficiaries.
2. To measure the technology readiness and highlight perceived risks in technology usage.
3. To draw objective conclusions and lessons based on the findings of the study.

RESEARCH QUESTIONS/ HYPOTHESIS

The research questions of the study posed in connection with the identified objectives include:

1. What is the level of access to ICT infrastructure?
2. What is the extent of technology readiness of beneficiaries?
3. What is the perceived risk associated in relation to use of social media to interact with the government?

SAMPLE DESIGN AND DATA COLLECTION METHODS

The methodology for the analytical part of the survey is based on the literature review undertaken and the analysis of data collected from the sample survey. In addition, during the process of the sample urvey, expert group meetings were also organized to solicit views and inputs from stakeholders and beneficiaries. The methodological framework for the collection and assessment of e-services is based on a holistic view that measures three important dimensions: adequacy of infrastructure, ability of citizens in utilizing ICT enabled services, and the availability of online services benefitting the citizens from online services and information. The survey questionnaire assesses online service delivery, government approaches, e-participation, multi-channel service delivery, mobile services, digital divide as well as innovative partnerships through the use of ICTs.

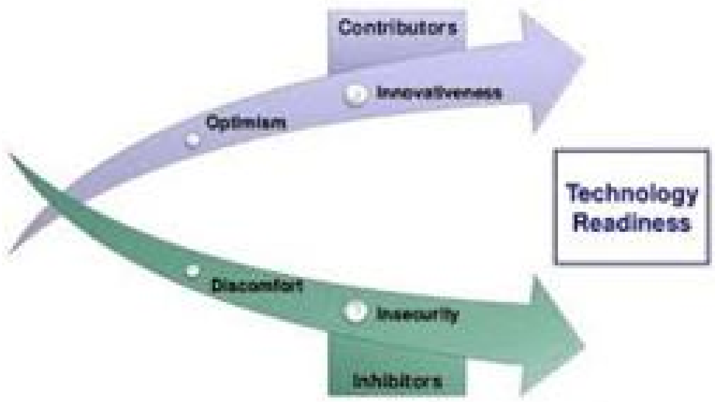

Figure 1: Technology Readiness Test Parameters

The study services have been selected from the select state government e-governance services to public through government citizen service providers of the state. For the purpose of sampling, respondents

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(consumers of the e-governance services of the government) have been selected using non-probabilistic sampling technique (convenience sampling) from the districts of the States Andhra Pradesh (Nellore and Prakasam); Karnataka (Bidar and Bellary); Kerala (Kottayam and Trivandrum); Tamilnadu (Madurai and Tiruchirapally)

and Telangana (Warangal and Rangareddy) as presented in Table 3. The study covered a total sample size of 5,000 responses with five hundred from each district. The data analyzed in this chapter comes from the questionnaire, unless otherwise stated.

Sample State and District	No of Respondents	Percent (%)
Andhra (Nellore & Prakasam)	974	19.5
Karnataka (Bidar & Bellary)	1081	21.6
Kerala (Kottayam & Trivendrum)	1030	20.6
Tamilnadu (Madurai & Tiruchirapally)	985	19.7
Telangana (Rangareddy & Warangal)	930	18.6
Total	5000	100.0

Table 2: Sample Design and size

SCOPE OF THE STUDY

The scope of the study is confined to the select factors that influence the respondents and is also limited to few districts of select states of south India. The study does not go into other details of social media and e-governance service compliance.

LIMITATIONS OF THE STUDY

Although, the study has been carefully undertaken, it is not devoid of shortcomings or inherent limitations. Listed below are the limitations of the study:

1) Keeping in view the time and budgetary constraints, the study is limited to only select districts of proposed States of south India namely Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana.
2) There may be interviewer/ respondent bias.
3) As sampling techniques used are non-probabilistic in nature, there is a scope for sampling error.

4. TOOLS AND TECHNIQUES FOR DATA ANALYSIS

The Technology Readiness Index (TRI), a 36-item scale to measure people’s propensity to embrace and use cutting-edge technologies, was published in the Journal of Service Research 2000. Meanwhile, several revolutionary technologies (mobile commerce, social media, and cloud computing) that were in their infancy just a decade ago are now pervasive and significantly impacting people’s lives. The TRI 2.0, a 16-item scale with the original TRI in terms of content, structure, and psychometric properties. Technology readiness represents a gestalt of mental motivators and inhibitors that collectively determine a person’s predisposition to use new technologies (Parasuraman 2000). The construct is multifaceted, comprising four dimensions:

- **Optimism**—a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives.
- **Innovativeness**—a tendency to be a technology pioneer and thought leader.
- **Discomfort**—a perceived lack of control over technology and a feeling of being overwhelmed by it.
- **Insecurity**—distrust of technology, stemming from skepticism about its ability to work properly and concerns about its potential harmful consequences. (Colb, 22 June 2014)

Of the four dimensions, optimism and innovativeness are ‘‘motivators,’’ contributing to TR, whereas discomfort and insecurity ‘‘inhibitors,’’ detracting from it.

As measured by the Technology Readiness Index of Parasuraman et.al have been molded to fit to our study with respect to the southern states of India. Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Telangana where e-Governance and Internet services are available. The study took two cities by Simple Random basis from each of the states identified. Samples from each of the cities taken by a Random Convenience Sampling Method and studied, compared and analyzed as per the objectives of the study.

5. DATA ANALYSIS

As part of the objectives of this study, the objectives has been analyzed by using Chi-Square Statistical Tool to find the association/difference between the statement (research question) and the states wise, gender wise, education background wise and profession wise.

5.1 RESPONDENTS AWARENESS ON GOVT E-GOVERNANCE SERVICES – SATE WISE

Respondents Opinion	Andhra	Karnataka	Kerala	Tamilnadu	Telangana	total
Yes %	79.8	91.2	93	75.9	81.5	84.5
No %	20.2	8.8	7	24.1	18.5	15.5
total %	100	100	100	100	100	100

Table 3: Respondents awareness on Govt e-Governance services – Sate wise Analysis in %

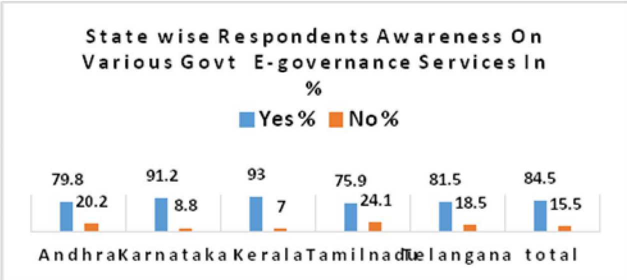

Figure 2: Respondents awareness on Govt e-Governance services – Sate wise Analysis in %

The above table and the chart clearly shows the respondents awareness on various Govt e-Governance services by the government. With 93 percent Kerala respondents stood highest awareness on the government e-governance services, Karnataka with 91.2 percent and Telangana with 81.5 percent awareness. Andhra respondents with 20.2 percent of highest unaware about government e-governance services and the overall percent says 84.5 percent awareness and 15.5 percent unawareness. This relationship is being tested with chi-square test.

	Value	df	Sig.
Chi-Square	172.580	4	**

Table 4: Respondents awareness on Govt e-Governance services – Sate wise - Chi-Square Test

Ns- Not Significance

* - Significant at 5% level ** - Significant at 1% level

Chi-Square revealed that there is a significance relation between the statement “awareness on Govt e-Governance services” and Sates at 1% of significance level.

5.2 ANALYSIS FOR TECHNOLOGY READINESS:

To Compare the analyzed information and to find out the significance association/difference w.r.t 1. Sate wise (ANOVA , 2. Gender wise, 3. Annual Income wise, 4. Educational Qualification wise & 5. Professional wise, the statistical tools Chi-Square, ANOVA, T-Test have been used.

5.2.1 OPTIMISM SCORE – STATE WISE ANALYSIS

		Optimism score		
		Mean	**S.D**	**No of respondents**
State	Andhra	15.82	2.30	974
	Karnataka	15.37	1.96	1081
	Kerala	15.53	.50	1030
	Tamilnadu	14.11	1.89	985
	Telangana	14.90	2.16	930
TOTAL		15.16	1.96	5000

Table 5: Optimism Mean Score – State wise

From the above table, it can be observed that the mean value of Andhra Pradesh is high with 15.82 and Tamil Nadu in last place with 14.11 percent comparing with other states.

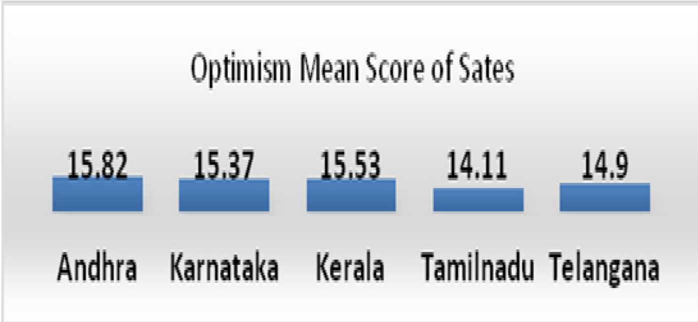

Figure 3 : Optimism Mean Score – State wise

ANOVA FOR OPTIMISM SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1757.511	4	439.378	125.938	**
Within Groups	17426.743	4995	3.489		
Total	19184.254	4999			

Table 6 : ANOVA f-test for Optimism Score between states (indicates 1 % significant level)**

ANOVA test revealed that there is a significance difference in the Optimism Scores among the 5 states at 1% of significance level.

5.2.2 INNOVATIVENESS SCORE-STATE WISE ANALYSIS

		Innovativeness score		
		Mean	S.D	No of respondents
State	Andhra	15.78	2.98	974
	Karnataka	15.36	2.47	1081
	Kerala	15.14	2.00	1030
	Tamilnadu	13.03	2.12	985
	Telangana	14.29	2.68	930
TOTAL		14.74	2.65	5000

Table 7: Innovativeness Mean Score of states

From the above table, it can be observed that the innovativeness mean score value of Andhra Pradesh is high with 15.78 and Tamil Nadu in last place with 13.03 percent comparing with other states.

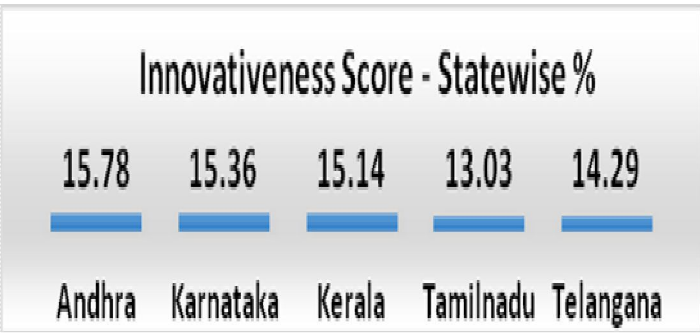

Figure 4: Innovativeness Mean Score of states

ANOVA FOR INNOVATIVENESS SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4706.160	4	1176.540	193.186	**
Within Groups	30420.521	4995	6.090		
Total	35126.681	4999			

Table 8: ANOVA f-test for innovativeness Score between states (indicates 1 % significant level)**

ANOVA test revealed that there is a significance difference in the Innovativeness Scores among the 5 states at 1% of significant level.

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5.2.3 PERCEIVED RISKS ASSOCIATED SCORE – STATE WISE ANALYSIS

		Perceived Risk Score		
		Mean	S.D	No.
State	Andhra	17.15	2.21	974
	Karnataka	15.22	2.99	1081
	Kerala	15.67	2.50	1030
	Tamilnadu	13.07	2.12	985
	Telangana	15.46	2.64	930
TOTAL		15.31	2.83	5000

Table 9: Perceived Risk Mean Score of states

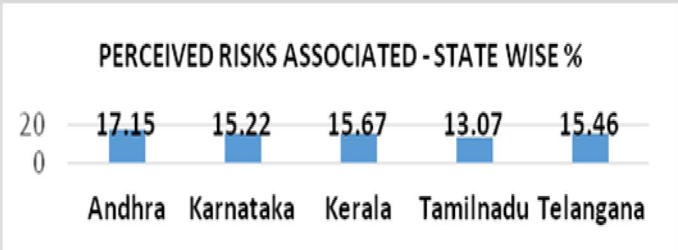

Figure 5 : Perceived Risk Mean Score of states

From the above table and chart, it can be observed that the perceived risk associated mean score value of Andhra Pradesh is high with 17.15 and Tamil Nadu in last place with 13.07 percent comparing with other states.

ANOVA FOR PERCEIVED RISK SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Betwn Groups	8404.760	4	2101.190	331.524	**
Within Groups	31658.144	4995	6.338		
Total	40062.904	4999			

Table 10: ANOVA test for Perceived Risk Score – state wise

ANOVA test revealed that there is a significance difference in the Perceived Risk Scores among the 5 states at 1% of significance level.

5.2.4 DISCOMFORT SCORE – STATE WISE ANALYSIS

		Discomfort Score		
		Mean	S.D	No.
State	Andhra	14.52	2.97	974
	Karnataka	12.39	2.54	1081
	Kerala	12.00	.00	1030
	Tamilnadu	12.44	1.79	985
	Telangana	15.53	3.04	930
TOTAL		13.32	2.71	5000

Table 1: Discomfort Mean Score of states

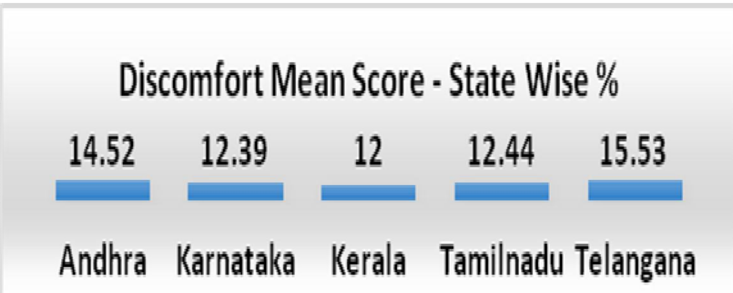

Figure 6: Discomfort Mean Score of states

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From the above table and chart, it can be observed that the discomfort mean score value of Telangana is high with 15.53 and Kerala in last place with 12 percent comparing with other states.

ANOVA FOR DISCOMFORT SCORE

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9431.119	4	2357.780	431.646	**
Within Groups	27284.167	4995	5.462		
Total	36715.286	4999			

Table 2: ANOVA test for Discomfort Score – State Wise

ANOVA test revealed that there is a significance difference in the discomfort Scores among the 5 states at 1% of significance level.

The survey instrument contained an adequate number of questions about (a) personal, demographic, and occupational characteristics that might be potential correlates of technology adoption and use and contemporary tech-oriented behaviors in order to validate TRI 2.0. The above state wise analysis is further analyzed with respect to gender, annual income, educational qualification and professional background. This analysis also used the various statistical tools like ANOVA and t-Test and their significance level results are tabulated here.

Parameter	Gender wise	Annual Income	Educational Background	Professional Background
Optimism (Contributors)	No Significance (t-Test)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)
Innovativeness (Contributors)	Significance in 1% level (t-Test)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)
Perceived Risk (Inhibitors)	No Significance (t-Test)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)
Discomfort (Inhibitors)	Significance in 1% level (t-Test)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)	Significance in 1% level (ANOVA)

Table 3: Technology Readiness Analysis Results on Gender, Annual Income, Education and Professional Backgrounds

In contributor category, optimism and perceived risk, there is no significance and with respect to innovativeness and discomfort, there is a significance in 1% level on gender wise. The results says, for both the categories of contributors and inhibitors, there is a same level of significance to any gender. The Annual income wise, there is a significance in 1% level to both the categories and on educational background results also says the same 1% significance level.

6. FINDINGS OF THE STUDY

The state wise analysis on the awareness of E-Governance Services of their state government clearly shows the Kerala people stood first with 93%, next 91.2 % of Karnataka people aware about the government's E-Governance services. Third place goes to Telangana State with 81.5 %, fourth place goes to Andhra Pradesh with 79.8% and the last place goes to Tamil Nadu State with 75.9%.

The findings says that the Optimism Score, the mean value of Andhra Pradesh is high with 15.82 and Tamil Nadu in last place with 14.11 percent comparing with other states. Gender wise analysis shows very narrow difference in mean value as 0.09 and the average mean score is 15.16. The profession background wise analysis reveals the "not working" level has 15.45 mean score and the "agriculture" level has got 14.54 mean score as least comparing to other levels such as own business(14.97), private(15.28), Govt employee(14.99), retired(15.27) and students levels(15.29).

The Innovativeness Score analysis reveals that the mean score value of Andhra Pradesh is high with 15.78 and Tamil Nadu in last place with 13.03 percent comparing with other states. The gender wise analysis reveals that the mean score 14.84 for male and 14.57 mean score for female. The education back ground wise analysis says "High School" level has got highest 15.04 mean score and PHd level has got minimum of 14.41 mean score.

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The profession wise analysis shows that the retired people has got highest 15.10 mean score and the agriculture profession people has got minimum of 13.81 mean score.

The perceived risk score analysis reveals that the mean score value of Andhra Pradesh is high with 17.15 and Tamil Nadu in last place with 13.07 percent comparing with other states. The gender wise analysis shows that male with 15.35 mean score and the female with 15.25 mean score.The education back ground wise analysis shows, high school level has 16.06 mean score and masters level with 14.64 as minimum in mean score. The profession back ground wise analysis says that the not working people with highest mean score of 15.74 and agriculture level has got 14.49 mean score as lowest comparing to other profession.

The discomfort score analysis shows that the mean score value of Telangana is high with 15.53 and Kerala in last place with 12 percent comparing with other states. The gender wise analysis shows 13.17 mean score for men and 13.55 is the mean score for female. The education background wise analysis shows that 13.90 mean score as high for high school level and masters level with minimum of 12.94 as mean score. The profession wise analysis shows not working people has got maximum of 14.16 mean score and private employees has got minimum of 13.34 as mean score.

7. CONCLUSIONS AND POLICY RECOMMENDATIONS

The results of the study highlight the challenges in terms of technology readiness. Governments to create appropriate policies and regulations to stimulate adoption of emerging technologies among civil society and the private sector which would improve inclusion without widening existing divides, supplementing online services with technology-enabled offline services is increasingly important as countries move towards adopting a more digital government with the aim of promoting efficiency and inclusiveness. To leverage digital use, some countries are making services “digital by default” designed primarily for use online but when some services are not available offline, the potential implications are significant. The most common barriers to e-government resilience are insufficient training and accessibility, as well as e-illiteracy. There is a need for trust, security, and privacy, which can be established through the following cyber security measures: (i) adopting a harmonized set of laws at regional and international levels against the misuse of ICTs for criminal or other nefarious purposes; (ii) integrating adequate technical capabilities in detecting and responding to cyber-attacs, and to ensure a climate of trust and security; (iii) and establishing minimum security criteria and accreditation schemes for software applications and systems. A secure e-government system requires collaboration among vendors, industries and manufacturers to ensure that devices are secure by design and that users can interact with them to perform updates and make configurations changes, among others. The digital transformation must be thoughtfully strategized and continuously updated to ensure security and relevance along the path to sustainable development.

Improvement in such services is strong and consistent in all assessed categories: paying for utilities; submitting income tax; registering new businesses; paying fines and fee; applying for birth and marriage certificates; registering motor vehicles; and applying for driver’s licenses and personal identity cards.

Research shows that lower-income families, those with less education, persons with disabilities, minorities, and rural residents generally lag behind in both broadband adoption and computer usage.Despite progress, providing local, relevant and useful content, in addition to raising awareness about it, requires significant effort.

8. SUGGESTIONS

There are few gaps between government services and the common people because of the digital divide. This could be eliminated only by proper motivation and competency given in an innovative and appropriate methods.

The Study found that across all the five south Indian states, the revolutionary nature of Information and Communication Technology (ICT), and followed by Social Networking sites are rapidly changing the society and the mode of e-governance services. There is a growing trend to stay connected through the Internet and more so seen as an effective mode for enhancing access and delivery of services of individuals, business entities and the Government. Social Media is increasingly gaining popularity and seen as a tool to reach out to more and more citizens by the government. Creating a system to train and provide gainful training and introducing the E-Governance services through various SHGs and other small peoples group with small encouragements to overcome the challenge.

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APPLICATION OF LAPLACE TRANSFORM APPROACH TO INFINITE SERIES

Dinesh Verma[1] and Rohit Gupta[2]
Associate Professor[1] and Lecturer[2], Department of Applied Sciences, Yogananda College of Engineering and Technology (YCET), Jammu

ABSTRACT
Generally, it has been noticed the Laplace transformation is applied in different areas of science, engineering and technology, and is used in solving the time domain function by converting it into frequency domain. Laplace transformation makes it easier to solve the problems in engineering applications. In Mathematics, a power series in one variable is an infinite series. In this paper, we will discuss the Laplace Transformation of some infinite series.

Keywords: Laplace transformation, Infinite series, Power Series.

INTRODUCTION
Laplace transformation is a mathematical tool used to obtain the solutions of differential equations by converting them from one form into another form. It solves the differential equations without finding their general solutions. It is also used to convert the signal system in the frequency domain for solving it on a simple and easy way. It has applications in nearly all engineering disciplines, like System Modeling, Analysis of Electrical Circuit, Digital Signal Processing, Nuclear Physics, Process Controls, etc.

DEFINITION
Let F (t) is a well-defined function of t for all t ≥ 0. The Laplace transformation of F (t) is defined as L {F (t)} $=\int_0^\infty e^{-pt}F(t)\,dt = f(p)$, provided that the integral exists. If the integral is convergent for some value of p, then the Laplace transformation of F (t) exists otherwise not. Here, p is a parameter which may be real or complex number and L is the Laplace transformation operator.

Laplace transformation of Convergence Series:

$$\frac{c+z}{1!}+\frac{(c+2z)^2}{2!}+\frac{(c+3z)^3}{3!}+\cdots$$

$$=\sum_{n=0}^{\infty}\frac{(c+nz)^n}{n!}=\mathrm{f(z)}$$

$$\text{So, L\{f(z)\}} = \mathrm{L}\left\{\sum_{n=0}^{\infty}\frac{(c+nz)^n}{n!}\right\}$$

$$\int_0^\infty e^{-pz}\left\{\sum_{n=0}^{\infty}\frac{(c+nz)^n}{n!}\right\}dz \quad , \quad let\ c+nz=t$$

$$=\sum_{n=0}^{\infty}\int_0^\infty e^{-pz}\frac{(c+nz)^n}{n!}dz$$

$$=\sum_{n=0}^{\infty}\int_0^\infty e^{-p\left(\frac{t-c}{n}\right)}\frac{t^n}{n!}\frac{dt}{n}$$

$$=\sum_{n=0}^{\infty}e^{\frac{pc}{n}}\int_0^\infty e^{-p\left(\frac{t}{n}\right)}\frac{t^n}{n!}\frac{dt}{n} \quad , \quad let\ \frac{t}{n}=u$$

$$=\sum_{n=0}^{\infty}e^{\frac{pc}{n}}\int_0^\infty e^{-pu}\frac{n^n u^n}{n!}\frac{ndu}{n}$$

$$= \sum_{n=0}^{\infty} e^{\frac{pc}{n}} \frac{n^n}{n!} \int_0^{\infty} e^{-pu} u^n du$$

$$= \sum_{n=0}^{\infty} e^{\frac{pc}{n}} \frac{n^n}{n!} \frac{n!}{p^{n+1}}$$

Hence,

$$L\left\{\sum_{n=0}^{\infty} \frac{(c+nz)^n}{n!}\right\} = \sum_{n=0}^{\infty} e^{\frac{pc}{n}} \frac{n^n}{p^{n+1}}$$

Laplace Transformation of Geometric Series:

$$\frac{1}{1-z} = \sum_{n=0}^{\infty} z^n = f(z)$$

$$L\{f(z)\} = L\left\{\sum_{n=0}^{\infty} z^n\right\}$$

$$= \int_0^{\infty} e^{-pz} \sum_{n=0}^{\infty} z^n dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} z^n dz$$

$$= \sum_{n=0}^{\infty} L\{z^n\}$$

$$= \sum_{n=0}^{\infty} \frac{n!}{p^{n+1}}$$

Hence,

$$L\{f(z)\} = \sum_{n=0}^{\infty} \frac{n!}{p^{n+1}}$$

Laplace Transformation of the Power series expansion of e^z:

$$e^z = \sum_{n=0}^{\infty} \frac{z^n}{n!} = f(z)$$

$$L\{f(z)\} = L\left\{\sum_{n=0}^{\infty} \frac{z^n}{n!}\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=0}^{\infty} \frac{z^n}{n!}\right\} dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} \frac{z^n}{n!} dz$$

$$= \sum_{n=0}^{\infty} \frac{1}{n!} \int_0^{\infty} e^{-pz}\, z^n dz$$

$$= \sum_{n=0}^{\infty} \frac{1}{n!} L\{z^n\} = \sum_{n=0}^{\infty} \frac{1}{p^{n+1}}$$

$$Hence, \qquad L\{f(z)\} = \sum_{n=0}^{\infty} \frac{1}{p^{n+1}}$$

Laplace Transformation of the Power series expansion of $\boldsymbol{log(1+z)}$:

$$\log(1+z) = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} z^n = f(z)$$

$$L\,\{f(z)\} = L\left\{\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} z^n\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} z^n\right\} dz$$

$$= \sum_{n=1}^{\infty} \int_0^{\infty} e^{-pz}\, \frac{(-1)^{n+1}}{n} z^n dz$$

$$= \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} \int_0^{\infty} e^{-pz}\, z^n dz$$

$$= \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n}\; L\{z^n\}$$

$$= \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n}\; \frac{n!}{p^{n+1}}$$

$$= \sum_{n=1}^{\infty} (-1)^{n+1}\; \frac{(n-1)!}{p^{n+1}}$$

$Hence,$

$$L\,\{f(z)\} = \sum_{n=1}^{\infty} (-1)^{n+1}\; \frac{(n-1)!}{p^{n+1}}$$

Laplace Transformation of the Power series expansion of $\boldsymbol{log(1+z)}$:

$$\log(1+z) = \sum_{n=1}^{\infty} \frac{(-1)^{2n-1}}{n} z^n = f(z)$$

$$L\,\{f(z)\} = L\left\{\sum_{n=1}^{\infty} \frac{(-1)^{2n-1}}{n} z^n\right\}$$

$$= \int_0^\infty e^{-pz} \left\{ \sum_{n=1}^\infty \frac{(-1)^{2n-1}}{n} z^n \right\} dz$$

$$= \sum_{n=1}^\infty \int_0^\infty e^{-pz} \frac{(-1)^{2n-1}}{n} z^n dz$$

$$= \sum_{n=1}^\infty \frac{(-1)^{2n-1}}{n} \int_0^\infty e^{-pz} z^n dz$$

$$= \sum_{n=1}^\infty \frac{(-1)^{2n-1}}{n} L\{z^n\}$$

$$= \sum_{n=1}^\infty \frac{(-1)^{2n-1}}{n} \frac{n!}{p^{n+1}}$$

$$= \sum_{n=1}^\infty (-1)^{2n-1} \frac{(n-1)!}{p^{n+1}}$$

Hence ,

$$L\{f(z)\} = \sum_{n=1}^\infty (-1)^{2n-1} \frac{(n-1)!}{p^{n+1}}$$

Laplace Transformation of the Power series expansion of $log\frac{(1+z)}{(1-z)}$:

$$log\frac{(1+z)}{(1-z)} = \sum_{n=1}^\infty \frac{2}{2n-1} z^{2n-1} = f(z)$$

$$L\{f(z)\} = L\left\{ \sum_{n=1}^\infty \frac{2}{2n-1} z^{2n-1} \right\}$$

$let, \quad 2n-1 = m$

$2n = m+1$

$$n = \frac{m+1}{2}$$

$$= \int_0^\infty e^{-pz} \left\{ \sum_{n=1}^\infty \frac{2}{2n-1} z^{2n-1} \right\} dz$$

$$= \sum_{n=1}^\infty \int_0^\infty e^{-pz} \frac{2}{2n-1} z^{2n-1} dz$$

$$= \sum_{n=1}^\infty \frac{2}{2n-1} \int_0^\infty e^{-pz} z^{2n-1} dz$$

$$= \sum_{n=1}^{\infty} \frac{2}{2n-1} L\{z^{2n-1}\}$$

$$\sum_{n=1}^{\infty} \frac{2}{2n-1} \frac{(2n-1)!}{p^{2n-1+1}}$$

$$\sum_{n=1}^{\infty} \frac{(2n-1)!}{p^{2n}}$$

Hence,

$$L\{f(z)\} = \sum_{n=1}^{\infty} \frac{(2n-1)!}{p^{2n}}$$

Laplace Transformation of the Power series expansion of $Cosx$:

$$Cosx = \sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} z^{2n} = f(z)$$

$$L\{F(z)\} = L\left\{\sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} z^{2n}\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} z^{2n}\right\} dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} \frac{(-1)^n}{2n!} z^{2n} dz$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} \int_0^{\infty} e^{-pz} z^{2n} dz$$

$let\ 2n = u$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} L\{z^u\}$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} \frac{u!}{p^{u+1}}$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{2n!} \frac{2n!}{p^{2n+1}}$$

$$Hence, L\{f(t)\} = \sum_{n=0}^{\infty} \frac{(-1)^n}{p^{2n+1}}$$

Laplace Transformation of the Power series expansion of $Sinx$:

$$Sinx = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} z^{2n+1} = f(z)$$

$$L\{F(z)\} = L\left\{\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} z^{2n+1}\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} z^{2n+1}\right\} dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} \frac{(-1)^n}{(2n+1)!} z^{2n+1} dz$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} \int_0^{\infty} e^{-pz} z^{2n+1} dz$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} L\{z^{2n+1}\}$$

$$= \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} \frac{(2n+1)!}{p^{2n+1+1}}$$

$$Hence, L\{f(t)\} = \sum_{n=0}^{\infty} \frac{(-1)^n}{p^{2n+2}}$$

Laplace Transformation of the Power series expansion of $Coshx$:

$$Cosx = \sum_{n=0}^{\infty} \frac{1}{2n!} z^{2n} = f(z)$$

$$L\{F(z)\} = L\left\{\sum_{n=0}^{\infty} \frac{1}{2n!} z^{2n}\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=0}^{\infty} \frac{1}{2n!} z^{2n}\right\} dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} \frac{1}{2n!} z^{2n} dz$$

$$= \sum_{n=0}^{\infty} \frac{1}{2n!} \int_0^{\infty} e^{-pz} z^{2n} dz$$

$$let\ 2n = u$$

$$= \sum_{n=0}^{\infty} \frac{1}{2n!} L\{z^{u}\}$$

$$= \sum_{n=0}^{\infty} \frac{1}{2n!} \frac{u!}{p^{u+1}}$$

$$= \sum_{n=0}^{\infty} \frac{1}{2n!} \frac{2n!}{p^{2n+1}}$$

$$Hence, L\{f(t)\} = \sum_{n=0}^{\infty} \frac{1}{p^{2n+1}}$$

Laplace Transformation of the Power series expansion of $Sinx$ **:**

$$Sinhx = \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} z^{2n+1} = f(z)$$

$$L\{F(z)\} = L\left\{\sum_{n=0}^{\infty} \frac{1}{(2n+1)!} z^{2n+1}\right\}$$

$$= \int_0^{\infty} e^{-pz} \left\{\sum_{n=0}^{\infty} \frac{1}{(2n+1)!} z^{2n+1}\right\} dz$$

$$= \sum_{n=0}^{\infty} \int_0^{\infty} e^{-pz} \frac{1}{(2n+1)!} z^{2n+1} dz$$

$$= \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} \int_0^{\infty} e^{-pz} z^{2n+1} dz$$

$$= \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} L\{z^{2n+1}\}$$

$$= \sum_{n=0}^{\infty} \frac{1}{(2n+1)!} \frac{(2n+1)!}{p^{2n+1+1}}$$

$$Hence, L\{f(t)\} = \sum_{n=0}^{\infty} \frac{1}{p^{2n+2}}$$

CONCLUSION

In this paper, we have successfully obtained the Laplace transforms of some infinite series. It provides an easy and powerful mathematical tool and reveals that the Laplace transform approach is effective and simple.

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AWARENESS OF SOCIAL ENTREPRENEURSHIP

CA Kishor K. Wankhede[1] and Satish Pradhan[2]
Assistant Professor[1] and Research Student[2], Department of Accountancy, Dnyanasadhana College, Thane

ABSTRACT
Social entrepreneurs combine commerce and social issues in a way that improves the lives of people connected to the cause. They don't measure their success in terms of profit alone success to social entrepreneurs means that they have improved the world, however they define that. Social entrepreneurship is the use of the techniques that startup companies and other entrepreneurs to develop, fund and implement solutions to social, cultural, or environmental issues.

INTRODUCTION
Social Entrepreneurship is relatively a new term. It came in to notice just a few decades ago. But its usage can be found throughout the history. In fact, there were several entrepreneurs who established social entrepreneurs to eliminate social problems or bring positive change in the society. Vinoba Bhave, the founder of India's Land Gift Movement, Robert Owen, the founder of cooperative movement and Florence Nightingale, founder of first nursing school and developer of modern nursing practices might be included in this category. They had established such foundations and organizations in 19th century that is much before the concept of social entrepreneurship used in management.

OBJECTIVES OR FOCUS AREAS OF SOCIAL ENTREPRENEURSHIP
Enhance a person‘s ability to improve her or his economic well-being and personal dignity through opportunity.

- Harness aid to be more accountable, transparent and solutions-oriented, for lasting development.
- Enable access to and ensure use of reliable, affordable and appropriate healthcare in disadvantaged populations.
- Address issues of sustainable productivity not beneficiary by beneficiary, but system wide.
- Lay the foundation for peace and human security.
- Harness the capital and consumer markets that drive change by considering all costs and opportunities.
- Transform the way water is managed and provided, long-term, for both people and agriculture.

THREE TYPES OF SOCIAL ENTREPRENEURSHIP
Leveraged non-profit ventures
This is a non-profit type of venture. The entrepreneur engages a cross section of society, including private and public organisations, to realise a particular social innovation. Leveraged non-profit ventures depend on outside philanthropic funding, but since their partners have a vested interest in their continuation, longer-term sustainability is often enhanced.

Hybrid non-profit ventures
A non-profit type organisation as well, but this model includes some cost-recovery by means of selling goods and services. To be able to sustain their activities, entrepreneurs must mobilise other sources of funding besides public or philanthropic sectors. Grants or loans offer a solution to money shortages. These loans, however, need to be paid back at a certain point.

Social business ventures
Social business ventures are for-profit entities that provide a social or ecological product or service. Although financial profits are an underlying goal here, accumulating wealth is not the main objective. The focus of the enterprise is to grow as a social venture in order to reach more people in need and positively impact one or multiple sectors of society. Hence, a great deal of the profits is reinvested in the enterprise to fund expansion. The entrepreneur of this type of venture seeks investors who are interested in combining financial and social returns on their investments.

Importance of Social Entrepreneurship
Employment Development The first major economic value that social entrepreneurship creates is the job and employment Estimates ranges from one to seven percent of people employed in the social entrepreneurship sector. • Innovation / New Goods and Services Social entrepreneurs develop and apply innovation important to social and economic development and develop new goods and services. Issues addressed include some of the

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biggest societal problems such as HIV, mental ill-health, illiteracy, crime and drug abuse which, importantly are confronted in innovative ways. • Equity Promotion social entrepreneurship fosters a more equitable society by addressing social issues and trying to achieve ongoing sustainable impact through their social mission rather than purely profit-maximization. Another case is the American social entrepreneur J.B. Schramm who has helped thousands of low-income high-school students to get into tertiary education. A social entrepreneur is somebody who takes up a pressing social problem and meets it with an innovative or path breaking solution. Since profit making is a secondary objective, therefore they are people who are passionate and determined about what they do. They possess a very high level of motivation and are visionaries who aim at bringing about a change in the way things are.

