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A STUDY THE CONCEPT OF BANK MERGERS IN INDIAN BANKING SYSTEM

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Abstract

Banking is one of the fastest growing sectors in all over the world. In India banking sector plays a major role in both private and public sectors. In this competitive world banking sectors facing a lot of challenges such as customer relationship, digital banking, online banking, financial consolidation etc. In order to gain advantage banks are adopting and merging to have a good impact on the market. Merging is an only way to get a better advantage in this situation, but also open up various opportunities and more challenges which may affects the banking efficiency, employees and their customers. Once it merge with strong banks it will increase competition, economies of scale, advanced level of technology and its integration, new product and services, future banking will be better for their development of the customers.

Keywords: *banking system , banking merger, customer relationship, digital banking, online banking, financial consolidation*

INTRODUCTION

RBI bid to move towards the best international banking practice will moulding the norms and strength and the digital securities. Current banking sectors comes with lot of innovative and technology to provide a better customer service. In 1991, the government opened the doors for foreign bank to start their operation in India and provide their wide range of facilities, it helps banks industry deals with new challenges and economic poses using technology. Technology opened up new markets, new products, services, and delivery channels using online banking, Mobile banking, and Internet banking. This progress of technology help our banking sector moved to World Wide and all so significantly reduce the cost of global fund transfer. This globalization enables the high expectation of the customers. It will help the customer to transfer their funds all over the world easily using NEFT, RTGS, and IMPS etc.

Review of Literature

Baby Soundarya.M, MoghanaLavanya.S, Hemalatha.S (2018) in their paper studied about Mergers and acquisition has emanated as the innate process of business reorganizing.9 There are different motives for companies to enter M&A namely, shareholder gains, managerial gains, economies of scale, economies of scope, cost savings, taxes exemption, diversification, to raise entry barriers, to obtain multimarket contact and to have better research and development. the keen issue in mergers and acquisitions is the status of human resource in the companies that are merged or acquired.

Srivastava & Prakash (2014) examined the cross-border M&A have given opportunities to the emerging market multinationals to add value while implementing the strategy of internationalization examined. The study result indicates no statically significant difference in the mean value of all the measures except R&D expenses as percentage of operating expenses for the acquirer Indian firms before and after merger and acquisition event.

Ghosh& Dutta (2014)explored the overall strategic impact of M&A in telecom sector with the tools like ratio analysis of 8 BSE listed telecom companies goes for M&A during 2000-2010, The study concluded that changes in overall performance of the 7 firms due to M&A not much significance. They faced difficulties in coping with the adverse macro financial situation and integration the merger firms on the other.

Paramasivan. C (2011) Information technology plays a key role in the modern world which meets the day to day activities of the human beings directly or indirectly associated. Commercial activities particularly banking and financial sectors may not function without proper information technology. With rapid development in the Information Technology Commercial and financial sectors performed will and could reach to nook and corner of the world. Common man can enjoy the benefits of the personal, commercial and official activities through information technology. Commercial banks and Information Technology are inseparable and interrelated segment which provides immense services to the customers and make them satisfied.

Idea of Merging Banks in India:

Idea behind bank mergers it will help increase the asset and also increase the value of shareholders and increase profits. Banks can attain quick growth with expanded market access. It would increase efficiency of performance and valve of their company .It reduced the risk and bankruptcy. The potential competitors will be absorbed into one entity and reduces the competition in the market.

After 10 months of banks merger by the current government, the half yearly financial results of the banks highlights their superior performance than the pre merger period in the subsequent analysis.

The merger of public sector banks involves integration of six weaker public sector banks with four better performing 'anchor' banks. Andhra Bank and Corporation Bank were merged with Union Bank while Oriental Bank of Commerce and United Bank were merged with Punjab National Bank. Syndicate Bank has been merged with Canara Bank, while Allahabad Bank with Indian Bank. The mergers took effect from 1.4.2020. Dena bank and Vijaya bank were merged with Bank of Baroda in 2019.

Punjab National Bank (PNB) has become the country and second-largest bank, with business size of Rs 17.94 lakh crore, after SBI which has the business of over Rs 52 lakh crore.

Canara Bank has become the fourth-largest public sector bank of the country. After the merger, the combined business is Rs 15.20 lakh crore and a lower gross NPA ratio of 8.77 per cent

Union Bank of India post-merger has become 5th largest PSB. The combined business base of the merged bank is Rs 14.59 lakh crore. Union Bank has a high Net NPA ratio of 6.85per cent .

Indian Bank has assets of Rs 8.07 lakh crore post-merger becoming 7th largest PSB. Indian Bank had a net NPA ratio of 3.75per cent

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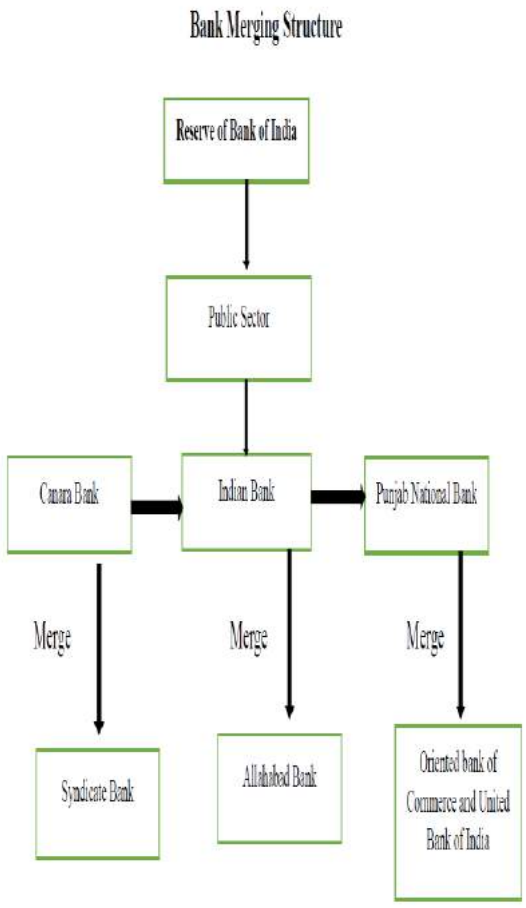

Reasons of Merger banking

1. A key reason for the merger is the **weight of mounting bad loans** over the years.

2. Ostensibly aimed at improving operating efficiency, governance and accountability and **facilitate effective monitoring.**

3. Creating **globally stronger banks,** doing away with needless overlaps in operations and infrastructure, and ushering in **economies of scale to bring down costs** have always been at the heart of any consolidation drive.

4. The move was aimed at creating **next-generation banks** with a **strong national presence** and **global outreach** accompanied with **enhanced capacity to increase credit** to the various important sectors of the economy.

Some of the mergers and acquisition are:

Name of the Bankers	**Banks Merged**
Punjab National Bank	Oriental Bank of Commerce
	United Bank of India
Canara Bank	Syndicate Bank
Indian Bank	Allahabad Bank
Union Bank of India	Andhra Bank
	Corporation Bank
Bank of Baroda	Dena Bank
	Vijaya Bank

Benefits of Banking Merger:

1. After these mergers, the lending capacity of the Public Sector Banks will increase and their balance sheet would also be strong.

2. These big banks would also be able to compete globally and increase their operational efficiency by reducing their cost of lending.

3. India needs investment in huge quantities to turned India into a 5 trillion economy. If banks have sufficient money to fund big projects than the economic development of the country would speed up.

4. The merger would help in better management of banking capital.

So after the merger of the 10 PSBs in the four major banks seems a good step in ensuring the availability of the money for the investment purpose in the country.

Bank Name	Merged Year	Before Merging (Net Worth) in Crore	Merging Banks	After Merging (Net Worth)in Crore
Punjab National Bank	2019-2020	11,82,224.00	PNB+OBC+UBI	17,94,524.00
Oriental Bank	2019-2020	4,04,194.00		
United Bank of India	2019-2020	2,08,106.00		
Canara Bank	2019-2020	10,43,249.00	CNB+SYNB	15,20,295.00
Syndicate Bank	2019-2020	4,77,046.00		
Indian Bank	2019-2020	4,29,972.00	INB+ALB	8,07,859.00
Allahabad Bank	2019-2020	3,77,887.00		

Merger has no effects on the total assets or return on capital employed but they do result in improved return on investments. There are a few banks in India who are involved in this process, rest functions individually. There is a significant and noticeable impact on the net profits and also on shareholders' capital.

Conclusion:

Banking sectors needs transformation and technology upgradation due to global competition. Merging is the one of the concepts to improve and support for the long-term development scheme. Bank merging is one of the ways to reduce NPA and also it increases customer service and development of the bank. RBI planning to increase economic growth in India, bank merging is one of the plans, it is also having their own benefits as well as dis-advantages, but it increases efficiency and strength of the bank and also customer support service technically. Merging of public sector banks provide an opportunity to increase the operational performance and able to meet the international competition. In future merging of few more public sector banks are unavoidable not only to improve their financial strength but also sustainability in the financial market.

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CUSTOMERS PERCEPTION OF FINANCIAL TRANSACTION TOWARDS BANKING TECHNOLOGY IN TRICHYDISTRICT WITH SPECIAL REFERENCE TO MANACHANALLURBLOCK

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Abstract

In developing countries like India inclusive growth is one of the emerging aspects which help in the overall and sustainable socio-economic growth. In this regard, Reserve Bank of India constituted a committee to formulate the model to extend the banking services to, the unreached and unbanked people in the country. Based on that, Reserve Bank of India introduced a concept called financial inclusion. It is one of the innovative socio-economic contribution scheme which aims at providing financial services to the unreached people at an affordable or free of cost. Banks play a key role in financial inclusion; hence, it is also called inclusive banking. Banking is one of the unavoidable segments of socio-economic aspects of the country, which leads to increased employment opportunities, industrial growth, and infrastructural development, human resource up gradation, poverty eradication, capital formulation and speedy delivery of capital flow. In this aspect banking technology is one of the most important part of business or individual person they can transaction amount to different mobile application with knowledge Reserve Bank of India like Google Pay, Phone Pe, Paytm, PayPal and BHIM, accurate and timely anywhere in the world. In this way, the researcher analysis that, customers perception of financial transaction towards banking technology in Trichy District with special reference to Manachanallur Block.

Keywords: *Banking Technology, Reserve Bank of India, Mobile Financial Application, Socio-Economic, Customers Perception.*

INTRODUCTION

India has third largest population in the world after China and United Stated and presents developmental prospect for the technology segment in future aspects. In this regards, the banking and financial

sector is one of the major benefits and the growth of banking technology products have been increasing customer satisfaction and reducing time consuming.

BRIEF DESCRIPTION OF THE RESEARCH TOPIC

Banking in India is well organized and regulated through competent authorities and is considered as one of the largest branch network systems in the world. Indian banking industry consists of age old history with various evolutionary processes. With the emergence of globalization, Indian banking industry gets transformed from traditional to technology enabled one. Now banking practices have become easy owing to the application of information and communication technology in banks.

STATEMENT OF THE PROBLEMS

In this regards, banking technology is novel concepts in this modern world, without moving anywhere, we could transaction amount one person to another person prior permission with banking sectors. Therefore, the banking sectors contribution towards customers to complete their needs of transactions and downloading financial statement in the comfortable of time, they can also reducing stress and saving time.Banking technology like balance inquiry, withdrawal, deposits and record of recent transaction. And also banking sectors not like public sectors all the nationalized banking sectors to considering the customer's needs, safety and security of the financial information of customers is a most important factors of all the banks.But the banking technology made an increasing the customer satisfaction? With this question in mind, the present research in undertaken.

OBJECTIVES OF STUDY

1. To know the concepts of Banking Technology in India.
2. To analysis the customer's perception of financial transaction towards banking technology in Trichy District with special reference to Manachanallur Block.
3. To find out the customer's opinion and purpose banking technology in Trichy District with special reference to Manachanallur Block.

HYPOTHESIS

The present research study consists of three hypothesis, which have been formulated according to their relevance and importance. Formulated hypothesis have been tested with appropriate statistical tools. Chi- square for association between Age, Marital Status, Education, Annual Income and Location.

RESEARCH METHODOLOGY

Research methodology is one of the important parts of the research framework, which decides the structure, and design of the research. Research methodology includes various factors such as nature of the research, source of data, and tools for data collection, selecting the sample, and tools analysis of data.

Nature of Research

The present research study is descriptive in nature with the use of both primary and secondary data.

Sampling Techniques

A Stratified Random Sampling technique was applied to select the Respondents perception of financial transaction towards banking technology in Trichy District with special reference to Manachanallur Block for study purpose.

Sources of Data

The study requires both secondary and primary data. Primary data were collected with the help of structured interview schedule's which were distributed to the respondents of the perception of financial transaction towards banking technology. Secondary data were collected from the reports of

Reserve Bank of India, Journalsand Books etc.

Sample Size Calculation

Sample size was calculated according to Slovin's formula. Total population is 11,156, based on the formula; required sample size is 30 which is considered as sample respondents.