Scope of Social Entrepreneurship

Social entrepreneurship is a growing, worldwide movement. The scope of social work is no longer limited to activism. Today, there are many opportunities in child welfare, community policing, healthcare, counseling etc in not only NGO's but also national and international bodies as well as social enterprises. Additionally, there is immense scope for social entrepreneurship and starting your own social initiatives. Social entrepreneurship will play a big role in bringing the growth to the rural masses in India and so it becomes important to study the factors, like fair trade, that will shape the social entrepreneurship philosophy

Qualities of Social Entrepreneurs

- **Ambitious:** Social Entrepreneurs tackle major social issues, from increasing the college enrollment rate of low-income students to fighting poverty. They operate in all kinds of organizations: innovative nonprofits, social- purpose ventures, and hybrid organizations that mix elements of nonprofit and for-profit organizations.
- **Mission driven:** Generating social value not wealth is the central criterion of a successful social entrepreneur. While wealth creation may be part of the process, it is not an end in itself. Promoting systemic social change is the real objective
- **Strategic:** Like business entrepreneurs, social entrepreneurs see and act upon what others miss: opportunities to improve systems, create solutions and invent new approaches that create social value.
- **Resourceful:** Because social entrepreneurs operate within a social context rather than the business world, they have limited access to capital and traditional market support systems. As a result, social entrepreneurs must be skilled at mobilizing human, financial and political resources
- **Results oriented:** social entrepreneurs are driven to produce measurable returns. These results transform existing realities, open up new pathways for the marginalized and disadvantaged, and unlock society‘s potential to effect social change

Role Of Technology

- The Internet, social networking websites and social media have been pivotal resources for the success and collaboration of many social entrepreneurs.
- Using wiki models or crowd sourcing approaches, for example, a social entrepreneur organization can get hundreds of people from across a country (or from multiple countries) to collaborate on joint online projects
- Having IT (Information Technology) enabled kiosks in rural areas in India wherein those people and the teenagers and the youth in particular can pick up valuable IT skills which would enhance their employability in future.

Problems Facing By Social Entrepreneur

- Funding
- Strategy and Long-Term Focus
- Remaining True to the Mission
- Lack of skilled man force
- Social and Cultural Effect
- Lack of Government support:

Some famous Social entrepreneurs
Muhammad Yunus founded Grameen Bank 1983.

In 2006, **Yunus** was awarded the Nobel Prize for creating the Grameen Bank to empower villagers with the funding to pull themselves out of poverty.

Bill Drayton is recognized as one of the pioneering social entrepreneurs of our time. Drayton founded “Ashoka: Innovators for the Public” in 1980, which takes a multi-faceted approach to finding and supporting social entrepreneurs globally

Sanjit “Bunker” Roy He had a privileged upbringing in India, in contrast to many Indians who live off of less than US $1 a day. He founded Barefoot College in 1972, a solar-powered college for the poor.

Top 10 Social Entrepreneurs of India
- Jeroo Billmoria.
- Ajaita Shah. ...
- Harish Hande. ...
- Sushmita Ghosh. ...
- Trilochan Shastry. ...
- Hanumappa Sudarshan. ...
- Akansha Hazari. ...
- Shaheen Mistry
- Aditya Baran Mallick
- Chetna Vijay Sinha

GOVERNANCE OF SOCIAL ENTREPRENEURSHIP
What is governance? Why is it important in social entrepreneurship?
Governance is formally defined as “systems and processes that ensure the overall direction, effectiveness, supervision and accountability of an organization”. Governance mechanisms can include governing boards, monitoring systems and signaling mechanisms like reporting or codes of conduct. Social entrepreneurs address the most pressing problems societies face through employing scalable, self-sustainable and innovative business models. They must balance financial responsibilities and social impact and must coordinate among multiple stakeholder groups, including investors, employees, regulators, clients and beneficiaries. As a result, social entrepreneurs leaders manage complex trade-offs. A carefully selected, well-designed and well-managed board will help the social entrepreneurs to reach its goals

Future of the possible role of Social Entrepreneurship in Development in India
The current need of Indian society is to have a meaningful program of social development that identifies and uses a series of reliable social indicators for measuring the quality of life. Social entrepreneurship shows the potential to develop into that and shows the capacity to contribute to development by providing results in quality of life, by using social indicators in studying development. With the use of social indicators reports on the state of society will be more accurate, consequently would ease the path to identify trends of change, anticipate impending problems and crises, along with better suggested policy leads and strategy modifications (Dube 1988).

Suggestions which could help Indian social entrepreneurs in achieving their objectives:

a) Social enterprise should use the network approach with other social enterprises to avail the opportunities in the market. It helps them to educate the consumer and set the market standards.

The social enterprises should work together to educate customers about the difference between their product and those offered (possibly at lower Prices) by other businesses.

b) Social entrepreneurs should assist higher education institutes in India in developing curriculum that instils social entrepreneurship in their students and, in doing so, provides social enterprises with access to good quality managers and promoters.

c) Majority of the social enterprises are operating mostly in the southern and western parts of India. This is primarily due to the jurisdictional focus of many of these enterprises and this leads to a regional imbalance in the growth of social entrepreneurship within the country. These enterprises should try to expand their operations to act as a mentor for similar organizations in the under-serviced areas of India. Balancing the growth of social entrepreneurship in the country would go a long way in solving the social problems of a large population spread over the width and breadth of the country.

How Can Social Entrepreneurs Contribute to Society?

An entrepreneur is often defined as someone who sees a social problem in his community and comes up with a new idea, method or business to respond to it. But the truth has more to it than this; their impact is really important and more significant than we can imagine.

A social entrepreneur, similar to a business entrepreneur, relies on his innovation and creativity, and is driven by his willingness to bring solutions; he builds a strong and sustainable organization, that puts mission before profits. That is the different thing about these social enterprises that creates a special appeal for them because this is the way you do good business; you help others and make a difference in their lives, unlike most (though not all) corporations that pursue CSR (corporate social responsibility) for marketing purposes or to reduce costs and increase profits.

CONCLUSION

Social Entrepreneurship holds the key for future development in India. In the days to come, social entrepreneurs will play a crucial role in the advancement of social changes. The best thing about social entrepreneurship is that success is not mentioned by financial gains, but by the number of people these enterprises are able to reach and create a positive impact. In the coming days, social entrepreneurship and Social businesses will be in the mainstream substantially, which will hopefully impact the society positively.

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YOUTH PERCEPTION TOWARDS SOCIAL MEDIA: A STUDY WITH REFERENCE TO UDUPI TALUKA

Rashmitha[1], Shruthi[2] and Dr. Umesh Maiya[3]
Student (M. Com)[1,2] and P. G. Co-ordinator[3], Dr. G. Shankar Government Women's First Grade College and P. G Study Centre, Ajjarkadu, Udupi

ABSTRACT
It is a known fact that young, adult and teenagers are the most avid users of social media sites and thisresearch was done keeping this in mind. Here the aims is to create an immense level of awareness among the youth exposed to such social media and findings will not only bear results as to how adversely and positively is the youth affected by the usage of these sites but also will help the youth to understand the usage of these networking sites like Facebook, Snapchat, Instagram, Twitter, WhatsApp efficiently.This study was carried out with youth between the age group of 18 to 30 and 150 samples were selected to fill the structured questionnaire. In this research paper a questionnaire is framed which focuses on the increased use of social media and helps to understand the background for using it. As a youth, are they utilising their precious time for good purpose or not?This question is answered here as these things matter a lot for overall development of the society as youth are the future of our society.

Keywords: Social media, privacy policy, youth perception, Communication Technology.

INTRODUCTION
"Social media is not a media. The key is to listen, engage and build relationship."

Social media may have been influenced by 1840s introduction of telegraph in USA which connected the country.Technology such as social media websites have become famous parts of life for many young people today. Everyone is in social media- young, adult and teenagers are always in frenzy when it comes to socialising online. There are many social media to choose from, some of the popular ones include Facebook, Twitter, and Snapchat. As the popularity of social media keeps on spreading all over the world, there have been mixed feeling about these networks and how they impact the youth.

Too much social media also leads to addiction. Society today is full of people seating next to each other, not talking but just staring at their phones. Youths are spending more time with social media friends than with their family, friends and loved ones. The creator of these networks did not anticipate that their creations would be centres of crime and social decay.

OBJECTIVES
1. To highlight the significance of social media.
2. To analyze the youths perception towards social media.
3. To find for what purpose youths are using social media.

RESEARCH METHODOLOGY
SAMPLING
For this study, the researchers used simple random sampling method to distribute the questionnaire among respondents covering the area which comes under Udupi Taluk with sample size of 150.

TOOLS USED FOR THE STUDY
This study is descriptive in nature. The study is based on primary data and the secondary data. Primary data was collected through questionnaire and the secondary data was collected from internet, books, and articles. Tabular form and the diagrams (various charts) are used for presenting the data and for testing the hypothesis chi-square test has been used.

HYPOTHESES
Hypothesis 1:
H_0: There is no significant relationship between the hours spent on social media and the impact of it on youth.

H_1: There is a significant relationship between the hours spent on social media and the impact of it on youth.

LITERATURE REVIEW
Boyd and Nielsen (2006) reported that the top 10 social networking sites developed with the passage of time, and its number of users increases from 46.8 million to 68.8 million. This rating reveals the important

information about how new generation interacts with each other. Talking about law and jurisdiction it is international law that one must be 18 years old minimum to use social networking websites but unfortunately, According to Lenhart& Madden (2007) calculation it has been analysed 41% of 12-13 years old and 61% of 14-17 years old users use social networking websites.

Charlene Li et al., (2007) estimated that students are more likely to use social networking websites; nearly 47% teenagers (12 to 17 years old) and 69% of young adults (18 to 21 years old) and 20% of adults (18+) use social networking sites, and only 20% use them to contact other people. According to Charlene Li et al (2007) students activity. Social networking sites focuses on communicating with each other.

FINDINGS OF THE STUDY

SIGNIFICANCE OF THE SOCIAL MEDIA

Advantages of social media:

1) Social media helps across the globe to communicate and stay connected to each other.

2) Sharing mass information is very easy and very quick since many social media sites provide the facility of creating groups.

3) Social media is great source of entertainment or refreshment which helps you lighten your mood.

4) It is a way of earning and livelihood for a huge number of people who are running their pages on social media sites.

Table 1: Personal profile of the respondents

Age	Frequency
18-20	28
21-23	61
24-26	22
27-30	39
Gender	Frequency
Female	99
Male	51

Source: Primary data

The survey was conducted on 150 youths out of which 28 were from the age group of 18-20, 61 were from the age group of 21-23, 22 were from the age group of 24-26 and 39 were from the age group of 27-30. In this study 66% of youth were females and 34% were males.

Table 2: Type of social networking sites used by youths

Social networking sites	Frequency	Percentage
Facebook	41	27.41
Snapchat	3	2.11
Instagram	34	22.89
Twitter	4	2.71
WhatsApp	65	43.98
Smule,Botim	1	0.30
Tumblr, Wattpad	1	0.30
Hike	1	0.30
Total	150	100

Source: Primary data

Table 2 indicates that type of social networking sites out of 150 youths 41 uses Facebook , 3 uses Snapchat ,34 uses Instagram, 4 uses Twitter, 65 uses WhatsApp and others use Smule, Botim, Tumblr, Wattpad And Hike by one each.

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Table 3: Youths purpose behind using social media sites

Use	Frequency	Percentage
Keep up with news/gossip/trends	54	35.83
To feel a sense of belonging	12	7.83
Contact and connect with friends/family	63	42.34
Interact with new people	21	14
Total	150	100

Source: Primary data

Table 3 indicates that the purpose of using social media sites by youths out of 150, 54 youths uses social media to keep up with news/gossip/ trends, 12 youths uses in order to feel a sense of belonging, 63 youths uses to contact and connect with friends and family and 21 youths uses it to interact with new people.

Table 4: Youths perception in inclusion of information in social profile

Information	Frequency	Percentage
Real information	99	66.00
Real to some extent	50	33.90
Fake information	1	0.70
Total	150	100

Source: Primary data

Table 4 indicates that 99 youths include real information in their social profile, 50 youths include real information to some extent and only one youth include fake information in social profile.

Table 5: Youths perception towards disadvantage of using social networking sites

Disadvantage	Frequency	Percentage
Time consuming	67	44.57
Less social interaction	23	15.12
Unrealistic expectations	21	13.95
Negative feelings and emotions	38	25.58
Addiction	1	0.78
Total	150	100

Source: Primary data

Table 5 indicates youths perception towards disadvantage of using social media sites 67 youths consider it as time consuming one, 23 youths assumes it as a less so interaction, 21 youths consider it as a way to unrealistic expectations, 38 youths consider it a way negative feelings or emotions and remaining one youth consider it as addiction.

Table 6: Youths perception towards effectiveness of privacy policies in social networking sites

Perception	Frequency	Percentage
Strongly disagree	10	6.70
Disagree	33	22.00
Neutral	67	44.70
Agree	33	22.00
Strongly agree	7	4.60
Total	150	100

Source: Primary data

Table 6 indicatesyouths perception towards effectiveness of privacy policies in social networking sites 10 youths strongly disagree, 33 youths disagree, 67 youths consider it as neutral, 33 agree and 7 strongly agree.

Table 7: Youths perception towards accepting strangers on social networking sites

Perception	Frequency	Percentage
Yes	33	22.00
No	59	39.30
Sometimes	58	38.70
Total	150	100

Source: Primary data

Table 7 indicates acceptance of strangers friendship in social networking sites out of 150, 33 accepts strangers friendship in social networking sites, 59 not accept strangers in social networking sites and remaining 58 youths sometimes accept strangers friend request in social networking sites.

Table 8: Youths perception towards effect of social media on life

Affect	Frequency	Percentage
Does not have an effect on face to face communication	72	48.00
Somewhat has an effect on face to face communication	56	37.30
Replace most face to face communication	22	14.70
Total	150	100

Source: Primary data

Table 8 indicates that 48% of youths perception is social networking media does not have an effect on face to face communication, 37% perception is somewhat has an effect on face to face communication and15% of youths perception is that it replace most face to face communication.

Table 9: Youths perception towards impact of social networking sites on overall well- being

Impact	Frequency	Percentage
Positive impact	12	8
No impact	21	14
Negative impact	11	7.3
Both positive and negative impact	106	70.7
Total	150	100

Source: Primary data

Table 9 indicates youth'sperception towards impact of social networking sites on overall well-being out of 150 youths, 12 consider it has positive impact, 21 perceptions is that it has no impact, 11 consider it as negative impact and 106 youths perception is, it has both positive and negative impact.

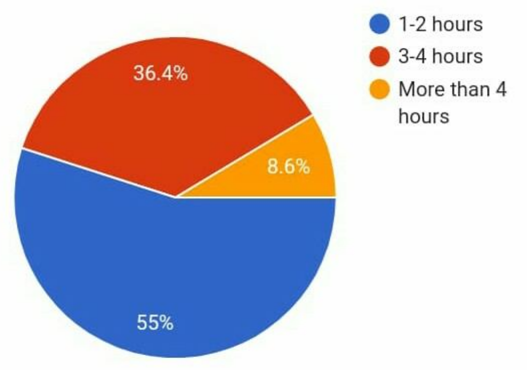
Table 10: Youths perception towards importance of social networking

Importance	Frequency	Percentage
Strongly agree	20	13.30
Agree	70	46.70
Neutral	51	34.00
Disagree	7	5.00
Strongly disagree	2	1.00
Total	150	100

Source: Primary data

Table 10 indicates youths perception towards importance of social networking sites 20 youths strongly agree , 70 youths agree, 51 neutral, 7 disagree and 2 strongly disagree.

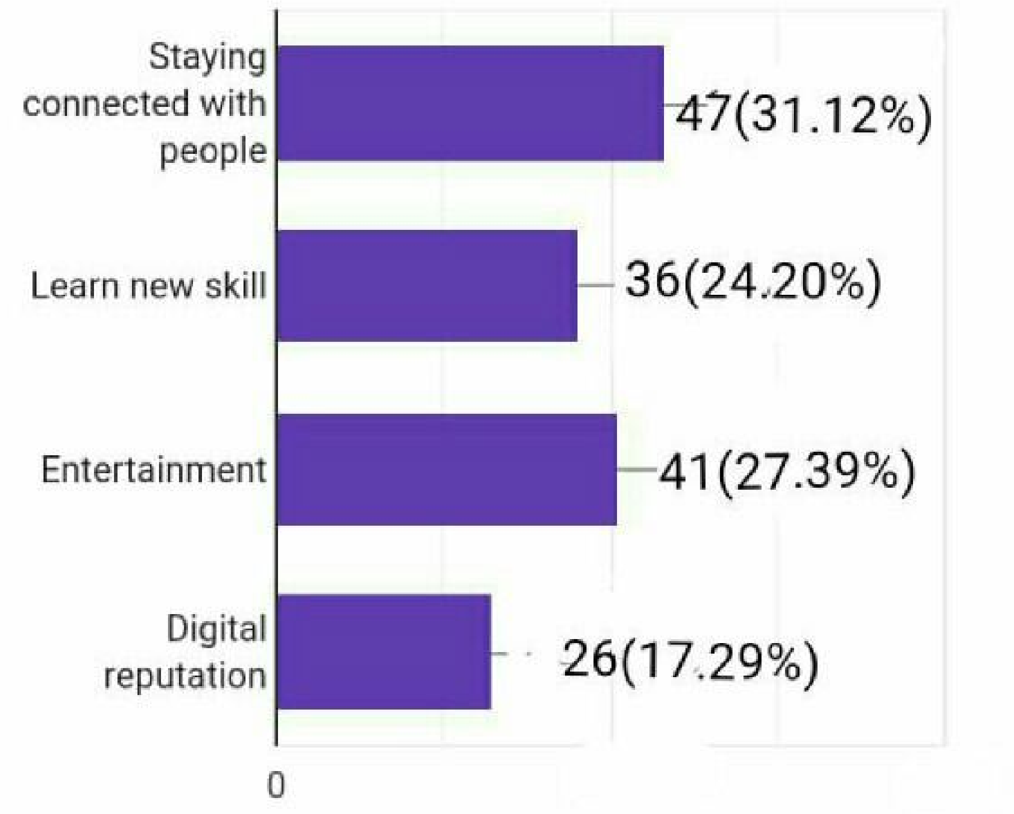
Fig-1: Youths perception towards personal benefits of using social networking sites



Source: Primary data

Fig 1 indicates that youths perception towards personal benefits of using social media sites. Out of 150 respondents, 31.12% respondents use social networking sites to stay connected with people, 24.20% use it to learn new skills, 27.39% respondents use it for entertainment and 17.29% youths use social media sites for digital reputation.

Fig-2: Youths perception towards time spent on social networking sites



Source: Primary data

Fig 2 indicates that youths perception towards time spent on social networking sites. Out of 150 respondents, 55% respondents are spending 1-2 hours a day, 36.4% respondents are spending 3-4 hours and 8.6% respondents are spending more than 4 hours a day on social networking sites.

TESTING OF HYPOTHESIS

H_0: There is no significant relationship between the hours spent on social media and the impact of it on youth.

H_1: There is significant relationship between the hours spent on social media and the impact of it on youth.

Table 11: Relationship between the hours spent on social media and the impact of it on youth

Impact / Hours	Positive	Negative	No impact	Total
1-2	27	28	16	71
3-4	21	22	3	46
More than 4	11	9	13	23
Total	59	59	32	150

Source: Primary data

Degree of freedom is 2

Level of significance is 1%

Calculated valve	Critical value
19.87	9.21

Chi-square value=19.87 more than 9.21, H0 is rejected.

Interpretation: Here alternative hypothesis H_1 is accepted; therefore there is significant relationship between the hours spent on social media and the impact of it on youth.

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CONCLUSION

The purpose of this research work was to examine the social networking sites usage patterns of youth and the impact of social networking sites on their lives and behaviour. Social networking has been proved to have both positive and negative effects on youth. The target group prefers spending an abundant amount of time on these social networking sites on an average of more than 2 hours a day which keeps them away from their own purpose of existence and interacting with their own natural surroundings. The youth today is not only techno savvy and socially existent but also embody social consciousness. The funding of this study can be used for further research work on social networking sites and it's impact on interpersonal relationships amongst youngster, culture and education.

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EFFICIENT MULTI-WEIGHTED CLUSTERHEAD ENDORSED ROUTING PROTOCOL (EMCRP) FOR MOBILE AD HOC NETWORKS

Dr. S. Karunakaran, Dr. N. T. Renukadevi and Dr. K. Saraswathi
Assistant Professor, School of Computer Technology & Applications, Kongu Engineering College, Perundurai

ABSTRACT
Mobile ad-hoc network (MANET) is a self-associating structure less wire free network of movable devices without any centralized management. The network nodes converse with one another over limited wireless channels in a multi-hop style. The ad-hoc network is flexible to the extremely vibrant topology ensuing from the mobility of association nodes and the varying broadcast conditions. The aim of a routing protocol that can react rapidly to network circumstances with little protocol overhead is a primary confront in MANET. Routing protocols must rapidly adjust to the topology variations and powerfully look for novel paths with least energy utilization. The proposed algorithm swiftly adapts to the topology modifications by means of efficient clusterheads elected based on five weight based parameters namely constancy, connectivity, remaining energy, pace and signal to noise ratio. The success of the proposed algorithm was calculated in terms of packet deliver ratio, end-to-end delay and control overhead.

Keywords: MANET, Cluster, Clusterhead, Constancy, Connectivity, Remaining energy, pace, signal to noise ratio

1.0 CLUSTER BASED ROUTING

Nodes in Mobile ad-hoc network take out routing with no help of an recognized infrastructure [1]. Nodes depend on one another in moving a packet towards the destination, due to the inadequate range of every mobile node's wire free transmission [2]. The recital of this network task is limited by a range of overheads in MANET which have to be handled for effective concert.

(i) No central management

(ii) Regular and erratic network topology variation

(iii) Bandwidth restraint and evaluation

(iv) Host Movement and Heterogeneity

(v) Restricted battery time

These expenses create a confront for the *Mobile ad-hoc network* scalability [3][15]. Flat MANET routing protocols affected by excessive direction-finding overhead when the extent of the network scales higher. Between the available solutions for this matter, hierarchical organization is the mainly studied. In order to resolve the scalability matter, and to perk up the PRESPentation, a hierarchical move towards dividing the network into clusters can be adopted.

Clustering strategy stabilizes the system and aims to manage the hosts effectively. In the lack of any middle manager in the network, clusterheads can contribute in a distributed nature to lead the network. Clustering confine the belongings of link or host failure inside the cluster and recover system topology.

The reward of clustering of hosts for scalability contain better performance and the hold up for additional users[13]. As the battery and bandwidth wealth of each host are bearably limited, alliance of nodes hooked on clusters may professionally utilize them to offer the guaranteed communication in MANET among the source and the destination [4][14]. Clustering of mobile hosts is intended at gathering different improvement of mobile ad-hoc network that contain reduced PRESPervation costs, energy competence, load matching to give out the workload beside the network. Clustering in mobile ad-hoc network centered on energy and bandwidth competence by dividing the network into convenient groups that evade the need for each node to commune directly. Clusterhead (CH) is selected to synchronize the actions in the cluster.

The cluster based approach in mobile ad-hoc network facilitates, efficient network administration, better routing competence and scalability, condensed power utilization, simpler and steady topology, enhancement of susceptibility due to a host adding and moving, connection failures, reduced nosiness, effectual network capacity and decreases the end-to-end delay[5][12].

2.0 CLUSTER HEAD SELECTION

2.1 EXISTING APPROACHES

In the existing cluster based methodologies for routing network function, the finding the clusterhead was aimed on criterions, namely highest heuristic, Lowest Identifier (LID) heuristic and weight based heuristics. The major disadvantage of highest degree algorithm is that, it has a general hypothesis that the hosts do not shift while the cluster configuration is in growth [6][16]. The LID approach plans to stabilize the load, by identifying clusterhead among least ID nodes. Literature survey reveals that the node weight oriented approach is most valuable in electing the clusterhead.

2.2 PROPOSED APPROACH

Node weight oriented clusterhead selection process will be proficient for mobile ad-hoc networks. In the current weight based techniques factors like node mobility, speed, distance, faith value, cumulative duration of being a clusterhead, connectivity, register time in the cluster and lasting energy level have been applied in various combinations to identify the clusterheads. The blend of constancy, connectivity, remaining energy, speed, signal to noise ratio are vital in determining the life span of a node, are deemed together in the planned approach, to choose an efficient clusterhead.

3.0 RELATED WORKS

In Distributed Clustering Algorithm (DCA) [7], the nodes are organized following a weight bases principle. It permits the selection of the nodes that manage the clustering procedure based on node mobility connected constraints. DCA requires only facts of the home topology at every node, and permits each normal node to have straight access to minimum one clusterhead, thus assured quicker inter and intra cluster contact between each couple of nodes. Its time complication is proven to be delimited by a network restriction that depends on the topology of the network quite than on its size. However, DCA is appropriate for networks where nodes moreover do not shift or shift very gradually.

A Weighted Clustering Algorithm (WCA) [8] takes four parameters that are node degree, remoteness, mobility and remaining energy to calculate the node weight. In stipulations of the numeral of clusterheads and leading set updates, WCA reveals enhanced performance than the current techniques. However, the superior mobility of nodes leads to additional occurrence of reaffiliations, which in revolve maximize the network burden and reduces the network life span.

Flexible Weight Based Clustering Algorithm (FWCA) [9] introduced with the objective of resulting small number of clusters, maintaining steady clusters, reducing the number of access for the algorithm and increasing existence of mobile nodes in the system. Every node calculates its weight cost to choose a clusterhead based on the degree distinction, real transmission energy, normal speed, remaining energy. Ultimately, the path connecting two nodes changes continually as the clusterhead position modified. And also, further control overhead packets produced by FWCA affects its performance.

Secured Clustering Algorithm (SCA) [10] methodology elects the clusterhead based on the weight factors of faith worth, degree, energy, max value, and steadiness. It surpasses restrictions in other algorithms by introducing new methods as cluster division, merging shrinking and extension. They too suggest using resourceful flooding to drive beacons inside the cluster to evade overhead owing to flooding. SCA creates a hierarchical arrangement which can be used for together protection and routing protocols. However, the SCA introduce extra clusters to administer the rising quantity of nodes.

Flexible Weighted Clustering Algorithm based on Battery Power (FWCABP) [11] calculate node weight using scattering degree, home clustering coefficient, standard speed and battery energy. In FWCABP, a specific threshold for the amount of nodes to be formed by a clusterhead persists, thus it will not disgrace the MAC task. It enhances the load balancing. On the other hand, when the movement of nodes augmented, node takes additional battery energy. Consequently, the minimum lifetime of nodes reduced in FWCABP.

4.0 EFFICIENT CLUSTER HEAD ELECTION

In the proposed effort, effective clusterheads are elected based on the slightest collective weight value of constancy, remaining energy, connectivity, pace and signal to noise ratio. Effective cluster heads are employed to improve the routing.

(i) Constancy: The constancy of a node decides its ability to continue within the cluster. It is calculated based on the longer availability of connectivity among its neighbour nodes even as in movement.

(ii) Connectivity: Predicts the numeral of neighbours of a specified node, within a known radius. This criteria is used to elect a clusterhead, the node with the majority of neighbours, in line to service more nodes.

(iii) Remaining energy: Point out the outstanding energy on hand with a node. Because clusterhead has added tasks, it have to converse as extended as probable, thus it should be the majority powered node.

(iv) Pace: It is the measure of movement of node in the cluster. It is identified by computing the running average rate of each node throughout a particular time.

(v) Signal-to-Noise Ratio [SNR] : Signal to noise ratio in message point out the sum of fault in the propagated signals amongst the two communicating nodes. When this ratio is minimal then the nodes are proficiently communicate one another and retransmission of information is kept back. Therefore least SNR nodes are elected for competent cluster configuration.

The fundamental plan is to unite each of the said parameters with definite weighing factors connected on the system requirements. The ability of modifying the weighting factors supports to use the algorithm to a variety of applications. Clusterheads are elected on basis of the following weighted sum:

$$W = w_1D_1 + w_2D_2 + w_3D_3 + w_4D_4 + w_5D_5 \qquad (1)$$

where, D_1 is the constancy index of the node, D_2 is the connectivity factor, D_3 is the remaining energy, D_4 is the measure of pace that depends on the velocity of each node for the limited duration and D_5 is the measure of signal-to-noise ratio. Now w_1 to w_5 are the weight aspects and the sum of these factors is 1, thus that the input of the individual factor for clusterhead election be able to tuned by identifying the appropriate mixture of the weighing factors. Considering the importance of the parameters constancy, connectivity, remaining energy, pace, SNR of the network, these weighing factors are decided. To enhance the performance of various networking function beside the efficient clusterhead election, the best possible route detection has been obtained based on the constant and non-lock pathway.

4.1 MEASURING CONSTANCY

N_{Men} → Mention Node

T_t → Total time

I_P → Period

D_r → Distance range

n_{iv} → N_{men} one-step neighbors

$d[N_{ji}]$ → Distance of node N_j in the Period

Δ_d → Relative distance

Time → T_t/I_t

for specific mentioned node N_{Men}

for i interval values upto T_t

for j nodes in N_{Men} 's immediate vicinity

$d[N_{ji}]=distance(N_{Men},N_j)$

$\Delta_d = |d[N_{ji}] - d[N_{ji} - 2]|$

While ($\Delta_d > d_t$)

unsteadycount[N_{ji}]++

done

sleep (interval)

end

The value for constancy factor 'D_1' in the equation (1) was computed as,

$$D_1 = 1/n_{iv} \sum_{i=1}^{n_{iv}} |1\text{-unsteadycount } [N_i]/\text{time}|$$

4.2 MEASURING CONNECTIVITY

Connectivity is the measure of nearby nodes of a given node, surrounded by a specified radius. This constraint is used to decide a node as clusterhead which has highest neighbours. Moving host ‘v’ evaluate its new neighbor set N(v) with the original neighbor set N(v). If it was found to be identical, then host ‘v’ just does nothing. Else, host ‘v’ swaps the open neighbor group among all its one-step neighbors. Also, the host ‘v’ characters itself as backbone if it has two isolated neighbors, or else symbols itself as non-backbone. The mobility of node ‘v’ is concurrent or non-concurrent with linkage connections and disconnections. Throughout the progress of the mobile hosts, a lot of disconnections to its nearby nodes may happen. Likewise, inside its communication range, lots of fresh link relations may take place and afterward find disconnected. To begin with all mobility hosts suppose a consistent connectivity factor ‘C’.

While a node ‘u’ obtain a indication {reg(v), Tick} with no receiving sign {reg(v), Begin} earlier, node ‘u’ can finalize that it has a fresh connection to node ‘v’, and it straight away raises ‘C’ by 1.This connectivity factor ‘C’ can be replaced for D_2 in equation (1).

4.3 MEASURING REMAINING ENERGY

The energy level of cluster nodes is obtained by adopting a distributed algorithm (Halpern et. al. 2001)[17]. To compute the remaining energy, the network in dignified as a graph with a set ‘V’ of probable movable nodes situated in the system. Every node ‘u’ Є ‘V’ is mentioned by its coordinates (x(u),y(u)) during any known point of instance. Every member ‘u’ has a energy criteria ‘p’ where p(d) gives the least amount of energy required to set up a communication bond to a node ‘v’ at remoteness ‘d’ away from ‘u’. The rate for ‘d’ is computed based on the detachment equal to which the link continue among the nodes ‘u’ and ‘v’. Utmost transmission energy ‘P’ is same for every node, and the greatest distance for any two members to commune directly is ‘R’, i.e. p(R) = P. This energy utility ‘P’ is applied for D_3 in the equation (1).

4.4 MEASURING PACE

While the nodes in the cluster move faster, it may be disconnected from the clusterhead and as a effect, re-association take place. Re-association occurs after one of the normal member moves away from a cluster and register with another available cluster. In this circumstance, the sum of data swap among the node and the related clusterhead is limited and quite minimal. The data revision in the occurrence of moderation in the dominant group is a large amount than a re-association. ‘P’ is the gauge of movement. It relies on the pace of each node ‘v’ in a particular time ‘T’. Calculating the pace of each node provides a gauge of ‘P_v’.

$$P_v = \frac{1}{T}\sum_{t=1}^{T}\sqrt{\left(X_t - X_{t-1}\right)^2 + \left(Y_t - Y_{t-1}\right)^2} \qquad (2)$$

Here (X_t, Y_t) with (X_{t-1},Y_{t-1}) be the coordinates of the node ‘v’ at moment t and t-1. Node with fewer paces is a healthier alternative for clusterhead. This pace value ‘P_v’ is applied for D_4 in the equation (1).

4.5 MEASURING SIGNAL TO NOISE RATIO

The signal-to-noise ratio is calculated for the overall connection that persists among the nodes by sending the test signal lively. SNR value of node N is calculated between all nodes in its vicinity. Normally in wireless scenario the node might have link with every other node within its coverage area. The anticipated value is the link value metric. The node with maximum link value is considered for electing as clusterhead. The nodes with less link value are not measured for the selection. The below formula used for computing SNR value,

$$N_{SNR} = (10 \log)\frac{Rx\_Thresh}{Noise\_E} \qquad (3)$$

Where,

N_{SNR} ⟶ Signal-to-noise ratio of Node ‘N’

Rx_Threh ⟶ Getting threshold value

Noise_E ⟶ Signal noise power

5.0 OPTIMAL PATH DETECTION

With the cluster oriented routing methodology, every clusterhead keeps the relationship data of the each other node inside the gather. The clusterheads document the IP addresses of nodes within its cluster in the path table and the IP addresses of nearby clusterheads in the adjacent table. Paths within the cluster boundary (Intra-cluster paths) are identified in real time by means of relationship data. Paths between clusters (Inter-cluster paths) are established through deluge the system with the Path Request (PREQ).

Cluster members interchange data by means of dispersed advance method. In order to review adjacent table, all members every so often communicate its adjacent table in a ‘welcome’ note to the further nodes within the group. This procedure makes fresh neighbors to be included to the adjacent table. As a result of investigating the adjacent table from its neighbors, a member will be in position to obtain absolute data regarding the system topology. Nodes include its own IP addresses with its ‘welcome’ communication and the clusterheads insert the IP addresses of their cluster nodes into its ‘welcome’ note. When ‘welcome’ message not obtained from a particular member, afterward the node is measured to be left from the group and the record for that member would be erased from the adjacent table.

While the Mentioned node (N_{Men}) in some particular cluster is eager to correspond to End node (N_{End}), it contains the knowledge of just the identity of the end node. Network packets shall be directed towards the end node, barely when the mentioned node realizes the end system’s IP address. The procedure of discovering the IP identification of the end node with the help of its node ID is called as ‘determination the identity of end node’. In order to know the IP address of the end node, the mentioned node transmits a Path Find request (PFIND) message towards its clusterhead. The receiving clusterhead authenticate whether the end node alive in its cluster currently. Provided that the end node was available within the identical cluster range, it transmits its IP address by means of Path Response (PRESP) message to the mentioned node. After considering the accessible routes, N_{Men} choose the steady and non-lock route to N_{End}.

Upon the node to be reached is available on a different cluster range, and then the clusterhead of the mentioned node conveys a Path Find Request Message (PFIND) towards the clusterheads of the left over clusters. On the other side, the clusterheads on receiving this demand, look for the availability of the needed source in the range of their own clusters. While discovering the seek out source, the identity of the alarmed node N_{End} is forwarded to the node on demand N_{Men} via Path Response (PRESP) message. The mentioned node then identifies entire available routes to the end node and verifies the routes using the below criteria:

(i) Constancy

(ii) Non-Lock

(iii) Traffic-free

Every existing route from the mentioned node to the end node is evaluated for packet conduction. Within them, the group of constant and non-lock routes were discovered. Relations were implemented on these routes, for transmitting the packets. Between these routes, few routes might have been detached owing to movement. Packets are then forwarded with further low traffic, constant and non-lock routes which are currently live.