Table No. 1.1

Sampling size calculator was applied to determine the sample size of the research study;

S. No	Name of the Block	No. of Villages	No. of. Respondents Selected (6)
1.	Manachanallur	Samayapuram	6
2.		Irungalur	6
3.		Puradhakudi	6
4.		Konalai	6
5.		Siruganur	6
Total Respondents			30

Source:*Primary Data*

Population Size : 11,156
Confidence level : 95%
Confidence Interval: 7.79
Sampling Size : 30

Where:

- n = Sample size
- N = Population size
- e = acceptable sampling error * 95% confidence level
- p = 0.5 are assumed

REVIEW OF LITERATURE

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic.

Any research work needs a background information which helps to understand the nature of the issues associated with the particular topic and its significance in the future studies. With this aspect review of literature part has been framed to study various literatures relating to the particular problem and identified the gap.

The present review of literature consists of three important parts which are mainly related to the research work.

1. Inclusive Banking
2. Banking Technology
3. Mobile Banking

Monisha et al, (2017) says that E-Banking has got consideration in Indian context. E-Banking services have been effectively implemented by many public and private sector banks as it is profitable for Consumers as well as banks. The Role of information and technologies has been exceptional in endorsement of e-banking. Many financial innovations like ATMs, credit cards, RTGS, debit cards, mobile banking etc. have completely changed the face of Indian banking

Neha khurana (2018) pointed out theinnovation and technology have guided a radical change in traditional financial services. Now, Technology seems an essential key for the growth of digital economy. Over the years Indian banks and financial service providers have cautiously adopted technology to augment reach to the customers, provide services to and operational efficiency with growing market and technological advances.

Padma (2014) observed that the bank system is facing challenges with stiff competition and advancement of technology. It becomes imperative for service providers to meet or exceed the target customers' satisfaction with quality of services expected by them. The commercial banks play an important role in overall economic development of a nation.

Shilpa Arora and Priyanka Singh (2019) explain that the demonetization have brought a significant change in Indian economic scenario. Currently the rapidly growing Indian economy is facing a number of challenges and introduction and implementation of

demonetization have created a range of new problems and opportunities in the banking sector.

Vimala (2016) explain thatthe usage of Internet has revolutionized the entire banking system. People can bank anytime, anywhere without having the need to visit the bank branch. This helps customers in saving time by completing work at the click of the button. Although, Internet banking is very convenient and fast, it is mired with several security issues.

Paramasivan.C (2011) observed that Information technology plays a key role in the modern world which meets the day to day activities of the human beings directly or indirectly associated. Commercial activities particularly banking and financial sectors may not function without proper information technology. With rapid development in the Information Technology Commercial and financial sectors performed will and could reach to nook and corner of the world.

Table No. 1.2
Profile of the Respondents

S.No	Profile	Variable	Data	Total Respondent's	Percentage	Total Percentage
1	Gender	Male	18	30	60.00	100
		Female	12		40.00	
2	Age	Below 30 Years	6	30	20.00	100
		30-40Years	12		40.00	
		40-50Years	8		26.67	
		Above50Years	4		13.33	
3	Marital Status	Married	16	30	53.33	100
		Un married	14		46.67	
4	Education	Graduate	18	30	60.00	100
		Post graduate	03		10.00	
		Professional	07		23.33	
		School	02		6.67	
5	Occupation	Private	18	30	60.00	100
		Government	05		16.67	
		business/self employed	07		23.33	
6	Annual Income	Below 1 lakh	07	30	23.33	100
		1-5 lakh	15		50.00	
		5-10 lakh	08		26.67	

Sources: *Primary Data*

Table No.1.2, indicate that profile of the respondents, according to 60 percent of respondents belongs to male category and 40 percent of respondents belongs to female category. In this regards majoritity of respondents age above 40 percent of the respondents, 53.33 percent of the respondents belongs married, 60 per cent respondents having Graduate, 60 percent of the respondents having private employee and 50 percent of the respondents earning 1-5 lakh annual income.

Table No. 1.3
Banking Practices of Respondents

S.No	Source	Variable	Data	Total Respondent's	Percentage	Total Percentage
1	Type of account	Saving Bank a/c	25	30	83.33	100
		Current a/c	05		16.67	
2	Reason for selecting the bank	Location convenience	05	30	16.67	100
		Bank image	06		20.00	
		Better Service	08		26.67	
		Recommend by friends	02		6.67	
		Availability of online banking	09		30.00	
3	Frequency of visit the bank branch	Daily	03	30	10.00	100
		Weekly	08		26.67	
		Fortnightly	05		16.67	
		Monthly	13		43.33	
		Rarely	03		10.00	
4	Frequency of using the mobile banking	Daily	04	30	13.33	100
		Weekly	08		26.67	
		Fortnightly	06		20.00	
		Monthly	09		30.00	
		Rarely	03		10.00	
5	Type of Bank	Nationalized Bank	13	30	43.33	100
		Private bank	17		56.66	
6	Using Mobile App	Google Pay	16	30	53.33	100
		Phone Pe	07		23.33	
		Paytm	05		16.67	
		PayPal	02		6.67	

Sources: *Primary Data*

Table No.1.3, shows that Banking Practices of Respondents, according to 83.33 percent respondents having saving account. In this way, 30 percent of respondedntsreason for selecting the bank towards availability of online banking, 43.33 percent of respondents visit the bank branchmonthely ones, 30 per cent of respondents using the mobile banking end of the month, 56.66 percent of respondents belongs to private bank customers and 53.33 percent of respondetns using online transactions Google Pay. In this aspects majority of the respondent's having awareness about the banking practices and knowledge about the banking technology.

Table No: 2.1
Customer Satisfaction and Age

Ho: There is no association between Customer Satisfaction and Age of respondents.

Age (in years)		Customer Satisfaction			Total	Chi – square value	p – value
		Low	Medium	High			
Tot	Number	06	08	16	30	**71.111**	**0.000***

al	rs					**	*
	Row (%)	19.8	26.8	53.3	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 1% level; p<0.01

Table No. 2.1 indicates the customer satisfaction and Age of respondents. The values of chi – square test (71.111**) at low p- value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between customer satisfaction and age of the respondents.

Table No: 2.2
Opinion towards Banking Technology and Age

Ho: There is no association between opinion towards banking technology and Age of respondents.

Age (in years)		**Opinion towards Banking Technology**			**Total**	**Chi – square value**	**p – value**
		Low	**Medium**	**High**			
Total	Numbers	05	11	14	30	**80.000****	**0.000***
	Row (%)	16.5	36.8	46.7	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 1% level; p<0.01

Table No. 2.2 indicates the opinion towards banking technology and Age of respondents. The values of chi – square test (80.000**) at low p- value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between opinion towards banking technology and age of the respondents.

Table No: 2.3
Purpose of Banking Technology and Age

Ho: There is no association between Purpose of Banking Technology and Age of respondents.

Age (in years)		**Purpose of Banking Technology**			**Total**	**Chi – square value**	**p – value**
		Low	**Medium**	**High**			
Total	Numbers	08	09	13	30	**65.694****	**0.005***
	Row (%)	26.4	30.1	43.3	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 5% level; p<0.05

Table No. 2.3 indicates the Purpose of Banking Technology and Age of respondents. The values of chi – square test (65.694**) at low p- value of (0.005) indicate that the null hypothesis is rejected at 5 per cent level of significance. Hence it may be concluded that there is no significant association between purpose of banking technology and age of the respondents.

Table No: 3.1
Customer Satisfaction and Annual Income

Ho: There is no association between Customer Satisfaction and Annual Income of respondents.

Age (in years)		**Customer Satisfaction**			**Total**	**Chi – square value**	**p – value**
		Low	**Medium**	**High**			
Tot	Numb	06	08	16	30	**50.222**	**0.000***

al	ers					**	*
	Row (%)	19.8	26.8	53.3	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 1% level; p<0.01

Table No. 3.1 indicates the customer satisfaction and Annual Income of respondents. The values of chi – square test (50.222**) at low p- value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between customer satisfaction and Annual Income of the respondents.

Table No: 3.2

Opinion towards Banking Technology and Annual Income

Ho: There is no association between Opinion towards Banking Technology and Annual Income of respondents.

Age (in years)		**Opinion towards Banking Technology**			**Total**	**Chi – square value**	**p – value**
		Low	**Medium**	**High**			
Total	Numbers	05	06	19	30	**47.000****	**0.000****
	Row (%)	16.5	20.1	63.4	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 1% level; p<0.01

Table No. 2.2 indicates the opinion towards banking technology and Annual Income of respondents. The values of chi – square test (47.000**) at low p- value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between opinion towards banking technology and Annual Income of the respondents.

Table No: 3.3

Purpose of Banking Technology and Annual Income

Ho: There is no association between Purpose of Banking Technology and Annual Income of respondents.

Age (in years)		**Purpose of Banking Technology**			**Total**	**Chi – square value**	**p – value**
		Low	**Medium**	**High**			
Total	Numbers	08	09	13	30	**50.222****	**0.005***
	Row (%)	26.4	30.1	43.3	100		
	Col [%]	100	100	100	100		

Note: **Denotes significant at 5% level; p<0.05

Table No. 3.3 indicates the Purpose of Banking Technology and Annual Income of respondents. The values of chi – square test (50.222**) at low p- value of (0.005) indicate that the null hypothesis is rejected at 5 per cent level of significance. Hence it may be concluded that there is no significant association between purpose of banking technology and Annual Income of the respondents.

FINDINGS

1. According to 60 percent of respondents belongs to male category and 40 percent of respondents belongs to female category. In this regardsmajority of respondents age above 40 percent of the respondents, 53.33

percent of the respondents belongs married, 60 per cent respondents having Graduate, 60 percent of the respondents having private employee and 50 percent of the respondents earning 1-5 lakh annual income.

2. 53.33 percent of respondent's using online transactions Google Pay. In this aspects majority of the respondent's having awareness about the banking practices and knowledge about the banking technology.
3. The customer satisfaction and Age of respondents. The values of chi – square test (71.111**) at low p-value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between customer satisfaction and age of the respondents.
4. The opinion towards banking technology and Age of respondents. The values of chi – square test (80.000**) at low p-value of (0.000) indicate that the null hypothesis is rejected at 1 per cent level of significance. Hence it may be concluded that there is no significant association between opinion towards banking technology and age of the respondents.
5. The Purpose of Banking Technology and Age of respondents. The values of chi – square test (65.694**) at low p-value of (0.005) indicate that the null hypothesis is rejected at 5 per cent level of significance. Hence it may be concluded that there is no significant association between purpose of banking technology and age of the respondents.

Table No.04

NATIONAL ELECTRONIC FUND TRANSFER (NEFT) - APRIL 2021

		TOTAL OUTWARD DEBITS		RECEIVED INWARD CREDITS	
Sr. No	**BANK NAME**	**NO. OF OUTWARD TRANSACTIONS**	**AMOUNT (Rs. Lakh)**	**NO. OF INWARD TRANSACTIONS**	**AMOUNT (Rs. Lakh)**
1	Axis Bank	22841508	15653104.5	13390046	12133359.7
2	Bank Of Baroda	4579131	3949715.8	18306849	5948692.5
3	Bank Of India	2749434	1302872.2	9864079	3540277.1
4	Bank Of Maharashtra	1446447	940816.4	3377446	1747837.9
5	Canara Bank	4824694	3195309.9	10018703	4997709.4
6	Central Bank Of India	2290255	1601302.8	6798334	2242165.9
7	Citi Bank	7389431	14578995.6	2703844	9048399.5
8	City Union Bank Ltd	1154755	595740.4	939429	588058.0
9	Deustche Bank	2623981	4578894.3	366259	2508401.8
10	HDFC Bank	35960181	26340664.9	25057340	33076507.0

Source:rbi.org.in/home.aspx

Table No.04, explains that National Electronic Fund Transfer (NEFT) - in the year of April 2021. In this regards, the highest of the fund transfer nationalized banking sectors likewise, Axis Bank funds transfer NEFT, Outward transaction's22841508 amount of 15653104.5 and received inwards credits 13390046 amount of 12133359.7. According to, the moderate of the fund transfer nationalized banking sectors likewise, Canara Bank funds transfer NEFT, Outward transcations4824694 amount of 3195309.9 and received inwards credits 10018703 amount of 4997709.4. In this way the moderate of the fund transfer nationalized banking sectors likewise, City Union Bank Ltd funds transfer NEFT, Outward transaction's1154755 amount of 595740.4 and received inwards credits 939429 amount of 588058.0.

SUGGESTIONS

The study brings out a bird's eye view of presentation of banking technology using online transaction, the opinion towards the practice of banking technology by the respondents in Madurai District. Majority of the respondents in the study area felt that the using online transaction enables the banking technology innovative and effective practice. Ultimately, opening of bank account will not be the end process of the financial inclusion. It should extend and maintain it as an active account with sufficient balance in the account.

CONCLUSION

In this aspects banking technology and inclusive banking is the part of financial inclusion which concentrates only on provision of banking services to the unbanked people in the country. With the effect of financial inclusion policy, Government have taken serious steps to extend the banking technology and financial services to all the parts of the country with the help of the banking and financial institution. India is one of the well-organized banking structures in the world with more than one lakh branches with sufficient information technology enabled networks. Banking practice of the respondents and their operational performance have improved with respect to visiting of banks, savings, loan facilities etc. Therefore, this study concluded, that the banking technology empowerment of the respondents has improved with respect to customers perception of financial transaction towards banking technology scheme and influenced their social and economic status in a positive aspect.