5.1 ALGORITHM STEPS

1. Start efficient clusterhead election procedure
2. Send receive beacon communication
3. Multi-Weight Estimation
A. Constancy
B. Connectivity
C. Remaining Energy
D. Pace
E. SNR
4. Weight value distribution to first hop neighbors
5. Node self weight Assessment
6. If (my weight > neighbors weight)
A. Choose me as Clusterhead
7. Else if (my weight < neighbors weight)
A. Leave from election process
B. Wait for broadcasted communication from elected clusterhead8

9. End if
10. Elected Clusterhead broadcast to available members within cluster.
1. Start constancy and non-lock path discovery procedure
2. N_{Men} transmit PFIND to its clusterhead CH_c of C_c
3. If N_{End} € C_c , then

   N_{End} launch PRESP to CH_c

   CH_c lay down every connection-bound route from N_{men} to N_{End}

   CH_c chooses the routes that conforms

   Least traffic, maximum constancy and has restricted non-lock trait
4. Else

   Call Func DiscoverAndForward (N_{End},C_c)

   CH_c lay down every connection-bound route from N_{Men} to N_{End}

   CH_c chooses the routes that conforms

   Least traffic, maximum constancy and has restricted non-lock trait
5. End
6. Func DiscoverAndForward (N_{End},C_c)
7. If (N_{End}! EC_c–)

   DiscoverAndForward (N_{End})
8. Else

   Promote RRESP to C_c+
9. End func.
10. End

Here, C_c– denotes downstream, C_c+ denotes upstream clusters.

6.0 EXPERIMENTAL RESULTS

The ability of the projected procedure EMCRP is judged against DWCA [18], ZRP [17], and MOBIC-R [16]. The distributed coordination function (DCF) of IEEE 802.11 of WLANs was used as the MAC layer protocol. It has the capability to alert the network layer regarding connection break. Under the current simulation, 100 mobile nodes travel in a 2500 meter x 1500 meter rectangular area for 100 seconds. Starting position and mobility of the nodes are availed with the random waypoint (RWP) method of NS2. It has been presumed that every node shifts separately with the equal pace. Each node has the similar broadcast range of 300 meters.

6.1 PACKET DELIVERY RATIO

It is the fraction of the amount of packets reached productively and the sum of packets transmitted.

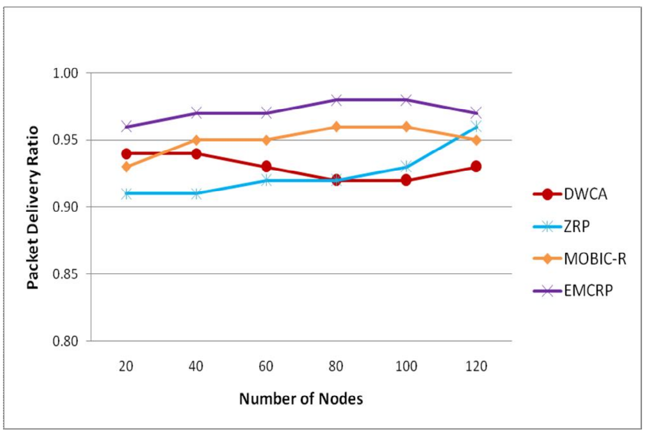

Fig. 1: Packet delivery ratio with respect to no. of nodes

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The proposed efficient multi-weighted clusterhead approach maintains the topology of the network by minimizing recurrent communication drops. Hence, a dynamic path established by EMCRP remains for extended time and delivers additional packets. EMCRP attains constantly better show by maintaining 96% to 98% of Packet Delivery Ratio (PDR) for 20 to 100 nodes.

6.2 END-TO-END DELAY

End-to-end delay refers to the time in use by a data packet to arrive at the target. The procedure for computing this metric is to subtract the instance at which the initial packet was propagated by the mentioned node from the time by which the initial packet reached at the target node.

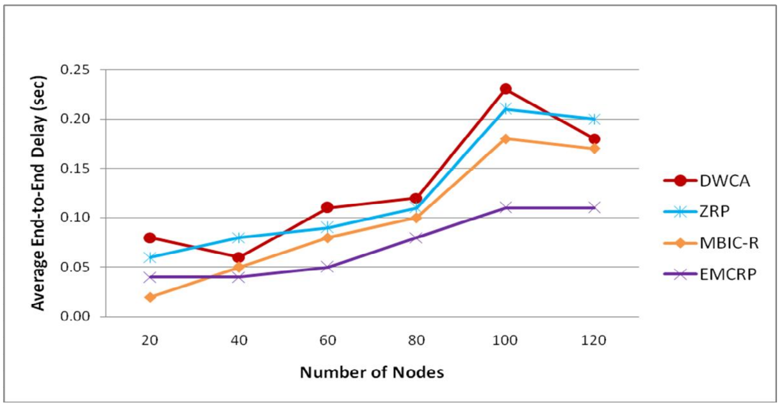

Fig. 2 : End-to-End delay with respect to no. of nodes

EMCRP optimizes the packet communication time by selecting the path from mentioned node to end node that satisfies the least traffic, constancy and non-lock characteristic. This strategy facilitates EMCRP to reveal the better end-to-end delay for the count of nodes from 35 to 120.

6.3 CONTROL OVERHEAD

This characteristic relate to the total amount of path finding control packets regulated by the total amount of obtained data packets.

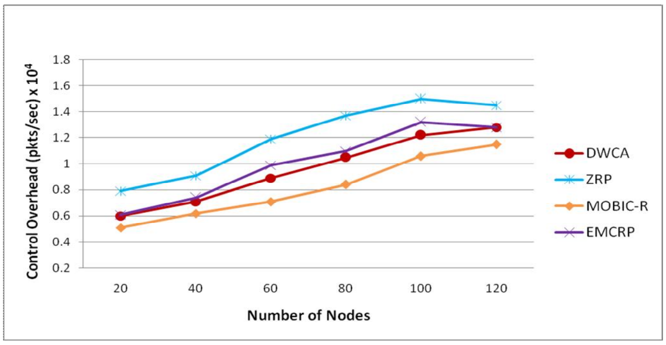

Fig.3: Control overhead with respect to no. of nodes

With respect to the rise in nodes, the count of messages exchanges within and outside cluster rises. The control overhead of the planned EMCRP approach is higher when evaluated with DWCA and MOBIC-R. The reason for this weakness is extra control packets swapped while cluster configuration course and efficient clusterhead election, based on multiple weighted criterion.

7.0 CONCLUSION

Recognizing resourceful clusterhead and establishing efficient message delivery routes between the mobile nodes in MANET was demanding mission. With that goal, the proposed EMCRP methodology discovers constancy and non-lock routes among the nodes in MANET with the support of efficient clusterhead. Here, the identification of suitable clusterhead is carried out by allocating multiple weight oriented criteria that includes constancy, connectivity, remaining energy, pace and signal to noise ratio. Such an ingenious clusterhead preserve consistent path information with the intention of steadying the topology of the wireless network. Since, an energetic path in EMCRP carry on for an extended period, additional packets shall be distributed. As a rationalization for the improvement in the network, the simulation outcomes prove that the projected EMCRP methodology obtains enhanced results while comparing with the certain clusterbased routing algorithms DWCA, ZRP, and MOBIC-R in view of packet delivery ratio and end-to-end delay. The control overhead aspect of EMCRP is better than ZRP. However it was weaker than the DWCA and MOBIC-R protocols. The

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future direction of the proposed work involves, indentifying improvements that required for minimizing the control overhead packets.

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IMPACT OF ONLINE SHOPPING ON CONSUMERS IN THANE CITY

Dr. Manisha D. Bhingardive
Assistant Professor, S. P. Dnyanasadhana College of Arts, Commerce & Science, Thane (W), Mumbai

ABSTRACT
The present transformation in the digital world has open up great opportunities for marketing companies to cover wide area and consumers at faster rate. Digital marketing is boon for the E-retailing companies because of benefits it offers such as customer friendly, savings in time, round the clock shopping, wide variety, reasonable rates, and huge discounts and so on The aim of the research was to understand the concept of digital marketing, to study factors influencing growth of online shopping and impact of online shopping on the consumers. The hypothesis was tested with the help of parameters like savings in cost & time, speed of transactions, convenience, prices charged, discounts and offers given, payment gateways and wide variety of products. Undoubtedly online buying has shown rapid growth but it suffers from certain limitations such as lacks privacy, payment security, leaking of personal data, issues in product delivery, sometimes inferior quality products and so on.

Keywords: Digital marketing, consumer-friendly activity, impact on life of consumers.

INTRODUCTION
Since the beginning of millennium, use of advanced technology and ICT changed not only businesses but also the public life in world. The present transformation in the digital world has open up great opportunities for marketing companies to cover wide area and consumers at faster rate. Digital marketing is boon for the E-retailing companies because of benefits it offers such as customer friendly, savings in time, round the clock shopping, wide variety, reasonable rates, and huge discounts and so on. Online marketing means any form of business transaction in which the parties interact electronically with each other Digital marketing includes email marketing, search engine marketing, social media marketing, many types of display advertising, mobile adverting etc. Today, we online buy from air ticket to daily grocery with the help of many portals like Grofers, Big Basket, Flipkart, Amazon, Snapdeal and so on.

CONCEPTUAL FRAMEWORK
a) Electronic Commerce (E-Commerce): E-Commerce relates to electronic trading of goods, services and electronic material. It is in general term which includes any form of commercial transactions or exchange of information through electronic mode.

b) Online shopping: The action or activity of buying and selling of goods with the help of internet. Broadband make online shopping easier.

c) Digital Marketing: The marketing of products or services using digital channels to reach consumers. The main purpose is to promote products through various form of digital media.

REVIEW OF LITERATURE
a) Hsiao (2009) mentioned in his article, that the digital revolution has brought about paradigm shift in the way of shopping activity. Online shopping is a process of buying goods & services from directly from seller by eliminating the middlemen.

b) Huang (2000), has asserted in his article that the online platform is nearly perfect market for performing dealings as the available information is compared with offerings of variety of sellers globally.

c) Dahiya (2012) has explained that the key to survive the businesses in the future depends on level of integrating e-commerce in business models today. With the intention to sale various products over the internet, the firms have to consider the factors like type of customers, their spending habits and their preferred products and services.

GENESIS OF THE STUDY
Previous studies reveal that digital marketing is growing faster in India. The driving factors for the growth of digital marketing are entry of corporate giants, increased inflow of FDI finance in this sector. The online sales of the product and services will shoot up in near future with increasing internet penetration, increased use of smart phones and tablets, increased base of social networking, penetration of e-wallets, ease of payments with debit and credit cards, and so on. In this regard the researcher the researcher attempted to study the effectiveness of online shopping to consumers.

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OBJECTIVES OF THE STUDY

The study was conducted keeping in view the following objectives for research:

1. To understand the concept of online shopping and digital marketing.
2. To analyse the driving factors of popularity of online marketing.
3. To study the impact of online marketing on life of customers.

HYPOTHESIS OF THE STUDY

H_1: *There is positive relationship between the benefits offered and purchase decision of consumers.*

METHODOLOGY AND DATA SOURCES OF STUDY

a) Data Collection: The study is an empirical research based on primary as well as secondary data. The primary data has been collected from 240 respondents form Thane City. A questionnaire based survey was conducted and data was collected from various categories such as student, salaried person and housewives. The secondary data for study has been collected from sources such as referring books, journals, websites, articles etc.

b) Statistical Technique used for analysis: To study and analyze the data, Ratio analysis and correlation analysis was used to arrive at findings and conclusion.

c) Presentation: Data relating to Thane city was analyzed and it is presented with the help of Tables, charts and diagrams.

d) Limitations: The study mainly focused on benefits of online Thane city. Though the researcher finds the selected geographical area under study representative in nature, an ideal effort would have been to covering the more cities. Since this was the study undertaken by the individual, it was not easy to carry out such a vast study because of time, cost and other resource constraints. The researcher restricted herself to select only Thane city.

DATA ANALYSIS AND DISCUSSION

Online shopping has becoming popular day by day due the benefits it offers to the consumers. It is the process whereby consumers directly buy goods or services from a seller as per their convenience by eliminating the role of intermediaries. Online shopping offers following benefits to consumers:

BENEFITS OF ONLINE SHOPPING

1. Consumer friendly: It is the main advantage offered by online shoppers. It provides the opportunity to shop round the clock (24*7). It is more convenient because of the factors such as easy billing, no wait to open the shop, anywhere anytime shopping etc.
2. Saves time: The customer can purchase the products by sitting at home, avoids standing in queues, and saves energy, time and money also.
3. Better Price: Cheap deals and reasonable price are available because the products are purchased directly from manufacturer. The main bnefit enjoyed by customer is cash on delivery (COD) method of payment.
4. Cost effective: In case of online shopping consumers buy the products with the help of broadband so it save distribution cost, transportation cost and service charges. It saves not only money but time and energy also.
5. Wide variety: In case of online shopping, customers can find almost any brand or item they are looking for. Customers can get in on the latest international trends without spending extra money. A far greater selection of colors and size are also available.
6. Heavy Discounts & offers: Online shopping provides more offers and discount to consumers. It attracts consumers in large number.
7. Allows instant comparison of product: Consumers can easily compare the price and features of the product online. Instant comparison of feature of product is possible by visiting other online sites.
8. Easy to Gift relatives and friend: Customers can easily send gifts to relatives and friends, at any nook and corner of the country. They can directly send the gifts through online shopping to any relative’s place.
9. Easy Buying of antique and rare items: The marketplace on the internet makes it much easier for us to buy old or unused things at rock bottom price. Also, if we want to buy antiques, there is no better place to find great ones. It reaches to remotest areas in India.

10. Provides Reviews & information: Here consumers can see the all information related to product provided by the seller. They can also see rating, feedback and reviews about products given by the consumers.

ANALYSIS OF PRIMARY DATA

a) The customers were influenced by their structural features such as their age, gender and economic status. Hence, the questions were regarding age, type of gender and whether they were employed or not. The information of these aspects was collected from the sample respondents and has been given below:

Table 1: Personal-Economic features of Sample Respondents

Sr. No.	Particulars	No. of Respondents	Percentage
A	Age		
	18-24	69	28.75
	24-35	84	35.00
	36-50	59	24.58
	51 & above	28	11.67
B	Gender		
	Male	140	58.33
	Female	100	41.67
C	User Status		
	Student	60	25.00
	Employed	154	64.17
	Housewives	26	10.83

Source: Compiled from field survey.

It s evident from above Table No. 1 that 35 % of the respondents were from age group of 24-35, followed by nearly 28.75% were from 18-24 age groups. Nearly 25% were from 36-50 age and hardly 11.67% percent were from 51 & above category. Whereas 58.33% were males and 41.67% were females. To find their status the questions were asked, nearly 66 % were employed followed by 25% were student and nearly 11 percent were house-wives.

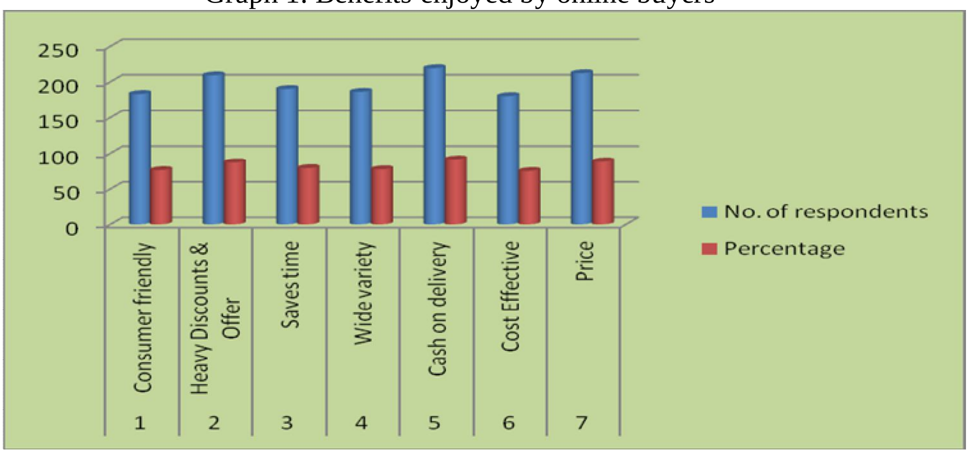
b) The customers were influenced by the factors affecting the adaptation of on-line buying. Hence, the questions were regarding benefits of online buying and rate it as per their preference. The information of these aspects was collected from the sample respondents and has been presented in table below:

Table 2: Benefits enjoyed by online buyers

Sr. No.	Particulars	No. of respondents	Percentage
1	Consumer friendly	183	76.25
2	Heavy Discounts & Offer	209	87.08
3	Saves time	190	79.17
4	Wide variety	186	77.50
5	Cash on delivery	219	91.25
6	Cost Effective	180	75.00
7	Price	212	88.33

Source: Compiled from primary data.

Graph 1: Benefits enjoyed by online buyers



It can observed from Table No.2 & Graph No 1 that cash on delivery is the most popular facility given to customers as 91.25% enjoyed it, followed by price charged by e-tailers 88.33 and heavy discounts which is 87.08 %. Nearly 77 % were attracted by wide variety of products whereas more than 79 % by the savings in time and 76.25 % responded that it is use friendly as offers lot of convenience to them. Nearly 75% responded that it is cost effective as it offers the products at very reasonable rate with free home delivery.

TESTING OF HYPOTHESIS

Percentage analysis and correlation analysis, the simple statistical tools are used by the researcher for testing of hypotheses. Analytical summary of the findings is presented here with for the testing of first hypothesis.

It can be inferred from the above analysis (Refer Table 1, Table & Graph 1) that benefits offered by e-retailers affect the buying decisions of customer in Thane city.

FINDINGS

Online shopping has become popular due to the benefits offered by online companies to the consumers. Buying decision of the customer is influenced by the benefits enjoyed by the customers. The major findings of the study are as follows:

- Online marketing is boon for the E-retailing companies as they can maximize their sales and provide maximum benefits to customers such as customer friendly process, savings in time, round the clock shopping, wide variety, reasonable rates, and huge discounts and so on.
- The driving factors for the growth of digital marketing are entry of corporate giants, increased inflow of FDI finance in retail sector. Recently multinational company Wal-Mart purchased 77% share of India Flip cart Retail Company.
- It is evident that 35 % of the respondents were from age group of 24-35, followed by nearly 28.75% were from 18-24 age groups. Nearly 25% were from 36-50 age and hardly 11.67% percent were from 51 & above category. Whereas 58.33% were males and 41.67% were females.
- It is observed that nearly 66 % were employed followed by 25% were student and nearly 11 percent were house-wives.
- It can observed that cash on delivery is the most popular facility given to customers as 91.25% enjoyed it, followed by price charged by e-tailers 88.33 and heavy discounts which is 87.08 %.
- It is found that nearly 77 % were attracted by wide variety of products whereas more than 79 % by the savings in time and 76.25 % responded that it is use friendly as offers lot of convenience to them. Nearly 75% responded that it is cost effective as it offers the products at very reasonable rate with free home delivery.

CONCLUSION

On the basis of above discussion and previous studies it can be concluded that India has witnessed a significant jump in online business and it is becoming popular day by day due the factors such as cost effective, round the clock shopping, saves time, reasonable prices, heavy discounts, wide variety, and easy payment ways and so on. Previous studies revealed that it the fourth most popular activity on the internet right after e-mail usage, instant messaging etc. Undoubtedly online buying has shown rapid growth but it suffers from certain limitations such as lacks privacy, payment security, leaking of personal data, issues in product delivery, sometimes inferior quality products and so on.

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SAFETY AND EFFICACY OF A POLYHERBAL UNANI FORMULATION (SHARBAT-E-FAULAD) IN SŪ' AL-QINYA (ANAEMIA) - A MULTI CENTRIC STUDY

Asim Ali Khan[1], Abdul Raheem[2], Shabana Parveen[3], Arifa Khatoon[4], Shagufta Parveen[5] and Zeba Afrin[6]
Director General[1], Research Officer[2, 3, 4] and Research Associate[5, 6], Central Council for Research in Unani Medicine, New Delhi

ABSTRACT

Background - Soo-ul-Qinya (Anaemia) is a major public health problem in India. According to the World Health Organization (WHO), there are two billion people with anaemia in the world and half of the anaemia is due to iron deficiency. Unani system of medicine has a treasure of single and compound formulations for the treatment of anaemia. The compound drug (Sharbat-e-Faulad) is one of widely prescribed medicine for the treatment of Soo-ul-Qiniya (Anaemia) in Unani medicine.

Material and Methods- Present open labelled, multi-centric, single arm validation was conducted to evaluate the safety and efficacy of Unani pharmacopeial drug Sharbat-e-Faulad in So-ul-qinya. Patients with Hb% in the range of 8-12 mg% in males and 8-10 mg % in female are included in the study. Sharbat- e- Faulad were given in the dose of 12 ml twice a day for the period of 12 weeks. Clinical as well haematological parameters were assesses before and after the treatment to evaluate the safety and efficacy of the drug.

Results– there is significant improvement in the Hb% of the patients treated with Unani formulation. Also, improvement in the sign and symptoms associated with Sū' al-Qinya (Anaemia) are recorded.

Conclusion- Unani compound formulation Sharbat-e-Faulad has substantial efficacy as a haematinic drug in the management of Sū' al-Qinya (Anaemia).

Keywords: validation, Sharbat-e-Faulad, Sū' al-Qinya, Anaemia

INTRODUCTION

Soo-ul-Qinya (Anaemia) is defined as the concentration of hemoglobin (Hb) less than 11 to 12 g/dl. It is further categorized as mild (10-11g/dl) moderate (9.7-9.9g/dl) and severe (less than 8 g/dl) [Kwiatkowski & West 1999]. Anaemia is typically caused by inadequate intake of iron, chronic blood loss, digestive problem and other systematic and metabolic disease. It is one of the most common nutritional disorders and therefore has a public health importance in developing countries like India where it is a most widespread nutritional problem especially in adolescent and woman of reproductive age. According to the World Health Organization (WHO), there are two billion people with anaemia in the world and half of the anaemia is due to iron deficiency [WHO, 2001]. It is a late indicator of iron deficiency, so it is estimated that the prevalence of iron deficiency is 2.5 times that of anaemia [WHO, 2001, Zimmermann and Hurrell,2007]. The estimated prevalence of anaemia in developing countries is 39% in children <5 years, 48% in children 5–14 years, 42% in women 15–59 years, 30% in men 15–59 years, and 45% in adults >60 years [WHO, 2001]. In a recent National Family Health Survey 2015-16, anaemia is reported 54% among females and 22% in male population [NFHS-4, 2016]. Anaemia can be due to many different reasons such as malaria, parasitic infestations and urinary tract infections, in fact poor nutrition and excessive ingestion of toxic chemicals. [Kwiatkowski & West 1999, Kanani and Poojara,2000]. The main cause of anaemia includes low intake and non-absorption of iron from the diet. Dietary factors play an important role in the development of iron deficiency. Women and young children are most vulnerable to anaemia due to insufficient iron in their diets [Pareek & Hafiz, 2015].. Although most consumed diets in different regions of India contain adequate amount of iron (26 mg) but iron absorption from such diets is only 1-5% [Chakma et al, 2000 & Rajaratnam et al, 2000]. The symptoms of anaemia include fatigue, headache, faintness (in severe conditions), breathlessness and palpitations. While the sign associated with anaemia are pallor, tachycardia, koilonchia and so on according to the types of anaemia [Kumar & Clark, 2017]. In modern system of medicine so many treatment are available in the market. In an average case of moderately severe anaemic, haemoglobin rises by about 1.0 gm percent per week of iron therapy. In moderately severe anaemic iron absorption would be therefore oral dose of 100-120 mg of elemental iron would sufficient to provide adequate iron for optimum the rises, but so many side effects occur mainly gastro intestinal nausea, vomiting, epigastria pain, constipation or diarrhoea iron therapy may precipitate haemolysis in cases of paroxysmal nocturnal haemoglobin aria. Moreover, modern medicines are getting more and more costly and people from developing countries often face tough choice to make. According to a World Health Organization (WHO) report about 80 percent of population of the Asia and African countries uses herbal medicine for some aspect of primary health care.

Sū' al-Qinya (Anaemia) is responsible for a great reduction in quality of life of affected people, especially in its more severe forms. It increases both costs of medical care and lost productivity through a decreased ability to work [Prema et al, 1981, Ezzati et al, 2002, Kalaivani et al, 2009]. Anaemia in children has been associated with impaired cognitive performance, coordination, loss of memory, low performance in school and stunted growth [Llewellyn-Jones, 1965]. Past several studies have shown that iron deficiency anaemia leads to irreversible impairment of child's learning ability and other behavioural abnormalities [Ratten, and Beischer, 1972]. There are so many single as well as compound Unani formulations mentioned in classical texts which have been used in the treatment of *Sū' al-Qinya* (Anaemia) by eminent Unani Physicians since long, but they need to be validated on scientific parameters in order to generate data regarding their safety and efficacy. *Sharbat-e-Faulad* is one of the most recommended compound Unani formulation used for the treatment of *Sū' al-Qinya* (Anaemia). Therefore, present clinical study has been planned to evaluate the safety and efficacy of a Unani pharmacopoeial formulation – *Sharbat-e-Faulad* in the treatment of *Sū' al-Qinya* (Anaemia).

MATERIAL AND METHOD

Study was conducted over a period of around three years. The protocol was approved by the Institutional Ethics Committee of Central Council for Research in Unani Medicine, New Delhi and was implemented in accordance with provisions of the Declaration of Helsinki and Good Clinical Practice (GCP) guidelines.

The study was designed as open labelled, multi-centric, single arm validation study and was conducted in three regional institutes of CCRUM i.e., Regional Research Institute of Unani Medicine (RRIUM, Aligarh), RRIUM, New Delhi, Central Research Institute of Unani Medicine CRIUM, Lucknow. The objectives of the study are to evaluate the safety and efficacy of Unani pharmacopeial drug *Sharbat-e-Faulad* in So-ul-qinya (Anaemia).

Test drug *Sharbat-e-Faulad* was procured from CRIUM, Hyderabad. Standardization for the quality control of the test was done on various parameters in the laboratories of the CRIUM, Hyderabad.

Patients of both genders with in age between 18 years to 65 years who had Hb% in the range of 8-12 mg% in males and 8-10 mg % in female with or without associated symptoms of anaemia (Whitish or yellowish Complexion of face and skin, Palpitation, Generalised fatigue, Shortness of breath) are included in the study. Patients with Hemoglobin less than 8 mg % or having history of Acute Blood loss or suffering from chronic diseases requiring long term treatment, pregnant and lactating women were not included in the study.

Out of total 400 screened patients, 360 patients who fulfilled inclusion criteria were enrolled in the study. The patients who fulfilled the inclusion criteria were explained regarding the dosage, duration and purpose and duration of the trial. An informed consent was taken from the patients enrolled in the study. Investigation included Hb %, PCV MCV, MCHC, TLC, DLC, ESR, LFT, KFT, S. Proteins, AG Ratio, S. Albumin, S. Globulin and Urine examination Routine and Microscopic were done on baseline and after the protocol therapy. *Sharbat- e- Faulad* were given in the dose of 12 ml twice a day for the period of 12 weeks. Among the enrolled patients, only 273 patients have completed the study and rest were withdrawal due to failure of follow-up. After completion of the trial, statistical tools were used to analyse and evaluate the observed data. Baseline and follow up values of biochemical and pathological tests are statistically analyzed using Student's paired't' test and the significance level of $P< 0.05$ are used in this study. Assessment of the safety of the drug was done on clinical parameters and investigations which include PCV MCV, MCHC, TLC, DLC, ESR, LFT, KFT, S. Proteins, AG Ratio, S. Albumin, S. Globulin and Urine examination Routine and Microscopic. Efficacy of the Unani polyherbal formulation was assessed on Hb% and reduction in severity of the associated symptoms of the anaemia.

RESULT AND DISCUSSION

In the present study, maximum number of patients i.e., 252(92.31%) were female and a minimum of 21(7.69%) were male. Majority of the patients (including both male and female) i.e. 91(33.33 %) were belonging to 18-24 years of age group followed by 71 (26.01 %) patients of 25-31 years of age group, less patients i.e.3 (1.10 %) each were in the age group of 53-59 and 60-65 years respectively. Mean age of the male patients enrolled in study is 36.15 ± 13.70 years while, mean age of the female patients in study is 29.59$\pm$ 8.97 (Table-1).

Table-1: Age and sex wise distribution of the patients

Age group In years	Sex		Total (%)
	Male	Female	
18-24	07	84	91(33.33)
25-31	02	69	71(26.01)
32-38	03	53	56(20.51)

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39-45	05	35	40(14.65)
46-52	01	08	09(3.30)
53-59	01	02	03(1.10)
60 years	02	01	03(1.10)
Total (%)	21(7.69)	252(92.31)	273(100.00)

As far as chronicity of the anaemia in the enrolled patients is concerned, majority of the patients i.e.192 (70.33 %) had chronicity of less than one month followed by 59 (21.60 %) patients had 8-14 months chronicity of disease. 06 patients (2.20%) patients registered were under category of chronicity with less than 36-42 months and ≥ 42 months , 3 (1.10%) in each category. No patients with chronicity of 29-35 months or more of the diseases were enrolled in the study. Distribution of the patients according to chronicity are listed in Table -2

Table No.2 : Distribution of patients according to chronicity

Chronicity in months	Sex		Total (%)	Statistics
	Male	Female		
≤1	0	03	03(1.10)	Mean chronicity of Males 9.52± 13.74 months , Range Minimum12 months Maximum 60 months Mean Chronicity of Females 6.89 ± 6.75 Range Minimum 06 months Maximum 48 months
1-7	14	178	192(70.33)	
8-14	05	54	59(21.60)	
15-21	0	04	04(1.47)	
22-28	0	09	09(3.30)	
29-35	0	0	0(0.00)	
36-42	01	02	03(1.10)	
≥ 42	01	02	03(1.10)	
Total (%)	21(7.69)	252(92.31)	273 (100.00)	

Distribution of patients according to temperament show that a maximum number of patients i.e., 139 (50.92 %) were of Safravi temperaments followed by117 (42.86%) patients those are of Balghami temperamnent. Only 12(4.40%) patients are of Damvi temperament and 05(1.83 %) patients among registered cases, are of Saudavi temperaments (Table-3).

Table No.3: Distribution of patients according to Temperament

Temperament	Sex		Total (%)
	Male	Female	
Balghami	14	103	117(42.86)
Safravi	06	133	139(50.92)
Saudavi	00	05	05(1.83)
Damvi	01	11	12(4.40)
Total (%)	21(7.69)	252(50.92)	273(100.00)

Mean value of Hb% before treatment was 9.48 ± 0.85 which get improved and become10.51 by the end of the treatment with p value *P<0.01*.

Figure-1 Change in Mean Value of Hb% during the treatment

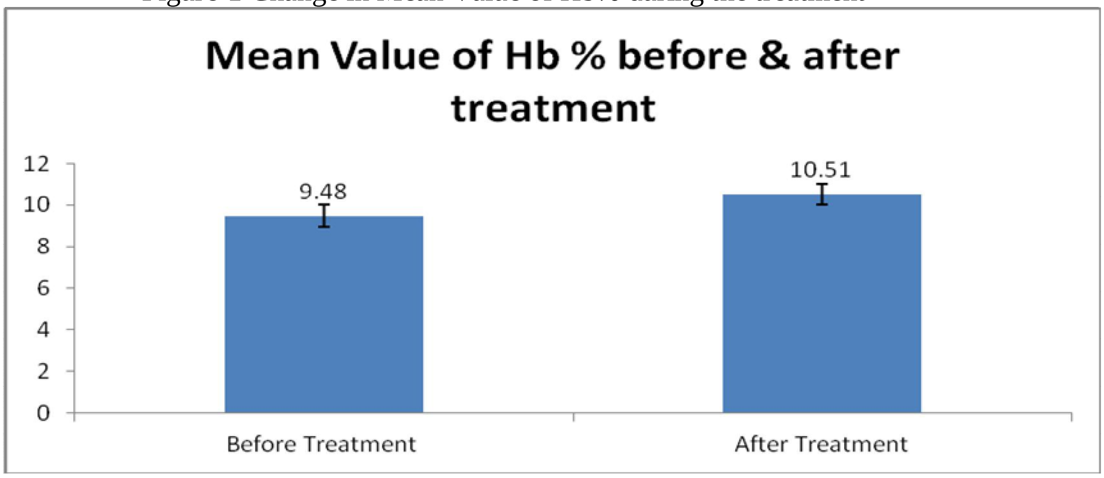

Table-3: Subsidence of Signs and Symptoms after treatment with Sharbat-e-Faulad in Soo-ul-Qinya cases

Signs and Symptoms		Severity			Subsidence Percentage
		Present	Absent	Total	
General Fatigue	Before treatment	129	144	273	
	After treatment	51	222	273	28.88%
Skin Complexion	Before treatment	46	227	273	
	After treatment	13	260	273	12.08%
Palpitation	Before treatment	235	38	273	
	After treatment	59	214	273	64.46%
Shortness of breath	Before treatment	255	18	273	66.66%
	After treatment	73	200	273	

In the present study, efficacy of Sharbat-e-Faulad was evaluated over a period of 12 weeks on concentration of Hb% and improvement in the symptoms associated with anaemia. General fatigue was present in 123 cases enrolled in study, while after protocol therapy of 12 week it has been revealed that symptom get subside and only remain present in 51 cases. Another symptom i.e., palpitation was positive in 235 cases of anaemia enrolled for the study which get remain positive for only 53 cases after treatment. Shortness of breath was found positive in 255 cases before starting of protocol therapy which get reduced to 73 cases after the treatment. Pale skin complexion is another classical symptom of the anemia which was positive in 46 cases and remains positive in only 13 cases. Subsidence percentage in terms of general fatigue, skin complexion, palpitation and shortness of breath are 28.88%, 12.08%, 64.46% and 66.66% respectively.

Table.4: Pathological and Bio Chemical Parameters before and after treatment

Parameters	(Mean ± S.D) B.T.	(Mean ± S.D) A.T.	Results
Hb gram%	9.48 ± 0.85	10.51 ± 1.49	Mean increase in Hb% level 10.87 % significant (P<0.01)*
TLC	7674.36 ± 2368.06	7688.56 ± 2072.59	N.S.
Polymorph	63.06 ± 8.43	63.13 ± 8.60	N.S.
Lymphocytes	33.03 ± 8.25	33.31 ± 8.11	N.S.
Monocytes	1.02 ± 1.10	1.10 ± 1.25	N.S.
Eosinophil	2.71 ± 2.07	2.65 ± 1.70	N.S.
ESR	36.17 ± 17.56	32.37 ± 17.42	significant (P<0.01)*
PCV	33.81 ± 7.02	35.73 ± 7.25	significant (P<0.01)*
MCV	91.08 ± 16.52	89.17 ± 14.76	N.S.
MCHC	28.87 ± 5.84	30.21 ± 6.16	significant (P<0.01)*
AG Ratio	1.94 ± 1.77	1.86 ± 1.37	N.S.
SGPT	25.86 ± 15.28	25.59 ± 14.53	N.S.
SGOT	28.46 ± 14.06	23.23 ± 18.27	N.S.
Urea	23.23 ± 7.50	22.70 ± 6.75	N.S.
Serum Creatinine	0.80 ± 0.24	0.89 ±0.72	significant (P<0.05)*
Serum Protein	7.45 ± 0.83	7.37 ± 0.80	N.S.
Serum Albumin	4.55 ± 0.77	4.51 ± 0. 85	N.S.

B.T.=Before treatment, A.T.=After treatment *significant, N.S. not significant at P<0.05

As far as safety of Unani polyherbal formulation *Shabat-e-Faulad* is concerned, it is evaluated on clinical symptoms and bio-chemical parameters as well. PCV MCV, MCHC, TLC, DLC, ESR, LFT, KFT, S. Proteins, AG Ratio, S. Albumin, S. Globulin are evaluated before and after the treatment of the patients to evaluate the safety of the drug. After 12 weeks of treatment no adverse effect has been reported in the enrolled patients. Bio-chemical parameters when assessed, there is no significant changes are reported in the value of safety parameters like TLC, Polymorph, Lymphocyte, Monocyte, Eosinophill, MCV, AG Ratio, SGPT, SGOT, urea, Serum Protein and Serum Albumin. Significant changes are reported in the values of PCV, ESR, MCHC and Serum Creatinine, but values lies within desired normal range. These finding are with consonance to other

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researchers regarding the haematinic effect of the *Sharbat-e-Faulad* and no toxic effect, particularly on liver and kidney functions are reported[Verma et al, 2013].