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SELF-ADAPTIVE AND MULTI SCALE APPROACH FOR IDENTIFYING TUMOR USING RECURRENT NEURAL NETWORK

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Abstract

Brain tumors detection is frequently done using MRI scans. Brain contains several nerve cells and tissues; a tumor occurs when growth of abnormal cells accumulates in region of brain. Early stage of brain tumors is classified into either benign (noncancerous) or malignant (cancerous). To identify tumor in brain comes with it's challenges, with new technology of improved image screening, it is becoming elementary to detect brain tumor. This research paper suggests an automated approach where MRI images are used for brain tumor detection. The proposed system initially improves the brain scan by reducing color variations and is known as segmentation is performed on the original image alongside with threshold binary, which is done to segment objects from the background. The method incorporates adaptive mean thresholding, which is essential method to calculate threshold value at any pixel. Also, Otsu's thresholding is used in the proposed system to perform automatic image thresholding.

In the method majorly 3 filters are used to facilitate improved segmentation of brain scan image. Kalman filter is one of the most important and widely used estimation algorithms, that produces estimations of hidden variables based on imprecise and uncertain dimensions. Median filter provides result by computing each output sample as median value of the input samples. Gaussian filter here is used to reduce noise and contrast.

This proposed method enables reduction in size and better performance using an architecture known as Xception also reduces computational cost of diagnosis of brain tumor using MRI scans. As the final assessments of the model, we achieve high accuracy and superior performance.

Keywords: *brain tumor, MRI scans, diagnosis, CT scans.*

INTRODUCTION

Tumor is a mass of abnormal cells, where brain tumor is one which is formed in the brain and can be life threatening. India has around 1 million cases per year. There are two types of tumor; *malignant* and *benign*, and the signs and symptoms vary greatly depending on the brain tumor's size. Diagnosis is conducted by a CT scan or

an MRI scan. This paper illustrates the identification of brain tumors using MRI scans. This proposed paper has a multi-module model for brain tumor screening in the MRI scan, and also integrates an automated approach that enhances the MRI scans to better assist in the identification of tumors.

The initial stage of segmentation is used on brain tumor imagesto extract multiple features from these images for analysis. Theearlier models use the segmentation technique *Gaussian distribution* which assumes the image is a symmetric histogram, however, if the histogram is non-symmetric this paper depicts more generic technique known as *Gamma distribution.* This paper proposes the use of faster R-neural network, for brain tumor image classification, segmentation and for feature selection process which helps in extracting the best features from multiple features and also reduction in computational time and memory space.

I. EXISTING SYSTEM

MRIimages are obtained as two-dimensional multislice images, and reformatting them into orthogonal planes has many obstacles because of sparse sampling in the perpendicular direction of the plane.

The major focus of existing system is to reinstate the lost through-plane regions in an MRI scan.The existing system suggests an *edge-guided GAN*to be used in reconstructing images of brain MRI scan, by separating it into two methods: contrast completion and edge connection.

The existing system usesdataset acquired from the Human Connectome Project to perform artifact rectification on clinical data and simulated datasets, also training and testing on it.In comparison with the traditional imputation tools, our method has higher SSIM, PSNR, signal quality and clarity.

The existing system follows adversarial model comprised of a generator and discriminator, having two major steps: contrast completion and edge connection.

In the first step, EGGAN combines edge generator along with low resolution images, using two-dimensional scans of missing slices as input along with the edges obtained from the original images. Then for second step, the existing system saturates the contrast based upon the first step, original contrast from 2D images, and also as directed by the original images.

After the above two steps, on generator and discriminator, spectral normalization is applied to enhance the stabilization of network by increasing weight matrices and using their highest values.

Spectral and instance normalization are both applied on all parts of edge generator layers, conversely only instance normalization is used in contrast generator, this is because grasping high frequency information prescribes more restrictions in order to maintain network stability. Whereas spectral normalization is not required for low frequency information, hence is not used with contrast generator.

II. PROPOSED SYSTEM

Goal of proposed system is brain tumor detection without human interference. Image processing used in the medical field has numerous major challenges. Our proposed model assists in classification and detection of brain tumor from the MRI scans. The very first step is extracting multiple features for examining and interpreting the scans is known as *segmentation.*

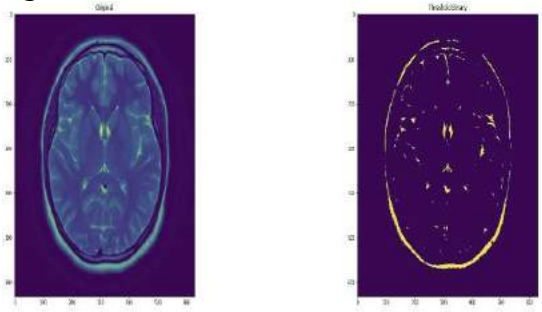


Figure 1.

Above figure shows the original image alongside with threshold binary, which is done to segment objects from the background.

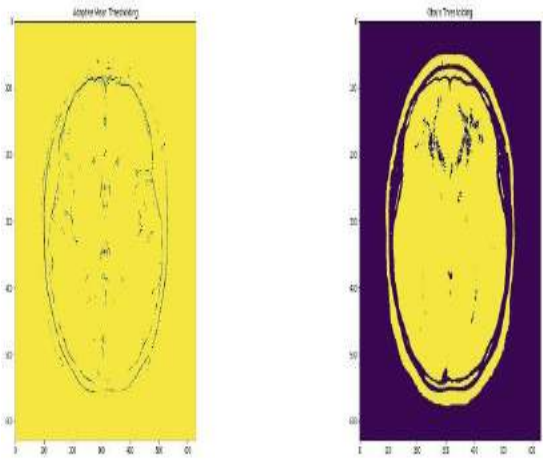


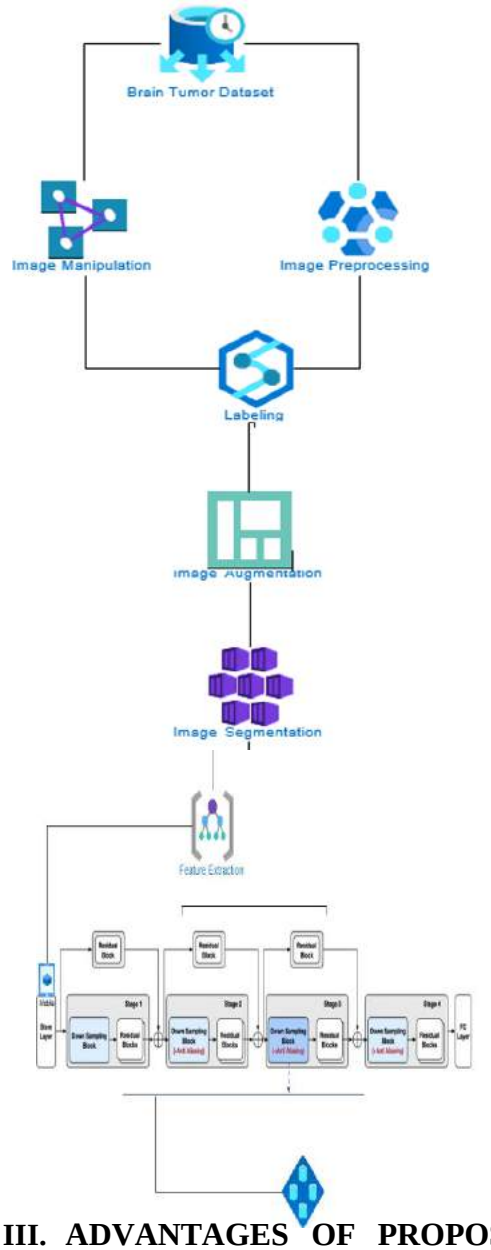
Figure 2.

Figure 2. shows adaptive mean thresholding, which is essential method to calculate threshold value at any pixel. Also, Otsu's thresholding is used in the proposed system to perform automatic image thresholding.

Segmentation helps in detection of any irregularities in MRI scans, and to evaluate image threshold using *gaussian distribution* which assumes that the image histogram has symmetric
distribution. In cases where the histogram is non-symmetric,*gamma distribution*, must be used.

For brain MRI image segmentation, the paper aims to use the Neural Network method called Faster RCNN, by using Between-Class Variance with Gamma distributions.

Once segmentation is completed, an essential step is performed which reduces computational time and memory space, and is known as feature selection process. It assists in selecting the prime features from the present ones. Variance is calculated for selecting prime features, then the feature with maximum variance is selected.



III. ADVANTAGES OF PROPOSED SYSTEM

- Sequencing of data is done, so that every sample is dependent on prior ones.
- Various convolutional layers along with recurrent neural networks are used to increase the pixels.
- Enhances the performance in the target domain and also handle non-linear data.
- Can not only extract specific features adaptivelybut also aim to learn features of specific scales.
- A simplified and reconstructed Faster R-CNN with InceptionV3.

IV. ALGORITHM

Fast Regions with Convolutional Neural Network (Faster R-CNN):

The core of faster R-CNN is formed by combination of; RPN (Region proposal network), which is used forgeneration of region proposals and for detecting objects in those regions we use faster R-CNN.

V. MODULES

1) Data Augmentation:

To build a powerful image classifier and detectorour model uses an effective method called Data Augmentation, using only very limited training dataset from each class it was able to recognize the data. To make the most of our limited training data, our model will Augment the data using various transformations like whitening the image, rotating, flipping the images horizontally and vertically, increasing brightness and rescaling the images so that our model never sees the same images twice. This helps us avoid overfitting and helps the model simplify and generalize better.

Finding the correct tool for an image classification job can be challenging, for that reason our model is trained to use dataas an initial baseline. Since the amount of data is limited, our main concern is to avoid overfitting in the model, which occurs when a model is trained with very limited amount of data and learns the patterns and cannot recognize new information.

Supposing, if a human can identify ten people who are loggers and ten as mariners from the images, where out of them only twologgers have a hat, then one may falsely assume that having a hat is considered as being a logger and this pretense will result in being a imperfect classifier.

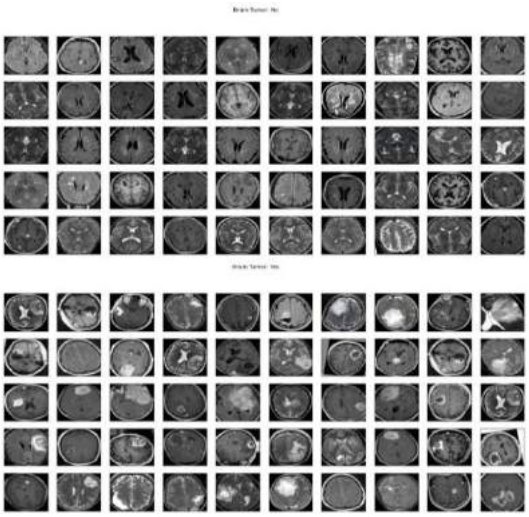


Figure 3.

The above Figure 3. Shows Augmented MRI scans of brain with and without tumors.

Augmenting data is one of the ways to prevent overfitting, but that is still not that enough because, the augmented examples might still be immensely associated with each other. Entropic capacity of our model will be our prime focus for avoiding overfitting, along with to what extentdata and informationour model is qualified to store and utilize.

Higher the capacity of storing information, more precise the model will be as it can use additional features, contradictorily, it can also store inappropriate features which may result in decreased performance. As to avoid both scenarios, building a model which stores limited features enables it to emphasize on most relevant features and has better chance in beinghighly precise

One among the multiple ways to control entropic capacity is to choose the optimal number of parameters for the model, i.e., the number of sizes of each layer and the number of layers.

Another technique is to penalize the network and using weighted regularization to reduce overfitting invarious deep learning models, such as L1 or L2 regularization, which optimizes the network by forcing it to take smaller values.

2) Data Import and Preprocessing:

Pre-processing is a technique which is used to convert the raw and preprocessed inputs into a useful and efficient form. The main aim of pre-processing is to improve the image using different types of filters and to reduce the redundant distortions in the data and also to enhance some features important for further processing of data.

First, we Convert the color images into grayscale images to reduce space complexity or computational complexity. This is because, in many objects and images, colorsaren't necessary to identify and interpret an image. Using Grayscale can be better option to create and recognize different type of objects. Because colored images contain extra materials and information than black and white images, they can further add redundant data and can increase the time and space complexities.

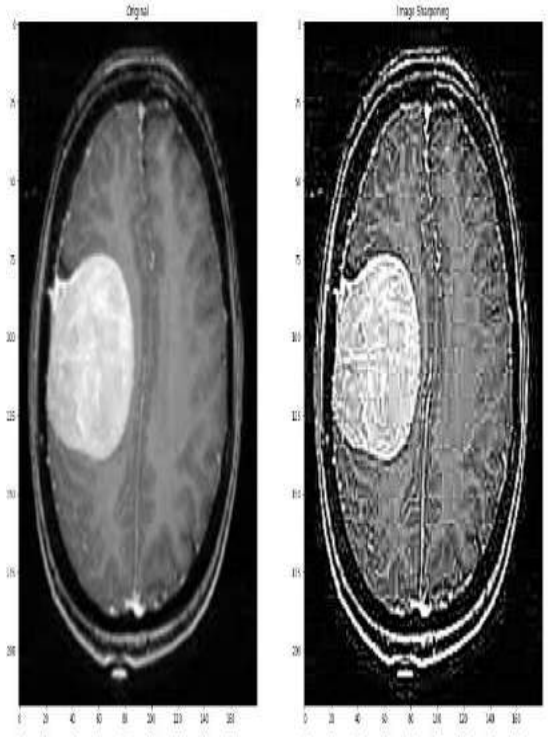


Figure 4.

The above image (Figure 4.) exhibits image sharpening performed onto the original image. The reason it is done is that, image sharpening is a high-end filtering process which aims to amplify high frequency details in the input image.

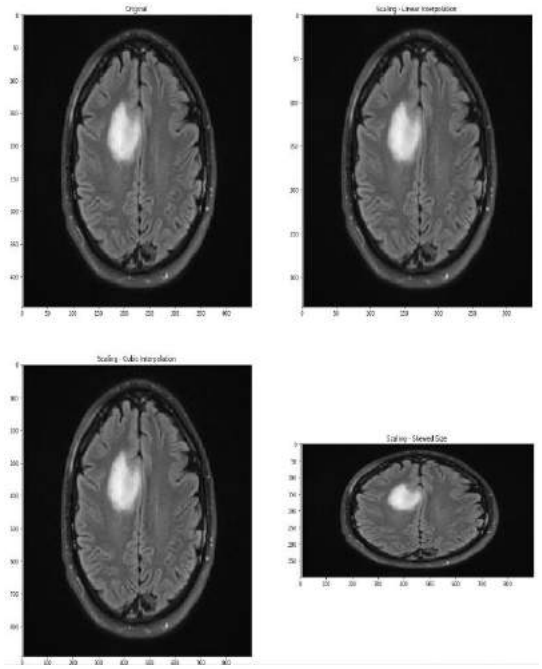


Figure 5.

The above image (Figure 5.) shows as a part of pre-processing, input image goes through multiple scaling to avoid blurring. Linear interpolation desires an amplification into two dimensions and is used when you have very small image, while cubic interpolation is preferably used for most images keeping the edges smooth.

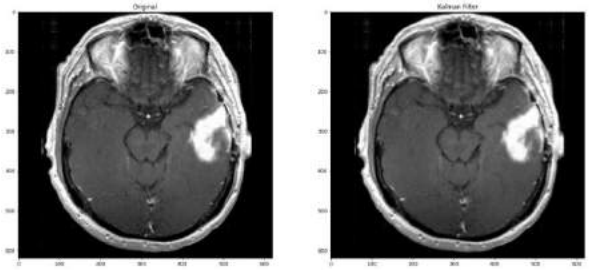


Figure 6.

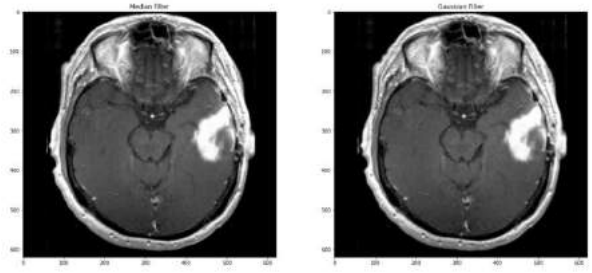


Figure 7.

Our proposed model is using 3 main filters; Kalman filter is one of the most important and widely used estimation algorithms, that produces estimations of hidden variables based on imprecise and uncertain dimensions. Median filter provides result by computing each output sample as median value of the input samples. Gaussian filter here is used to reduce noise and contrast.

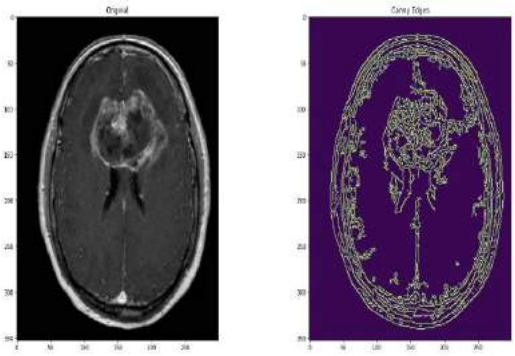


Figure 8.

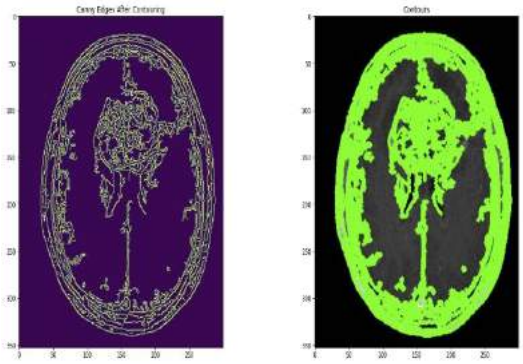


Figure 9.

Figure 8 & 9, are describing conversion of original image into edges and contour, here Canny Edges are used which is a multi-stage detector and helps to detect edges in the image. Contour is used to identify different structural outlines of the object and which can in turn help us identify the shape of the object. The canny edges then help us find different contours in the image.

One significant limitation present in a few algorithms of machine learning, like Convolutional Neural Networks, is the necessity of resizing the images into unified dimensions and size. Thus, before being used in the algorithm, the images should be preprocessed and reformatted to have similar heights and widths.

To further classify only the important parts in our image, the biggest contour is used from the image and then the extreme points on those contours are pointed out. Cropping the image is done using theextreme points on the contour so that only the important parts of the image are used for building our model and all the noise and redundant data are discarded from the images.

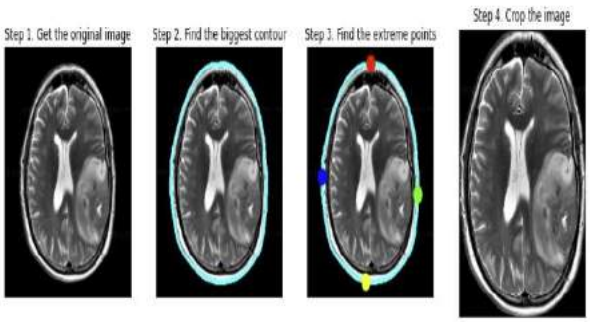


Figure 10.

3) Model Building:

A total of 5781 images were result after doing data augmentation and applying different filters on our data, consisting both images having brain tumor and not having brain tumor.2934 images were of images having brain tumor and 2838 images were of images not having brain tumor.

```
Number of examples: 5781
Percentage of positive examples: 50.90814737934613%, number of pos examples: 2943
Percentage of negative examples: 49.09185262065387%, number of neg examples: 2838
```

Figure 11.

Figure 11. is an image of the number of images in our model.

```
Training Data:
Number of examples: 4046
Percentage of positive examples: 51.458230350963916%, number of pos examples: 2082
Percentage of negative examples: 48.54176964903608%, number of neg examples: 1964
Validation Data:
Number of examples: 868
Percentage of positive examples: 49.193548387096776%, number of pos examples: 427
Percentage of negative examples: 50.806451612903224%, number of neg examples: 441
Testing Data:
Number of examples: 867
Percentage of positive examples: 50.057670126874278%, number of pos examples: 434
Percentage of negative examples: 49.942329873125721%, number of neg examples: 433
```

Figure 12.

The above figure shows, 70% (4046) of the data was for Training the model and 15% (868) for Test Data and 15% (867) of the data for Validation.

The input size to the first convolutional layer is 240 x 240 RGB colored image. The inputis being passed from various convolutional layers, then different types of filters were used with a size of: 3×3 (to capture the view of left, right, up, down, and center the smallest size filter is used).Now input is passed through several Activation and Batch Normalization layers. Model uses Sigmoid activation function and max-pooling being performed on a 2×2-pixel window, with a stride of 2.

Model is trained on total 21,876,513 parameters with loss function as Binary Cross entropy, and the optimizer function being RMSprop with a learning rate being 0.0001.

```
Total params: 21,876,513
Trainable params: 21,842,081
Non-trainable params: 34,432
```

Figure 13.

Model Checkpoint help the model in monitoring a particular parameter. Here, validation accuracy is monitored by passing Validation accuracy into Model Checkpoint. Now, if the validation accuracy in our current epoch is higher than the last epoch of the model, only then the model will be saved.

4) Model Performance:

After training our classification predictive model, an assessment was performed to check the performance. Python package called scikit-learn is used bymajority of the machine learning and deep learning practitioners for predictive and classifier modeling. With multiple functions that Scikit-learn provides us,are used for interpreting and calculating performance of models.

Our model is trained for 20 epochs and 127 steps per epoch. From the start itself the model started performing well and was able to get good Test and Validation Set Accuracy. The model managed to generate a validation loss as low as 0.00000041952 but when the best model was selected from all the epochs it had validation loss of 0.1316. The test accuracy was 98.70%.

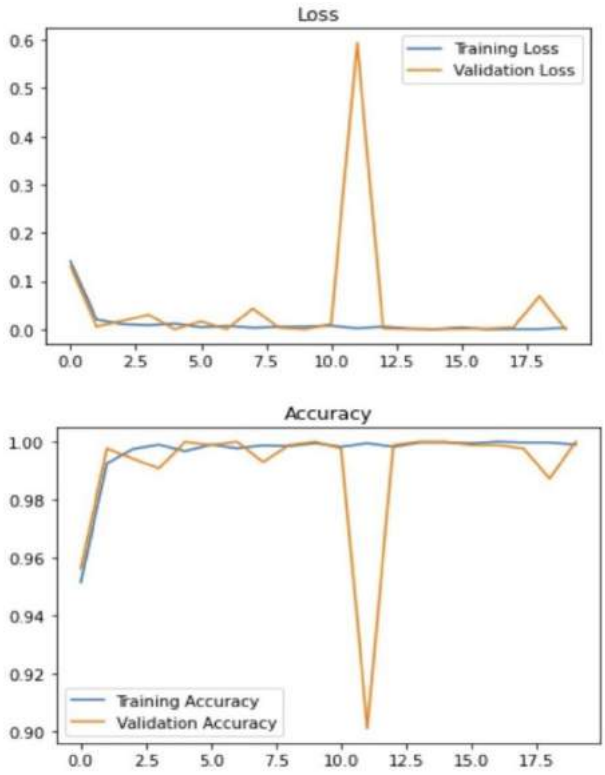


Figure 14.

In Figure 14, a plot is shown below to help visualize model's performance while training.

VI. RESULT

After completing the training and selecting the best model, resulted in Test set accuracy of 98.70% and Test loss of 0.026.Since the model was somewhatimbalanced,F1 score was used as metric for our model and it managed to achieve 98.71% f1-accuracy for Testing data and 99.36% f1-accuracy on Validation data which also shows that the model is good and there is no sign of over fitting.

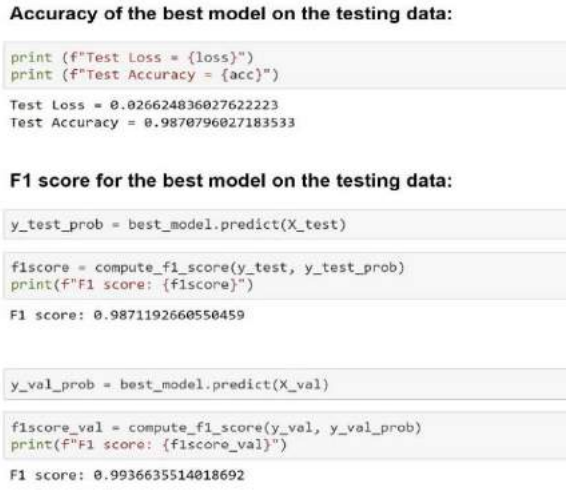


Figure 15.

The above figure is a snapshot of the accuracyachieved using our best model.

VII. CONCLUSION

This paper proposes a Faster R-neural network aimed forcategorizing the MRI brain tumor images which were acquired from Jansons MRI diagnosis center, and determining if tumor is present or not. The features which have highest dissimilarities are used for classification, and were classified as global feature using faster R-CNN along with Inception V3. This paper proposes an enhancement to the method for image thresholding. While training the model it took around 7 seconds per step.Our model was trained using different filters like Kalman Filter, Median Filter and Gaussian filter. It also used Image Interpolation to avoid image blur and increasing the pixel quantity in the image for maximum results.

In our method Gamma distribution is used whichresolves the problem of a nonsymmetric histograms of brain MRI images, also optimal value is obtained from threshold value by applying faster RCNN algorithm in the method.

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FINANCIAL SERVICES OF LIFE INSURANCE POLICY ININDIA

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Abstract

Life insurance is one of the financial assets for timely recovering of claims who the uncertainty risks against for protection of loss future events. Life insurance is financial help of unexpected events death recovery of claim to family members. Life insurance is long term financial investment with support of socio - economic development in our society. Life insurance policy promotes scheme welfare of customer services. Government of India is fully dedicated the financial services through number of scheme implement for society. This paper is highlighted financial services of life insurance policy in India.