CONCLUSION

It could be inferred that the test drug *Sharbat-e-Faulad* is safe and effective in managing the anaemia. During the study, clinically no significant side effects of test drug were observed nor reported by patients. Thus, *Sharbat-e-Faulad* can be used as an iron supplement for the management of anaemia. It is revealed that the test drug have significant effect in improving Hb% and also improving the sign and symptoms associated with disease. The drug can be used in the management of anaemia as iron tonic without any reported side effect. Further studies may be done to explore the mechanism of the action of the test drug.

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THERMAL PERFORMANCE OF GREEN ROOF INTEGRATED WITH PHOTOVOLTAIC PANEL

Vikas Verma and Vinay Singh
Department of Mechanical Engineering, Kamla Nehru Institute of Technology, Sultanpur

ABSTRACT
Almost all the semiconductor devices including the solar photovoltaic panels are extremely sensitive to the temperature. The increase in temperature of PV panels leads to the reduction of open circuit voltage and hence the effective power output of panel. It has been observed that with per degree increase in temperature beyond 25^{o}C which is generally the standard test temperature decrease in power output is 0.1-0.45% for thin silicon cell and 0.35-0.5% for crystalline silicon cells. This encourages the need to find some effective means of cooling, now a day's PV panels are being extensively used in combination with cool roof like green roof. The main reason behind their extensive use is that firstly they reduce the panel temperature by increasing convective heat transfer rate and reducing radiation load underside hence increase their efficiency and power output secondly they reduce the room temperature than the conventional roof and PV panel integration and thus reducing the need of conventional cooling systems like air conditioners which leads to reduction in electricity consumption and the associated harmful impacts on environment. Green roofs also lead to reduce CO2 emission and urban heat island effect. This project explains the major findings of a research to study the benefits of integrating green roof and solar PV systems. The thermal performance is analyzed by theoretical models, experiments and field studies. From the experimental result, room with green roof is found to be on an average 6.5^o C cooler which will reduce the cooling requirement and the efficiency of panel is increased by approx. 1.1%. The above mentioned roofing systems is developed and tested at the KNIT Sultanpur. Thus it can be said that the green roof on one hand leads to the effective utilization of otherwise waste area of roof and on the other hand provides the benefit of energy saving by reducing the cooling requirement and by increasing the efficiency of PV panel.

Keywords: Green roofs, solar photovoltaic, system integration.

INTRODUCTION
Almost all the semiconductor devices including the solar photovoltaic panels are extremely sensitive to the temperature. The increase in temperature of PV panels leads to the reduction of open circuit voltage and hence the effective power output of panels [1]. It has been observed that with per degree increase in temperature beyond 25 ^{0}C which is generally the standard test temperature decrease in power output is 0.1-0.45% for thin silicon cell and 0.35-0.5% for crystalline silicon cells [2]. This encourages the need to find some effective means of cooling PV panels as the temperature of earth is increasing rapidly and solar panels are mostly used in hot climates. Cooling of panels can be performed in the two ways. If mechanical energy is consumed in cooling of panels like spraying of water by employing pumps, then it is known as active means of cooling and if no mechanical energy is used in cooling then termed as passive means of cooling [1].

In passive means of cooling PV panels now a day's PV panels are being extensively used in combination with cool roof like green roof. The main reason behind their extensive use is that firstly they reduce the panel temperature by increasing convective heat transfer rate and reducing radiation load underside hence increase their efficiency and power output secondly they reduce the room temperature than the conventional roof and PV panel integration and thus reducing the need of conventional cooling systems like air conditioners which leads to reduction in electricity consumption and the associated harmful impacts on environment. Green roofs also lead to reduce CO2 emission and urban heat island effect.

GREEN ROOF
A green rooftop (also called nature rooftop, eco-rooftop or rooftop greening framework) is a living, vegetative framework that comprises of a substrate (developing medium) and a vegetation layer at its peripheral surface [3]. The plan and development between the rooftop structure and the developing media fluctuates, however normally incorporates a geo-material channel, root boundary and a waterproof film. Contingent on the vegetation layer, the developing media profundity can change from 15mm (for extensive systems using sedum mats) to 1500mm (for intensive one containing expansive bushes and trees).

The thermal use of green roofs can be considered from two characteristics (Hui, 2009; Wong, et al.,2003). Firstly, the directly effect to the building can control roof surface temperature and building heat gain so that the building energy can be reduced (Castleton, et al.,2010) Secondly, the indirect effect to the surrounding environment can be decrease the urban temperature and help mitigate the adverse impacts of urban heat islands.

PHOTOVOLTAIC PANEL

Photovoltaic panels are the devices made of semiconductor materials which are used to convert the solar energy into electrical energy with least environmental consequences. Now a day the use of PV panels is increasing rapidly because of reduction in cost of PV panels and due to simultaneous increase in the cost and environmental effects (defect) associated with the use of conventional sources of energy. The following subsections describe the PV panels in order to understand the principles of the PV panels.

There are two kinds of photovoltaic boards: crystalline silicon and thin film. Crystalline silicon is the most well-known PV panel being used and involves roughly 80-90% of the PV panel production of the overall industry. As the crystalline silicon is a poor absorber of light it needs a lot of thickness. PV panel efficiencies of the crystalline silicon achieve 19% [4]. The development of crystalline silicon cell comprises of seven layers- external glass cover, anti-reflective covering, contact framework, N type silicon, P type silicon, back contact. Thus the crystalline silicon cells suffer from the disadvantages of high production cost and large weight. The thin film PV panels market share is limited roughly around 10-20% and is of similar construction but of lesser thickness. Due to their less weight they are more popularly used in building integrated applications but with lesser efficiency of around 13% [5].

PERFORMANCE OF PV PANEL

The electrical effectiveness of PV panel is characterized by the proportion of energy yield conveyed to the net incident solar irradiation. The productivity of PV panel is influenced by different factors, for example, clean, wind, radiation, tracking system or settled establishment, surface materials, cell temperature, and cells' material. It has been shown that the PV panel performance can increment by 1.5% subsequent to cleaning of board surfaces [6]. Because of dust aggregation on the panel surface it obstructs the daylight and in this manner prompts increment in the panel temperature. Furthermore, an investigation in Iran demonstrated that splashing water over the PV board on a midyear day from 8 am to 5 pm expanded the power creation by 17% [7]. Because of shower of water the dusts get expelled and its temperature additionally gets brought down. Another investigation demonstrated that the instantaneous power expanded by 26 % utilizing persistent pumping of water [8].

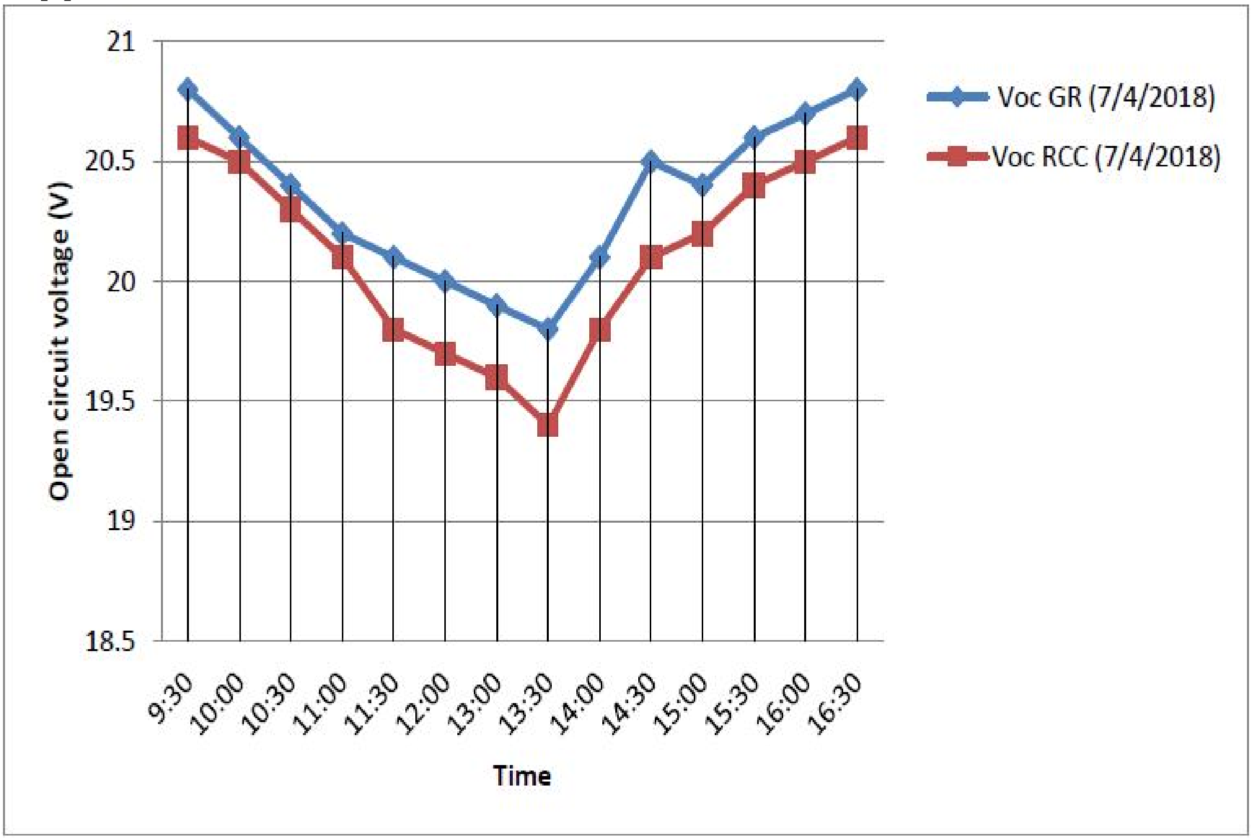

Figure1: Variation of open circuit voltage of PV panel with time

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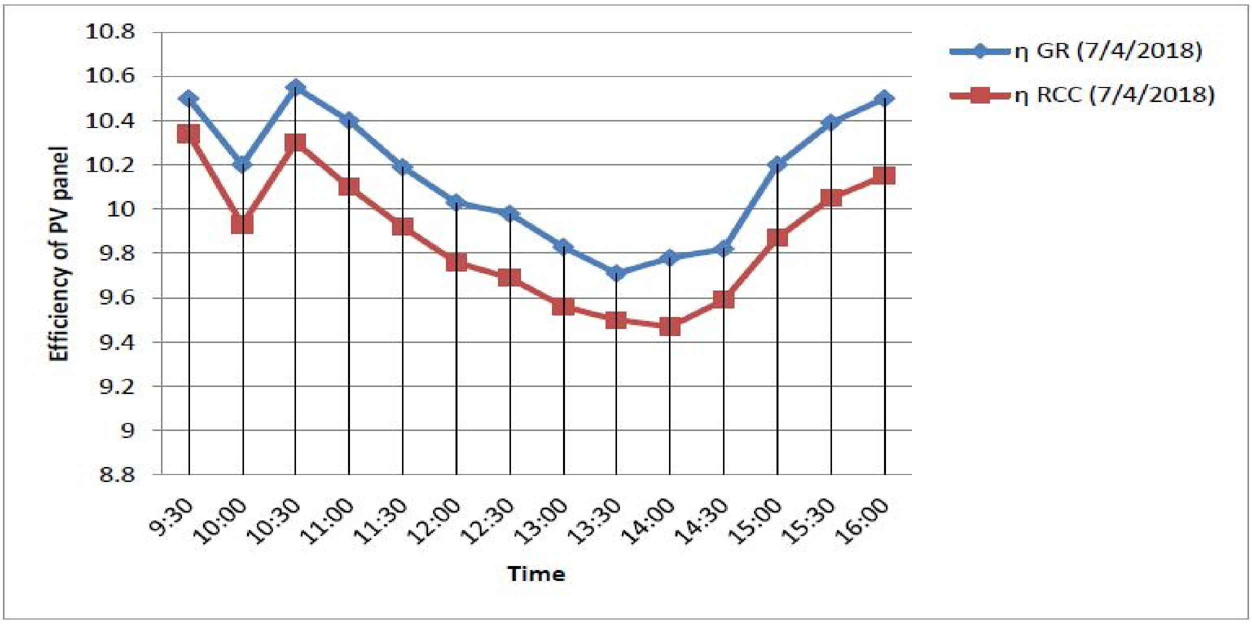

Figure2: Variation of efficiency of PV panel with time

The tilt angle and the setting up of the PV panels in specific direction impact control outcome of PV panels. In summer, the tilt angle ought to be equivalent to 15˚ short than the latitude of the PV panel to catch more daylight on the grounds that the sun in summer is high in the sky. In winter, the tilt angle ought to be equivalent to 15 degrees more than latitude on the grounds that the sun in winter is low in the sky. Nonetheless, to catch more daylight amid the entire year, the tilt angle ought to be equivalent to the latitude of location. Moreover, the orientation of the PV panel is viewed as an essential factor that effects on the yield of the PV panel. True south and true north are perfect orientation of the PV panels in the northern side of the equator and the southern side of the equator, individually. Another factor that impacts the PV panel temperature is the air speed. Research demonstrated that the PV panel temperature diminished 1.4˚C for every m/s wind speed increment. The electrical efficiency of PV panel decreases by about 0.4%/0C for crystalline silicon panels for increase of temperature beyond a certain range generally 25 ^{0}C [9].

$$\eta\ (T) = (25^{\circ})[1 - \beta(T - 25^{\circ})]$$

This delineates the possibility to enhance PV board efficiency through arrangement of a system that keeps up the PV panels at a lower temperature.

METHODOLOGY

An experimental setup has been prepared involving the fabrication of model of two rooms, fabrication of green roof (selection of soil, type of vegetation, type of green roof, depth of soil, drainage, irrigation), setting up of PV panel above each roof (selection of type of PV panel, power rating), measurement of Temperature of top of the PV panel on both roof, roof temperature, inside roof surface, solar irradiation, wind velocity, heat transfer rate, voltage and efficiency of PV panel.

Figure 3: Positioning of Panels & Sensors Over both Roofs

THEORETICAL VALIDATION

This section includes the mathematical formulas regarding the heat transfer and the efficiency of panel which are involved in the experimentation. The section is divided into the two half one dealing with the equation involved in computing the effect of green roof on the cooling requirement within the room and the other one describes the equation involved in computing the effect of green roof on the efficiency of PV panel.

GOVERNING EQUATIONS OF PV PANEL

It has been observed that efficiency of PV panel is the function of temperature and is given by

$$\eta\,(T) = (25^\circ)\,[1 - \beta(T - 25^\circ)] \qquad (1)\ [9]$$

From the above expression it is observed that with increase in temperature beyond the 25 0c efficiency of PV panel decreases, so it is required to be cooled in order to increase its efficiency. In this work green roof is employed as the cooling medium. The quantities (25˚) and β are usually specified by the manufacturer. But they can also be calculated using flash test where the panel output is measured at the two different temperature for a given solar irradiation flux as suggested by Hart and Raghuraman [10]. The value of β is calculated as follows:

$$\beta = 1/\,T - 25 \qquad (2)\ [10]$$

For polycrystalline silicon and for the reference temperature of 25 0c the value of β and η(25) is given as

$$\beta = 0.004 \qquad \eta\,(25) = 0.11 \qquad (3)\ [11]$$

On substituting the values of temperature obtained from the experiment through sensors and the above values of parameters in the eq. (1).

GOVERNING EQUATION FOR THE GREEN AND RCC ROOF

On both the roof area under the PV panel is 30% of the total area and the remaining 70% is exposed to direct solar radiation. So the total heat to the roof consists of two portion one by direct solar radiation and the other by the transmitted solar radiation through the PV panel. If α be the absorptivity of the RCC roof and S be the solar radiation, then the total heat (Qtotal) to the RCC roof is given by

$$\text{QtotalRCC} = \alpha \times S + \alpha \times \tau pr \qquad (4)$$

Thus the total heat flux (qtotalRCC) to the RCC roof is given by dividing the above expression by the total area (A) of the roof as follows

$$\text{qtotalRCC} = \alpha \times S + \alpha \times \tau pr \qquad (5)$$

where τpr is the diffused solar radiation and its value is measured by placing solarimeter below the panel. In case of RCC roof part of the absorbed energy will return back to the atmosphere through convection (qconv1) and radiation (qrad1) and remaining will transfer to inside surface of the roof through conduction (qcond).

Therefore,

$$\text{qtotalRCC} = \text{qrad1} + \text{qconv1} + \text{qcond} \qquad (6)$$

The heat transfer through convection is expressed as per Newton's law of cooling which is given in equation 6a.

$$\text{Qconv1} = h0 \times (T1 - T0) \qquad (6a)$$

Where, ho is the heat transfer coefficient for ambient air.

The heat transfer through radiation is expressed as per Stefan Boltzmann's law of radiation which is given in equation 6b.

$$\text{qrad1} = \epsilon \times \sigma \times (T_1^4 - T_0^4) \qquad (6b)$$

Where, ϵ is the emissivity of RCC roof and σ is Boltzmann constant.

The value of heat transfer coefficient can be determined from equation

$$h = 2.8 + 3.0 \times V \ \ W/m^2 K \qquad (7)$$

Where, V is the air velocity in m/s.

The energy at the inside surface of the roof (qcond) is further transfer in to the room through convection (qconv2) and radiation (qrad2). Thus,

$$\text{qcond} = \text{qconv2} + \text{qrad2} \qquad (8)$$

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Where,

$$qconv2 = hi \times (T_2\text{-}T_{iR}) \quad (8a)$$

$$qrad2 = \epsilon \times \sigma \times (T_2^4\text{-}T_{iR}^4) \quad (8b)$$

From equations (6) and (8), we get;

$$qtotalR = qrad1 + qconv1 + qconv2 + qrad2 \quad (9)$$

The modes of heat transfer from the green roof are same as in the case of RCC roof with an additional mode of heat transfer which is evapotranspiration. If qtotalG be the total heat flux from the green roof,

$$\alpha_S \times S + \alpha_S \times \tau pg = qtotalG \quad (10)$$

And

$$q_{totalG} = q_{rad1G} + q_{conv1G} + q_{evapo} + q_{cond} \quad (11)$$

qrad1G is the heat transfer through radiation, qconv1G is the heat transfer through convection, qevapo is the heat transfer through evapotranspiration from the top surface of green roof which are expressed as:

$$q_{rad1G} = \epsilon_s \times \sigma \times (T_{1G}^4\text{-}T_0^4) \quad (11a)$$

$$q_{conv1G} = h_0 \times (T_{1G}\text{-}T_0) \quad (11b)$$

$$q_{evapo} = 0.25 \times S \quad (11c)$$

Where, ϵ_s is the emissivity of soil on the top surface of green roof.

qcond is the heat transfer through conduction from top of green roof to the inside surface of the roof. Further the heat flows from inside surface of roof to the room through convection (qconv2G) and radiation (qrad2G). Thus,

$$qcond = qconv2G + qrad2G \quad (12)$$

Where,

$$qconv2G = hi \times (T2G\text{-}T0) \quad (12a)$$

The value of hi is determined from equation (5.3). Since the velocity inside the room was observed to be zero, thus hi is equal to 2.8 W/m2K. So

$$qconv2G = 2.8 \times (T2G\text{-}T0)$$

And

$$qrad2G = \epsilon \times \sigma \times (T2G4\text{-}TiG4) \quad (12b)$$

From equations (11) and (12), we get;

$$qtotalG = qrad1G + qconv1G + qevapo + qconv2G + qrad2G$$

The value of absorptivity for the RCC and green roof is taken from the thesis of Rounak katiyar titled "theoretical and experimental analysis of green roof" as 0.3 [13]. The value of emissivity for the two roofs is also taken from the same thesis as 0.91 and 0.96 respectively.

Table 1: Energy balance table for the green roof

Day	T_1	T_2	T_{iR}	T_0	S	V	h_0	q_{conv1}	q_{rad1}	q_{conv2}	q_{rad2}	q_{totalR}	$\alpha \times S + \alpha \times \tau pr$
6/04/2018	42.7	37.5	33.1	33.6	600.1	2.8	11.4	104.3	56.7	12.2	26.3	200.6	196.8
7/04/2018	43.1	37.9	33.8	34.2	564	4.1	15.2	136.9	56.1	11.4	24.9	229.4	183
8/04/2018	41.3	34	30.2	31.2	623.3	1.9	9.9	101.4	62	10.6	22.2	196.3	188.3
9/04/2018	46.1	39.6	34.6	34.9	618.7	1.9	9.1	101.9	71.2	14	30.7	217.9	204

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Table 2: Energy balance table for the green roof

Day	T_{1G}	T_{2G}	T_{IG}	T_0	S	V	h_0	q_{conv1G}	q_{rad1G}	Q_{evapo}	q_{conv2G}	q_{rad2G}	q_{totalG}	$\alpha\times S+\alpha\times\tau pr$
6/04/2018	34.6	27.6	26.8	33.6	600.1	2.8	11.4	12.1	10.1	150.1	2.2	4.7	179.1	168.2
7/04/2018	36.9	28.6	27.2	34.2	564	4.1	15.2	41.1	17.2	141	4.1	8.3	211.9	179.5
8/04/2018	33.2	27.8	26.8	31.2	623.3	1.9	9.9	19.8	12.4	155.8	2.8	5.9	196.7	190.5
9/04/2018	37.1	31.2	29.9	34.9	618.7	1.9	9.1	20.1	14.1	154.5	3.6	7.9	200.2	196.4

From the table 1 and 2 it is clear that the total heat transfer from the top surface of roof in both types of roof is more than the heat absorbed, that might be due to the selection of absorptivity of green roof which is taken as 0.3 in this case. From the above tables it is also clear that the heat absorbed in case of green roof is lesser as compared to that of RCC roof.

RESULT AND ANALYSIS

ESTIMATION OF THERMAL CONDUCTIVITY

Thermal conductivity for both the green roof and RCC roof is calculated using the heat transfer through conduction from the equation 8 and 12. The values of thermal conductivity on respective days as well as mean for green roof and RCC roof is calculated and shown in table 3 and 4.

Table 3: Thermal conductivity of RCC roof

Date	$q_{cond} = q_{conv2}+q_{rad2}$	Thickness in m(l)	K=q_{cond}
6/04/2018	38.5	0.2	1.4
7/04/2018	36.38	0.2	1.25
8/04/2018	32.91	0.2	0.9
9/04/2018	44.77	0.2	1.3
Mean			1.2

Table 4: Thermal conductivity of Green roof

Date	$q_{cond} = q_{conv2}+q_{rad2}$	Thickness in m(l)	K=q_{cond}
6/04/2018	7.9	0.4	0.45
7/04/2018	12.5	0.4	0.61
8/04/2018	8.7	0.4	0.64
9/04/2018	11.56	0.4	0.8
Mean			0.63

From the table 3 and 4 it is clear that the thermal conductivity of green roof (0.63W/mk) is lesser than the thermal conductivity of RCC roof (1.2W/mk) and hence the heat transfer in case of Green roof is lesser than the heat transfers in case of RCC roof and thus the room with green roof will be cooler than the room with RCC roof.

Table 5: Average temperature difference between the ambient air and inside air for the different roofs:

Date of experiment	RCC Roof (°C)	Green roof (°C)
6/04/2018	0.58	6.5
7/04/2018	1.4	6.18
8/04/2018	0.82	6.1
9/04/2018	0.61	6.6

Table 6: comparison of efficiency of panel over different roofs:

Date of experiment	RCC Roof (%)	Green roof (%)	% efficiency gain
6/04/2018	9.9%	10.95%	1.05%
7/04/2018	9.7%	10.85%	1.15%
8/04/2018	9.6%	10.7%	1.1%
9/04/2018	9.3%	10.25%	0.95%

From the table 5 and 6 green roof has positive impact on both the efficiency of PV panel as well as on the temperature of the room (cooling requirement). From the experiment result depicted in the above table 5 room with green roof is found to be on an average 6.5 ^{0}C cooler which will reduce the cooling requirement. From the table 6 it can be concluded that by using the green roof the efficiency of panel is increased by approx. 1.1%.

CONCLUSION

This Paper work aims to find the effect of green roof over the temperature of room, temperature of PV panel and the efficiency of PV panel. Experimentation has been done for a fixed orientation i.e. 26.8^{0}C and for fixed height of PV panel i.e. 38.5cm from the ground. These constraints might have affected the results. Room with green roof is found to be on an average 6.5^{0}C cooler which will reduce the cooling requirement and it can be concluded that by using the green roof the efficiency of panel is increased by approx. 1.1%. Thus it can be said that the green roof on one hand leads to the effective utilization of otherwise waste area of roof and on the other hand provides the benefit of energy saving by reducing the cooling requirement and by increasing the efficiency of PV panel.

SCOPE FOR FUTURE WORK

Following are the works that can be done in future to further enhance the effect of this integration:

- Mounting of the panel at different height from the roof
- Use of tracker with the PV panel
- Use of different type of green roof like intensive or semi-intensive green roof
- Use of different depth of substrate layer
- Use of different vegetation species that require less irrigation and solar irradiation
- Calculation of effect of green roof on payback period of panel
- Environmental impact calculation
- Computation of saving of energy and increased energy generation through integration
- Use of transparent PV panel

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THE IMPACT OF ONLINE MARKETING ON CONSUMER PURCHASING BEHAVIOR UNDER THE SOCIAL MEDIA AND ONLINE MARKETING

Niraj A Mishra
Assistant Professor, Seva Sadan College of Arts,Scince and Commerce, Ulhasnagar

ABSTRACT

Clearly, marketers are adding on-line channels to find, reach, communicate, and sell.Internet marketing has at least five great advantages. First, both small and large firms canafford it. Second, there is no real limit on advertising space, in contrast to print This research is conducted to see how the consumers' brand perception and purchasing decisions are influenced by different online marketing tools used across the industries such as Word of Mouth (WOM), online Chat assistance and Email advertising. Its purpose was so study the relationship between the different online marketing tools and techniques, WOM, Online chat and Email and their effects on the brand perception and consumer purchasing decision. There are a lot of other influencing factors included in a decision making of a consumer for purchasing and developing a perception about a particular brand but the most important factors that play a defining role in changing the consumer brand perception and purchasing decision is WOM and the dependency exists on these three variables.

INTRODUCTION

The objective of this research paper is to identify the various factors which influence online shopping. Online shopping is the way through which consumer can purchase goods or services directly by sitting at home. Earlier to shop online consumers generally visit shopping website by sitting in front of desktop or through laptops they can order, which is time taking and sitting in front of desktop is not a full day connectivity . Now day's smart phones play a dynamic role to connect to internet. The advent of social media has opened a new avenue of marketing for corporations. The traditional 'word-of-mouth' publicity has been replaced by the 'word-of-web', as consumers are increasingly referring to social media sites before making a purchase, greatly influencing buying behavior. Though most companies these days have an official website which has complete information about their products, consumers usually engage with a company after reading reviews and feedback from existing customers. Before buying a product, every consumer wants to make sure that the product is the best in its class, and offers good value for money. Advertisements don't always give a fair idea, as every company claims supremacy of its product. This is where social media plays an important part in defining consumer behavior. People who have already used the product describe their experience - its strengths, weaknesses etc., and this helps in disseminating information.

Purpose

The main **purpose of digital marketing** is to promote any business and to reach to its audience through the use of **digital** technology. It includes social media promotion, email **marketing**, etc. In simple terms, it's building awareness about your products or services to drive customers to your business using the **internet**. Online marketing is by far the most important segment of digital marketing. As traditional channels like TV and radio become less and less valuable, online marketing continues to take up bigger and bigger segments of companies' marketing budgets, with millions of businesses marketing exclusively via the Internet

IMPORTANT POINT

- **Digital Marketing is Highly Affordable**
- **Create Content which improves Customer Experience**
- **Usage of New Channels for Communication**
- **As a supplement**
- **As a main tactic**

ADVANTAGES OF ONLINE MARKETING

- Since your store is always open, 24 hrs a day, 7 days a week. Your customers are worldwide, and they shop anytime they want.
- The cost of spreading your message is next to nothing. Emailing your subscription base is more often cheaper than sending letter through the mail.

- Updating your subscribers can be done almost instantly through email. Visitors to your website can get up- to- the- minute information on each visit.
- If your business is an information sensitive business, such as a law firm, newspaper or online magazine, you can deliver your products directly to your customers without having to use a messenger.

DISADVANTAGES OF ONLINE MARKETING

- As we know, online marketing is not free. The cost of software, hardware, web site design, maintenance of your site, the online distribution cost and time. All must be issued into the cost of providing your service or product.
- There is so much information in the World Wide Web now, sometimes hard to tell the difference between crap and quality. Many craps are targeted at newbie's.
- It can leave a businessman feeling isolated. This is a very common situation because the World Wide Web is faceless. Most cases, it can appear cold and inhuman. This can leave you feeling isolated and inward.
- Information overload. We get to the part of there being a lot of information on the World Wide Web. Also, there can be too much good information too. A lot of competition for an industry, and this can leave you more confused than if there were presented with loads of craps and you might not be able to tell who to choose.

SOCIAL MEDIA AS A PROMOTER

The advantages of social media has opened a new place of marketing for corporations. The traditional 'word-of-mouth' publicity has been replaced by the 'word-of-web', as customer are increasingly referring to social media sites before making a purchase, greatly influencing buying behavior. Though most firms these days have an official website which has complete information about their products, consumers usually engage with a company after reading reviews and feedback from existing customers. Before buying a product, every consumer wants to make sure that the product is the best in its class, and offers good value for money. Advertisements don't always give a fair idea, as every firms claims supremacy of its product. This is where social media plays an important part in defining consumer behavior. People who have already used the product describe their experience - its strengths, weaknesses etc., and this helps in disseminating information

SOCIAL INFLUENCES ON CONSUMERS' PURCHASING BEHAVIOR

Various industry bigwigs have conducted researches and surveys to know the impact of social media on consumer behavior, and it has been found that consumers would like to have an interactive relationship with a company, so that they can easily pass on feedback, suggestions, and complaints. Given the nature of social media, anything - positive or negative - that is being said about your product or company is easily accessible to a global community of consumers,

HOW COMPANIES CAN CREATE A STRONG SOCIAL MEDIA PRESENCE

Many companies, just to join the bandwagon, spread themselves too thin by creating their profiles on innumerable websites, which can create a disconnect with the consumers if the company fails to respond. There are certain things that a business should take into consideration before putting itself up on social media. Let us take a look at some of these.

GIVING SERVICE NOT SALE

When you put your business on a social media site, the onus should be on engaging a consumer in an open conversation. Some of the most popular websites, such as Facebook, allow you to create a business profile, with an option that users can become 'fans'. The more 'fans' you are able to create, better the dissemination of information related to your brand as each time they log on, they will be updated with all the activity around your brand. It is important that you use social media in such a way that helps you in brand building. When you build a strong foundation for your business, and people are able to connect with you, it is very likely that sales would follow automatically. Remember the adage, 'A sale is something that happens when you are serving your customers.'

PAYING ATTENTION TO CONSUMERS' OPINION

It is important that you keep an eye on what is being said about your company. The conversation between consumers can give you some information on what they are expecting from the brand. Consumers can help with their opinion on how they perceive you as a company, and what improvements can be made to strengthen your brand.

BENEFITS OF INTERNET MARKETING

CONVENIENCE

Customers can order products 24 hours a day wherever they are.They don't have to sit in traffic, and a parking space, and walk through countless shops tofind and examine goods.

INFORMATIVE

Customers can find reams of comparative information aboutcompanies, products, competitors, and prices without leaving their office or home.

FEWER HASSLES

Customers don't have to face salespeople or open themselves up to persuasion and emotional factors; they also don't have to wait in line.Internet marketing also provides a number of benefits to marketers1

QUICK ADJUSTMENTS TO MARKET CONDITIONS:

Companies can quickly add productsto their offering and change prices and descriptions.

LOWER COSTS

On-line marketers avoid the expense of maintaining a store and thecosts of rent, insurance, and utilities. They can produce digital catalogs for much less thanthe cost of printing and mailing paper catalogs.

RELATIONSHIP BUILDING

On-line marketers can dialogue with consumers and learn from them.

AUDIENCE SIZING

Marketers can learn how many people visited their on-line site and how many stopped at particular places on the site. This information can help improve offers and ads.

The purpose of this research is to identify how the social media marketing impact on the consumer purchase decision. The objective of this research is that to define the term social media marketing and consumer purchase behaviour, to carry out a literature review on the subject of consumer purchase behaviour and impact of social media, to conduct a primary research with the help of questionnaires and interviews on the impact of social media advertising and consumer p The purpose of this research is to identify how the social media marketing impact on the consumer purchase decision. The objective of this research is that to define the term social media marketing and consumer purchase behaviour, to carry out a literature review on the subject of consumer purchase behaviour and impact of social media, to conduct a primary research with the help of questionnaires Methodology Research on the basis of secondary data accuracy of the research on the basis of evaluation the references articles and using self point.

Keywords: E-commerce, Consumer buying behavior, Customer benefits, Growing economic and secured purchase, Trend to technology, Easy availability.

Suggestion

WORKING CONCERN YOUR AUDIENCE IN MIND

"One issue with marketing, especially in digital, is the noise. There are so many companies saying the exact same thing, and companies don't really do the proper research to figure out who they are, what their message is, who needs to hear that message, and how to get that message out."

"Start from the top down. Take the time to explore your analytics and the data, interview your customers, pay attention to social media conversations & get involved, then create content that aligns your goals with your audience's goals, speak to your audience in a unique way, and constantly review & tweak."

FINDINGS

Social media marketing is a powerful way for businesses of all sizes to reach prospects and customers. Your customers are already interacting with brands through social media, and if you're not speaking directly to your audience through social platforms like Facebook, Twitter, Instagram, and Pinterest, you're missing out! Great marketing on social media can bring remarkable success to your business, creating devoted brand advocates and even driving leads and sales.

CONCLUSSION

The best way to evaluate the importance of applying social media in marketing is to realize the importance of social media in everyday life of people who are likely to become your customers. Social media marketing has

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become a necessity, one that is imposed to the business by the overall presence and impact social networks have on the users.

In spite of the fact that social media presence has become a necessity, there are numerous ways to leverage social media presence into improving your business, and here are some of the major benefits.

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UNANI PERSPECTIVE AND RECENT PHARMACOLOGICAL ACTIVITIES OF ASGAND (WITHANIA SOMNIFERA DUNAL): A REVIEW

Sofia Naushin, Zeba Afrin and Dr. Sofia Naushin
Research Associate, Central Council of Research in Unani Medicine, Ministry of Ayush, New Delhi

ABSTRACT
Withania somnifera Dunal. is described in the Unani literature in the name of Asgand found in waste land, cultivated in fields and open grounds throughout India. Great ancient physician Dioscorides (Dīsqūrīdūs) have mentioned it for the treatment of various diseased conditions in his book "Kitāb al-Ḥashā'ish". In Unani preparations, dried root of the plant are mainly used therapeutically to treat various ailments such as nervous and sexual disorders that affect the human health. In Unani system of medicine, Asgand is thought to possess anti-inflammatory, immunomodulator, aphrodisiac, semenogogue, nervine tonic, sedative, galactogogue and many other important medicinal properties. Pharmacological activity of asgand shows that it contains several alkaloids including withanolide A, withsomine, withaferin A, and withanolide D and various other constituents such as amino acids, steroids, volatile oil, starch, reducing sugars.

Keywords: Withania somnifera Dunal, Asgand, Immunomodulatory activity, Unani medicine.