Key Words: *Insurance, Finance, Premium, Policy, Services.*

INTRODUCTION

IRDA is launched several scheme dimension of service quality contribute the bonus plan policy, endowment policy is one of the most validity under this policies is running in prescribed manner. Insurance sector is prevailing which are benefit more number of people change the diversification of economic growth in our Indian economy. Insurance sector is enhancing provide the different variety of financial products to customer service is multi-variety of plan and policy schemes is adopted under insurance regulatory authority of India preparing the pathway of financial services to suffered customer. Life insurance is most powerful drive for uncertainty risk in future events which contributes multi-dimensional of customer services instant of before death and after death in our human life. Insurance sectors are spectrums of financial services are available to provide savings, credit, fund transfer, exchange of money transaction protection of unexpected loss for human life support to

customer. Insurance regulatory authority of India framed several beneficiary wonderful schemes distribution of uncertainty of risk in current scenario. Government of India ensuring promote poor people the socio-economic sustainable growth of human resource development to encourage and support of exposed the similar loss. Insurance is leading protection against family loss give more compensation fund is allotting to other member to enjoy under the various policy of insurance

Review of Literature

Kalpana Naidu. C and Paramasivan. C (2015) explainIndian financial system is highly influence with the banking and insurance sector which attracts flow of savings and investments to the country. Insurance sector in India is one of the growing sectors of the economy. The insurance sector, along with other elements of marketing, as well as financial infrastructure, have been touched and influenced by the process of liberalization and globalization in India. It also caters to the needs of the both real economy and socio-economic objective of the country. It is making inroads into the interiors of the economy and is being considered as one of the fast-developing areas in the Indian financial sector. It has been mobilizing long-term saving through life insurance to support economic growth and also facilitating economic development.

JyotiagarwalK .K. and Shakula (2014)noted that though the concept of insurance is quiet old; many households do not understand the concept of insurance. However, insured households do understand the insurance concept better than the uninsured. The study shows that a high proportion of households connect insurance with loss of life. The misconceptions are more prevalent among the uninsured households. With respect to major sources of information on insurance, the study indicates that insurance agents are the major source in both rural and urban areas, playing an important role in influencing the household's decision in favour of insurance. Other important sources of information are friends, relatives and the media. The present research paper tries to know on whose persuasion a person purchases policy, their preference, reasons behind it, area of improvement etc. and will also suggest how the incorporated strategies have helped LIC of India.

Prarthanashahi (2013)pointed thatlife Insurance Corporation of India (LIC) is a monolithic company from last few decades. After the successful implementation of economic reforms in life insurance sector in India, LIC of India has made several positive efforts to triumph the hearts of the people. To achieve that LIC of India have adopted a number of new trends in marketing strategies for introducing innovative technologies. This study is an attempt to know about the recent trends followed by LIC of India in order to make their products available to each and every forthcoming customer in the life insurance market. The present research paper is a comprehensive study to know whether the implemented strategies have truly helped LIC of India in the changing trends of the society and will also suggest how these recent trends have helped LIC of India as a whole to manage the existing leading position in the life insurance market.

Karthika, G and Vadivalagan (2014) said that Life Insurance is the fastest growing sector in India since 2000 as Government allowed Private players and FDI up to 26% and recently Cabinet approved a proposal to increase it to 49%. Life Insurance in India was nationalized by incorporating Life Insurance Corporation (LIC) in 1956. All private life insurance companies at that time were taken over by LIC. In 1993, the Government of India appointed RN Amphora Committee to lay down a road

map for privatization of the life insurance sector (Desai, G.R. 2002). While the committee submitted its report in 1994, it took another six years before the enabling legislation was passed in the year2000, legislation amending the Insurance Act of 1938 and legislating the Insurance Regulatory and Development Authority Act of 2000. The same year the newly appointed insurance regulator- Insurance Regulatory and Development Authority IRDA - started issuing licenses to private life insurers. Analyzing purchasing behavior profile is important as the progress of life insurance penetration and density is far from satisfying and this indicates at some problem in the way it is being sold in our country.

Bhagabandas, Sangeeta and Mohaty (2008) observed that during the post 1990 period, service sector in most of the Asian economies witnessed growth fuelled by significant changes in their financial sector. India is now being ranked as one of the fastest growing economy of the world. During last one decade or so, role of Indian insurance and mutual fund industry as a significant financial service in financial market has really been noteworthy. In fact since 1992, a number of research studies have underlined the importance of these two in the Indian capital market environment as important investment vehicles. But the existing 'Behavioral Finance' studies on factors influencing selection of mutual fund and life insurance schemes are very few and very little information is available about investor perceptions, preferences, attitudes and behavior. Yet again, perhaps no efforts are made to analyze and compare the selection behavior of Indian retail investors towards mutual funds and life insurances.

Hymavathikumari and Beanacilinadorthy (2012) suggest that Indian economy experienced a major structural change within the industrial sector as a result of the major drive for industrial diversification in the mid-fifties. The pace of transition of the Indian economy from an agricultural economy to an industrial one was quite slow since 1951. This underlines a major structural shift in the Indian economy especially in service sectors and less to the performance of the agricultural sector. Among various service sector activities banking and insurance plays a vital role. The banking sector is a very important sector of the Indian economy. There are many factors to examine when looking at insurance companies. Poor fundamentals not only indicate a poor investment opportunity, but also hinder growth. Nothing is worse than insurance customers discovering that their insurance company might not have the financial stability to pay out if it is faced with a large proportion of claims. Hence performance analysis is essential especially in case of insurance companies.

Objectives of the Study

The present study is following objectives

1. To examine life insurance policy help of financial support to policy holders.
2. To analyze life insurance policy through industry sector.
3. To find out the claims settle to LIC policy holders.

Methodology

The present study is purely based on secondary data. Secondary data were collected from various journals, magazines; newspaper related website and IRDA report 2019-2020 etc. The researcher collected the data analyzed insurance penetration and density with life insurance and non life insurance through industry. Premium and claims underwritten by life insurance

Table -1
Insurance Penetration and Density in India

Year	Life Insurance		Non Life Insurance		Industry	
	Density	Penetration	Density	Penetration	Density	Penetration
2001	9.10	2.15	2.40	0.56	11.50	2.71
2002	11.70	2.59	3.00	0.67	14.70	3.26
2003	12.90	2.26	3.50	0.62	16.40	2.88
2004	15.70	2.53	4.00	0.64	19.70	3.17
2005	18.30	2.53	4.40	0.61	22.70	3.14
2006	33.20	4.10	5.20	0.60	38.40	4.80
2007	40.40	4.00	6.20	0.60	46.60	4.70
2008	41.20	4.00	6.20	0.60	47.40	4.60
2009	47.70	4.60	6.70	0.60	54.30	5.20
2010	55.70	4.40	8.70	0.71	64.40	5.10
2011	49.00	3.40	10.00	0.70	59.00	4.10
2012	42.70	3.17	10.50	0.78	53.20	3.96
2013	41.00	3.10	11.00	0.80	52.00	3.90
2014	44.00	2.60	11.00	0.80	55.00	3.30
2015	43.20	2.72	11.50	0.72	54.70	3.44
2016	46.50	2.72	13.20	0.77	59.70	3.49
2017	55.50	2.76	18.00	0.93	73.00	3.69
2018	55.50	2.74	19.00	0.97	74.00	3.70
2019	58.00	2.82	19.00	0.94	78.00	3.76

Sources: IRDA-2019-2020

Table.1 inferred that insurance penetration and density in India. It is record of life insurance density 58.00 with penetration of 2.82 in 2019-2020. It is continuously service of LIC density of 55.70 with penetration of 4.40 in 2010-2011. It is served that LIC density of 49.00 with penetration of 3.40 in 2011-2012. It is decreased trend of life insurance corporation density is 9.10 with penetration of 2.15 in 2001-2002.

It is exhibit that non life insurance of density is 19.00 with penetration of0.97 in 2018-2019. It is highlighted that decreased value of 2.40 with penetration of 0.56 in 2001-2002. It is followed that 3.00 with penetration of 0.67 in 2002-2003.

It is concluded that industry position of density 78.00 with penetration of 3.76 in 2019-2020. It has been continuously increasing trend of density 74.00 with penetration of 3.70 in 2018-2019. It is decreased trend of life insurance corporation density of 11.50 in 2001-2002.

Table -2
Premium Underwritten by Life Insurance

S. No	Mode of premium	Types	2018-19	2019-20
1	First Year Premium	LIC	31326.22 (42.79)	57958.76 (56.66)
		Private Sector	41887.02 (57.21)	44326.64 (43.34)
		Total	**73213.24**	**102285.40**

2	Single Premium	LIC	111009.74 (78.29)	120317.48 (76.65)
		Private Sector	30780.06 (76.65)	36659.50 (23.35)
		Total	**141789.80**	**156976.98**
3	New Business Premium	LIC	142335.96 (66.20)	178276. 24 (68.76)
		Private Sector	72667.08 (33.80)	80986.14 (31.24)
		Total	**215003.04**	**259262. 38**
4	Renewal Premium	LIC	195169.11 (66.58)	201113.36 (64.12)
		Private Sector	97959.88 (33.42)	112534.45 (35.88)
		Total	**293129.00**	**243273.94**
1	**Linked and Non Linked Premium**		**2018-19**	**2019-20**
	LinkedLIC		813.50	761.58
	Private Sector		75338.67	82288.08
	Total		**76152.17**	**83049.66**
2	**Non Linked Premium**LIC		336691.57	378628.29
	Private Sector		95288.29	111232.51
	Total		**431979.87**	**489860.53**

Sources: IRDA-2019-2020

Table -2 exhibits that premium underwritten by life insurance during the year 2019-2020. It is first year premium Rs.31326.22 growth of (42.79) in 2018-2019. It is compare that increased position of premium Rs. 44326.64 growth of (43.34) in 2019-2020. It is single premium of compare the LIC decreased trend of private sector 36659.50 of (23.35) in 2019-2020.

Table -3
Claims of Life Insurers

S. No		LIC		Private		Total	
		2018-19	**2019-20**	**2018-19**	**2019-20**	**2018-19**	**2019-20**
1	Death claim	17075.06	17505.36	9671.94	12287.92	26747.00	29793.28
2	Maturity	151446.05	151159.70	16675.85	20565.77	168121.90	171725.47
3	Surrender	69237.27	70148.12	41931.73	51819.01	111169.00	121967.13
4	Others	11526.48	13947.45	12113.89	13243.76	23640.38	27191.21
5	**Total**	**249284.86**	**252760.62**	**80393.42**	**97916.46**	**329678.28**	**350677.08**

Sources: IRDA-2019-2020

Table -3 claims of life insurers during the year 2019-2020. The LIC death claims of Rs. 17075.06, private life insurance served maturity of 20565.77 from 2018-2020. The surrender value of money settled claims LIC Rs. 69237.27 with private services of Rs.13243.76 from 2018-2020.

Suggestions

1. Private insurance sometimes ignore the standards formalities and regulation framed by insurance

regulatory authority of India. They are not following best practices to reach target and also guide proper perspective of assumes. Most of the customer feel change the procedure from time to time. Private life insurance should try it come forward follows under the IRDA regulation

2. LIC are Service quality dimension is leading ensuring the financial services to promote the different variety of life insurance product to customer satisfy before death and after death to utilize multivariate of benefit to their future. Life Insurance Corporation must be provided bonus and premium in proper manner to customers.
3. Endowment policy is one major milestone of life insurance policy to give more benefit in retail business customers. Public life insurance companies should be introduced and implementation new policy and scheme framing under the guidelines of IRDA
4. Life Insurance Corporation of India should be trying it constant in proper way to reach customer new policy and schemes including Single Premium Endowment Plan, New Endowment Plan, and New Jeevan Anand LIC's Jeevan Rakshak LIC's Limited Premium Endowment Plan. All India Life Insurance Corporations conduct awareness on workshop among customer in rural and urban area.
5. Life Insurance Corporation should be giving credit facilities to customer under these types of policies schemes guarantee marriage endowment or educational annuity plan and jeevanachhaya child future plan. IRDA should be more constant are benefited society or group of people.

Conclusion

Life Insurance is leading financial services which promote the uncertainty risk for future events. Insurance company framed several benefit of policy schemes highly density services sector not only India also throughout world. Government of India is ensuring has been overwhelming to develop the socio-economic emancipation of below poverty line people. Insurance regulatory authorities of India promote the business people given more benefits prepare the some of the guidelines follow the private and public company insurances. Present day insurance sectors is certain level help to promote the uncertainty risk for present and future especially fully support to death of policy holders give some of the amount of financial services to the guardian of person. Insurance sector is diverse the spectrum of activities to served the policy holders are benefited majority of people and also pension fund scheme are utilized for senior citizen of India.

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ROLE AND PERFORMANCE OF MSME SECTOR IN INDIA

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Abstract

The Micro, Small & Medium Enterprises (MSMEs) have been contributing significantly to the expansion of entrepreneurial endeavours through business innovations. The MSMEs are widening their domain across sectors of the economy, producing diverse range of products and services to meet demands of domestic as well as global markets. The MSMEs in India are playing a crucial role by providing large employment opportunities at comparatively lower capital cost than large industries as well as through industrialization of rural & backward areas, inter alia, reducing regional imbalances, assuring more equitable distribution of national income and wealth. In this article focused on the MSME important role and performance of various sectors in India

Key words: Estimated MSME, Gender base ownership, Role and performance, social group, Estimated Employment.

INTRODUCTION

The Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. It contributes significantly in the economic and social development of the country by fostering entrepreneurship and generating large employment opportunities at comparatively lower capital cost, next only to agriculture. MSMEs are complementary to large industries as ancillary units and this sector contributes significantly in the inclusive industrial development of the country. The MSMEs are widening their domain across sectors of the economy, producing diverse range of products and services to meet demands of domestic as well as global markets. Ministry of Micro, Small & Medium Enterprises envisions a progressive MSME sector by promoting growth and development of the Sector, including Khadi, Village and Coir Industries, in cooperation with concerned Ministries/Departments, State Governments and other Stakeholders, through providing support to existing enterprises, adopting cutting edge technologies and encouraging creation of new enterprises.

MICRO, SMALL AND MEDIUM ENTERPRISES

In accordance with the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006 the Micro, Small and Medium Enterprises (MSME) are classified as below:

(i) A micro enterprise, where the investment in plant and machinery or equipment does not exceed one core rupees and turnover does not exceed five core rupees;

(ii) A small enterprise, where the investment in plant and machinery or equipment does not exceed ten core rupees and turnover does not exceed fifty core rupees; and

(iii) A medium enterprise, where the investment in plant and machinery or equipment does not exceed fifty core rupees and turnover does not exceed two hundred and fifty core rupees.

REVIEW OF LITERATURE

Kankipati et al (2017) has observed that the entrepreneurship generally speaking refers to the overall course of action undertaken by an owner in starting and managing his enterprise for profit. Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. Over last 5 decades MSME sector emerged as extremely effervescent and vigorous segment of Indian economy. There is continuous growth in MSME employment and MSME providing more employment opportunities over last 7 years.

Ujjal Bhuyan (2016) has analysed that the Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy. MSMEs not only play crucial role in providing large employment opportunities at comparatively lower capital cost than large industries but also help in industrialization of rural & backward areas, thereby, reducing regional imbalances, assuring more equitable distribution of national income and wealth. MSMEs are complementary to large industries as ancillary units and this sector contributes enormously to the socio-economic development of the country.

Subramanian et al (2019) has pointed that the importance of MSME has been recognized in recent years in both developed and developing countries for its significant contribution in gratifying various socio-economic objectives such as higher growth of employment, output, promotion of exports and fostering entrepreneurship. They play a crucial role in the industrial development of any country. The MSME sector is an important pillar of Indian economy as it contributes greatly to growth of Indian economy. This sector even assumes greater importance now as the country moves towards a faster and inclusive growth agenda.

Paramasivan C & Mari Selvam P (2013) has explained the contribution of micro, small and medium enterprises (MSME) sector to manufacturing output, employment and exports of the country is quite significant. According to estimates, in terms of value, the sector accounts for about 45 per cent of the manufacturing output and 40 percent of the total exports of India. The MSME sector employs about 42 million persons in over 13 million units throughout the country. There are more than 6000 products, ranging from traditional to high-tech items, which are being manufactured by the Indian MSMEs

OBJECTIVES OF THE STUDY

a) To assess the performance of MSME sectors in India

b) To analyse the role of MSME Enterprises in rural and urban areas.

METHODOLOGY

The study is based on secondary data. A survey and observation by selected literatures in published reports and research sources. Several published

reports are also consulted such as Annual report of MSME 2020-21 and websites of Ministry Of Micro, Small and Medium Enterprises, Government of India etc.

FINDINGS AND ANALYSIS

In this study based on the secondary data sources including percentage method used to analyse the role and performance of MSME sectors.

Table 1
Estimated Number of MSMEs (Activity Wise)

Activity Category	Estimated Number of Enterprises (in Lakh)			
	Rural	Urban	Total	Percentage
Manufacturing	114.14	82.50	196.65	31%
Electricity	0.03	0.01	0.03	0%
Trade	108.71	121.64	230.35	36%
Other services	102.0	104.85	206.85	33%
All	**32.488**	**309.00**	**633.88**	**100**

Source: MSME Annual Report 2020-21

The above table shows that the estimated number of MSMEs Activity wise. Micro sector with 630.52 lakh estimated enterprises on accounts for more than 99% of total estimated number of MSMEs. Small sector with 3.31 lakh and medium sector with 0.05 lakh estimated MSMES on accounted for 0.52% and 0.01% total estimated MSMEs, respectively. Out of 633.88 estimated numbers of MSMEs, 32.488 lakh MSMEs (51.25%) are in rural area and 309 lakh MSMEs (48.75%) are in the urban area.

Table 2
Gender base ownership Enterprises in rural and urban areas (in Lakhs)

Sector	Male	Female	Total percentage
Rural	77.76	22.54	48.80 %
Urban	81.58	18.42	51.20%
Total	**159.34**	**40.96**	**100%**

Source: MSME Annual Report 2020-21

The above table reveals that gender base ownership enterprises in rural and urban areas. The majority of enterprises situated in (urban 54.20%) areas. The remaining 48.80% of enterprises located in rural area. In this regard classification gender base rural enterprises maximum of male owners in 77.76 lakhs and remaining 22.54 enterprises in female ownership category. The maximum of 81.58 lakhs enterprises in male category and remaining minimum of 18.42laksh in female ownership enterprises.

Table 3
Distribution of Enterprises owned by Male and Female Entrepreneurs (in Lakhs)

Category	Male	%	Female	%	Total
Micro	79.56	29.28	20.44	72.04	100
Small	94.74	34.87	5.26	18.54	100
Medium	97.33	35.83	2.67	9.41	100
Total	**271.63**	**100**	**28.37**	**100**	**300**

Source: MSME Annual Report 2020-21

The above explained that distribution of enterprises owned by male and female entrepreneurs. Micro entrepreneurs are 29.28% of enterprises in male category and followed by 72.04% of enterprises in female category. Small entrepreneurs are 34.87% of enterprises maintained by male category and 18.54% of enterprises in female category. Medium sizes of entrepreneurs are 35.83% of enterprises in male category and 9.41% of enterprises are female category.

Table 4
Distribution of enterprises by social group of owner in rural and urban Areas

Sector	SC	ST	OBC	Others	Not known	All
Rural	15.37	6.70	51.59	25.62	0.72	100.00
Urban	9.45	1.43	47.80	40.46	0.86	100.00
All	**12.45**	**4.10**	**49.72**	**32.95**	**0.79**	**100.00**

Source: MSME Annual Report 2020-21

The above table explained that the distribution of enterprises by social group of owner in rural and urban areas. The socially backward groups owned almost 66.27% of MSMEs. Bulk of that was owned by OBCs (49.72%). The representation of SC and ST owners in MSME sector was low at 12.45% and 4.10% respectively. In rural areas, almost 73.67% of MSMEs were owned by socially backward groups, of which 51.59% belonged to the OBCs. In urban areas, almost 58.68% belonged to the socially backward groups, of which 47.80% belonged to the OBCs.

Table 5
Distribution of Enterprises Social Category wise

Sector	SC	ST	OBC	Others	Not Known	All
Micro	12.48	4.11	49.83	32.79	0.79	100
Small	5.50	1.65	29.64	62.82	0.39	100
Medium	0.00	1.09	23.85	70.80	4.27	100
All	**12.45**	**4.10**	**49.72**	**32.95**	**0.79**	**100**

Source: MSME Annual Report 2020-21

The above table cleared that distribution of enterprises social category wise. The analysis of enterprises owned by socially backward groups in each of the three segments of MSME sector reveals that micro sector had 66.42% of enterprises owned by socially backward group, whereas small and medium sectors had 36.80% and 24.94% of enterprises owned by socially backward groups, respectively.

Table 6
Estimated Employment in the MSME Sector (Activity Wise)

Category	Employment (in lakh)			
	Rural	Urban	Total	%
Manufacturing	186.56	173.86	360.41	32
Electricity*	0.06	0.02	0.07	0
Trade	160.64	226.54	387.18	35
other services	150.53	211.69	362.22	33
All	**497.78**	**612.10**	**1109.89**	**100**

Source: MSME Annual Report 2020-21
*Non-captive electricity generation and transmission

The above table estimated employment in the MSME sector. MSME sector has been creating 11.10 core jobs (360.41 lakh in Manufacturing, 0.07 lakh in Non-captive Electricity Generation and Transmission, 387.18 lakh in Trade and 362.82 lakh in Other Services) in the rural and the urban areas across the country. Statement No. 2.7 and Figure 2.5 shows the distribution of MSMEs activity wise

CONCLUSION

The Government has taken measure to improve the productivity, over last 7 years the MSME contribution to GDP has not increased to acceptable level. The estimated number of trade activity in compare to urban and rural is more than urban area covered to high trade and other MSMER activities. The gender base ownership enterprises in rural and urban areas comparatively urban area male ownership highly influence the MSME activity. Distribution of enterprises owned by male and female entrepreneurs was running to medium scale industry in majority of male

category. It is suggested that government has to adopt integrated policy, providing sound data with efficient governance, promote skill development to increase productivity and providing accessible credit through government sponsored agency exclusively to MSME is essential to increase productivity and contribution to economic growth.

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TEACHER MORALE OF MATIRICULATION HIGHER SECONDARY SCHOOLS IN TIRUNELVELI DISTRICT

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Abstract

In this paper should be aim to analyse a teacher morale of matriculation higher secondary schools in tirunelveli educational district. Morale is two types. High Morale means when one worker attitudes are satisfied to the circumstances and achievement of its goals such as enthusiasm , atmosphere ,loyalty, reliability, fidelity, steadiness. Low Morale means when one worker inhibit the eagerness and capability of an organization to achieve the goal like apathy, wringing, suspicion, glumness, breaking the rules, lack of aware and laziness..

Keywords: Morale,Perception, Reorganization,School , Teachers, Working Environment..

INTRODUCTION

Beginning of morale is in 1752, initially it means ethical value. . Morale is French statement which is constructing of moral so as to called confidence mainly in military. The statement was firstly recorded in1831. Collins English Dictionary defines morale as the level of mental otherwise moral confidence of anyone or else group. In addition it means attitude of cheerfulness. Morale is a concept of various dimension like for example a affection, belief, a state of mind, a mind set, an emotional feelings (Mendel, 1987). On individual basis morale is defined as the belief a worker has about his job, it is the one the worker perceives himself in the establishment, it is the level in which the establishment is viewed as discussion the worker's own requirements and expectations (Washington and Watson 1976). Morale is also connected to the attitudes of a group. In a battle the word morale is used by the concentration beside a circumstances, while the opponent's attack is disgusted and the army goes forward gleeful as soon in the ground inspite of several difficulties, in this circumstances it is thought that the morale of the soldier is exceedingly high.The morale is assumed at a low level when the army

leaves from the battlefield. Morale is a narrative, a feeling, an opinion, a manner, satisfaction and generally outlook of employees for the period of their time in a place of work atmosphere. The capacity of actual productivity is considered to be exactly related to the morale of the employees. Employees who are cheerful, assertive, and clear at work are said to have affirmative or high morale. The institution in which employees who are disappointed or frustrated and destructive about their atmosphere are said to be depressing or low employee morale (Dr. Abha Sharma, 2016)

TEACHERMORALE

Teachers' morale refers to the state of the spirits and mind or mental and physical well being of one teacheror group of teachers'. It is the eagerness, satisfaction, willingness, motivation which denote the professional awareness and enthusiasm in students' achievement and development of teaching profession or achieving the mission. Teacher's morale is concerned as an effect interrelated to the booming interaction between teachers' requirements, incentives and organizational goals. Teachers' morale is a complete measurement of a school's effectiveness. If the teachers' morale is high, it indicates the school achievement. If teachers' morale is low, it indicates that hardly to act effectively for organizational goals.

SIGNIFICANCE OF THE STUDY

Teachers act at all levels of education, be present in primary level, secondary level or at the tertiary level. Teachers are the main point in every educational system. In several aspects teachers as a nation's best asset and moreover the method that execute the curriculum (Mgbodile, 2004, Osman, Halim &Meerah, 2006). Teachers 'morale can allow clear-cut effect on pupil attitudes and knowledge. Attitude is not only to construct teachers, new pleasant for the teachers but in addition learning new pleasant for the students. This creates an atmosphere that is more helpful to learning. Teachers are a most important part of the learning system. They give the motivation and assist that students be successful. Teacher morale can suffer directly to the continuous stress of difficulty to meet educational goals and also change in leadership or policies. Improving teachers' morale has many advantages. It can help teachers to continue a clear attitude and happier at work. If schools provide good working environment, the teacher morale improve, and their willingness to work in their job will also be high.

OBJECTIVES OF THE STUDY

- To identify the recognition which influence teacher morale in Tirunelveli education district.
- To find the teacher perception towards work place in Tirunelveli education district.