INTRODUCTION
Withania somnifera Dunal known as *Asgand* in Unani medicine belongs to the family Solanaceae is widely used in traditional systems of medicine as dried mature roots. The plant is perennial shrub, found in waste land, growing in fields and open grounds in all the drier parts of India; widely cultivated in certain areas of Madhya Pradesh and Rajashtan. The roots are collected in winter, washed and cut into smaller pieces. (Anonymous, 2007) In Unani system of medicine, dry mature roots of *Withania somnifera* commonly known as *Asgand* are used for the therapeutical purposes. However, leaves of the plant are also used medicinally. (Anonymous, 2005; Kabeeruddin, 2007; Kabeeruddin, 2010) There are two varieties of asgand mentioned in Unani medicine, one is *Asgand Nagori* and other one is *Asgand Dakani*. *Asgand nagori* has more potential medicinal properties. (Ghani, 1920; Behl et al., 1993; Anonymous, 2005; Kirtikar & Basu, 2012)

Taxonomical classification (United Stated Department of Agriculture (USDA))

Kingdom:	Plantae
Subkingdom:	Viridiplantae
Division:	Tracheophyta
Subdivision:	Spermatophytina
Class:	Magnoliopsida
Order:	Solanales
Family:	Solanaceae (Anonymous, 1997; Anonymous, 2007; Khare, 2007; Anonymous, 2011; Vijaya, 2011)
Genus:	Withania
Species:	Withania somnifera (L.) Dunal-Withania
Botanical name:	Withania somnifera Dunal (Chopra et al., 2006; Khare, 2007; Anonymous, 2011)
Synonyms:	Physalis flexuosa linn (Anonymous, 1997; Vijaya, 2011)
	Withania ashwagandha Kaul (Khare, 2007; Vijaya, 2011)

Vernaculars names

Unani:	Asgand (Anonymous, 1997; Anonymous, 2007; Khare, 2007)
Arabic:	Kaknaj Hindi (Nadkarni, 1982; Anonymous, 2007; Kirtikar & Basu, 2012)
Persian:	Asgandh Nagori, Kaknaj-e-Hindi (Anonymous, 2007)
Urdu:	Asgand nagori (Anonymous, 2007)
Sanskrit:	Ashvagandha gandhrapatri, Palashaparni, Varahapatri (Nadkarni, 1982; Anonymous,

	1997; Anonymous, 2007; Khare, 2007; Kirtikar & Basu, 2012)
Hindi:	Asgand, Punir (Anonymous, 1997; Anonymous, 2005; Anonymous, 2007; Chopra et al., 2006; Kirtikar & Basu, 2012)
English:	Winter cherry. (Anonymous, 1997; Anonymous, 2007; Anonymous, 2011; Chopra et al., 2006; Khare, 2007; Kabeeruddin, 2010; Vijaya, 2011)

ETHNOBOTANICAL DESCRIPTION

MACROSCOPIC CHARACTERISTICS

Asgand (Withania somnifera Dunal) is an evergreen, erect, tomentose shrub, 30-150 cm in high found throughout the drier parts of india on waste places. (Anonymous, 2005) Leaves 5-10 by 2.5-5 cm., ovate, subacute, entire, more or less minutely stellately pubescent, base acute; main nerves about 6 pairs, stout, conspicuous; petioles 6-13 mm. long, stellately tomentose. (Kirtikar & Basu, 2012) Flowers axillary, sessile or shortly pedicelled, fascicled or solitary, hermaphrodite. (Chatterjee, 2003) Calyx campanulate, acutely 5-6 tothed, fruit-calyx inflated, papery, larger than the berry. Corolla campanulate; lobes 3-6, short, greenish or lurid yellow. Stamens attached near the base of the corolla. Ovary 2-celled, stigma shortly 2 fid. (Chatterjee, 2003) Berries are small globose berries, orange red when mature, enclosed in persistent calyx. (Anonymous, 1997) Seeds are many discoid, testa pitted, embryo peripheric. (Vijaya, 2011) The Roots are straight, unbranched and its thickness varying with age. They bear fiber like secondary roots. The outer surface of the root is buff to grey-yellow with longitudinal wrinkles. Its crown consists of 2-6 remains of stem base, which is variously thickened. Nodes are prominent only on the side from where petiole arises. The root is cylindrical, green with longitudinal wrinkles fracture, short and uneven. They have characteristic odour and bitter and acrid taste. (Anonymous, 2007)

MICROSCOPIC CHARACTERISTICS

A Transverse section of root shows cork exfoliated or crushed; when present isodiamatric and non-lignified and secondary cortex has about twenty layers of compact parenchymatous cells. Phloem parenchyma consists of sieve tubes companion cells. Cork cambium has 4-5 rows of tangentially elongated cells. Secondary xylem formed a closed vascular ring separated by multiseriate medullary rays; a few xylem parenchyma. (Anonymous, 2007)

HABITAT

In drier parts of India (Anonymous, 1997; Anonymous, 2007; Khare, 2007; Vijaya, 2011; Kirtikar & Basu, 2012) especially Rajasthan, Madhya Pradesh, Maharashtra; ascends to 1,700 m in the Himalayas. (Anonymous, 2007; Vijaya, 2011)

Parts used:	Dried roots (Anonymous, 1997; Kabeeruddin, 2010)
Taste:	Bitter (Nadkarni, 1982; Anonymous, 1997; Chopra et al., 2006; Hakim, 2011)
Temperament:	Hot^{1} Dry^{1} (Nadkarni, 1982)
	Hot^{3} Dry^{3} with moist secretions (Kabeeruddin, 2010)
	Hot and Dry with moist secretions (Anonymous, 1997; Hakim, 2011)
Dosage:	3-5 gram (Kabeeruddin, 2010) 5-10gms (Anonymous, 2007)
	4-6 gram (Hakim, 2011)
Contraindications:	Throat irritant (Ghani, 1920)
	Hot temperament (Ghani, 1920; Hakim, 2011)
Correctives:	Gond Katīrā (Anonymous, 1997; Kabeeruddin, 2010; Hakim, 2011)
Substitutes:	Sūranjān (Ghani, 1920; Anonymous, 1997)
	Bahman Safed (Anonymous, 1997; Kabeeruddin, 2010; Hakim, 2011)
	Qust (Ghani, 1920)

PHARMACOLOGICAL ACTIONS

- Awram-i-Ṣulb (Ghani, 1920; Kabeeruddin, 2010)
- Muwallid-i- Manī (Anonymous, 2007; Kabeeruddin, 2010)

- Mughalliz Manī (Spermatogenic) (Ghani, 1920; Kabeeruddin, 2010)
- Muqawwī-i- Raḥim (Uterine tonic) (Ghani, 1920; Kabeeruddin, 2010)
- Munaqqi-i-Raḥim (Kabeeruddin, 2010)
- Mundij-i-Balgham (Concoctive of phlegm) (Ghani, 1920; Hakim, 2011)
- Muhallil-i-waram (Anti-inflammatory) (Anonymous, 1997; Anonymous, 2007; Kabeeruddin, 2010)
- Mubhi (Aphrodisiac) (Nadkarni, 1982; Khare, 2007; Kabeeruddin, 2010)
- Muqawwī-i-Badan (Nadkarni, 1982; Anonymous, 1997; Kabeeruddin, 2010)
- Mussallab (Kabeeruddin, 2010)
- Munawwim (Hypnotic) (Nadkarni, 1982; Anonymous, 2007)
- Musakkin-i- A‘sab (Nerve sedative) (Ghani, 1920; Anonymous, 1997; Anonymous, 2007)
- Muqawwī-i -Aam (General tonic) (Anonymous, 1997; Anonymous, 2007; Khare, 2007; Hakim, 2011)
- Muqawwī-i -Mi‘da (Stomachic) (Ghani, 1920; Anonymous, 2007)
- Musammin-i-Badan (Adipogenous) (Anonymous, 2007; Hakim, 2011)
- Mudirr-i Hayz (Emmenagogue) (Khare, 2007)
- Mudammil-i Qurūḥ (Healing of ulcers) (Ghani, 1920; Kabeeruddin, 2010)

THERAPEUTIC USES

- Jarayān wa riqte Manī (Spermatorrhoea) (Ghani, 1920; Anonymous, 2007; Kabeeruddin, 2010)
- Muqawwi Bāh (Sexual stimulant) (Ghani, 1920; Kabeeruddin, 2010; Hakim, 2011)
- Waja‘ al-Mafāṣil (Polyarthritis) (Nadkarni, 1982; Anonymous, 1997; Anonymous, 2007; Khare, 2007; Kabeeruddin, 2010)
- Baraṣ (Leucoderma) (Ghani, 1920; Nadkarni, 1982; Khare, 2007; Hakim, 2011)
- Sayalān al-Raḥim (Leucorrhoea) (Anonymous, 1997; Anonymous, 2007)
- Waja‘ al-Qutn (Lumbago) (Nadkarni, 1982; Anonymous, 1997; Anonymous, 2007; Khare, 2007)
- Ḍu‘f al-Bāh (Anaphrodisia) (Anonymous, 1997; Anonymous, 2007)
- Ḍu‘f al-Aam (General debility) (Anonymous, 1997; Hakim, 2011)
- Jarab (Scabies) (Anonymous, 1997)
- Ḍīq al-Nafas (Asthma) (Ghani, 1920; Khare, 2007; Hakim, 2011)
- Qalaq-e-Usabi (Anxiety neurosis) (Ghani, 1920; Khare, 2007)
- Su‘āl (Cough) (Hakim, 2011)

COMPOUND FORMULATIONS

- Ma‘jūn Samagh (Anonymous, 1997)
- Habb-i -Asgand (Anonymous, 1997)
- Ma‘jūn Muqawwi-i- rahim (Anonymous, 1997; Kabeeruddin, 2010)
- Ma‘jūn Suhag sonth (Anonymous, 2007)
- Ma‘jūn Zanjabīl (Anonymous, 1997)
- Halwa’-i Gheekwar (Anonymous, 1997)
- Ma‘jūn Sa‘lab (Anonymous, 2007
- Zimād-i-Muhallil (Anonymous, 1997; Anonymous, 2007)
- Kushtā Gaodanti (Anonymous, 2007)

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CHEMICAL CONSTITUENTS

Chemical analysis reveals the root contains several alkaloids, including withanine, withananine, withananinine, pseudo-withanine, somnine, somniferine, somniferinine. (Khare, 2007) The roots of Withania somnifera consists primarily of a compound known as withanolide and is identified for its important physiologic processes. (Singh et al., 1976) The root extract contains an ingredient which has GABA mimetic activity. (Khare, 2007) Further analysis shows other steroidal alkaloids and lactones (Withanolides, Withaferins): Anaferine alkaloid, anahygrine, isopelletierine, cuseohygrine, Ashwagandhanolide (dimeric thiowithanolide), chlorogenic acid in leaf, beta-Sisterol, cysteine in fruit, iron, scopoletin, somniferinine, somniferiene, tropanol, withananine, withanoside IV, withanolides A-Y (Steroidal lactones) and saponins sitoindosides and acylsterylglucosides. (Bone , 1996; Elsakka et al., 1990) The free amino acids identified in the roots include aspartic acid, glycine, tyrosine, alanine, proline, tryptophan, glutamic acid and cystine. (Anonymous, 2005; Khare, 2007) The leaves of the plant contain withanolides with C28 steroidal nucleus and C9 side chain, with a six membered lactone ring. (Abou-Douh, 2002) Withaferin A and withanolide D which are two importanat withanolides isolated so far, attributes to curative properties of asgand. (Singh et al., 2010)

PHARMACOLOGICAL ACTIONS:

- **ANTICONVULSANT ACTIVITY**

Kulkarni SK *et al. reported that* asgand root extract significantly reduce jerks and clonus in 70% and 10% in mice caused by pentylene tetrazole (PTZ)-induced seizures when administered with dose of 100mg/kg and it was evident from EEG wave pattern. (Kulkarni & George, 1996) Kulkarni and Sharma carried out anti-convulsant activity by administration of W. somnifera root extract and found that extract showed reduction in severity of motor seizures induced by electrical stimulation in right basilateral amygdaloid nuclear complex through bipolar electrodes due to GABAergic mediation.(Kulkarni *et al*., 1993)

- **ANTI-AGING ACTIVITY**

In a double-blind clinical trial, a group of 101 healthy males of 50-59 years old age group were given *Withania somnifera* at a dosage of 3 grams daily for one year. Result showed that the subjects experienced significant improvement in hemoglobin, RBC count, hair melanin, and seated stature, decrease in serum cholesterol and nail calcium was preserved. Seventy percent of the research volunteers reported improvement in sexual performance. (Dhuley, 1997)

- **HEPATOPROTECTIVE ACTIVITY**

W. somnifera at a dose of 100 mg/kg significantly decreases hepatic serum enzymes, levels of malondialdehyde, total nitrate/nitrite NO(x) and also reduces the heme oxygenase activity in liver of rodents exposed to hepatotoxic gamma radiation. (Hosny & Farouk, 2012) It has been reported that W. somnifera root extract has effect on hepatic cell of Clarias batrachus as it contains different flavonoids and neurotransmitters that stimulated the neuroendocrine system, leading to hyperactivity of the endomembrane and the exit of molecules through the surface via exocytosis. (Verma *et al*., 2009)

- **IMMUNOMODULATORY EFFECT**

Withania somnifera were evaluated for their immunomodulatory effect in experimental animal. Mice treated with azoxymethane to induce colon cancer. Experimental mice were treated with 400 mg/kg body weight of *Withania somnifera* extract once a week for four weeks orally. Result showed that *Withania somnifera* significantly altered the level of leucocytes, lymphocytes, neutrophils, immune complexes and immunoglobulins IgA, IgG and IgM. Results revealed that azoxymethane induced colon cancer and immune dysfunction was better controlled by *Withania somnifera* and could be useful in the treatment of colon cancer. (Muralikrishanan *et al*., 2010)

- **ANTI INFLAMMATORY:**

In present study anti-inflammatory activity of *Withania somnifera* is evaluated in experimentally carrageenan-induced inflammation in albino rats. Experimental animals were divided in five groups of six animals each. 1st group were treated with normal saline, 2nd group treated with Indomethacin (5mg/kg) and 3rd, 4 & 5th groups were given *Withania somnifera* in doses of 400, 800 & 1600mg/kg respectively. Both Indomethacin (5mg/kg) and *Withania Somnifera* in the doses of 400, 800, 1600 mg/kg Inhibits carrageenan induced paw edema due to the ability to inhibit mediators of inflammation. Anti inflammatory activity of *Withania somnifera* and indomethacin is due to inhibition of cyclo-oxygenase enzyme. In present pharmacological study it is found that *Withania somnifera* show significant anti-inflammatory activity in all experimental models. (Modi & Kumar, 2018)

❖ ANTIDEPRESSION AND ANTIANXIETY ACTIVITY

In the present clinical study, 20 healthy volunteers were treated with 1000 mg of aqueous extract of roots and leaves of *Withania somnifera* or a matching placebo for a period of 14 days. Psychometric tests like FTT, CDT, DSST, DVT, and CST were done using computerized psychometric test system to evaluate the effects of psychotropic drugs. Result showed that *Withania somnifera* extract significantly decreased reaction time in SRT, CDT, DSST, DVT, and CST following 14 days treatment compared to placebo, indicating its positive effect on psychomotor function. Result showed that *Withania somnifera* extract improve the cognitive and psychomotor performances in anxiety and depression. (Pingali *et al*., 2014)

❖ ANTI-STRESS/ADAPTOGENIC ACTIVITY:

In this pharmacological study, extract of WS roots (25 and 50 mg/kg po) was investigated against a rat model of chronic stress (CS) to evaluate the adaptogenic activity. The stress procedure was mild, unpredictable foot shock, administered once daily for 21 days to rat model. Chronic stress can result in a adverse physiologic conditions including hyperglycaemia, glucose intolerance, increase in plasma corticosterone levels, gastric ulcerations, male sexual dysfunction, cognitive deficits, immunosuppression and mental depression. WS (25 and 50 mg/kg po) and PG (100 mg/kg po), administered 1 h before footshock for 21 days significantly reduced the CS induced pertubation. The results indicate that the antistress, adaptogenic activity of the Withania extract was approximately equal to the activity of the Panax ginseng extract. (Bhattacharya & Muruganandam, 2003)

❖ ANTI-OXIDANT ACTIVITY

Chaudhuri et al. evaluated the antioxidant activity of 70% methanolic extract of *W. somnifera* roots by using different tests including total antioxidant activity; efficiencies for scavenging of hydroxyl, superoxide, nitric oxide, singlet oxygen radicals, hypochlorous acid and inhibition of lipid peroxidation. The results obtained indicate, the 70% methanolic extract of the same also has possibility as an antioxidant and free radical scavenging agent. The results concluded that 70% methanolic extract of *W. somnifera* root possess antioxidant and mild free radical scavenging as well as iron chelating properties in vitro. (Chaudhuri *et al*., 2012)

❖ ANTI-DIABETIC ACTIVITY:

In the present study, methanolic root and leaf extracts of *Withania somnifera* were evaluated for their anti-hyperglycemic and anti-hyperlipidaemic effects on Streptozotocin-induced diabetic rats. *Withania somnifera* root extracts (WSREt) and leaf extracts (WSLEt) were orally administered daily to diabetic rats for eight weeks. After the treatment period, the levels of blood glucose, AST, ALT, ALP, LDH, HDL-c significantly increased by the use of *in vitro* methanolic root extracts compared to normal control rats. The levels of total protein, albumin, albumin: globulin (A: G) ratio, were significantly decreased in streptozotocin-induced diabetic rats by using *in vitro* root extracts. The levels of total protein albumin and albumin : globulin (A : G) ratio, in streptozotocin-induced diabetic rats. Administration of WSREt at the dose of 300 mg/kg body weight produced a significant decrease in fasting blood glucose (FBG) level by 102.65 with respect to initial fasting blood glucose level after 30 d of the treatment. Administration of WSLEt demonstrated highest DPPH and FRAP free radical scavenging activity, i.e. 86.55±1.77 and 48.87±2.55 than other extracts. Result indicated that methanolic root extract of *W. somnifera* at the dose (300 mg/kg) has more potent anti-hyperglycaemic properties than the other *in vitro* and *in vivo* extracts of leaf and root on streptozotocin induced diabetic rats and was also found to be similar in effect to that of the standard drug 'Glibenclamide'. (Jena *et al*., 2016)

❖ ANTIBACTERIAL ACTIVITY:

Isolated flavonoids from different parts (leaf, stem, root and fruits) of *Withania somnifera* were evaluated for antibacterial activity against *Enterobacter aerogens, Bacillus subtilis, Klebsiella pneumoniae, Raoultella planticola* and *Agrobacterium tumefaciens by* Disc diffusion assay. Results obtained in the study revealed that the tested plant extracts possess potential for antibacterial activity against all five pathogen. (Singh and Kumar, 2013)

❖ ANTI CANCER ACTIVITY:

In present study, 50% ethanol extract of root, stem and leaves of *Withania somnifera* were evaluated for their ant proliferative potential on five human cancer cell lines of four different tissues i.e. PC-3, DU-145 (prostrate), HCT-15 (colon), A-549 (lung) and IMR-32 (neuroblastoma). Ethanol extracts of root, stem and leaves showed cytotoxicity activity ranging 0-98% depending on the cell lines but maximum activity was found in leaf extract of *Withania somnifera*. Result obtained indicate, the growth inhibitory activity in *Withania somnifera* against various human cancer cell lines i.e. PC-3, DU-145, HCT-15, A-549 and IMR-32. (Yadav *et al*., 2010)

❖ **NEUROPROTECTIVE ACTIVITY:**

In present study, root extract of *Withania somnifera* (100 mg/kg body weight) were evaluated on MPTP-induced parkinsonism via the analysis of behavioural features and the oxidant-antioxidant imbalance in the midbrain of mice. MPTP-treated mice produce a significant alteration in behavior, increased levels of thiobarbituric acid reactive substance (TBARS), and increased activities of superoxide dismutase (SOD) and catalase (CAT) were noticed in midbrain of mice. Treatment with the *Withania somnifera* root extract resulted in a significant improvement in the mice's behaviour and antioxidant status and a significant reduction in the level of lipid peroxidation. (Srinivasagam *et al.*, 2007)

❖ **SPERMATOGENIC ACTIVITY:**

In the present study, root powder of *W. somnifera* was evaluated to investigate the impact on semen profile, oxidative biomarkers, and reproductive hormone levels of infertile men. Infertile men were treated with *W. somnifera* root powder (5 g/day) orally for 3 months with milk. Result showed a significant improvement in sperm concentration and motility as well as improvement in testosterone and LH levels. It significantly decreases the seminal LPO levels, stress and serum cortisol levels and ROS production. The observations reported in these studies reinforce the beneficial effects of Asgand in male fertility potential and semen quality. (Ahmad *et al.*, 2010)

❖ **CARDIOPROTECTIVE EFFECT:**

In a study the cardioprotective potential of Hydro-alcoholic root extract of *Withania somnifera* on the basis of haemodynamic, histopathological and biochemical parameters in the experimental model of isoprenaline-induced myonecrosis was investigated. Several molecular parameters for myocardial injury were done to elucidate the effect of *Withania somnifera*. Result indicated that *Withania somnifera* at the dose (25, 50 and 100 mg/kg) possess a strong cardioprotective effect in the isoprenaline-induced myonecrosis in rats. (Mohanty *et al*., 2004)

CONFLICT OF INTEREST

NO CONFLICT OF INTEREST ASSOCIATED WITH THIS ARTICLE.

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CUSTOMER SATISFACTION TOWARDS JIO SIM: A STUDY WITH REFERENCE TO UDUPI CITY

Anusha[1] and Dr. Umesh Maiya[2]
Student (M. Com)[1] and P. G. Co-ordinator[2], Dr. G. Shankar Government Women's First Grade College and P. G Study Centre, Ajjarkadu, Udupi

ABSTRACT
In the era of information explosion, people are to be provided with quick and timely access to information. Indian Telecom Industry, service providers are the main drivers; whereas equipment manufacturers are witnessing growth. Hence, researchers made an attempt to know awareness of the customer on reliance jio sim, to find out the customer's satisfaction and to factors influencing to buy the jio sim. After collecting the data from the respondents it was analyzed using chi-square tests. Likert's five-point scale was used for developing questionnaire and for determining customer satisfaction. The sample size of the present study is 100 and the area of the study is Udupi town.

Keywords: Sim, Communication technology, Network efficiency

INTRODUCTION
Telecom is one of the fastest-growing industries in India and as the second largest market in the world. In present scenario, the telecommunication is lifeblood for every business activity. The Reliance Jio is one pioneer and the largest segment in the telecom industry. Customer perception is the main primary goal of every business organization. As the rapid changing business scenario for the entire transaction activities begins and ends with the customer. This study aims to focus that to identify the perception level of the customers of Reliance Jio. So, it is very essential for the service provides to understand the influence of various demographic variables that influence the perception and satisfaction level to win the hearts of the customers**.**

OBJECTIVES
- To know about the awareness level of the customer towards Reliance Jio Sim
- To highlight the jio customer satisfaction
- To find out the factors influencing the customer to buy Jio Sim

Research methodology
Sampling: For the purpose of the study the researchers used stratified random sampling technique. The researcher personally contacted 100 respondents in and around Udupi Taluk.

Tools used for the study: Present study is based on primary and secondary data. Secondary data was collected from books, journals, magazines and internet. Primary data was collected by the researchers through a structured questionnaire method. Likert's 5-point scale was used for few questions. Simple statistical tools were used for interpreting data & were presented by using tables and diagrams. Chi-square was used for testing the hypothesis.

HYPOTHESIS
H0: There is no significant relationship between age and awareness level

H1: There is a significant relationship between age and awareness level

SIGNIFICANCE OF THE STUDY
Telecom is one of the fastest growing industries in India and as the second largest market in the world. In present scenario, the telecommunication is lifeblood for every business. To identify the customer's views regarding quality, quantity, free service and price. In telecommunication sector wider scope available in the world. This research will include data collection and methodology through observation as a tool to identify the specific problems with in the business and trying to find out the subsequent remedies for this.

LITERATURE REVIEW
B. Adhinarayanan and K. Balanagagurunathan (2011) In their article entitled, "A study on customer satisfaction towards reliance jio" have indicated that Indian telecom sector, like any other industrial sector in the country, has gone through many phases of growth and diversification. Starting from telegraphic and

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telephonic systems in the 19th century, the field of telephonic communication has now expanded to make use of advanced technologies like GSM, CDMA and WLL to the great 3G Technologies in mobile phones.

Paulaset (2016) The study of providing customer satisfaction is the most crucial step of the company with the internet access on the move such as wide network coverage and technology advanced stuff required by almost everybody in today's environment. Reliance jio is working according to Indian market; it gives best quality services at much less price.

Singh, (2017) the customer do not prefer reliance network(Rodrigues,2015). Therefore, it will be a hard task to get a good customer base for the 4G network. Reliance jio Infocomm Limited announced the launch of its digital service with jio in Mumbai on 1st September 2016 with jio Welcome offer. The permission of TRAI has enable users the access to unlimited LTE data and national voice, video, messaging, services, Jio applications and content, free of cost up to 31 December 2016.

Jayaraman et. (2017) Reliance jio has entered into market of telecom service providers with freebies and more data to the customer. In the knowledge world, jio the foray into the fast evolving market has made a tremendous change in the competition, price and data availability. Jio is widely used by the techno-savvy customers**.**

FINDING OF THE STUDY

The study describes that the personal characteristics of the respondent customers i.e., age of the customer, gender, occupation etc. The age group belongs to 20 to 50 and above. The female customer is more than the male customer. The objective was to highlight the main factor that is the awareness level of customer towards Reliance jio SIM, identify the customer satisfaction and also factor influencing the customer etc**.** It is also observed that the some of the factors causing dissatisfaction regarding network service, and service outlets provided by jio**.**

Tables 1: Age of customer

Age	No. of respondents
20-30	46
30-40	28
40&above	26
Total	100

Source: Primary data

Inference: The table indicates that majority percentage (46%) of the respondents is in 20-30 years' age group. The lower percentage of respondent (26%) is 40 and above years old.

Table 2: Gender distribution of respondents

Gender	No. of respondents in percentage
Male	48%
Female	52%
Total	100%

Source: Primary data

The above table indicates that female customer is more than the male customer. 52% female and rest 48% male customers.

Table 3: Brand of handset used

Brand	No. of customers
Samsung	52

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Apple	6
Huawei	8
Nokia	20
Other	14
Total	100

Source: Primary data

The most of the customer use the Samsung handset than the other brand. Second preference was given to Nokia brand.

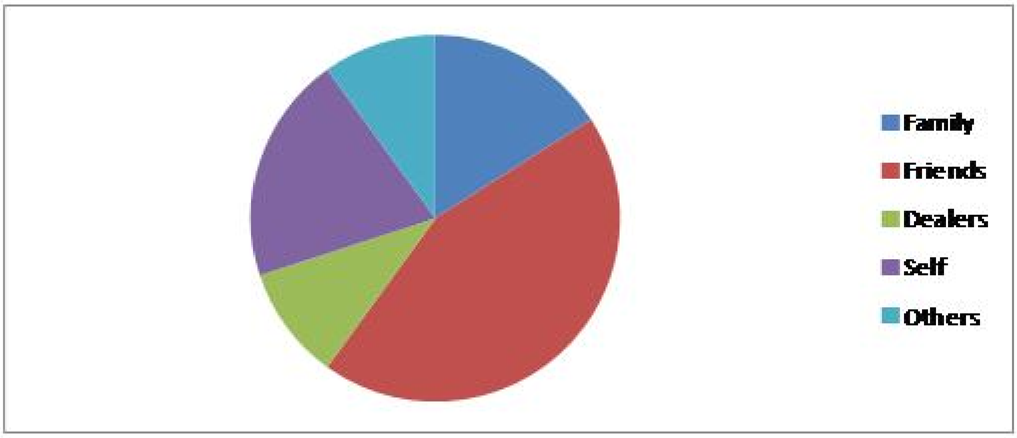
Table 4: Network used before jio

Network used	No. of respondents in Percentage
Airtel	52%
Vodafone	14%
BSNL	17%
Docomo	3%
Others	14%
Total	100%

Source: Primary data

Inference: The above table indicates that the majority customer used the Airtel network before used the jio network. It is evidence that Airtel faced hardship from the Jio sim.

Figure 1: Source of influence to buy Jio



Source: Primary

Figure 1 shows that the most of the customers get influenced by their friends to buy Jio.

Table 6: Awareness on Jio

Sources	No .of respondents
Newspaper	12
Advertisement	39
Hoardings	2

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Friends	39
Others	8
Total	100

Source: Primary data

Inference: The most of the customers got awareness about jio is through advertisement and friends.

Table 7: Respondents preference for jio scheme

Particular	**No .of respondents in percentage**
Prepaid	**79%**
Post-paid	**21%**
Total	**100%**

Source: Primary data

The most of the customers prefer a prepaid scheme than the post paid.

Table 8: Respondents' awareness on jio services

Awareness level	No. of respondents
Fully Aware	16
Sufficiently aware	49
Slightly aware	35
Total	100

Source: Primary data

The above table indicates that most of the respondents are aware of the services offered by jio.

TESTING OF HYPOTHESIS

- **H_0:** There is no significant relationship between age and awareness level
- **H_1**: There is a significant relationship between age and awareness level

Table 8: Relationship between age and awareness level

Age/Awareness level	Fully Aware	Sufficiently Aware	Slightly Aware	Total
20-30	8	25	13	46
30-40	5	13	10	28
40& above	3	11	12	26
Total	16	49	35	100

Source: Primary data

Chi-square analysis

Chi-square value	Table value	Significance
2.74	9.49	No significant

Source: Field survey data

Chi-square analysis shows that the alternative hypothesis**, '**There is a significant relationship between age and awareness level' is rejected. Hence the alternative hypothesis is rejected and null hypothesis is accepted. Thus, we conclude that there is no significant relationship between age and awareness level.

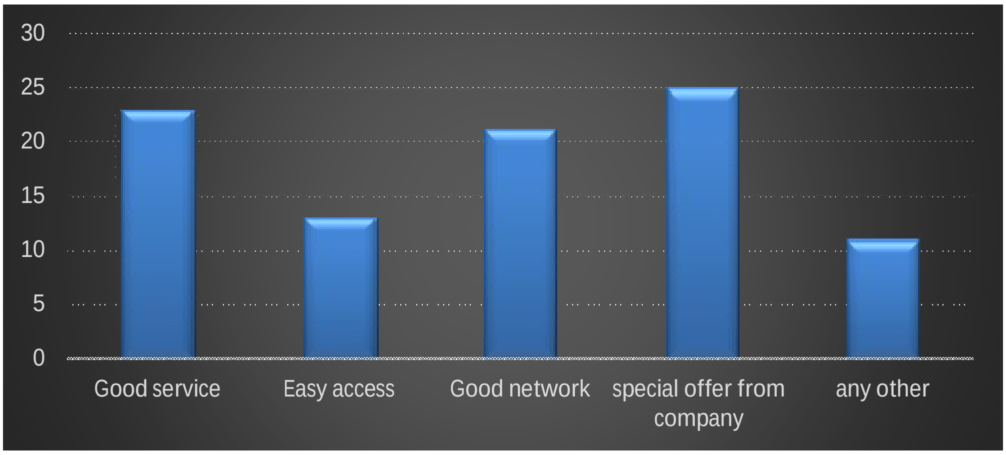
Table 9: Respondents' satisfaction level on jio service

Satisfaction level	No .of respondents
Highly satisfied	10
Satisfied	35
Average	31
Not so satisfied	21
Unsatisfied	3
Total	100

Source: Primary data

In the above table indicates that the most of the customer satisfied about the services offered by jio.

Figure 2: Reasons for Preference



Source: Primary data

Most of the customers prefer jio SIM because they provide a special offer to customer.

CONCLUSION

In today's competitive business, customers are considered as the backbone of the company. Treating the customer like friends is the best way to attract them and make then always come back. The level of satisfaction can also vary depending on other options and customer. Customer satisfaction will help business build stronger relationship.

From the overall study of identifying the satisfaction level of customer service it may be concluded that the Reliance Jio customers are satisfied with the service of which company providing. But the same time service station environment has to be enhanced. Better customer service will help the organization to be more efficient, to quality service, avoid problems, maintaining the growth and customers attract new schemes and so on. Therefore, there is no significant relationship between age and awareness level.

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AN ANALYSIS OF SECTION 8 (1) (D) (G) & (I) Of RTI Act 2005

Ambir Khan
Student, RMLNLU, Lucknow

INTRODUCTION

Right to Information (RTI) "Act is a milestone enactment which was started in India in the year 2005 which has finished almost 14 years as of now. It has acquired radical changes in the nation's organization and society. With the assistance of RTI Act one can come to know about the working of the public authorities. Earlier citizen were not aware about the affairs of public authority, thus it resulted in widespread corruption in the system. RTI act carries many success stories in all over the country along with some terrible occasions in type of assaults on RTI activists and slaughtering of them. RTI has helped many people especially at the grass root level such as public distribution system, public works etc. There are two sorts of commissions in the nation one is Central Information Commission (CIC) and other one is State Information Commission (SIC). For central public authorities concerning issue one needs to approach CIC and for state level SIC in request and grievance process. For the most part RTI application/appeal is filled physically in office of public authorities and commissions workplaces separately however for most recent few years some open specialists and commissions have executed online RTI application/request system which spares parcel of time and cash eventually bringing about smooth organization of Act., Central Information Commission (CIC) and Department of Personnel and Training, New Delhi has actualized online application/claim framework successfully. Anyway online RTI application/claim framework in India is in the beginning stage. The motive of RTI Act is that ideas and operations of the public authority should be known to the public, for whom such authority has been established. Transparency and accountability are two main pillars on which Democracy rests. Free flow of information is essential for growth of a democratic society. Democratic form of Government necessarily requires accountability which is possible only when there is openness, transparency and knowledge. Greater exposure about functioning of the Government ensures better and more efficient administration, promotes and encourages honesty and discourages corruption, misuse or abuse of powers by an officer or authority. Transparency is a powerful safeguard against political and administrative aberrations and antithesis of inefficiency resulting from a totalitarian government which maintains secrecy and denies information[1]"

A SHORT HISTORY THAT LED TO ENACTMENT OF RTI ACT

Right to Information Act 2005 was passed by Parliament on 15 June 2005 and came fully into force on 12 October 2005. The first application was given to a Pune police station. Information disclosure in India was restricted by the Official Secrets Act 1923 and various other special laws, which the new RTI Act relaxes.

The right to information gained power when UDHR was adopted in 1948 providing everyone the right to seek, receive, information and ideas through any media and regardless of frontiers.[2] Also The International Covenant on Civil and Political rights 1966 says that "Everyone shall have the right to freedom of expression, the freedom to seek and impart information and ideas of all kind, regardless of frontiers [3].

In India in 1977 Janta Government headed by Morarji Desai constituted a working group to ascertain if the Official Secrets Act, 1923 could be modified so as to facilitate greater flow of information to the public. In 1986 the famous case of Mr. Kulwal v/s Jaipur Municipal Corporation the Supreme Court gave clear cut directive that Freedom of Speech and Expression provided under Article 19 of the Constitution clearly implies Right to Information as without information the freedom of speech and expression cannot be fully used by the citizens. In 1990 Heading the National Front government, Prime Minister V.P Singh, first politician to lay emphasis on RTI, stressed on the importance of Right to Information as a legislated right. He tried to enact legislation in 1989-90. But, due to the political instability at the time, the idea did not materialize."

In "Reliance Petrochemicals Ltd vs. Proprietors of Indian Express 1989 AIR 1990, the SC reads right to know in article 21. The SC held that right to know is a necessary ingredient of participatory democracy. The court further held that Article 21 confer on all person a right to know which include right to receive information. The ambit and scope of article 21 is much wider as compared to article 19(1) (a). In India, the development for the RTI has been as energetic in the hearts of marginalized individuals, scholastic writings and in the media. This isn't astounding since sustenance security, shelter, environment," business and other survival needs are inseparably connected to one side to information.

In the mid-1990s, in Rajasthan, the Mazdoor Kisaan Shakti Sangathan "(MKSS) hit upon a novel method to show the significance of information in a person's life - through formal reviews or Jan Sunwais. The MKSS's battle requested the transparency and accountability of authority records, a social review of government

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spending and a redressal Apparatus for individuals who had not been given their due. The battle got the creative energy of an extensive cross-segment of individuals, including activists, government employees and lawyers.4 The National Campaign for People's Right to Information (NCPRI) framed in the late-1990s turned into a widespread movement. As the movement assembled energy, it progressed toward becoming clear that the right to information is legally enforceable. Because of this battle, in addition to the fact that Rajasthan passed a law on the RTI but in a number of panchayats, graft was exposed and officials punished. Finally in 2005 govt. made Right to Information a legal right. The RTI Act at the outset clarified that the CPIO, under the RTI Act, is required to furnish information/documents as available on record; however, PIO is not supposed to create information that is not a part of the record. He is also not required to interpret information or provide clarification or furnish replies to hypothetical questions, eliciting answers to queries, redressal of grievance, reasons for non-compliance of rules/contesting the actions of the respondent public authority are outside the purview of the Act. The Petitioners right extends only to seek information as defined in Section 2(f) of the RTI Act either by pinpointing the file, document, paper or record etc."or by mentioning the type of information as may be available with the specified public authority.[4]

EXEMPTED INFORMATION UNDER SECTION 8

There are circumstances when the information requested can't be provided by the public authority because of sensitiveness and secrecy of information which if disclosed/revealed would not only hamper the sovereignty and dignity but also power and pride of the nation. Sometimes the information sought is related with third party, which affects the right to privacy which is also a fundamental right. No public authority can claim that any information held by it is "personal". There is nothing "personal" about any information, or thing held by a public authority in relation to itself. The expression "personal information" used in Section 8(1) (j) means information personal to any other "person", that the public authority may hold. That other "person" may or may not be a juristic person, and may or may not be an individual. For instance, a public authority may, in connection with its functioning require any other person – whether a juristic person or an individual, to provide information which may be personal to that person. It is that information, pertaining to that other person, which the public authority may refuse to disclose, if it satisfies the conditions set out in clause (j) of Section 8(1) of the Act, i.e., if such information has no relationship to any public activity or interest vis-à-vis the public authority, or which would cause unwarranted invasion of the privacy of the individual, under clause (j) of Section 8(1) of the Act. The use of the words "invasion of the privacy of the individual" instead of "an individual" shows that the legislative intent was to connect the expression "personal information" with "individual". In the scheme of things as they exist, in my view, the expression "individual" has to be and understood as "person", i.e., the juristic person as well as an individual."[5]

So a few exclusions are fused in the RTI Act under Section 8 which incorporates ten exceptions. Section (8) of the RTI Act "enrolls some exceptional examples when the public authorities are exempted from unveiling information looked for. This incorporates information that would be prejudicial to national integrity, security or economic interests; would constitute to contempt of court of law; would hamper police investigations; would affect commercial interests like trade secrets; would hamper police examinations; would influence business premiums like prized formulas; would block the procedure of examination; would influence guardian connections and would hurt the individual physically.[6]"

Section- 8-"Exemption from disclosure of information" defined.- "(1) Notwithstanding anything contained in this Act, there shall be no obligation to give any citizen,—

(a) information, disclosure of which would prejudicially affect the sovereignty and integrity of India, the security, strategic, scientific or economic interests of the State, relation with foreign State or lead to incitement of an offence;

(b) Information which has been expressly forbidden to be published by any court of law or tribunal or the disclosure of which may constitute contempt of court;

(c) Information, the disclosure of which would cause a breach of privilege of Parliament or the State Legislature;

(d) Information including commercial confidence, trade secrets or intellectual property, the disclosure of which would harm the competitive position of a third party, unless the competent authority is satisfied that larger public interest warrants the disclosure of such information;

(e) Information available to a person in his fiduciary relationship, unless the competent authority is satisfied that the larger public interest warrants the disclosure of such information;

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(f) Information received in confidence from foreign government;

(g) Information, the disclosure of which would endanger the life or physical safety of any person or identify the source of information or assistance given in confidence for law enforcement or security purposes;

(h) Information which would impede the process of investigation or apprehension or prosecution of offenders;

(i) Cabinet papers including records of deliberations of the Council of Ministers, Secretaries and other officers: Provided that the decisions of Council of Ministers, the reasons thereof, and the material on the basis of which the decisions were taken shall be made public after the decision has been taken, and the matter is complete, or over: Provided further that those matters which come under the exemptions specified in this section shall not be disclosed

(j) Information which relates to personal information the disclosure of which has not relationship to any public activity or interest, or which would cause unwarranted invasion of the privacy of the individual unless the Central Public Information Officer or the State Public Information Officer or the appellate authority, as the case may be, is satisfied that the larger public interest justifies the disclosure of such information:

Provided that the information, which cannot be denied to the Parliament or a State Legislature shall not be denied to any person.

(2) Notwithstanding anything in the Official Secrets Act, 1923 (19 of 1923) nor any of the exemptions permissible in accordance with sub‑section (1), a public authority may allow access to information, if public interest in disclosure outweighs the harm to the protected interests.

(3) Subject to the provisions of clauses (a), (c) and (i) of sub‑section (1), any information relating to any occurrence, event or matter which has taken place, occurred or happened twenty years before the date on which any request is made under section 6 shall be provided to any person making a request under that section: Provided that where any question arises as to the date from which the said period of twenty years has to be computed, the decision of the Central Government shall be final, subject to the usual appeals provided for in this Act."

Class based exemptions 8 (1) (b) (e) (f) (j): This class of information is exempted from disclosure even when there is no harm.

Prejudice based exemptions 8 (1) (a) (c) (d) (g) (h) (j): Less the prejudice higher the chances of disclosure. Whether prejudice exist have to be determined in each case.

Time limited exemptions 8 (1) (b) (d) (e) (f) (g) (h) (j): These exemptions are valid only for a period of 20 years from date on which information is created.[7]

It is to be noted that even within the RTI Act the right to privacy and personal information have been placed on a separate footing. Section 8 exempts certain information, it should not be considered as a fetter on the Right to Information, but an equally important provision protecting other public interest including privacy of individuals.

The object of RTI act is to "harmonize the conflicting public interests, that is, ensuring transparency to bring in accountability and containing corruption on the one hand, and at the same time ensure that the revelation of information, in actual practice, does not harm or adversely affect other public interests which include efficient functioning of the governments, optimum use of limited fiscal resources and preservation of confidentiality of sensitive information, on the other hand. While Section 3 and 4 seek to achieve the first objective, Sections 8, 9, 10 and 11 seek to achieve the second objective. Therefore when Section 8 exempts certain information from being disclosed, it should not be considered to be a fetter on the right to information, but as an equally important provision protecting other public interests essential for the fulfilment and preservation of democratic ideals. Therefore a balance has to be struck between the principle of promoting honest and open government by ensuring public access to information created by the government on the one hand and the principle of confidentiality breach whereof is likely to cause substantial harm to competitive position of the person from whom information is obtained and the disclosure impairing the government's ability to obtain necessary information in future on the other hand.[8]"

The Supreme Court in "Bihar Public Service Commission v. Saiyed Hussain Abbas Rizwi[9] (2012) 13 SCC 61 held that the statutory exemption provided under Section 8 of the Act is the rule and only in exceptional circumstances of larger public interest the information would be disclosed. It was also held that 'public purpose' needs to be interpreted in the strict sense and public interest has to be construed keeping in mind the balance between right to privacy and right to information. The relevant extract from the said judgment is quoted below:"

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"21. ...... Another very significant provision of the Act is Section 8(1) (j). In terms of this provision, information which relates to personal information, the disclosure of which has no relationship to any public activity or interest or which would cause unwarranted invasion of the privacy of the individual would fall within the exempted category, unless the authority concerned is satisfied that larger public interest justifies the disclosure of such information. It is, therefore, to be understood clearly that it is a statutory exemption which must operate as a rule and only in exceptional cases would disclosure be permitted, that too, for reasons to be recorded demonstrating satisfaction to the test of larger public interest. It will not be in consonance with the spirit of these provisions, if in a mechanical manner, directions are passed by the appropriate authority to disclose information which may be protected in terms of the above provisions. All information which has come to the notice of or on record of a person holding fiduciary relationship with another and but for such capacity, such information would not have been provided to that authority, would normally need to be protected and would not be open to disclosure keeping the higher standards of integrity and confidentiality of such relationship. Such exemption would be available to such authority or department."

SECTION 8 (1) (D)

Section 8(1)(d) of the RTI Act exempts from disclosure- "information including commercial confidence, trade secrets or intellectual property, the disclosure of which would harm the competitive position of a third party, unless the competent authority is satisfied that larger public interest warrants the disclosure of such information;". In order to claim the exemption under Section 8(1) (d) of the RTI Act, the PIO must establish that disclosure of the information sought (which may include commercial or trade secrets, intellectual property or similar information) would result in harming the competitive position of a third party. As per Section 19(5) of the RTI Act, the burden of establishing the applicability of the exemption lies on the PIO.[10]

Information relating to the affairs of a private "entity treated as confidential the disclosure of which can possibly have an adverse effect on the competitive position of the entity, is exempt under Section 8(1)(d) of the RTI Act. Section 8(1) (j) exempts personal information relating individuals and unincorporated entities. The basic protection from disclosure afforded by virtue of these statutory exemptions cannot be lifted or disturbed unless the petitioner is able to justify how such disclosure would be in 'public interest'. Thus Section 8(1) (d) is relevant when case provides that the authority may refuse to give information relating to commercial confidence, trade secret or intellectual property, disclosure of which would harm the competitive position of a third party, unless the competent authority is satisfied that larger public interest warrants the disclosure of such information. The question, therefore, that falls for consideration is as to whether disclosure of various documents submitted by the third party (such as bidders) is a trade secret or commercial confidence or intellectual property. Prima facie, once a decision is taken in the matter, there is no justification to keep it secret. People have a right to know the basis on which the decision has been taken. Let us presume that tenders are invited by the public authority and on the basis of tender documents, the eligibility of a tender or a bidder is decided, then those tender documents cannot be kept secret, that too, after the tender is decided and work order is issued on the ground that it will amount to disclosure of trade secret or commercial confidence. If the authorities of Government refuse to disclose the document, the very purpose of the Act will be frustrated. Moreover, disclosure of information, sought for by the petitioner, cannot and shall not be a trade secret or commercial confidence; rather disclosure of such information shall be in public interest, inasmuch as it will show the transparency in the activities of the Government.11 The Hon'ble HIGH COURT of Delhi in its decision 2014 [W.P. (C) 85/2010 Naresh Trehan vs Rakesh Kumar Gupta][12]" has held as under:

If the nature of information is such that "disclosure of which may have the propensity of harming one's competitive interests, it would not be necessary to specifically show as to how disclosure of such information would, in fact, harm the competitive interest of a third party. In order to test the applicability of Section 8(1) (d) of the Act it is necessary to first and foremost determine the nature of information and if the nature of information is confidential information relating to the affairs of a private entity that is not obliged to be placed in public domain,"then it is necessary to consider whether its disclosure can possibly have an adverse effect on third parties.

TEST OF LARGER PUBLIC INTEREST

In cases which involves section 8 (1) (i), the public authority may declare information requested but only after taking into account larger public interest into account. For this purpose we first have to understand what really public interest is as per the RTI Act. The expression "public interest" has to be understood in its true connotation so as to give complete meaning to the relevant provisions of the Act. The expression "public interest" must be viewed in its strict sense with all its exceptions so as to justify denial of a statutory exemption in terms of the Act. In its common parlance, the expression "public interest", like "public purpose", is not capable of any precise definition. It does not have a rigid meaning, is elastic and takes its colour from the statute in which it occurs, the concept varying with time and state of society and its needs (State of Bihar v. Kameshwar Singh [AIR 1952 SC 252]). It also means the general welfare of the public that warrants recognition and protection; something in which the public as a whole has a stake [Black's Law Dictionary (8th Edn.)].A public authority should declare the information "falling under section 8 (1) (d) if he thinks that public interest outweigh the interest of other party. While determining public interest he is not supposed to follow very high standards but he should act like a reasonable man while deciding whether to disclose information under this sub section or not. The decision has to be arrived at by the authorities objectively and the consequences of such disclosure have to be weighed with regard to the circumstances of a given case. The decision has to be based on objective satisfaction recorded for ensuring that larger public interest outweighs unwarranted invasion of privacy or other factors stated in the provision. Certain matters, particularly in relation to appointment, are required to be dealt with great confidentiality. The information may come to knowledge of the authority as a result of disclosure by others who give that information in confidence and with complete faith, integrity and fidelity. Secrecy of such information shall be maintained, thus, bringing it within the ambit of fiduciary capacity. Similarly, there may be cases where the disclosure has no relationship to any public activity or interest or it may even cause unwarranted invasion of privacy of the individual. All these protections have to be given due implementation as they spring from statutory exemptions. It is not a decision simpliciter between private interest and public interest. It is a matter where a constitutional protection is available to a person with regard to the right to privacy. Thus, the public interest has to be construed while keeping in mind the balance factor between right to privacy and right to information with the purpose sought to be achieved and the purpose that would be served in the larger public interest," particularly when both these rights emerge from the constitutional values under the Constitution of India.[13]

COMMERCIAL PUBLIC AUTHORITIES

The commercial "public authorities such as the L.I.C. are competing on the one-hand with other similar State entities and on the other hand with private entities engaged in the insurance business. Any information having a commercial bearing, which would necessarily include hiring of premises for business operations, if disclosed would have the potentiality to compromise the commercial interest of the public authority. For example, the public authority's competitors may encourage the landlord to part-with the tenancy of the public authority by luring him with higher rentals given the strategic locations of such premises. It will impose avoidable burden on the public authority. There could be other similar pressures of a commercial nature which can be brought on the public authority if such contracts, viz. the rental agreements are to be disclosed. In an era where the market place is now brimming with highly competitive entities engaged in insurance business, any disclosure of any such information having a commercial bearing must be treated with utmost caution.[14] Thus, commercial public authorities may refuse to disclose information which can hurt their commercial interests but the commercial authorities can't be allowed to take this plea whenever information is requested from them therefore a system of check and balance should be put on commercial public authorities so that they don't violate the legal right of information of every citizen of this country and they can also do corruption if allowed to take the plea of commercial interests at their discretion. Therefore whenever any information is refused quoting an exemption the authority withholding the information must show satisfactory reasons and the reasons should be based on some material facts to avoid arbitrariness, unreasonableness and to build a culture of transparency in commercial public authorities."

EXEMPTED INFORMATION UNDER SECTION 8 (1) (D)

Details of loan accounts, "valuation reports of immovable assets and details of properties and securities of borrowers are in the nature of commercial confidence. The Bank is required to maintain secrecy of such information and therefore, if such information has no relationship with any public activity or interest disclosure of the same is exempted under Section 8(1) (d) of the RTI Act. In the Institute of Chartered Accountants of India v. Shaunak H. Satya and Ors.[15] the Supreme Court of India has held that Section 8(1) (d) of RTI Act did not bar or prohibit disclosure of question papers, instructions and solutions to questions communicated by the examining body to the examiners, head-examiners and moderators, are information available to such persons in their fiduciary relationship and therefore exempted from disclosure. Income tax returns including information provided to the income tax authorities during the course of assessment and proceedings thereafter, are exempted under the provision Section 8(1) (d) of the RTI Act. Information relating to intellectual property, the disclosure of which would harm the competitive position of a third party, is also exempted from disclosure under Section 8(1) (d) of RTI Act. Furthermore public authorities can only take the plea of section 8 (1) (d) of RTI Act if information requested is related to third party except commercial public authorities which can also take plea of

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this sub-section if furnishing of information harm their trade interests," trade secrets and commercial confidence.

SECTION 8 (1) (G)

Section 8(1) (g) of the RTI Act exempts, "information, the disclosure of which would endanger the life or physical safety of any person or identify the source of information or assistance given in confidence for law enforcement or security purposes;".

The plain reading of the above provision shows that Sec 8(1) (g) of the RTI Act speaks of three different criteria which, if present, would attract Sec 8(1) (g) exemption:

i) Information, the disclosure of which would endanger the life or physical safety of any person or

ii) Identify the source of information or

iii) Assistance given in confidence for law enforcement or security purposes.[16]

The Hon'ble Supreme Court in the case of Bihar Public Service Commission vs. Sayyed Hussain Abbas Rizvi & Anr[17] [Civil appeal No. 9052 of 2012] has held that clause 8(1) (g) "can come into play with any kind of relationship. It requires that where the disclosure of such information which would endanger the life or physical safety of any person or identify the source of information or assistance given in confidence for law enforcement or security purpose, the information need not be provided. In other words if in the opinion of the concerned authority there is danger to life or possibility of danger to physical safety, the CPIO would be entitled to bring such case within the exemption of Section 8(1) (g) of the RTI Act. This section concerns with the cases where no obligation is cast upon the public authority to furnish information, the disclosure of which would endanger (a) the life (b) physical safety of any person. The legislature, in its wisdom, has used two distinct expressions. They cannot be read or construed as being synonymous. Every expression used by the Legislature must be given its intended meaning and, in fact, a purposeful interpretation. The expression 'life' has to be construed liberally. 'Physical safety' is a restricted term while life is a term of wide connotation. 'Life' includes reputation of an individual as well as the right to live with freedom. The expression ' life' also appears in Article 21 of the Constitution and has been provided a wide meaning so as to inter alia include within its ambit the right to live with dignity, right to shelter, right to basic needs and even the right to reputation. The expression life under section 8(1(g) the Act, thus, has to be understood in somewhat similar dimensions. The term 'endanger' or 'endangerment' means the act or an instance of putting someone or something in danger; exposure to peril or such situation which would hurt the concept of life as understood in its wider sense [refer Black's Law Dictionary (Eighth Edition)]. Of course, physical safety would mean the likelihood of assault to physical existence of a person. If in the opinion of the concerned authority there is danger to life or possibility of danger to physical safety, the State Information Commission would be entitled to bring such case within the exemption of Section 8(1) (g) of the Act. The disclosure of information which would endanger the life or physical safety of any person is one category and identification of the source of information or assistance given in confidence for law enforcement or security purposes is another category. The expression 'for law enforcement or security purposes' is to be read ejusdem generis only to the expression 'assistance given in confidence' and not to any other clause of the section. On the plain reading of Section 8(1) (g), it becomes clear that the said clause is complete in itself. It cannot be said to have any reference to the expression 'assistance given in confidence for law enforcement or security purposes'. Neither the language of the Section nor the object of the Section requires such interpretation. It would not further the cause of this section. Section 8 attempts to provide exemptions and information should not be denied where some part of information can be disclosable under section 10. Section 8 (1) (g) cannot be used to deny information when it should be disclosed for larger public interest. This subsection protects persons who are doing their duty with reasonable care and due diligence such as examiners whose identity cannot be disclosed to prevent possible threat of life or injury from students and so on but this should not be used to protect arbitrarily those persons who are not doing their duty with reasonableness, accountability , care and diligence. Out of many objectives of RTI Act one objective is to expose the culprits in the government who are doing corruption or are doing their duty without following the administrational ethics of public offices."The exemption under this section should not be used to protect persons who are causing loss of livelihood, justice, opportunity and rights of ordinary citizens of this country.[18]

RIGHT TO LIFE AND CORRUPTION AND RTI ACT

Corruption is not only destructive but capable of ruining or the spoiling of society or a nation. The corrupt society hates integrity, moral and virtuous principles. "No doubt, such a society change for the worst and travels on the path of self-destruction. Corruption is not a new phenomena so are the selfishness and greed which are

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two main reason of this evil presence in the society. A corrupt society is known for their immorality,"lack of fear, lack of empathy compassion and respect for the law.

Right to life is the most important human right and If Human rights violations are occurring because of illicit practicing of corruption, it will surely somehow be linked directly or indirectly with the public's welfare measures. Corruption affects the diverse economical, social, cultural, political ethics as well as equality of the citizens who are getting affected by such corrupt practices therefore it becomes important that what all measures could be taken by which the corruption gets deteriorated as well as the human rights of the citizens also gets secured.

Corruption could be found anywhere wherever, there is giving and taking of something from someone by which the person who is acting under its duty, abuses his responsibility just for the sake of the fulfillment of fraud means and act according to one who gives any economic benefit or other benefit for lifting up of his wrongful intention. It may include practices which has been defined or mentioned in legislations in India which includes- bribery, extortion, money laundering, fraud and embezzlement of public funds among many others such as cronyism, nepotism, patronage on which there is no legislation. There are many causes of corruption for example low wages and salaries and wealth inequality are the economic causes of corruption beside economic causes there are political, social, legal, cultural, educational and ethical causes of corruption.

A reading of the above paragraph, will make you think that expression pertaining to allegation of corruption cannot be exhaustively defined and this thing is in fact true. The RTI Act is to step-in-aid to establish the society governed by law in which immoral acts like corruption has no place. The Act envisages a transparent public office. Therefore even in organizations which are exempt from the provisions of the Act, in terms of the notification issued under section 24 (4) of the Act, stills information which relates to corruption or the information which excludes the allegation of corruption would be relevant information and cannot be denied for the reasons that the organization is exempted under the Act. While interpreting section 8 courts should always take into consideration the provisos which are attached to section 8 and 24 of the RTI Act and make sure that does they are providing information on the same level to the poorest citizen of this country and a MP or MLA. There should not be two parameters for citizens of this country for exercising their normal right. The dream of a just and welfare state cannot be fulfilled unless we creates same parameters for same things for every citizen irrespective of their background, caste, creed, religion, power and education. We should not create two separate classes in the country. The public authorities cannot take plea of right to life and safety according to moral principles if they are violating the same rights of other persons but the law of our country is greatly designed by Britishers therefore we cannot raise questions and doubts on this but we should try to find positives out of this legal philosophy but their laws were based on distrust of the natives and a firm belief in our inability to govern ourselves. Courts should disclose information related to safety of those officials who had violated the basic rights of other citizens as a principle of equality and justice provided that equality doesn't mean sameness. The court should try to minimise the use of exemptions of RTI Act in order to fulfil the objectives of transparency, accountability, justice, equity and reasonableness which will be devoid of unjustness, arbitrariness and authoritarianism.[19]

SECTION 8 (1) (I)

As per Section 8(i) of the Right to Information Act, 2005, a "Public Authority" is not obliged to disclose Cabinet papers including records of deliberations of the Council of Ministers, Secretaries and other Officers. Section 8(1) sub-section (i) subjects this general exemption in regard to Cabinet papers to two provisos, which are as under: -

Provided that the decisions of Council of Ministers, the reasons thereof, and the material on the basis of which the decisions were taken shall be made public after the decision has been taken, and the matter is complete, or over:

Provided further that those matters which come under the exemptions specified in this section shall not be disclosed."

From a plain reading of the above provisos, the following may be inferred: -

i) "Cabinet papers, which include the records of deliberations of the Council of Ministers, Secretaries and other officers shall be disclosed after the decision has been taken and the matter is complete or over.

ii) The matters which are otherwise exempted under Section 8 shall not be disclosed even after the decision has been taken and the matter is complete or over.

iii) Every decision of the Council of Ministers is a decision of the Cabinet as all Cabinet Ministers are also a part of the Council of Ministers. The Ministers of State are also a part of the Council of Ministers, but they are not Cabinet Ministers.

From the above points we may conclude that every decision of the Council of Ministers is a decision of the Cabinet and, as such, all records concerning such decision or related thereto shall fall within the category of "Cabinet papers" and, as such, disclosable under Section 8(1) sub-section (i) after the decision is taken and the matter is complete, and over.[20]

Seven Judges of the Supreme Court in S.P. Gupta "and others versus President of India and others[21] AIR 1982 SC 149 have examined and interpreted Article 74(2) of the Constitution of India. They further observed that the reasons which prevailed with the Council of Ministers, would form part of the advice tendered to the President and therefore they would be beyond the scope/ambit of judicial inquiry. However, if the Government chooses to disclose these reasons or it may be possible to gather the reasons from other circumstances, the Court would be entitled to examine whether the reasons bear reasonable nexus [See, para 58 at p.228, S.P. Gupta (supra)]. Views expressed by authorities/persons which precede the formation of advice tendered or merely because these views are referred to in the advice which is ultimately tendered by the Council of Ministers, do not necessarily become part of the advice protected against disclosure under Article 74(2) of the Constitution of India. Accordingly, the material on which the reasons of the Council of Ministers are based and the advice is given do not form part of the advice. In another case it was held that report of Public Service Commission which formed material on the basis of which the Council of Ministers had taken a decision, did not form part of the advice tendered by the Council of Ministers. When Article 74(2) of the Constitution applies and bars disclosure, information cannot be furnished. RTI Act cannot and does not have the ability and mandate to negate the constitutional protection under Article 74(2). The said Article refers to inquiry by courts but will equally apply to CIC."

Justice Bhagwati "then examined and interpreted Section 123 of the Evidence Act, 1872 and the protection on the basis of State privilege or public interest immunity. Section 22 of the RTI Act is a non-obstante provision and therefore overrides Section 123 of the Evidence Act, 1872. Protection under Section 123 of the Evidence Act, 1872 cannot be a ground to deny information under the RTI Act. However, the question of public interest immunity has been examined in detail and the same is of relevance while interpreting Section 8(1) (j) of the RTI Act."

The second proviso to Section "8(1) (i) of the RTI Act explains and clarifies the first proviso. As held above, the first proviso removes the ban on disclosure of the material on the basis of which decisions were taken by the Council of Ministers, after the decision has been taken and the matter is complete or over. The second proviso clarifies that even when the first proviso applies, information which is protected under Clauses (a) to (h) and (j) of Section 8(1) of the RTI Act, is not required to be furnished. The second proviso is added as a matter of abundant caution exabudent catulia. Sub-clauses (a) to (j) of Section 8(1) of the RTI Act are independent and information can be denied under Clauses 8(1) (a) to (h) and (j),"even when the first proviso is applicable.

CABINET SECRECY IS AN ESSENTIAL PART OF THE STRUCTURE OF THE GOVERNMENT

Confidentiality and collective "responsibility in that scenario are twins to effectuate the object of frank and open debate to augment efficiency of public service or affectivity of collective decision to elongate public interest. To hamper and impair them without any compelling or at least strong reasons, would be detrimental to the efficacy of public administration. It would tantamount to wanton rejection of the fruits of democratic governance, and abdication of an office of responsibility and dependability. Maintaining of top secrecy of new taxation policies is a must but leaking budget proposals a day before presentation of the budget may be an exceptional occurrence as an instance.[22] Freedom of speech and expression as provided under Article 19(1) (a) of the Constitution of India, which includes the right to information, is subject to Article 19(2) of the Constitution of India wherein restrictions can be imposed on the fundamental rights of freedom of speech and expression. The right to information cannot have an overriding effect over and above the provisions of Article 19(2) of the Constitution of India and since the Right to Information,"Act originates from the Constitution of India the same is secondary and is subject to the provisions of the Constitution.[23]

SECTION 8(1) (I) AND TRANSPARENCY

30. In S.P. Gupta (supra),[24] the Supreme Court held that "democratic form of Government necessarily requires accountability which is possible only when there is openness, transparency and knowledge. Greater exposure about functioning of the Government ensures better and more efficient administration, promotes and encourages honesty and discourages corruption, misuse or abuse of authority, Transparency is a powerful safeguard against

political and administrative aberrations and antithesis of inefficiency resulting from a totalitarian government which maintains secrecy and denies information.” Therefore it is necessary that government declare all information on which its decisions and policies are based and only in rare cases government should maintain secrecy like where information in public domain can put serious threat to nation’s security and integrity. Information on which government decisions and policies are based when available in public domain enable citizens to not only evaluate the working of government but also put a system of check and balance on government so that government didn’t function and use its powers arbitrarily and unresponsively at the cost of citizens interest.

CONCLUSION

A study of the provisions of section 8 of the RTI Act “as well as the case laws under it reveals that the legislature was aware of the dangers posed to the security, life of individuals and damage to commercial entities and government from such a powerful transparency law but an analysis of the RTI Act make it clear that these exceptions were not carved out to protect the individuals and commercial entities to nullify the objects of the RTI Act and therefore drafted the legislation to incorporate the principle that although the RTI Act should not be used to violate the right to life of individuals and freedom of trade but such exceptions will not be applicable if a larger public interest is to be served by the disclosure. This principle is in line with other common law jurisdictions. Anyway it is disheartening to note that the legislature has only left the legislation at the stage of the principle which has left the language of the exception very wide and open to varied interpretations. It is reasonable that the lawmaking body would attempt to keep points of interest out of the extent of the area to make it future proof. Clearly it would be outlandish for the legislature or the courts to envision each and every condition that could emerge where the Right to Information and fundamental rights like security would be at loggerheads. Be that as it may, such wide and equivocal drafting has prompted situations where the Courts and the Central Information Commission have taken contradicting views. with the views of the Court clearly winning in every case However, it is workable for the legislature to adopt an accepted practice of authoritative drafting and rundown certain cases where there is a conspicuous” balancing required between the two rights and put them” as "Ilustrations" to the section.

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ADDRESSING THE PSYCHOSOCIAL THREATS FOR THE WELLBEING OF TRIBES IN KERALA

Dr. Jilly John[1], Krishna Prasad[2] and Aneesh M S[3]
Assistant Professor[1], Research Assistant[2] and Research Scholar[3], Department of Social Work, Central University of Kerala

ABSTRACT

Psychosocial wellbeing has to be ensured to declare a person totally healthy. Compared to the general population, the importance that the tribes give to psycho social concern is far less. While we compare the health of tribe with the definition of Health given by WHO, the most shocking fact about the tribes came to the light i.e. how deprived they were in the light of the global definition of the health. The research gap in the field of psychosocial health of the tribes is highlighted in this article. The major objective behind preparing such an article was to document the present condition of the tribes in the field of psychosocial health and to bring to light how piercing each psychosocial issue is and to frame a structure of addressing the scarcity. The article is prepared on the basis of literature reviews and field investigations, FGDs, interaction with resource persons, in-depth interviews with representatives of the target population and expert opinion of people related to the field of tribes and their psychosocial problems. The article clearly indicates the relevance and significance of the research gap identified in the psychosocial health of the tribes and how these circumstances be the cause of other major issues of the tribes. The article also clearly draws a line between psycho social issues and crystallizes how strongly interconnected they are. The article tries to be a maiden endeavor in content and concept in the field of psychosocial health of the tribes.

Keywords: Tribes health concept, Wellbeing, Psychosocial issues

INTRODUCTION

India, the largest democratic nation in the world, has travelled 70 years since independence. India is well-known for the comprehensiveness of the Constitution and the freedom that the citizens celebrate here. The very Constitution has always been so keen to ensure the citizens with equal access to all sorts of services and protection of the state in an equitable fashion.

The word ‘equitable’ gains or rather demands special status while coming to the tribal cause of the nation. Constitutional provisions cater to various needs of 160 million scheduled castes and 80 million scheduled tribes, who constitute 24% of the nation’s total population. The constitution ensures positive action, like reservation in jobs and other places, to improve the condition of the scheduled tribes and castes and guarantees their legitimate rights, (Louis,2003).Tribes contribute 8.61% to the total population of India, (Naidu, 2015).The significance of considering the tribes with extra attention can be seen in limelight if the fraction of the tribal population in the Indian population, the extent to which they are vulnerable and the special consideration given to them in the constitution are brought together.

Researchers, scholars, activists and policy makers have long been expressing their deep concern for various problems of the tribes through write ups, social actions and policies.The topics of consideration in the articles and research works, which were obtained while probing supporting literature for the present study, were identified to be most often coinciding with each other.Social, economic and health related concerns of the tribes were there in almost all the literary pieces reviewed.Though there were slight references to the psychological issues of the tribes in some of the articles, they were either inadequate or concentrated only on some sections of the population like unwed mothers, students or those dwelling in some specific area.The psychological issues covered in the articles were also limited to a few like stress, anxiety or loneliness.

In a piece of literature, Rao, Deshingkar & Farrington, (2006) proposes that the socio- economic conditions of the tribes as the most marginalized section of the society has extensively been documented and because of that he straightaway moves on to arenas such as restoration of the tribal resources that are being extinct and exploited gradually, measures of improving agricultural productivity in the tribal areas and the issues related to governance in the tribal land. It has been thus implied that the social as well as economic delicacies of the tribes have been enormously documented and more or less addressed to at least a limited extent. What remains unattended is the other side of the coin, the psychological delicacies of the tribes, which is in fact eclipsed as the light falls only on the evident and manifest side. More than half of the tribal land has been alienated in different parts of the country because of either being awfully indebted to private money lenders or fraudulent practices of others. Chances are very high that there arise psychological implications such as anxiety, adjustment issues and stress attached to these social issues because of land alienation and further events (Sharan,2005).

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The reality that each social problem is followed by one or more psychological distress is often neglected or rather not yet touched upon with deserving attention. In a context, while expounding his views on how the market-based development affects the identity of the tribes, Sarkar et al., (2006) shot a comment with the same perception that indigenous people often lose their values in the process of development. The comment clearly tells how the ways of addressing social issues affect everything of what is ‘normal’ to the tribes, including identity and psychological equilibrium. As part of restructuring of the existing geographical distribution of the human population in order to protect the forest and the hills, the tribes are also being forced to adapt to the changes brought in by the law-enforcers. The increasing economic demands of the tribes, depletion of the forest resources, urbanization and emergence of new employment opportunities have also either lured or coerced the tribes to leave their lands and migrate to new places. According to Xaxa (2015), the advancement in the colonial period opened up a new vista to the tribes with a spectrum of means of earning daily wages. The new vista included employment opportunities like expansion of the roads and railways and extraction of minerals, to which the tribes could become the unskilled labourers. The persuasion from one side that is the depletion of forest resources and the extinction of indigenous ways of earning, and the enticement from the other side, that is the pleasing beckon of the new employment opportunities, together caused the tribes to leave the indigenous ways of living and compromise, though gradually, their cultural identity.

The present study initiates the maiden endeavour towards assessing the prevalence of psychosocial problems among the tribes and equipping counsellor trainees from within the community to address the identified psychosocial problems.

THE TRIBAL SITUATION IN INDIA

Tribes are the aboriginal inhabitants of our country, India who live a life in harmony with the natural environment and have a culture in rhythm with the physical and social environment. They are known as the poorest, most marginalized, oppressed and deprived people in the country, Nalinam (2016). Scaria et al., (2013, cited by Nalinam,2016) brings to light the fact that India is the country having the second largest tribal population after Africa. According to Xaxa (2011), tribes remain the most excluded section of the Indian population in all indicators of development despite the fact that the country has formulated various kinds of policies and programmes for their upliftment since independence. There are social as well as psychological implications of this exclusion. Social consequences of the exclusion range from financial deprivation to cultural identity issues. Employment, economic growth, poverty alleviation and social upliftment are very much dependent upon the access to finance by the poor and vulnerable groups. The financially excluded section of the society comprises marginal farmers, landless labourers, self-employed and unorganized sector enterprises, ethnic minorities, socially excluded groups, senior citizens and women, (Dash et al.,2016; Krishnan,2010). Majority of the tribal population belongs to the categories of landless labourers, marginal farmers and socially excluded groups as per the focus group discussions conducted in the study areas. The study conducted by Krishnan (2014) came to the conclusion that the deprived tribes are poorly informed about various financial products, practices and provisions. The state of being oblivious about the measures to be taken towards being financially secure undermines their wellbeing in old age. Focus group discussions in and visits to the study areas have proven that the welfare policies and provisions have failed to achieve the expected improvement in the wellbeing of the tribes. The reasons for the underachievement of the policies are that they do not radically view an issue.

In the sector of education, child development and addressing mal-nutrition, the state and central governments have been launching and implementing innumerable schemes and programmes, especially for the tribes. Many of the tribal groups in the country lag even in literacy rate. In a study conducted by Suresh and Cheeran (2015), only three among the seventeen tribal groups considered for their study have better literacy rate. Educational exclusion of certain communities has been significantly pointed out. According to Haseena and Mohammed (2014), education of tribal children is not just a constitutional obligation but a strategic input for the overall development of the tribal population. Tribal concept of pleasure, low socio-economic status, existence of ethnic stereotypes, tribal concept of learning, linguistic problems, psychological problems, academic andadministrative problem, indifferent attitude of tribal parents, teachers and students are identified as the main reasons for dropout among tribal students. The medium of education, culture and content of education and the teachers themselves tend to be alien to students from tribal background, causing high level of dropout at different levels of schooling, (Xaxa,2011). Dropout and lack of education can obviously lead to unemployment, poverty, malnutrition, social exclusion, ignorance of legal provisions, the consequences and indulgence in illegal activities such as production and sale of illicit substances.

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According to Mohindra and Labonte (2010), health and human development indicators of the scheduled tribes are lagging far behind other communities. The reasons include indigenous practices, health culture, inadequate reach of health care facilities, absenteeism of professionals, discrimination and geographical disadvantage. Tribes resort to means such as magico-religious activities to fight diseases and snake bite and exorcism to drive out ghosts, (Tarafdar, 2008). HIV/AIDS, malaria and tuberculosis are dangerously there among tribes. High levels of chronic malnutrition and infectious diseases were observed among scheduled tribes (Mohindra & Labonte, 2010). According to Balgir (2007), majority of the health care needs of the tribal population are taken care of by the health professional at the primary health care centre. Geographical disadvantage, faith healing system, discrimination faced in the hospitals and reluctance to renounce the traditional system of treating adversely affect access of tribes to the health carefacilities. According to Mohindra and Labonte (2010), health of the tribes has been adversely affected by inappropriate research methods and practices too. Making researches culturally sensitive, considering the needs, priorities and ways of knowing the Scheduled Tribe (ST) populations is essential to understand the tribal health concerns in a comprehensive manner. Mohindra et al., (2010) opines with the view that studies and welfare programmes must promote tribal self-determination, mobilization and transformation. All the concerns have been addressed either separately or collectively by various studies.