SCOPE OF THE STUDY

This study is designed to learn the morale of teacher in Tenkasi education district. The previous researches so far done are in northern part of the country and other urban areas. The study compares morale with leadership, organizational climate, job satisfaction. The Tirunelveli district consists of three educational districts namely Tirunelveli Central Educational District, Cheranmahadevi Educational District and Tirunelveli Educational Dist This study focuses on the teacher morale of matriculation higher secondary schools in Tenkasi education district. Both rural and urban area is covered. The data collected from 14 schools. Totally 15 questions were used to assess teachers' morale.

REVIEW OFLITERATURE

Paramasivan. C (2015) Education becomes a powerful weapon to the socio-economic setup of the country which brings colorful changes in almost all the stakeholders. Providing quality and

time bound education to the students is the vital role of the educational system of the country particularly in higher education which is highly knowledge based, innovation oriented and research centered. Education and educational system largely depends on the academicians particularly the teaching faculty. Therefore, the teacher must be a opt person to teach his subject in a systematic manner. A teacher is not only a person already well educated but also he/she should be a active learner throughout his/her service though formal training such as orientation, refresher programmes.

Basilius, R.W., Okto, I., Henie, P.A., (2015). Relationship between school Principals transformational leadership, teachers job satisfaction and teachers work morale at state elementary schools in Boven Digoel Regency, Papua, Indoneva. International Journal of science and Research. Volume 4, Issue 8. The author conclude that the regional education administrators want to improve teacher job satisfaction and teacher's work morale then they have to take some strategic steps and effort to improving principals' transformational leadership.

John, O.K.O., Misia, M.M.K., Bonijace, N.N., (2015). Effect of teachers morale on standard eight pupils' Academic achievement in public primary schools in maranisubcountry, Kenya, International Journal of scientific and research publication. Volume Issue 10. The researcher recommended that there is a strong relationship between attitudinal professional and motivational aspects attitudinal aspects like, an optimistic view towards one's colleagues, and enthusiasm for one's work. Professional aspects like update and maintain teaching and learning instruments. Motivational aspects like school management committees should give teacher's incentives. These three aspects promote teachers' morale and lead to high pupils academic achievement and parents, teachers associations should ensure schools' environment is conducive for learning.

Abha,S..(2016). Study of Teachers morale in relation to organizational climate of government and private secondary schools. Abhinav National monthly refereed journal of Research in Arts and education. Volume 5, Issue 4. The author reveals that teacher morale was closely related to organizational climate of state government as well as private secondary schools irrespective of theirmanagement.

Muhammad, R., Muhammad, S.A., Zafar, I..(2016). Relationship between morale and job satisfaction of subject specialists teaching in higher secondary schools of Khyber pakhtunkhwa, Pakistan. Volume VIII Number I.The author identify that the increased job satisfaction leads to high morale . The relationship is slightly stronger in case of male subject specialists, the strength of relationship is higher that urban subject specialists. Similarly the strength of relationship is much higher in case of married subject specialists as compared to unmarried subject specialists.

Nuzhat, J.M., Khan M.A...(2015), Morale of teachers working in various higher secondary schools of Kashmir Division – A comparative study of science and arts teacher. Crlobal advanced research journal of educational research and review. Volume 4 Issue 9.The researcher found that the morale factors like personality factors, professional aspiration, professional skill, school facilities environmental impact, arts and science higher secondary school teachers have same morale but the factors school administration and educational administration, science and arts higher secondary school teacher differ on morale. Arts higher secondary school teacher have better school

administration and science higher secondary school teacher have better educational administration.

Bessie.S.,Matthew.K.,Army.H.. (2015). Education leadership styles impact on work performance and morale of staff. Journal of marketing and management. Volume 6, Issue 2.The author suggested that leadership style is closely associated with work performance and morale and have a stronger effect on morale & performance. The teacher and support staff samples recognized that leadership behaviours and practices exhibited by school principals have animpact on the performance and confidence level of school personnel.

Vandana, M.,Gaaganpreet, K.. (2015). Morale among secondary school teachers. Journal of teacher education and research. Volume 10, Number 1, doi: 10.5958|2454-1664. 2015.0003.8 The author revealed that the chandigarh secondary school teachers exhibited better teacher morale than Mahali secondary school teachers; Chandigarh and Panchkula secondary school teachers exhibited comparable teacher morale; and Panchkula secondary school teacher exhibited better teacher morale than Mahali secondary school teachers

Vincent.T.. (2014). Organizational climate and teachers morale in the higher secondary schools of Namakkal district. Research Paper. Volume 3 Issue 11.The author shows that there exists no relationship between organizational climate and teacher morale. The organizational climate and teacher morale do not differ on the basis of type of schools, management, experience of the teachers and locality of theschools.

Monica.D.T., Lawrencia.K.W.. (2014). Teacher morale and attitude to work in selected senior secondary schools in the cape coast monacipality. European journal of Educational and Development psychology. Volume 2, Number 2.The researcher indicated that the teacher salary and conditions of services is the factor of unsatisfactory. As regards teacher morale and attitude of teacher to work, school facilities and student behaviour made unique significant contribution concerning teacher morale and type of school, the student behavior, school facilities and satisfaction with teaching are the factors that showed significant differences in single sex school as against co- educational schools.

Catherine.B..(2013). Conflict: Challenges and Mechanisms Head Teachers can use to manage conflict towards an improvement Teacher Morale in public Primary schools in Eldoret Municipality, Kenya. Journal of social science for policy implication. The author points out that some of the challenges facing head teacher's in conflict resolution in organization was lack of training in conflict resolution and management in public primaryschools.

Anne.W., Kabutu.M., Ndirangu. M.,Antony.K. Evelyn. M.O.. (2014). Secondary school teachers perceptions of the factors that influence their morale and commitment to work: A CASE of Nakuru district. International journal of innovation and applied studies. Volume 9, Number 4.The author established that the teachers were highly committed to their work. There was no significant relationship between teachers' commitment to work and their age and experience of the teacher. Also there was no significant relationship between teachers' gender and commitment to their work. There was no significant relationship between teachers' gender, age, experience, academic, professional qualification. No significant relationship between teachers' perceptions of the factors that influenced their morale and their commitment to work.

Jenny.T.. (2015). Teacher morale, student engagement, and

student achievement growth in reading in North carolino. Journal of organizational and educational leadership. Volume1, Issue 1.The author indicates that there was no significant relationship among the variables. The study include insights into each of the variables of teacher morale, student engagement and student achievement growth.

RESEARCH METHODOLOGY

The research methodology includes nature of the study, nature of the data, collection instrument, sample size determination, sampling procedure, area of the study and framework of data analysis. The research design applied for this study was descriptive in nature. The primary data were used in this study and collected through structured questionnaire. For the purpose of the study the researcher selected 210 samples from 14 Matriculation Higher Secondary Schools in Tenkasi Education District. Simple Random sampling method was used for selecting the respondents from the populations. In order to analyze the collected data, the statistical tools such as simple percentage analysis, weighted average and t- test were used.

SAMPLING TECHNIQUE

The study has taken sample of 210 matriculation higher secondary schools teachers from 14 schools. Simple random sampling method was used to choose teachers from a population of 705 teachers which represented 30 percent of the population. Questionnaire is used as information instrument. T- test tool is used for analyzing the data.

Table 1
DEMOGRAPHIC PROFILE

DEMOGRAPHIC	CLASSIFICATION	FREQUENCY	PERCENT
AGE	less than 25	33	15.7
	25-35	128	60.9
	36-45	37	17.6
	46-55	10	4.7
	Above55	2	1.0
	Total	210	100.0
Gender	Male	31	14.7
	Female	179	85.2
	Total	210	100.0
Marital status	Single	63	30
	Married	147	70
	Total	210	100
Education	UG	20	9.5
	PG	45	21.4
	UG with BE.d.	79	37.6
	PG with BE.d,	55	26.1
	Others	11	5.2
	Total	210	100.0
Experience	Below 2 yrs	25	11.90
	3 to 5 yrs	58	27.61
	6 to 8 yrs	90	42.85
	Above 8 yrs	37	17.61
	Total	210	100.0

Salary	3000to5000	37	17.6
	5001to7000	62	29.5
	7001to10000	54	25.7
	Above 10000	57	27.1
	Total	210	100.0
Subject area	Social	34	16.1
	Science	55	26.1
	English	39	18.5
	Maths	44	20.9
	Tamil	38	18.0
	Total	210	100.0
Stay as a teacher	Working condition	18	8.5
	Enjoy working	150	71.4
	Time with family	7	3.3
	Adm. Support	5	2.3
	Job security	30	14.2
	Total	210	100.0
School location	Urban	83	39.5
	Rural	127	60.4
	Total	210	100.0
er experience in present school	Below 1 yr	35	16.6
	1 to 3 yrs	94	44.7
	4 to 6 yrs	49	23.3
	7 to 9 yrs	32	15.2
	Total	210	100.0

Source: Primary Data

1. Mostly teacher job was preferred by female rather than male respondents because of job security andcomfort,
2. Most of the respondents are in the age group of 25-35 at 60.9 percent because teachers are taken from private schools. Only 1.0 percent falls under the age group of above 55, because senior teachers mostly got job in over aperiod.
3. 30 percent of respondents are single and 70 percent of respondents are married
4. Most of the respondents are UG teachers with B.Ed (37.6 percent) because most schools prefer B.Ed. qualified teachers to teach the students and 26.1 percent of respondents have completed their PG degree along withB.Ed.
5. 42.85 percent of the respondents are having working experience, because of their uncomfortability in IT and other jobs. So they retain asteachers.
6. 26.1 percent of respondents are teaching Science. 20.9 percent of respondents are teaching Maths, 18.5 percent of respondents teach English, 18.0 percent of respondents are teaching Tamil, 16.1 percent of respondents are teaching Social subject.
7. 71.4 percent of respondents are like to enjoy working with student's because of their dedication to theirjob.
8. Even though Tenkasi belongs to urban area more samples are from the nearby ruralarea.

9. 44.7 percent of the respondents are currently working in the school for 1-3 year. Due to their family situation most of the respondents shift from one place to another, .23. 3 percent of respondents belong to 4- 6years, because salary paid to them moderate so they continue on the respective school.16.6 percent respondents are current working in the school below 1 year. 15.2 percent of respondents are currently working in the school between7- 9years

Table 2

WEIGHTED AVERAGE FOR RECOGNITION BY THE ORGANIZATION THAT DEVELOPS THE MORALE

S. NO	PARTICULARS	WEIGHTED AVERAGE
1	Extracurricular	4.42
2	Outside competition	4.36
3	Work involvement	4.5
4	Science exhibition	4.21
5	Literary day	4.1
6	Color day	4.03
	Mean of weighted average	4.27

Source: primary data

Interpretation

From the above table weighted average value 4.27 shows that the recognition given by the schools are in an agreeable condition by the respondents.

Table 3

T-TEST FOR AGE AND RECOGNIZATION BY THE EMPLOYER

Variable	Age	Mean	Std deviation	T	Significant value
Recognition by the employer	Less than 35 years	25.7	3.39	.740	.460
	More than 35 years	25.3	3.18		

Interpretation:

H0: There is no significant difference between age and recognition by the **employer H1:** There is a significant difference between age and recognition by the employer

From the table't' value .740 and its corresponding 'p' value .460 .It is stated that there is no significant influence in recognition by the employer with that of the age.

The table reveals that, less than 35 years age group scored high mean value than the age group of more than 35 years. Hence, it stated null hypothesis is accepted. Less than 35 years age group teachers are accepting that the age is not considering the recognition.

Table 4
T-TEST FOR EXPERIENCE LEVEL AND TEACHERS PERCEPTION TOWARDS WORKPLACE

Variable	Experience level	Mean	Std deviation	T	Significant value
Teachers perception towards workplace	Less than 5 years	47.6	6.10	2.629	.01
	More than 5 years	49.6	4.78		

Interpretation:

H0: There is no significant difference between experience level and teachers perception towards workplace.

H1: There is a significant difference between experience level and teachers perception towards workplace.

From the table‘t’ value 2.629 and its corresponding ‘p’ value 0.01. It is concluded that experience level of the respondents have significant influences on teachers perception towards workplace.

The table reveals that, more than 5 years experience level group scored high mean value than the experience level group of less than 5 years. Hence, it stated null hypothesis is rejected. More than 5 years experience level group employees accept that teacher’s perception towards workplace is good. Less than 5 years experience level group employees do not accept that teacher’s perception towards workplace isgood.

FINDINGS

In this study the researcher have some finding based onthe objectives of thestudy.

Teachers Age and Recognition by the organization: Less than 35 years age group teachers are accepting that the age is not a criteria for the recognition of teachermorale.

Teachers Experience level and Teachers perception towards workplace: More than 5 years experienced teachers accept that teacher’s perception towards workplace is good. Less than 5 years experience level group teachers do not accept that teacher’s perception towards workplace is good. Similarly t-test has been employed for certain variables like opportunity to improve my skills , rules/ norms, adequate teaching materials, helps to conduct the program and eventsetc.