In the sector of psychological aspects of the tribes, there are so many issues rising up now a day. Behind every social stigma and issue the possibility of having a psychological conundrum is too high, as mentioned in the introduction to this article. For instance if the unemployment and consequent poverty are considered the pivotal social issue, the risk of developing apessimistic mindset that there is no point in trying to pursue education as there are even educated people who are still unemployed is very high. This is a point where ‘psycho-social’ interventions are very significant.

Two separate lists of social as well as psychological problems faced by the tribes are developed based on the information obtained from the literature reviewed, focus group discussions conducted and key persons interviewed. Both the lists are still stretchable but drawing the link between one social problem and consequent psychological problem(s) is more important than extending the list for only knowing the causes can help uproot an issue radically.

1. SOCIAL PROBLEMS

Social problems relegate a tribal person from what is normal and common to all people in a particular society, thus entrenching him in a lower stratum of the society despite his equal rights.

HOUSING

Despite a number of schemes implemented, the housing facilities in many of the tribal abodes still remain awkward. Life Mission, for instance, of the Kerala government directly provides financial assistance to tribal people to build a house. Private money lenders, incomplete construction, waiting for the government aids to come are the few social problems related to housing. Almost all the houses are incompatible with the number of members in the family. Even teenage girls are often denied the privacy that is inevitable. According to Kumar et al,(2017), housing is not only a basic need of the humanity but it demands focused attention of the policy makers. The finding also proposes that each couple in a family is supposed to have a separate room in a house for their privacy, which is lacking in these rural especially tribal households. Further gives a shocking information that 82.4% of the tribal houses are constructed with own resources, which clearly delineates the shortcoming of the government provisions in reaching the target population. Having an unfinished or no house and being indebted trigger psychological issues such as stress, anxiety, sleep disorders and even depression.

FOOD & WATER

Malnutrition haunts tribal hamlets. Geographical disadvantage affects easy access to food and water. According to Kumar et al., (2017), only 21.4% tribes have drinking water facility within the premises of their houses. Scheduled tribes in rural areas are more dependent upon unsafe drinking water, having no other option. The number of scheduled tribes depending upon unsafe drinking water amounts up to 79.4%. When safe drinking water is not available, tribes become forced to depend upon private wells of others, which cause conflicts. These situations may lead to psychological disturbances such as irritability, burnout or behaviour problems.

CULTURAL PROBLEMS

One of the root causes for tribes being termed the indigenous people is their indigenous knowledge and culture. Fading of the indigenous knowledge in the fields of arts, crafts and treatment is the major cultural problem of the day. Ridicule and persecution coerce tribes to hide their indigenous art forms from the limelight. As reported by representatives of the target population in the focus group discussion, even schools fail to

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promote tribal art forms and handicrafts. Displacement due to pressure of circumstances, sense of inferiority, educational backwardness, high suggestibility and the unavailability of strongly supporting organizations or government officials also add to the fading of tribal culture. According to Ota (2015), tribes are facing great changes and worst losses in their traditional house pattern dress, ornaments, hunting implements, musical instruments and several other objects of art and artifacts in metal, in textile, timber, wood, bamboo and leaves. Often they are being replaced and often they are distorted to an extent where even identification is difficult. They tend to imitate other communities as per the trends, which is fuelled by the sense of inferiority. Thethreats to culture can cause tribes to have psychological issues such as stress, burnout, behaviour problems, irritability or nervousness.

UNEMPLOYMENT

'More people and less vacancies' is the most intimidating reality in a country like India, where population explosion is taking place. Inadequacy in education along with school dropouts and oblivion of careeropportunities deprives tribes of the fortune of having a steady income job despiteprovisions like reservation in jobs. According to Puhan (2016), Indian industry isfacing a paradoxical situation where the youths are running after securing a job and the industries are suffering from unavailability of skilled labourer, which is the consequence of a supply-driven education system instead of a demand-driven one. National Youth Policy (1998) stated that elimination of unemployment is its most important objective. Lack of motivation, corruption, discrimination, shortage of jobs, lack of education, ignorance and attitude are worsening the tribal scenario of employment. Poverty, indebtedness, suicide and anti-social activities are both causes and consequences of unemployment. Unemployment canspur psychological issues such as anxiety, nervousness, tension, stress, burnout, sleep disorder, addiction to alcohol andsubstances or behaviour problems.

PROBLEMS IN SCHOOLING

Tribes have provisions like reservation in jobs to secure a safe living if they complete at least their basic schooling. According to Sahu (2014), in the case of education and literacy, tribes lag behind other groups of people. Medium of education, location of the village, economic condition, attitude of the parents, teacher related problems, lack of proper monitoring are the potential causes for educational backwardness. The researcher put forth a few suggestions like literacy campaign, influencing attitude of the parents, introducing relevant study materials in local language, appointment of local teachers and female teachers, providing stipends and various scholarships, setting up residential schools, ensuring social security and setting up provisions for proper monitoring to uproot the issue of dropout. Peer pressure, custom of going for daily-wages at late childhood, sense of inferiority, persecution faced in schools or addiction to alcohol, tobaccoand other substances cause problems in schooling. Problems in schooling can cause tribes to have psychological issues such as tension, stress, depression, burnout, irritability, alcohol/tobacco/substance addiction or behaviour problems.

SOCIAL SECURITY

Educational backwardness is the prime cause for issues in social security. Tribes become often unaware of their legal rights and legal consequences of activities like producing, consuming and selling illegal substances. Poor contact with people outside the tribal community is a major cause for social insecurity (Menon, 2013). Persecutory attitude of the police and other authorities, lack of unity and sense of inferiority are also contributing factors for experiencing social insecurity. Social insecurity can cause tribes to feel psychological disturbances such as anxiety, nervousness, tension, stress, irritability or addiction to substances or alcohol.

HEALTH CARE

A healthy person in a family can assure that the family does not suffer from poverty. According to Naidu (2015), every society has a traditional healing system and among the tribes, it is attached to some mysticism, magic-religious practices and herbals, giving rise to a health culture. The health culture decides further health practices among the population. The same study proposes the health care system to conform to the health culture of the tribes so that maximum utilization of available resources and the best results can be ascertained. It is a necessity that the traditional tribal medicine has to be scientifically studied and need to combine them with modern allopathic system so as to make it affordable and available to the tribal people. Distance from the hospital, lack of transportation facilities or hilly or disadvantaged structure of the settlement pushes the situation further. Persecutory attitude of the health professionals, usage of discriminatory words, absenteeism of the professionals in the hospital, lack of need-based schemes, poverty, mal-nutrition or ignorance of tribesregarding health care provisions available for them can make the health care facilities less reaching. According to Balgir (2006) tribes have a wealth of folklore associated with their health practices. The knowledge of the health professional and policy makers about various folklores of different socio-cultural systems of the tribes may have good impact on designing the model for appropriate health interventions. The folklore along with health

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practices constitutes a health culture. Balgir (2004) also argues that health culture of a community does not change much with changes in the access to various health services. They are now not able to completely trust their traditional health culture because of the injected 'rational thoughts' and are not able to confide the modern health care means because of its alienation. Balgir (2006) wants the health sector personnel and researchers to scientifically study the 'traditional tribal medicine' and 'healing systems' and 'combine' them with modern medical science so as tomake the health care facilities more tribe-friendly, affordable and accessible. According to Nair (2010) there are a few diseases constantly pestering the tribes and another important threat to the tribal health is not being informed about various diseases, including epidemics. As per the FGD conducted, lack of knowledge aboutdiseases like HIV/AIDS, Jaundice, Malaria etc. really worsen lives in the tribal habitats. Psychological problems induced by inadequacies in the health sector include stress, tension, anxiety, nervousness, burnout, irritability, sleep disorders, sexual problems, addiction to drugs/ alcohol/ tobacco, memory problems or behaviour problems.

LEGAL ISSUES

Legal issues haunt the tribes from two different sides. The first one is ignorance of the legal provisions protecting the rights in general and privileges in particular. This unabridged ignorance is largely exploited by landlords, government officials and even the police. The other side of the issue is the ignorance of the consequences of illegal activities. It becomes difficult to distinguish between legal and illegal activities. Ignorance of legal complications or provisions, peer pressure, adolescent gangs and enticement of money or any other advantage entangle tribes in the cyclone of illegal activities and their consequences. Legal complications can cause the tribes to face the law and be detained. These all can contribute to psychological disturbances such as stress, anxiety, tension, depression, burnout, loneliness, irritability or behaviour problems.

2. PSYCHOLOGICAL PROBLEMS

The bridge between social and psychological problems is well delineated above. Psychological problems go well with social problems to form a whole of well-defined problems; the "psycho-social" problems. If an attempt is made to sort out the psychological problems that came across in the scrutiny of the social problems, that would be an extended list.

ANXIETY

Simply, anxiety is a nervous disorder marked by excessive uneasiness and apprehension, typically with compulsive behaviour or panic attacks. According to Davison (2008), anxiety is an emotion characterized by an unpleasant state of inner turmoil, often accompanied by nervous behaviour such as pacing back and forth rumination and somatic complaints. In the case of tribes, it affects their social living. They cannot go to an office, cannot talk to police personnel, cannot talk to the bank manager and get a loan etc. if they have traits of anxiety. Reasons for anxiety at different ages are different but symptoms must have similarities. Exam the next day would be reason for a student feeling anxiety whereas paying back the money borrowed would be the reason for anxiety among the elderly. Stress at work, stress from school, stress in family life such as husband-wife issues, financial ailments, death or loss of the beloved, emotional trauma, side effects of medication for other diseases, use of illicit drugs like marijuana or cocaine, symptoms of other severe illnesses, lack of oxygen in the workplace like the bottom of a well where the tribes will have to work occasionally, approaching a bank for loan, talking to a police officer, dealing with new epidemics etc. are situations capable of triggering anxiety.

NERVOUSNESS

As per the definition of the Oxford English Dictionary (1971), nervousness is a state of being easily alarmed or agitated. Nervousness can cause a person to have problems like trouble sleeping, being focused always and remaining stressed even after the cause for the stress has disappeared. Stress is the most potential cause for nervousness.

TENSION

Tension is a state of feeling highly stressed. The Oxford English Dictionary defines tension as a state of feeling emotional or mental strain. Tension is caused when we exert ourselves too much and too often with the same uneasy task. Waiting for your turn in a team, facing the audience, taking responsible roles in tribal gatherings etc. are situations causing tension to tribes.

STRESS

According to the Oxford English Dictionary, psychological stress is a state of mental or emotional strain or tension resulting from adverse or demanding circumstances. Cohen et al., (2007) stated that psychological stress is a state when the individual perceives that the environment demands tax or exceeds his or her capacity. According to Jaffe-Gill et al., (2007), stress is nothing but a psychological and physiological response to

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upsetting events that ruin our equilibrium of mind in some or the other way. There are so many situations causing stress. Few of them can be identified to be specific to the tribal habitat. Those common situations causing stress to the tribes are death of spouse, divorce, abandoning, detainment, loss of the beloved, injury or illness, marriage, state of being fired from job, economic concerns, retirement, being bedridden and unwanted pregnancies. Using alcohol, cigarettes, or drugs to relax, nervous habits (e.g. nail biting, pacing), teeth grinding or jaw clenching, overdoing activities (e.g. exercising, shopping), overreacting to unexpected problems, picking fights with others etc. are most important symptoms of stress.

DEPRESSION

Unlike other psychological problems, depression is a little serious thing. According to the American Psychiatric Association, depression a common and serious medical illness that negatively affects how you feel, the way you think and how you act. According to Kumar et al., (2012), depression is a mental disorder that produces depressed mood, loss of interest, fading of pleasure, feeling of guilt, reduced self-worth, disturbed sleep and appetite, low energy, and poor concentration. These by-products of depression are not stagnant but capable of becoming rampant. These can cause permanent impairment to an individual's ability to look after oneself. The further finding of the study proves that in a year, depression takes the lives of nearly 8, 50,000 people around the world. There are some situations intensifying the effect of depression. A few of them are addiction to alcohol or drug abuse, medical conditions and complications, medications such as steroids, sleeping problems, stressful life events, such as death or loss of spouse, failing a class, divorce, childhood abuse or neglect, being fired from job, social isolation etc. Among the tribal population, suicidal ideation can be so serious as chances of being depressed is much too high there. Knowing the symptoms and severity of depression will help the tribes to be more vigilant and cautious. Precaution against depression is very necessary among the tribal population. According to the World health organization (2015), more than 300 million people (nearly 4% of the total population) around the world have depression. The number is high and the risk is higher.

BURNOUT

According to Maslach (2001), burnout is a prolonged response to chronic emotional and interpersonal stressors on the job. According to the Oxford English Dictionary burnout is physical or mental collapse caused by overwork or stress. According to Gerry (2013), depleted physical energy, exhaustion, lack of motivation, frustration, cynicism, emotional exhaustion, cognitive problems, slipping job performance, lowered immunity to illness, less investment in interpersonal relationships, interpersonal problems at home and work, not taking care of oneself, being preoccupied with work when you are not at work, decreased satisfaction, increasingly pessimistic outlook, increased absenteeism and inefficiency at work are the most frequented symptoms of burnout.

LONELINESS

Loneliness, as the term indicates, is a state of solitude, tormenting the peaceful existence of an individual. It feels worse when nobody is there to talk to and when a person is unable to trust anyone. Ernst and Cacioppo (1999) were upholding the view that loneliness is a complex set of feelings encompassing reactions to the absence of intimate and social needs. According to Doman and le Roux (2010), Loneliness is defined as a state of subjective feelings of social pain and isolation. It also involves the desire for deeper involvement into the social web than being experienced at a point of time. Many scholars and researchers have pointed out IQ level, affluence, fear of rejection and living situations as causes of loneliness. Among the tribes, these factors influence with a different altitude other than the general population, which is also a subject to the present study. Tribes in particular have problems like abandonment, single mothers, high rate of child mortality etc. worsening the psychological distress, especially the impact of loneliness. According to Wang et al., (2018), prolonged period of loneliness increases the chance of having severe depression and anxiety symptoms. Loneliness has significant impact on the mental health of an individual. Therefore, mental health of a person can be improved if social support is increased and loneliness is reduced. In the tribal scenario, it demands double intense attention as social support system there is not focused towards addressing issues like loneliness. Loneliness can lead to other complex psychological disturbances such as depression, behaviour problems, irritability, addiction to substances etc.

IRRITABILITY

Irritability is the abnormal or excessive sensitivity to a particular stimulus in simple words. According to the Oxford English Dictionary irritability is a state of having the property of responding actively to physical stimuli. Stringaris et al., (2009) defined irritability as inter- individual differences in proneness to anger that may reach a pathological extent. According to Vidal-Ribas et al., (2016), if irritability is a mood, anger is its defining emotion. When anger becomes conscious and enters a person's conscious mind, it is called a feeling, and when it becomes observable to others, anger can be considered as an affect. Major symptoms of irritability are sweating, racing heart, fast breathing, confusion, anger, fever, headache, hot flashes, irregular menstrual cycles, reduced sex drive and hair loss. Irritability can make the functioning of a person look abnormal. Tribes generally have all the above mentioned problems as reported by the FGDs conducted among them. Irritability is a major psychological problem among the tribes.

SLEEP DISORDERS

Almost all the psychological problems mentioned here can lead to sleep disorders. Sleep disorders are those affecting the normal sleep of a person. According to Krystal (2012), psychiatric disorders and sleep are related in important ways. Sleep disorders can ruin the mental equilibrium of an individual, culminating in a variety of other psychiatric disorders. Sleep disorders can intensify other psychological disturbances such as stress, irritability and anxiety.

SEXUAL PROBLEMS

Psychological issues such as behaviour problems, addiction to alcohol and irritability can lead to severe sexual problems. HIV/ AIDS and other STDs can worsen the psychological side of sexual problems. According to De (2017), more than 60% of the tribal women do not even know what is HIV/AIDS. Ignorance of the fatal disease and other STDs increases the chances of disorders related to sex. Molestation, groping, child sex abuse, violent sexual acts are all sexual problems. This imparts the psychological aspect to sexual problems. FGDs in a few tribal colonies have revealed shocking facts about these sexual violence and dysfunction.

ADDICTION TO ALCOHOL OR OTHER SUBSTANCES

Addiction is a psychological state. It enslaves a person to a particular object or individual. In the case of alcohol or substances, de-addiction is an intense psychological process. According to the Oxford English Dictionary addiction is the fact or condition of being addicted to a particular substance or activity. According to Skrtic et al., (2008), high level use of and addiction to alcohol can raise family issues such as marital breakup, domestic violence and abuse of the spouse. According to Shand (2005), alcohol is a causal factor for road accidents, loss of jobs and financial loss. According to Abrams et al., (2002), people having social phobia or anxiety tend to depend more on alcohol or drugs to regain composure, which in fact exacerbates their condition. Addiction to substances or alcohol is a severe psychological problem among the tribes.

BEHAVIOUR PROBLEMS

Obsessive Compulsive Disorder, Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder, Conduct Disorder etc are a few important behaviour problems. Aggression to people and animals, destruction of property, eating disorder, deceitfulness, lying, stealing, truancy or violation of rules are major symptoms of behaviour problems.

ADJUSTMENT PROBLEMS

Adjustment problems among tribes is in fact one of the basic reasons to all other torments. Adjustment issues are both social and psychological in nature. When the social aspects of adjustment issues are considered, occasions when a tribal settlement is forcefully displaced to a new place, conditions in school, bad weather within the colony or family, depletion of forest resources and loss or death of spouse or the beloved are equally relevant (Chauhan,1969). Alcohol and drugs cause adjustment issues within the family or colony, persecutory approach of other communities cause adjustment issues among those communities and the tribes, change in climate causes tribes to face severe adjustment issues as they are still so much natural in nature and rifts with students from other communities and teachers make weather in schools awfully bad. All the adjustment issues can lead to psychological disturbances such as stress, tension, anxiety, nervousness, burnout, loneliness, irritability, sleep disorders, sexual problems, addiction to drugs/ alcohol/ tobacco, memory problems and behaviour problems (Basu,2000).

The list of psychological problems attached to each social problem is an expandable but the least attended one. The vacuum created by studies so far has to be filled with the innovative findings of new psycho-social researchers as the psychological equilibrium of the mankind is acutely at risk in the changing environment. Recent flood in Kerala, other natural calamities, poverty etc. are strongly upholding the immediate need for immense studies interlinking social and psychological problems. The hastiness with which the world changes influences the tribal lives too. Psychological disturbances are, though not manifest, capable of submerging the tribal lives forever in a deep gorge from where an escape is not even possible if not quick.

CONCLUSION

According to the World Health Organization (1948), health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Therefore a person can be considered healthy only if he is physically, mentally and socially peaceful and happy. Along with social and physical well-being, mental health is also given with equal importance. Understanding, studying, contriving ways to tackle and documenting psychological problems attached to each social problem is, therefore, very important to say that a person is healthy in all aspects. A nation has the responsibility to make all its citizens healthy alike as healthy population is the actual wealth of a mighty nation. The researchers, scholars and activists were so active in the beginning in addressing the physical health of the population. Later when they understood the fact that each physical ailment has its roots deeply immersed in social circumstances or environmental factors, social causes of each and every physical ailment were enormously studied and documented as seen in the literatures reviewed for the present study. This endeavor of the scholars, researchers and activists during 90s and 2000s could enlighten the eyes of the policy makers and the social issues are now being addressed gradually. Can we right now say that the tribes can be made healthy by addressing just their physical health concerns and the social causes? To satisfy the WHO's standard definition of health, the studies and policies will have to address the psychological factors involved, which are awfully shrunk at present. The scarcity of literature, studies and movements in the psychological concerns of tribes has appeared as comments in some studies. One among such studies is of Mohindra and Labonte, (2010), which projects the fact that only a few number of studies are there incorporating the health of the tribes in a comprehensive manner. The study also comments that "they did not identify any study that assessed a comprehensive health intervention for STs". The fact is that, only physical health issues and the social causes to them have been studied and documented so far, except slight references to, that too only a few of, the psychological problems threatening the tribes. The gap is of only one particular in the global definition of health; that is the psychological aspect. It is, in fact, the most relevant one in the definition. The derivation of more than one psychological problem from each single social problem signifies the need to address and study the psycho-social problems as a whole with rapt attention.

The present study is the maiden and most innovative kind in the psychological side of the tribal health. It is innovative as the assiduity of the study is to pierce each social problem, identify psychological problems attached, study the psychological problems derived in detail and to train counsellor trainees from within the community to initiate uprooting those problems. The impact of addressing psychological problems using the actual and major stake holders is much too high as it can function at the grassroots' level. The study intends to pave a new path through the untraveled domains of a dense and bewitching forest, enlightening the tribes towards addressing their psycho-social problems on their own.

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DETERMINATION OF ACUTE TOXICITY OF NPK ON SOIL BIOTA: A STUDY OF ITS IMPACT ON EARTHWORM (EUDRILUS EUGENIAE)

Chaudhari Meena S.
Assistant Professor, Department of Zoology, Smt. P. K. Kotecha Mahila Mahavidyalaya, Bhusawal

ABSTRACT

Among the natural resources land is an essential abiotic natural resource consisting soil as an upper layer. It is considered as most important resource because it fulfills all the requirements of living beings directly or indirectly. India is a large country in the world having an area of around 3,287,263 sq. Km and agricultural land accounts for near 56.78% of total land area of country. Agricultural inputs disturbing the soil ecosystem in which earthworms constitute 80% of total biomass. Earthworms play many roles for improvement of soil health and increase crop production. In present study an experiment was conducted to find out the eco-toxicity of NPK fertilizer on earthworm Eudrilus eugeniae. For the acute toxicity study different doses of NPK were mixed with soil and the mortality of earthworm Eudrilus eugeniae were recorded. The experiment found that for 96 hours all the earthworms thrived at the dose 150 mg/kg. and LC50 were recorded at the exposure of 211.34 mg/kg. So it is concluded that earthworms were affected by the use of NPK. So proper care should be taken when NPK is used in agricultural field.

Keywords: Acute toxicity. agricultural inputs, Eudrilus eugeniae, NPK, Soil,

I. INTRODUCTION

India is a agriculture based country and to get the intensive crop production various technologies are employed in agriculture field including the use of modern machineries, application of inorganic mineral fertilizers in various forms, use of agricultural insecticides, pesticides etc. Among the inorganic fertilizers NPK is one of the world's most important inorganic fertilizer. It is a compound fertilizer produced by mixture of the three components Nitrogen, Phosphorus and Potassium. It provides all these three components to soil in plant usable form. Soil also supports a large number of biodiversity. Earthworms form the majority of biomass in soil biodiversity. Although their number is not dominant but their size makes them major biomass contributor of the soil. [9, 14].

Earthworms are serving for mankind since million of years and they are recognized for their important role regarding the improvement of physico- chemical characteristics of soil and thus increasing its fertility [5, 8]. Earthworms are also used as a testing animal for soil pollution by OECD in early 1980's for the registration of industrial fertilizers and pesticides before implementing them into the soil.

For soil fertility very important to know their dynamics in soil under the influence of various technologies or agricultural input like fertilizers, pesticides etc.[3, 4].Most of studies related with toxicity were conducted on effect of pesticides on earthworm [13, 11] but very few studies were conducted on the effect of fertilizers on the earthworms. So the present investigation was undertaken to access the potential risk of NPK on earthworm Eudrilus eugeniae.

II.MATERIALS AND METHODS

Earthworms: The earthworm *Eudrilus eugeniae* (Annelida, Oligochaeta, Eudrilidae) were purchased from vermiculture plant of Nasik and cultured in vermicomposting plant of the Kotecha college at Bhusawal. It is the biggest Taluka of Jalgaon district situated on National Highway 6, on the bank of Tapi river and has an average elevation of 209 metres. The earthworms were collected from the plant acclimatized for one month in laboratory conditions. At the time of experiment for gut evacuation earthworms were kept in glass beaker having filter paper soaked with 25 ml of tap water for 24 hours at 25 $\pm 2^{o}$C.

Fertilizer: NPK is the world's most widely used compound fertilizer. It is highly soluble and excellent source and nitrogen (N), of Phosphorus (P) and Potassium for plant nutrition.

Ten mature earthworms with evacuated gut were added to each plastic trough separately with respect to different doses of fertilizers and a diet of 10% organic matter (cow dung and leaf litter) and air dried soil. Test soil was collected from a non-irrigated land which has no record of input of agrochemicals. Control was set with only soil and water. The troughs were covered with wet muslin cloth to maintain moisture level and also it will prevent earthworms to crawl out of the trough. One control and five replicates were used for each dose and kept in laboratory for 96 hours. Number of deaths in each set with respect to different doses was recorded to find out toxicity of fertilizers. The experiment was maintained at 25 ± 2^{0}C.

III. RESULTS AND DISCUSSION

A. BEHAVIOURAL AND MORPHOLOGICAL CHANGES

When the earthworms Eudrilus eugeniae were exposed to NPK fertilizer, the following morphological and behavioural changes were observerd.

1. The *Eudrilus eugeniae* showed coiling and curling of body as a sign of toxicity of fertilizers.
2. Excessive mucus secretion occurred with sluggish movements.
3. As the exposure period increased swelling in clitellum and protrusions at different places on body was observed.
4. Bloody lesions occurred as the length of exposure increased
5. Some type of degenerative changes occurred at posterior end of body and body started breakage.
6. Gentle mechanical stimulus had no effect.

Fig.1 (a) protrusions on body of earthworm

Fig.1 (b) Degenerative changes resulted in breakage of earthworm body

The wide variation of toxicity of NPK on adult earthworms were recorded. Details of toxicity with respect to dose and replicates are mention in table1 and graph 1.

Table 1: mortality of adult earthworm at different concentrations of npk after 96 hours exposure of npk.

Sr. No.	Dose (mg/ kg soil)	No.of Earthworm Usedin Each Replicate	Mortality of Earthworm (Eudrilus eugeniae) in Different replicates					Average (Total)	(%) Mortality	Remark
1	160	10	0	1	2	1	1	1	10%	Non toxic
2	180	10	1	2	3	2	2	2	20%	Non toxic
3	200	10	3	2	3	4	3	3	30%	Toxic
4	220	10	5	6	5	5	4	5	50%	Toxic
5	240	10	6	6	6	5	7	5	60%	Highly toxic
6	260	10	6	8	8	7	6	7	70%	Highly toxic
7	280	10	10	9	9	8	9	9	90%	Highly toxic
8	300	10	10	10	10	10	10	10	100%	Highly toxic

Mortality begins with the exposure to 160mg/kg. of NPK. A distinct variation in mortality was found with respect to different concentrations in different replicates. (Table1, figure2)

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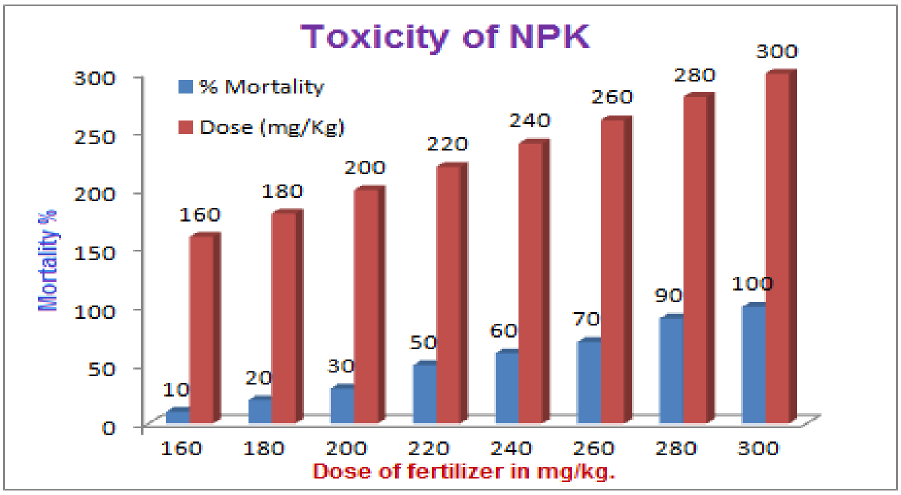

Fig-2: Comparison of % Mortality when exposed to NPK at different Dose concentration

On an average 1% (average 1.0) mortality was recorded in each replicate at the exposure of 160mg/kg. Mortality gradually increases with the increase in the dose of fertilizer. Mortality of *Eudrilus eugeniae* at the exposure of 180mg/kg, 200mg/kg, 220mg/kg, 240mg/kg. 260mg/kg, 280mg/kg, 300mg/kg of NPK to the soil was 20% (average 2), 30%, (average 3), 50% (average 5), 60%, (average 6.0), 70% (average 5.0),90% (average 9.0), 100% (average 10) respectively. Results showed that 140mg/kg of NPK to the soil was nontoxic whereas 200mg/kg and 220mg/kg was toxic to earthworms *Eudrilus eugeniae* and above 240mg/kg it showed highly toxicity.

Toxicity evaluation of complex fertilizer in earthworm was reported by Abbiramy *et. al.* (2013) using paper contact method [1]. They reported NPK in 32:16:8mg/5ml concentration caused immediate mortality to earthworm *Eisenia foetida* while only the 2:1:0.5 and 4:2:1mg/5ml was non-toxic to earthworm for 48 h. The lethal toxic concentration was evaluated 40µg/cm2.The relative toxicity grade was categorized as “very toxic” for NPK fertilizers to *Eisenia foetida*.

Toxicity evaluation on different stages of life cycle of earthworms was carried out by Anindita Bhattacharya and Sanjat Kumar Sahu (2016) [7]. They noted 96 hours LC_{50} value 374.28mg/kg for juvenile, 512.86mg/kg for immature and 616.6mg/kg for adult *D. willsi*.

Iordache M. and Borza A.(2010) [10] extensively studied the effect of different concentration of Nitrogen and Phosphorus on earthworms in long term experiment. They found highest number of earthworm in largest dose of nitrogen fertilizer. They further added that phosphorus content of soil exerted greatest negative effects on earthworm’s biomass. Decreased biomass also considered as a sign of toxicity to fertilizers.

Significant reduction in quantity of individuals and number of earthworm species than under other treatments was found in chemical fertilization (Xiang 2006) [15].

Positive effect of NPK was reported by Mishra and Tripathy(1988) [12].They observed enhanced the population density, biomass and average length of earthworms after NPK treatment. In acute treatment NPK found toxic to earthworms but treatment of NPK for longer period may result in positive effect of NPK. This positive effect of NPK on earthworm population may be attributed due to greater plant production which resulted in increased litter quantity ultimately increased organic matter returns in the form of decaying plant residues for long term.

Fertilizers have specific effects on earthworms depending upon the type of fertilizers applied and species of earthworms used. Bhatnagar R. K. and Paltta R. K. (1996) [6] observed that vertical distribution varies seasonally due to preference of habitat and feeding habits etc.

The recommended dose (160 mg/kg) of NPK is safe as the mortality is concerned, Although there is no report of mortality was found at the recommended dose, but the excessive use of NPK which is mostly applied by the farmers in the field can’t be safe because NPK consists 18% phosphate which may cause severe toxicity by bioaccumulation. Beside this, the phosphate contains of NPK also run off in water bodies resulting in eutrophication

IV. CONCLUSION

The “Green revolution that was promoted in last few decades of 20th century was to boost the food production without foreseeing its ill effects. In India the role of chemicals is well recognized and established for the success

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in agriculture sector. India is the second biggest consumer of fertilizer in the world next only to China. The general fertilizer recommendation of NPK dosage as per the department of agriculture, India is 120kg: 60kg: 30kg (4:2:1) per hectare. But this recommendation is not followed by Indian farmers as they aim at higher productivity and the fertilizers are overused. This attitude leads to more amount of fertilizers into the soil affecting the soil organisms.From the above results, it may be concluded that the study of acute toxicity of NPK to earthworm *Eudrilus eugeniae* is really significant in confirming the toxic potential.

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ISSUES AND CONCERNS OF RIGHT TO INFORMATION

Dr. M. Dileep Kumar[1] and Dr. B. P. Mahesh Chandra Guru[2]
ICT Officer[1], Administrative Training Institution, Government of Karnataka, Mysore
Former Professor[2], Journalism and Mass Communication, Mysuru

ABSTRACT

The right to information has given the people the power to challenge their government and change the paradigm of development on the basis of constitutional values and aspirations. The use of the RTI as a redressal mechanism has created a relationship of animosity between the government and citizens. The pendency at the various information commissions is a huge challenge. The central and state governments have not played a facilitative role to the information commissions. Extension of right to information laws to the private sector is necessary to supplement the disclosure regimes for improving their effectiveness. Undoubtedly, the RTI Act has contributed in a very large measure to the efforts for ensuring greater probity, greater transparency and greater accountability in the work of public authorities. There is a cause effect relationship between right to information and inclusive development. The right to information has empowered the common man in getting information which has an impact on his welfare and has led to accountability in the government to some extent. The right to information enables the people to monitor and evaluate the performance of the government and work as pressure group for the implementation of constitutional provisions and election manifesto. The right to information is expected to improve the quality of decision making by public authorities, in both policy and administrative matters. The government should also further put in place measures to promote openness and a culture of disclosure of information in government institutions on the basis of positive attitude and behavioral patterns of the officials.

PREAMBLE

Statesmen have rightly observed that a major peril to democratic development is citizens who are unaware of their rights and duties regarding citizenship. Good governance is a two way process in which the administrators frame rational policies on one side and the other, people provide opportunities for its effective implementation. The administrative system is required to allow adequate opportunities to the people to question the authorities if they are not accountable to the society. The social and economic evils exist in the society due to secretive acts of administration.

The right to information is commonly understood as the ‘right to access information held by public bodies’ in international parlance. It was adopted by 13 countries in 1990. The number of countries which have recognized the right to information as an instrument of good governance has risen consistently over a period of time. The inter-governmental organizations, multilateral development banks and other international financial institutions have recognized the right to information. These institutions have also adopted information disclosure policies since the right to information was seen predominantly as an administrative governance reform across the globe. In the present times, the right to information is duly recognized as a fundamental human right of the people. The issues and concerns of right to information are examined in this article based on qualitative research methodology.

RTI FOR BETTER DEMOCRACY

Information is rightly considered as the resource which enables the people to adequately exercise their rights and responsibilities as citizens or make informed choices. Government information is a national resource. The Right to Information Act, 2005 was enacted in the country to bring about reforms in the administration and development spheres of national life in India.

The legislation would enable members of the public to obtain access under the law to documents that may otherwise be available only at the discretion of government.

The passing of the Right to Information Act in 2005 was considered as a miracle for the country's democratic system of governance. The people have a right to know as to what extent their elected representatives and government fulfilled the mandate to serve them. An enlightened populace is the best guarantee for the healthy working of democracy. The Government of India enacted the Right to Information Act in 2005 with a view to ensure participatory communication, governance and development in Indian Republic.

The Central Information Commission and State Information Commissions have come into existence to provide information to the people on the policies and programmes of various central and states governments. The

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working of these commissions has an obvious impact on the implementation of the RTI Act in the country. Scholars have examined the various features, advantages and limitations of RTI Act in India in order to explore new ways in which it could improve its functioning, thereby making the implementation of the RTI Act much more effective.

ADVANTAGES OF RTI

Right to Information is a fundamental human right, crucial to human development, and a prerequisite for the realization of other human rights: civil and political rights such as the right to life and liberty, freedom of expression and equality before the law; and economic, social and cultural rights such as right to adequate food, right to water, right to highest attainable standard of health, right to education. RTI has become a friend in need, making life easier and honorable for common people and empowers them to request and access public services successfully.

The Right to Information Act has heralded citizen's rights to be recognized and thereby made participative democracy possible. If well implemented and well-used, real swaraj will dawn. The Act empowers citizens. It has given them a tool to know how governments function. Information can be demanded from the public authorities; i.e., all government bodies and organizations substantially financed by government established including NGOs, all public sector undertakings, all bodies and institutions of self government established or constituted by law made by parliament or state legislature and so on.

The Right to Information Act is a path-breaking legislation which signals the march from darkness of secrecy to dawn of transparency. It lights up the mindset of public authorities, which is clouded by suspicion and secrecy. Openness in the exercise of public power – Executive, Legislative or Judiciary – is a culture, which needs to be nurtured, with privacy and confidentiality being an exception. The right to information will also be a powerful means for fighting corruption. The effective implementation of the Right to Information Act will create an environment of vigilance which will help promote functioning of a more participatory democracy (Second Administrative Reforms Commission, 2006:14).

Scholars have examined the relationship between media and development, media and governance and information and transparency across the globe. They have unanimously stated that the routes of democracy can be cultivated only with the help of a fair and transparent people centered governing system. In India, progressive individuals and activists launched a strong social movement for right to information since the existing administrative systems and procedures in India offered limited opportunities to the citizens to participate in administrative decisions and process of development.

TRANSPARENCY AND PROBITY IN PUBLIC LIFE

The Right to Information Act empowers the ordinary citizen in a very radical way. However, to be truly effective in ensuring greater transparency and probity in public life, the legislation needs to be used responsibly and judiciously by the public, the respective information commissions and the concerned government departments (Kejriwal, 2006:10). Practically, people are seldom informed as to the appropriateness and propriety of decisions and actions relating to governance and development processes. They do not even know how the decisions are being implemented and who the real beneficiaries are in modern society. In many cases the validity, utility and appropriateness of administrative functioning is masked by the veil of secrecy, which is the root cause of opaque administrative practices and corruption in public offices.

The ultimate purpose of RTI Act is to promote the feeling of equality, justice and confidence which will usher the process of democratic administration. The Right to Information Act is thus a step to bring in a more responsive administration, participatory development and efficient democracy. The world has witnessed a great movement for right to information since it contains the statutory provisions for the effective implementation of the informative aspects of democratic form of governance.

Several international organizations including the World Bank have emphasized the need and importance of right to information from the points of view of good governance and corruption free development. The progressive individuals and organizations launched mass movement across the country for about four decades to get the right to information which is an effective instrument of good governance. India enacted the Right to Information Act in 2005 to facilitate access to information about the government policies and programmes and enhance the quality of good governance.

RTI AND MEDIA

Right to information provided a great weapon for the media but extracting information from the government machinery is still a challenging task. The information officials adopt delay and denial tactics and cause inconvenience to the information seekers. Officers insensitive towards RTI wrote that the requested information would need extraordinary diversion of resources (Yadav, 2009:19). The Right to Information Act 2005 commands timely response to inhabitant requests for government information. Well informed citizenry can actively participate in development process and enjoy their fundamental rights. Access to information is an essential step to ensure transparency and accountability in government systems and processes.

ACCOUNTABILITY OF GOVERNMENT

In India, a definite information revolution has swept after the implementation of RTI laws. It is an imperial edifice built on feudal foundations and the citizens have the right to know what their government has done to them. The marginalized citizens have been newly empowered by the far-reaching law granting them the right to demand almost any information from the government. This law has given the people the feeling that the government is accountable to them. The law has given the poor a powerful tool to ensure they get their slice of that cake (Polgreen, 2010:11). The law has given the people the power to challenge their government and change the paradigm of development on the basis of constitutional values and aspirations.

The procedural fairness in respect of delivery of information has been examined by various courts. There is a need for creating awareness among the authorities about the challenges of establishing equality in the courts (Judicial Council of California, 2011:08). The information commissions and public officials should be sensitized about the standardization of the principles and procedures of delivery of information services to the people.

In the current RTI system there are many challenges that are inhibiting the government’s efficient delivery of the RTI as a service to the people. This has changed the concept of how the citizens view the RTI, as the government feels harassed and the citizens feel as though their rights are being unjustly denied. Additionally, individuals have turned the RTI into a redressal mechanism rather than a way to ensure transparency and learn/understand how their government is functioning. The use of the RTI as a redressal mechanism has created a relationship of animosity between the government and citizens (Hickok, 2011:07).

The people have encountered certain challenges in the absence of well equipped information commissions and standardized delivery systems. The government also faces certain challenges since the information commissions are not subjected to certain structural changes. The need for a positive culture of transparency and accountability has to be fostered in order to encourage the citizens to actively engage with the government and exercise their right to information, participation and progress.

Public Awareness

The quality of RTI awareness in common public is not adequate. The efforts made by appropriate governments and public authorities are restricted to publishing of rules and regulations on websites. They have not generated mass awareness on various government schemes. The public officials are not fully trained in the art and craft of information management and diffusion. There is lack of any electronic document management system in the government offices. The pendency at the various information commissions is a huge challenge. The central and state governments have not played a facilitative role to the information commissions.

The enactment of right to information act heralded a new age of transparency in an infamously opaque bureaucracy in India. It has exposed layers of corruption in numerous schemes across various government departments. The political parties are unite against RTI Act since disclosure of sources of funding, extent of funding and management of funds has posed serious threat to their existence. It can seem that wrongdoers might attempt to hide behind the excuse of ‘privacy’ (Kaul, 2013:09). The courts have ruled that disclosure of personal information in respect of service record, income tax returns and assets of an individual is illegal unless it is necessary in larger public interest. The public authorities should be proactive and voluntarily put information in the public domain for the use of citizens, effectively inculcating a culture of transparency in administration.

The RTI laws are not effectively enforced across the world due to certain political and bureaucratic constraints and limitations. The experiences of these countries show that implementation has faced challenges across countries, but has been especially difficult in countries where the broader governance environment is weaker on dimensions such as the rule of law, government effectiveness, voice and accountability, civil liberties, and political rights. The evidence suggests that as countries with challenging governance environments and capacity limitations adopt RTI laws, they will need to both devise implementation solutions that can adapt to these limitations and undertake complementary initiatives to strengthen their broader governance environment (Dokeniya, 2013:05).

The acquisition of information on governance enhances the capacity of people to resist authority when abused (Salaria, 2014:13). In a democracy, the citizens have a right to know about the functioning of government since it affects their security, welfare and progress. Right to Information was enacted to make democracy a really effective participatory democracy in order to enable the people to adequately exercise their rights, make informed choices, monitor the status of governance and safeguard democracy. The people gain the capacity and opportunity to directly challenge the system which is averse to efficiency, transparently, accountability and good governance.

The Right to Information has evolved as a tool to ensure transparency in the governance of the country. The right being granted to every citizen of India, it becomes important to examine the coverage of the act that grants this right. While the applicability of this right against government bodies is unquestionable, whether the right covers private bodies has always been an unsettled matter. In this globalization and anti-nationalization era, the involvement of the private bodies in the public activities are vital and to impose accountability through transparency in relation to private as well as public functionaries is inevitable. Extension of right to information laws to the private sector is necessary to supplement the disclosure regimes for improving their effectiveness (Sharma, 2015:16).

The private sector organizations are not above the civil society, national parliament, judiciary and other constitutional bodies. They receive land, capital, labor, consumers, distributors, image builders and other facilitators from the society. Hence, they are required to be answerable to the people who matter most in a democracy. The inclusion of private sector under the RTI Act is the need of the hour.

Participatory Governance

By 2015, more than 100 countries had national-level RTI laws or regulations in force including the major developing countries like China and India. Progressive thinkers have emphasized that the right to information is only a first step towards participatory governance but it is also a vital step in the direction of restoring sovereign power to the people. The Right to Information Act is an effective instrument of making democracy accountable to the civil society. The new law enables the public service to serve the citizens in a better way. The elected representatives and bureaucrats should live upto the expectations of the people and serve them well by adhering to the principles of transparency, accountability and social responsibility. The proactive disclosure of information enables the people to assert their rights and participate actively in the mainstream of development.

Undoubtedly, the RTI Act has contributed in a very large measure to the efforts for ensuring greater probity, greater transparency and greater accountability in the work of public authorities and the way RTI has brought to light many maladies plaguing the nation echoes its success. The principle of partnership is derived from the fact that people are not only the ultimate beneficiaries of development, but also the agents of development. The stakeholders' participation leads to better project and more dynamic development (Prakash, 2015:12). The people of India have the right to know the role of public functionaries in development in order to check the menace of corruption in the name of development.

In Canada, the citizens have the right to request information from federal, provincial/ territorial, and municipal governments since access to information is critical in promoting social justice. The revelation information about the activities in government exposes the often secretive dealings between state and corporate elites. The disclosure is relevant from good governance and public accountability points of view (Walby and Brownlee, 2015:18). The people face the tough challenge since government agencies control information and consider the activists as adversaries. The intellectuals, activists and media professionals are concerned about mitigating the constraints of suppression of information in the name of official secrets and national security.

Literacy development and increasing awareness in rural areas about RTI would be a highway to good governance if it is harnessed properly (Singh, 2016:17). In India illiteracy has become a severe democratic deficit. In particular, the digital divide has also widened the gap between the forwards and backwards in the country. There is a cause effect relationship between right to information and inclusive development. The rural and tribal masses are alienated from the mainstream of development due to the prevalence of dominant paradigm.

The right to information has become a critical instrument to making governments more responsive to citizens. It is indeed a significant step toward good governance. More than 100 countries have right to information laws which emphasize that appropriate information management is critical. The public authorities should have in place and properly maintain an updated system of maintenance and reporting of the relevant data. There is very little support for back-end operations such as preparation for generation, storage, and retrieval of information

(Bhatta, 2016:02). The public officials should develop necessary infrastructure, adopt new processes and build capacity to deliver information to the people who are the angel guardians of democracy. There is a need for more proactive measures to ensure effective implementation of right to information laws and enable the people to establish good governance.

PROACTIVE DISCLOSURE OF INFORMATION

The Internet penetration has opened up new avenues for proactive disclosure of information by public bodies, fresh challenges such as threats to privacy, online harassment, identity theft and surveillance and hate speech and incitement to violence. These rights are not absolute and that states can restrict them through appropriate legislation. The information commissions should develop standards for proactive disclosure of information, as well as robust monitoring mechanisms for ensuring public bodies' compliance with the norms and guidelines (Abdullah, 2017:01). The inputs given by the intellectuals, activists and other concerned citizens should be utilized by the government to facilitate proactive disclosure of information and strengthen the foundations of democracy in modern times.

The right to information has empowered the common man in getting information which has an impact on his welfare and has led to accountability in the government to some extent. Transparency, accountability of public authorities, reduction in corruption, people's participation in policy formulation and implementation-all objectives of the Act, seem to be moving in slow motion. The attitude of all stakeholders towards effective implementation has lost the initial vigour (Chaudhary, 2017:03). The right to information increases greater accountability and transparency in governance which benefit the people. The country has moved from an opaque and arbitrary system of governance to participatory democracy which is a good step towards achieving real Swaraj.

The Right to Information Act is expected to improve the quality of decision-making by public authorities, and the government, by removing obstacles in the path of knowing information regarding various ongoing and present programs. Every citizen hence has a right to question the government. The Right to Information Act empowers citizen to question government, inspect their files, and take copies of government documents and also the government works. It curbs the problem of carcinogenic corruption within the public authorities and promotes open and transparent government (Furtado, 2017:06). The right to information enables the people to monitor and evaluate the performance of the government and work as pressure group for the implementation of constitutional provisions and election manifesto. It also helps the people to cleanse the administrative environment on the basis of the access to information independently of government.

The policy makers hoped that the right to information enhances the quality of participatory political democracy by giving all citizens further opportunity to participate in a more full and informed way in the political process. The central and state information commissions are also established all over the country to implement the provisions of the act and safeguard the interest of the people. The officials are also required to play a pro-active role to facilitate greater accountability and transparency at all levels. Studies have revealed that better the access of the citizen to information, the greater would be the responsiveness of government to community needs. The right to information is expected to improve the quality of decision making by public authorities, in both policy and administrative matters.

WATERSHED IN DEMOCRACY

The Right to Information (RTI) Act, 2005, a transparency law, is a watershed in the history of Indian democracy. The higher degree of access of citizens to the governmental affairs is directly related to the level of responsiveness of the government in power. Alternatively, the more restricted the public access to such facts and information, the higher is the chance of an opaque system and a concomitant sense of disempowerment and alienation of the common man from the democratic process (Chowdhury, 2018:04). In a democracy, judiciary has a great social responsibility of activating the government organizations, information commissions and public officials to effectively facilitate the disclosure of information and strengthen the process of governance.

The citizens of India can obtain information from the government departments through India Post Website on the basis of an application filed electronically (Sharma, 2019:15). The right to information is used by various stakeholders across the country to access information from the government agencies and expedites the process of development. A national level agency to oversee facilitation on RTI for both supply and demand side requirements should be established to facilitate timely flow of information from the government to the society.

The information seekers are required to gain the familiarity with the legal provisions and practical mechanisms. The best practices should be used to establish good rapport between the information seekers and information providers. These practices should be used as guidelines because each information requirement varies greatly from any other and cannot be obtained by using common parameters and methodologies. The right to information enables the people to obtain information about Central and state government activities. It has spurred information activism in the country and helped bring down corruption in public administration. The citizens and non-governmental organizations gain access to information relating to the functioning of government and fight against injustice in the name of governance.

The central and state level information commissions should be managed by the information specialists rather than former bureaucrats. The commissions should be equipped with resource persons and competent officials for the speedy and efficient delivery of information services. They should be enabled to plan information delivery strategies and make other people within the commissions aware of the communication strategies for better access to public information. The public information offices should be headed by the persons who can function independently and effectively on the basis of adequate training, funds and facilities. These commissions should play a pro-active role in times of delivery of information services according to the norms and guidelines of the act.

These commissions, educational institutions, media organizations, voluntary organizations and other agencies should organize adequate awareness campaigns among the people in order to utilize the act to combat the corruption and get the services of the information providers. The government should also create an independent oversight mechanism to oversee implementation of the act and promotion of the right which is lacking under the current context. The government should also further put in place measures to promote openness and a culture of disclosure of information in government institutions on the basis of positive attitude and behavioral patterns of the officials.

The latest web technologies allow governments to share with the public a variety of information in unlimited quantities on demand relating to environmental, policy, legal, human rights and cultural issues. The standard metadata to identify date, steward, steward contact information, uniform markings and controls such as laws, regulations, and policies may help address the challenge of public disclosure of information under the RTI laws. The use of technology in the processing of information, poses important questions with regard to a person's right to privacy. Practically relevant guidelines have to be formulated to handle the problems in accordance with the norms of freedom, truth and human rights.

In the present times, the government and civil society organizations have not developed a scientific measure to monitor the level of implementation of the RTI Act in India. Tested, tried and healthy practices should be developed on the basis of research and development endeavors. These practices should also be shared across states and information commissions to enable mutual learning and possibilities for emulation. The information officials should be trained in the application of advanced information technologies and processes to shorten the path to information sharing and provide a wider outreach. The ability of the media professionals should not be hampered through certain laws which are outdated and irrelevant.

The Right to Information Act, 2005 has the capacity to influence the process of government decision-making and policy formulation on issues and concerns which affect the well being of the people. The proper exercise of the people’s right to information can also bring about the empowerment of people. The central and state governments have established commissions of information with a view to facilitate the flow of information from government to the people. Most of the commissions are not fully and properly equipped in terms of human resources who are specialists in information management. The exercise of this right is hampered substantially because the information users are not fully aware of the provisions of the act and methodologies of obtaining information.

The right to receive information pertaining to government policies and programmes is a fundamental right. The government should merely facilitate access to information since it is vital to the preservation of a free society and protection of public interest against suppression of truth. The people have the fundamental right to gather all possible information relating to governance, management, development and other activities. Access to information on governmental activities would increase the responsiveness of government to the needs of the people. In a democracy, people have a right to assess the performance of the government and play a better role in enhancing the quality of participatory political democracy.

The public authorities are the custodians of information resources pertaining to government organizations. The judiciary has observed that the mere establishment of a body under a statute would not automatically render it a public authority for the purposes of the RTI Act. The public authorities have to change their mindset, adapt themselves to the new information environment and strengthen the process of governance by providing information to the people and enhancing the transparency and accountability of the government. Digitization opens new opportunities in the efforts for more accountable, responsive and judicious governance. The information commissions should develop standards for computerization, indexation and recording of important documents making them accessible to the people.

CONCLUSION

Access to information and transparency are considered a vaccine for ensuring good governance and countries must gear up for this vaccine to ensure accountability and prevent the exploitation of the masses. The people have suffered silently due to lack of transparency in government or the public sector in India and abroad. Studies have emphasized the need for developing a methodology of people's audit of public authorities in order to ensure good governance. Absence of political will has also resulted in the ineffective implementation of the act. The information seekers are forced to knock at the doors of the courts in order to seek the enforcement of the right to information. The courts have also positively responded to the people to the best of their ability. It is of paramount importance that comprehensive and early legislation is passed that guarantees the right to information on the basis of constructive provisions for penalties and autonomous appeal mechanism to achieve the goals of integrated development, sustainable development and inclusive development in India.

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A STUDY OF INTER-DISTRICT DISPARITIES IN EDUCATION DEVELOPMENT OF RAJASTHAN

Seema Choudhary[1] and Dr. S. B. Yadav[2]
Assistant Professor[1], Government College Degana, Nagaur
Associate Professor[2], B. S. R. Govt. Arts College, Alwar

ABSTRACT
Earlier, Rajasthan was regarded as 'a backward' region in Indian economy. But in recent time, Rajasthan is a developing state striving for achieving the status of developed state. But many factors are there due, in which our state could not achieve that status. Among them the major factors is education because the socio-economic development of any area is depend on education. Our state is educationally backward because the level of education is not uniform across all the districts. Some districts are developed and some districts are backward in the development of education. Therefore, the present research paper is an attempt to analyze the disparities in the levels of educational development among the districts of Rajasthan.

Keywords: Disparity, Education, Educationally developed districts, Educationally backward districts, Rajasthan economy.

INTRODUCTION
Regional disparities in overall development are a common phenomenon in both developed and developing countries. In India, there are large differences in the level of social development and hence the problem of regional disparity. Some states have achieved rapid social growth in recent years, while other has languished. Rajasthan is one of the backward states of India, which is well known for the widespread disparities between the different micro regions in the level of social development. Balanced regional development has always been an essential component of the state development strategy in order to ensure the minimum living standard of the people of the state. Education is one of the major components of social development of state. It is also one of the main components of human development index. It acts as a activator for social upliftment enhancing the returns on investments made in almost every aspects of development efforts, be it population control, environmental degradation control, health, hygiene and weaker sections of the society. Thus, it is to needless to say that education is a pre-required of economic development as it increases the economic opportunities to masses and reduces social disparities. So we can say that development in the field of education results development of the whole nation. The disparities in education among states and different districts of the state, remains a matter of deep concern. The widening of this disparity in the period of reforms is further complicating problems for the planners. There have been several efforts to enhance quality made by the government. The district education revitalization programme was launched in 1994 with an aim to universalize primary education in India. The government of India adopted a policy known as National Policy on Education- 1986 with an aim to removal of educational imbalance. The main governing body at the tertiary level is the University Grants Commission, which enforces its standards, advice the government and helps coordinate between the centre and state. Thus, government should take proper efforts for bringing the educational development to reduce regional disparities in the country. No doubt, there has been a phenomenal expansion of educational facilities since independence; still there is a long way to go.

REVIEW OF LITERATURE
In the existing literature, number of studies tried to measure the regional disparities by the socio-economic, education and health indicator. The prominent work by Dubey (2009) has analysed the inter-state disparities in five states in India. It has been used three indicators like consumption, inequality and incidence of poverty. The states had a relatively homogeneous initial level of poverty in 1973-74 and the coefficient of variation is being about 20% in the selected states. Jahangir (2011) has examined the inter-state disparities in the socio-economic development of state. The study concluded that considerable regional disparity existed among states in India despites the attempt of the central and the state government for balanced regional socio-economic development. Ohlan (2012) has examined the pattern of disparities in socio-economic development at the district level in India with the help of Wroclow Taxonomic technique. The findings of the study are that wide disparities exist among the different district in the level of socio-economic development. The level of infrastructural development is found to be positively associated with the overall socio-economic development. Qamar (2015) has examined the educational imbalance existing among the Indian states. The findings are that the educational development level is not uniform across the states and UTs. The states like Arunchal Pradesh, Rajasthan, Bihar, Andhra Pradesh, Jharkhand, Utter Pradesh and Jammu & Kashmir are not performing well in most of educational indicators but all these states are performing well in the growth of educational institutions, gross

enrolment ratio, and pupil-teacher ratio. Singh and Sheera (2016) have been analyzed the inter-state disparities in health and education development level in India with the help of Wroclow Taxonomic technique. The results are that wide regional disparities have been observed in the level of development among different states of India. The Gujarat state is found first rank and Odisha is found last rank in health development. Maharashtra is found first rank while Andhra Pradesh performs very poor in the education development. Health facilities of the people were found to be positively associated with educational development.

OBJECTIVES

- To analyze the inter-district disparities in the levels of educational development in Rajasthan.
- To rank the districts in order of their educational development.

RESEARCH METHODOLOGY

The present study is based on secondary sources of data obtained from the 'socio-economic statistics Rajasthan 2013-14' published by the directorate of economics and statistics (DES), government of Rajasthan, jaipur. The secondary data has been collected for a year 2012-13. The coefficient of variation value is computed for variation in education development in the districts of Rajasthan. A total of twelve indicators of education development have been taken for the analysis. These indicators are:

1. Literacy Rate
2. Male Literacy Rate
3. Female Literacy Rate
4. Gender Gap in Literacy
5. Number of Primary School
6. Number of Upper Primary School
7. Number of Secondary and Senior Secondary School
8. Number of General Colleges
9. Pupil Teacher-Ratio at Primary School Level
10. Pupil Teacher-Ratio at Upper Primary School Level
11. Pupil Teacher-Ratio at Secondary and Senior Secondary School Level
12. Pupil Teacher-Ratio at General Colleges Level

ANALYSIS AND DISCUSSION

Table 1: District-wise literacy rate of Rajasthan (2011)

District	Total	Rank	Male	Rank	Female	Rank	Gender gap	Rank
Ajmer	69.3	8	82.4	8	55.7	8	26.7	22.5
Alwar	70.7	5	83.7	6	56.3	6	27.4	18
Banswara	56.3	29.5	69.5	32.5	43.1	28	26.4	25
Baran	66.7	13	80.4	12	52	13	28.4	16
Barmer	56.3	29.5	70.9	29	40.6	30	30.3	8.5
Bharatpur	70.1	6	84.1	5	54.2	10	29.9	11
Bhilwara	61.4	26	75.3	25	47.2	22	28.1	17
Bikaner	65.1	17	75.9	22	53.2	12	22.7	29
Bundi	61.5	24.5	75.4	24	46.6	23	28.8	14.5
Chittorgarh	61.7	22	76.6	21	46.5	24.5	30.1	10
Churu	66.8	12	78.8	14	54	11	24.8	28
Dausa	68.2	10	83	7	51.9	14	31.1	6
Dholpur	69.1	9	81.2	11	54.7	9	26.5	24
Dungarpur	59.5	27	72.9	27	46.2	26	26.7	22.5
Ganganagar	69.6	7	78.5	15	59.7	4	18.8	33
Hanumangarh	67.1	11	77.4	17	55.8	7	21.6	31
Jaipur	75.5	2	86.1	3	64	2	22.1	30
Jaisalmer	57.2	28	72	28	39.7	31.5	32.3	3

Jalore	54.9	33	70.7	30	38.5	33	32.2	4
Jhalawar	61.5	24.5	75.8	23	46.5	24.5	29.3	13
Jhunjhunu	74.1	3	86.9	1	61	3	25.9	27
Jodhpur	65.9	15	79	13	51.8	15	27.2	19
Karauli	66.2	14	81.4	10	48.6	16	32.8	2
Kota	76.6	1	86.3	2	65.9	1	20.4	32
Nagaur	62.8	19	77.2	18	47.8	20	29.4	12
Pali	62.4	20	76.8	20	48	18.5	28.8	14.5
Pratapgarh	56	31	69.5	32.5	42.4	29	27.1	20
Rajsamand	63.1	18	78.4	16	48	18.5	30.4	7
Swai madhopur	65.4	16	81.5	9	47.5	21	34	1
Sikar	71.9	4	85.1	4	58.2	5	26.9	21
Sirohi	55.3	32	70	31	39.7	31.5	30.3	8.5
Tonk	61.6	23	77.1	19	45.4	27	31.7	5
Udaipur	61.8	21	74.7	26	48.4	17	26.3	26
Rajasthan	66.1		79.2		52.1		27.1	
C.V.	9.12		6.53		13.85		13.05	

Source: Computed from Socio-Economic Statistics Rajasthan 2013-14, DES, Rajasthan, Planning department, Jaipur.

Table 1 show that in Rajasthan the percent of total literacy rate is 66.1 percent in which the male literacy is 79.2 percent and female literacy is only 52.1 percent. Out of 33 districts 19 have lower literacy rate than that of the state while 14 districts register higher literacy rate than the state. Kota district ranks first with 76.6% literacy followed by Jaipur(75.5%), Jhunjhunu(74.1%), Sikar(71.9%), and Alwar(70.7%). The bottom ranked districts like Jalore, Sirohi, Pratapgarh, Banswara, Barmer and Jaisalmer. The coefficient of variation value of nearly 9 percent indicates not so significant variation in regard to total literacy rate in the districts of Rajasthan. On the other hand in male literacy the top ranked districts like Jhunjhunu, Kota, Jaipur, Sikar and Bhartpur. The bottom five districts are Partapgarh, Banswara, Sirohi, Jalore and Barmer in male literacy. The C.V. value of male literacy suggests only a variation of about 7 percent in the districts of Rajasthan. The female literacy rate among these districts varies from 65.9% to 38.5%. The female literacy rate is highest in Kota (65.9%) followed by Jaipur(64%), Jhunjhunu(61.0%), and Ganganagar(59.7%), it is lowest in Jalore(38.5%) followed by Sirohi, Jaisalmer, Barmer and Partapgarh. The C.V. value of nearly 12 percent indicates not so significant variation in regard to female literacy rate in the districts of state. The gender gap in literacy is also not uniform in all the districts. It is highest in Swaimadhopur(34%) followed by Karauli(32.8%), Jaisalmer(32.3%) and Jalore(32.2%), it is lowest in Ganganagar(18.8%) followed by Kota(20.4%), Hanumangarh(21.6%), Jaipur(22.1%) and Bikaner(22.7%). The C.V. value shows a variation of 13 percent in gender gap in literacy rate in the districts of Rajasthan. Thus, there are wide disparities in literacy rate among the districts of Rajasthan.

Table-2: District-wise number of educational institutions in Rajasthan (2012-13)

District	no. of primary schools	Rank	no. of upper primary schools	Rank	no. of sec. & senior sec. schools	Rank	no. of colleges	Rank
Ajmer	1334	15	1345	11	735	13	37	14
Alwer	1931	8	2155	2	1598	2	118	4
Banswara	2435	6	769	25	443	24	37	14
Baran	1128	22	719	26	483	22	17	25
Barmer	3696	1	1687	5	553	21	13	27.5
Bharatpur	1356	14	1435	9	1024	7	65	7
Bhilwara	2438	5	1479	8	583	17	27	18
Bikaner	1602	10	1116	15	645	15	29	17
Bundi	1043	27	695	28	384	28	13	27.5
Chittorgarh	1332	16	999	18	436	26	18	23.5
Churu	929	29	1221	12.5	838	8	56	8
Dausa	1078	24	907	22	715	14	50	10
Dholpur	876	31	665	30	424	27	22	20

Dungarpur	1891	9	678	29	317	30	18	23.5
Ganganagar	1375	13	1221	12.5	831	10	69	6
Hanumangarh	562	33	989	19	832	9	75	5
Jaipur	2939	3	3077	1	3006	1	281	1
Jaisalmer	1064	26	437	32	178	33	3	33
Jalore	1476	12	1104	16	470	23	14	26
Jhalawar	1041	28	962	20	437	25	12	29
Jhunjhunu	1232	19	1133	14	1251	5	129	2
Jodhpur	2908	4	2073	3	1053	6	44	11
Karauli	1237	18	781	24	578	18	19	21.5
Kota	892	30	933	21	748	12	32	16
Nagaur	2241	7	1895	4	1288	4	53	9
Pali	1188	21	1486	7	597	16	26	19
Pratapgarh	1090	23	416	33	210	32	9	32
Rajsamand	1207	20	810	23	329	29	11	30.5
Swai madhopur	1074	25	716	27	570	19	19	21.5
Sikar	1587	11	1515	6	1497	3	121	3
Sirohi	726	32	457	31	227	31	11	30.5
Tonk	1324	17	1002	17	554	20	37	14
Udaipur	3218	2	1360	10	778	11	42	12
Rajasthan	114299		51450		38237		1527	
C.V.	48.98		48.54		72.03		115.13	

Source: Computed from Socio-Economic Statistics Rajasthan 2013-14, DES, Rajasthan, Planning department, Jaipur.

The district-wise growth of educational institutions is presented in table 2. It is observed from the table that the growth of educational institutions is not uniform among the districts of Rajasthan. It is noticeable that only seven districts, Banswara, Barmer, Bhilwara, Jaipur, Jodhpur, Nagaur and Udaipur, out of 33 districts have more than 2 thousand primary schools. Among the remaining 26 districts, about five districts, which include the districts such as Churu, Dholpur, Hanumangarh, Kota and Sirohi have less than one hundred primary schools.The numbers of primary schools are highest in Barmer district and lowest in Hanumangarh district. The coefficient of variation has been computed at 48.98% which indicates very large disparity in the establishment of primary schools, in the districts of Rajasthan. In case of upper- primary schools, there are 51450 schools in the state. Only 3 districts like Alwar, Jaipur and Jodhpur out of 33 districts have more than 2 thousand upper-primary schools. Among the remaining 30 districts, about 16 districts have less than one thousand schools, among them about 3 districts show less than 5 hundred schools. The highest rank is occupied by Jaipur district and lowest rank is occupied by Partapgarh district in the number of upper- primary schools. The C.V. value for number of upper- primary schools is high being almost 48.54 percent. The number of secondary & senior secondary schools varies from 3006 to 178. Seven out of 33 districts have more than one thousand schools while among the remaining districts 3 districts have less than 3 hundred secondary & senior secondary schools, these districts includes Jaisalmer, Partapgarh and Sirohi. The C.V. value (72.03%) indicates very large disparity in the establishment of secondary & senior secondary schools. In case of higher educational institutions, the number of colleges in the districts varies from 281 to 3. The number of colleges is highest in Jaipur(281) followed by Jhunjhunu(129), Sikar(121), Alwar(118) and Hanumangarh(75) and lowest in Jaisalmer(3) followed by Partapgarh(9), Rajsamand(11), Sirohi(11), Jhalawar(12) and Barmer(13). Only four districts have more than one hundred colleges while among the remaining districts 13 districts have less than 20 colleges. A very high value of C.V. of 115.13% also indicates high disparity in facilities for higher education in the districts of the state.

Table-3: District-wise pupil-teacher ratio in Rajasthan (2012-13)

District	Primary School	Rank	Upper Primary School	Rank	Sec. & Sen. Sec. School	Rank	Colleges	Rank
Ajmer	38	28.5	21	12.5	20	3	66	6
Alwer	34	19.5	21	12.5	21	5.5	118	22
Banswara	34	19.5	28	29	48	33	211	31
Baran	32	12	21	12.5	26	16	95	19
Barmer	38	28.5	30	32	36	28.5	73	8.5

Bharatpur	31	10.5	22	18	25	14	89	16.5
Bhilwara	33	15	23	20.5	27	18	71	7
Bikaner	39	31	27	25	32	26.5	82	12
Bundi	31	10.5	20	7	24	11.5	84	13
Chittorgarh	30	8	19	4	29	22	88	14.5
Churu	34	19.5	23	20.5	22	8.5	125	24
Dausa	35	22.5	24	22	32	26.5	185	28
Dholpur	36	25	28	29	28	19.5	79	11
Dungarpur	30	8	27	25	43	31.5	121	23
Ganganagar	25	4	20	7	28	19.5	173	26
Hanumangarh	33	15	21	12.5	24	11.5	203	30
Jaipur	43	33	21	12.5	21	5.5	192	29
Jaisalmer	35	22.5	28	29	29	22	40	1
Jalore	33	15	29	31	31	24.5	103	21
Jhalawar	36	25	22	18	29	22	65	5
Jhunjhunu	21	1	17	1	26	16	442	33
Jodhpur	34	19.5	27	25	21	5.5	360	32
Karauli	24	2.5	31	33	24	11.5	89	16.5
Kota	38	28.5	20	7	19	2	63	3
Nagaur	28	5.5	21	12.5	24	11.5	96	20
Pali	33	15	22	18	31	24.5	75	10
Pratapgarh	41	32	27	25	43	31.5	176	27
Rajsamand	33	15	19	4.5	36	28.5	58	2
Swai madhopur	28	5.5	21	12.5	22	8.5	88	14.5
Sikar	24	2.5	18	2.5	18	1	165	25
Sirohi	38	28.5	27	25	40	30	64	4
Tonk	30	8	18	2.5	21	5.5	73	8.5
Udaipur	36	25	21	12.5	26	16	91	18
Rajasthan	33		30		24		118	
C.V.	15.1		16.8		26.51		68.97	

Source: Computed from Socio-Economic Statistics Rajasthan 2013-14, DES, Rajasthan, Planning department, Jaipur.

Table 3 shows that the district-wise figures for pupil-teacher ratio in 2012-13. It is observed from the table that at primary level, most of the districts (31 out of 33) are following the norms of having 40 or below 40 pupil-teacher ratio. It means there are enough teachers in the districts of Rajasthan at primary level. On the other hand, the pupil-teacher ratio is more than 40 in two districts like Jaipur and Partapgarh. The district Jhunjhunu is occupies first rank followed by Karauli, Sikar, Ganganagar and Swai Madhopur and the Jaipur is occupies last rank in pupil-teacher ratio at primary level. The C.V. value of 15.10% also indicates average disparity. At upper- primary level, all the districts of the state having 40 or below 40 pupil-teacher ratio. Among such districts, Chittorgarh, Jhunjhunu, Rajsamand, Sikar and Tonk show less than 20 students per teacher. The C.V. value for pupil-teacher ratio at upper- primary level in 33 districts of the state shows 16.80% average disparity. At secondary & senior secondary level, most of the districts (30 out of 33) having 40 or below 40 pupil-teacher ratio. On the other hand, the pupil-teacher ratio is more than 40 in three districts like Banswara, Dungarpur and Partapgarh. The Sikar district is occupies first rank followed by Kota, Ajmer and Alwar. The Banswara district is occupies last rank in pupil-teacher ratio at secondary & senior secondary level. The C.V. value shows a variation of 26.51% in pupil-teacher ratio at secondary & senior secondary level in the districts of the state. At college level, only one district out of 33 districts have pupil-teacher ratio 40. It means there are not enough teachers in the districts of Rajasthan at college level. On the other hand, the pupil-teacher ratio is more than 2 hundred in 13 districts, among them Jhunjhunu and Jodhpur are wrost in pupil-teacher ratio more than three hundred. The district Jaisalmer is occupies first rank and the district Jhunjhunu is occupies last rank in pupil-teacher ratio at college level. The C.V. value shows a very high disparity of around 69 percent in pupil-teacher ratio at college level in the districts of Rajasthan.

CONCLUSION

The above analysis reveals that the levels of education development clearly indicate that the level of education across the districts is not uniform. There is a significant disparity among the districts on the measure of educational considered in the present study. Some districts like Kota, Jaipur, Jhunjhunu and Sikar are performing well in most of the education indicators. The districts like Jalore, Sirohi, Partapgarh, Banswara, Barmer and Jaisalmer are not performing well in total literacy rate, male literacy and female literacy. Though, except Partapgarh and Sirohi, the districts like Jalore, Banswara and Barmer are showing good performance in the growth of educational institutions but they still come under the educationally backward districts. On analyzing the pupil-teacher ratio it is found that most of the educationally backward districts have high pupil-teacher ratio which also adversely affect the quality of education. Special care should be taken for the implementing the development programmes in these districts.

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