SUGGESTION

The researcher suggested that the teacher’s perception level also concentrated by the management for effective management. The perception of the teachers’ towards the workplace if negative leads to low morale and it decrease the willingness of the teachers’ to work towards their workplace. So the management need to take some effective steps to give the pleasant workplace to teachers that improves the morale in the organization

CONCLUSION

Teacher morale is high due to confidence, spirit, and willingness, cooperative living. Teacher morale is good among the teachers but it is affected by some of the variables like opportunity, adequate teaching material, proper rules and norms, if schools provide good working environment, the teacher morale is high that automatically induces student participation that develop the society. The researcher identify that the level of morale among teacher in Tenkasi education

district is high. In this study the researcher found that less than 35 years age group scored high mean value than the age group of more than 35 years. Hence, it is stated that null hypothesis is accepted. Less than 35 years age group teachers are accepting that the age is not considering the recognition and the found that less than 5 years of experienced staff group do not accept that teacher's perception towards workplace is good.

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PERFORMANCE OF AGRO BASED INDUSTRIESIN INDIA WITH SPECIAL REFERENCE TO SUGAR INDUSTRY

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Abstract

The Indian sugar industry is a key driver of rural development, supporting India's economic growth. The industry is inherently inclusive, supporting over 50 million farmers and their families, along with workers and entrepreneurs of almost 550 sugar mills, apart from a host of wholesalers and distributors spread across the country. The Indian sugar industry is cyclical as, on the one hand it serves the domestic market, the largest in the world. Sugar is a sector of significant importance to the national economy. It has done so by commercially utilizing the rural resources to meet the great domestic demand for sugar and by generating surplus energy to meet the increasing energy needs of India. In addition to this, the industry has become the mainstay of the alcohol industry. The sugar sector also has a significant standing in the global sugar space. The Indian domestic sugar market is one of the largest markets in the world in terms of volume. India is also the Second largest sugar-producing nation and remains a key growth driver for world Sugar growing above the Asian and world consumption growth average.

Keywords: ***Agro-based industry, Agriculture, Farmers, Labour intensive, Capital saving***

INTRODUCTION

Agriculture and industry are integral components of the development process due to their mutual relationship as agriculture provides inputs to the industry and output of the industry is used in agriculture to expand production. There are many industries which are based on agricultural production. Agro-based industries are depending on agriculture for their raw-material and other basic inputs. This inter-dependence must be oriented to suit the need of our country and State. Stabilization and growth of agricultural production results in rapid advancement in output and employment in agro-industries. Further, the cumulative effect of agricultural growth and growth of agro-industries creates greater opportunities for industrial growth as well as integration of the different sectors of the economy. Agro-based industries may be classified into two categories namely food processing industries and non-food processing industries. Food processing industries mainly deal with the

preservation of perishable products and utilisation of by-products for other purposes. These types of industries include the processing of wheat, rice, maize, barley, pulses, meat, fruits, vegetables, etc.

Agro based Industries in India

Agro industry is an enterprise that processes raw materials, including ground and tree crops as well as livestock. The degree of processing can vary tremendously, ranging from the cleaning and grading of apples to the milling of rice, to the cooking, mixing, and chemical alteration that create a texturized vegetable food agro industries can be roughly categorized according to the degree the raw material is transformed. In general, capital investment, technological complexity and management requirements increase in proportion with the degree of transformation.

Sugar Industry in India

The sugar industry in India plays a vital role in socio economic developmentin rural areas by mobilizing rural resources and generating higher income and employment opportunities. About 7.5 percent of the rural population covering about 45 million sugarcane farmers, their dependents, and a large number of agricultural laborers are involved in sugarcane cultivation, harvesting, and ancillary activities. About half a million skilled and semi-skilled workers, From the rural areas are also engaged in the sugar industry. In India, the sugar industry is the second largest agro-based industry, next only to textiles and contributes about Rs.1650 crore to the central exchequer as excise duty and taxes annually. Besides, the State Governments realize about Rs.600 crore annually through purchase taxes, cess, etc. The total value of sugarcane produced in the country is estimated at Rs.24000 crore per year.

The sugar industry in India finds itself entangled in a complex web of problems leading to declining profitability to the cane growers as well as the sugar industry. The reasons for the same are to be traced and suitably addressed to give a boost to this sector in the country. Unlike many western or major sugarcane growing countries, sugarcane is the only source of sugar in our country, and therefore, any mismatch between demand and supply of sugar in the country assumes significance at the national level and influences the economics of sugarcane cultivation to a great extent. The initiatives by the State Governments in the form of fixing a remunerative sugarcane price and pressurizing sugar mills to make payment within areasonable time encouraged farmers to put in more area under the sugarcane crop.

This underlines the need to study the economics of sugarcane cultivation to understand the effectiveness of the price policy in determining the area under sugarcane crop. The initiatives of research institutions, particularly those directly involved with sugarcane crop, are required to be listed to study the growth in productivity of sugarcane crop. Further, the globalization of the Indian economy started in the early 90s is bound to direct the trade of agricultural commodities in the years to come.

Sugar Cultivation in India

Sugarcane and sugar beet are the main sources of sugar in the world. Out of total sugar produced in the world 60 per cent is obtained only from sugarcane. Asia is the largest producer of sugar followed by Europe Most of the sugar in Asia comes from sugarcane whereas in Europe from sugar beet. Presently sugarcane is grown in an area of 16 m. ha in over 79 countries. The global production of raw sugar is 112 m.t. India stands first in area (3.93 m. ha) and production (167 m.t) among the sugarcane growing countries of the world. Uttar Pradesh has the largest area almost 50 per cent of the cane area in the country, followed by Maharashtra, Karnataka,

Tamil Nadu, Andhra Pradesh, Gujarat, Bihar, Haryana and Punjab. These nine are most important sugarcane producing states. Sugarcane production is also highest in U.P. followed by Maharashtra. Productivity wise, Tamil Nadu stands first with over 100 tonnes per hectare followed by Karnataka, Maharashtra. Bihar has the lowest productivity amount the major sugarcane growing states. The sugar industry is the second largest agro-based industry, next only to textiles, in the country.

Table 1

Performance of Sugar and Sugar Cane Production in India during 2004-05 to 2017-18

Year	Area under Sugarcane (000 hectares)	Yield of cane tonnes per hect (area)	Production of sugar-cane (000 tonnes)	No. of factories in operation	Average Total Actual cane capacity crushed (000 tonnes) to 24 hrs		Recovery of sugar percent cane	Total sugar produced (000 tonnes)	Average Molasses duration (days) production ('000 tonnes	(
1	2	3	4	5	6	7	8	9	10	11
2004-05	3661	64.8	237088	400	3545	124771	10.17	12691	96	5514
2005-06	4202	66.9	281172	453	3606	188672	10.22	19267	126	8551
2006-07	5151	69.0	355520	504	3474	279249	10.17	28361	174	13109
2007-08	5055	68.9	348188	516	3546	249906	10.55	26356	149	11313
2008-09	4415	64.5	285029	488	3725	144978	10.03	14538	.87	6542
2009-10	4175	70.0	292302	490	3825	185548	10.20	18912	108	8400
2010-11	4885	70.1	342382	527	3650	239807	10.17	24394	136	10970
2011-12	5106	69.3	353768	529	3868	256975	10.25	26342	137	11824
2012-13	5279	67.1	354400	526	4125	250598	10.03	25140	126	11744
2013-14	534.1	64.7	345600	509	4088	238464	10.23	24396	125	10882
2014-15	5307	69.1	366800	538	4101	273046	10.37	28310	135	12482
2015-16	5284	63.7	336900	526	4192	236492	10.62	25125	117	10873
2016-17	4945	61.3	303600	493	4337	194078	10.44	20285	99	9026
2017-18	5042	81.5	411000	525	4488	302427	10.74	32479	140	14063

The above table indicates the figures of the area under sugarcane yield of sugarcane. Production of sugarcane. The number of factories, working capacity. Cane crushed, recovery. Sugar production, duration, and molasses production from 2004-2005 to 2017-18.

Table 2

State-wise Sugarcane Cultivation in India (Thousand Hectares)

States	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Assam	29	27	30	-	-	-	-	-	-	-
A.P & Telangana	196	158	192	204	190	195	210	190	186	177
Bihar	112	116	248	170	252	298	302	280	296	300
Gujarat	221	154	190	194	203	182	185	185	180	182
Haryana	90	74	85	95	100	118	115	116	120	122
Kerala	2	3	3	-	-	-	-	-	-	-
Maharashtra	768	756	965	1025	937	940	1060	1050	765	915
M.P. & Chhattisgarh	70	62	65	81	80	85	131	155	150	140
Karnataka	281	337	423	432	427	476	499	510	410	415
Orissa	11	8	13	40	40	42	30	30	43	35
Punjab	81	60	70	95	95	96	98	100	105	105
Pondicherry	2	2	-	-	-	-	-	-	-	-
Rajasthan	6	6	5	-	-	-	-	-	-	-
Tamil Nadu	309	293	316	335	320	285	255	250	260	201
Uttar Pradesh	2084	1977	2125	2252	2475	2513	2307	2302	2310	2330
Uttarakhand	107	96	107	108	110	111	115	116	120	120
West Bengal	18	14	15	-	-	-	-	-	-	-
Others	28	32	33	75	50	-	-	-	-	-
Total	**4415**	**4175**	**4885**	**5106**	**5279**	**5341**	**5307**	**5284**	**4945**	**5042**

It is observed that, Uttar Pradesh is the largest sugarcane cultivation area and in South India, it is Karnataka, and Tamil Nadu, Andhra leading state in cultivating sugarcane crops in India. Pradesh and Telangana have shown a considerable Maharashtra in another state given more importance amount of cultivating sugar cane crops. It is also very to sugar cane cultivation Bihar, Gujarat, Haryana, clear that starts like Assam, Kerala, Pondicherry Uttarkhand, Madhya Pradesh, and Chhattisgarh (UT) Rajasthan, and West Bengal are shown a dismal focus moderate level of cultivation. In the case of feature of sugarcane cultivation.

Table 3

State-Wise Number of Centrifugal Sugar Factories Working in India

States	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Andhra Pradesh	35	35	37	37	36	24	22	19	18	18
Bihar	9	9	10	11	11	11	11	11	11	11
Goa	1	1	1	1	1	1	1	1	1	1
Gujarat	18	18	19	19	18	18	20	21	20	17
Haryana	15	14	14	14	14	14	14	14	14	14

Karnataka	50	54	59	58	60	62	65	64	64	66
MadhyaPradesh	9	11	13	13	12	14	16	17	17	18
Maharashtra	147	143	167	170	172	157	183	180	152	187
Orissa	5	4	5	5	5	5	3	3	3	2
Punjab	16	15	16	17	16	16	16	16	16	16
Puducherry	1	1	2	2	2	2	2	1	1	m
Rajasthan	1	1	1	1	1	1	1	1	1	1
Tamil Nadu	37	41	44	43	43	42	43	42	39	36
East U.P	44	42	42	42	40	38	38	38	38	38
West U P.	35	35	34	33	33	33	32	31	31	48
Central U.P.	53	51	49	49	49	48	48	48	47	4
West Bengal	1	1	1	1	1	1	1	1	1	1
Uttarakhand	10	10	10	10	9	9	9	8	8	7
Chhattisgarh	1	3	3	3	3	3	3	3	4	4
Telangana	-	-	-	-	-	10	10	7	7	7
All India	**488**	**490**	**527**	**529**	**526**	**509**	**538**	**526**	**493**	**525**

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About the number of sugar factories in India for the period from 2008-09 to 2017-18 presented. The table indicates that there are no sugar industries found in Assam, Kerala, where as in the state of Telangana, sugar factories are missing for the period from 2008-09 to 2012-13. Another noteworthy feature of the above table implies that there is only one sugar factory run in the state of Goa and Rajasthan the highest number of sugar factories are found in the state like Maharashtra (187), Uttar Pradesh (90), Karnataka (66) and Tamil Nadu (36). Rest of the state only a few sugar factories are working.

Major Findings

- The area under sugarcane cultivation in the world is marginally decreased to 20.27 million ha. In 2004 to 19.78 million ha. In 2005. This led to a decrease in sugar cane production.
- Major sugarcane produced in Uttar Pradesh, Maharashtra, stood in second place. In Southern India both Karnataka and Tamil Nadu were the largest in sugarcane production.
- It has been observed that Uttar Pradesh is the leading State in the production performance of sugar production. Similarly, in the Southern State, Karnataka performed a leading role in the production of sugar.
- It has been observed that the States like Assam, Kerala, and Rajasthan sugarcane cultivation is almost negligible.
- It is also observed that there are no sugar industries found in Assam and Kerala. In the case of Telangana, there were no sugar factories from 2009 to 2013.
- It is further observed that the States like Assam, Nagaland, and Kerala has been ruled out in the sugar and sugar-related production activities. It has been further observed that Karnataka and Telangana have done a remarkable job regarding crushing activities during 2017-18 compare to 2016-17.

Conclusion

Agro based industries in India is one of the basic and backbone of Indian economy which provide employment,

income generation, industrial inputs and outputs, regional growth and associated with all kind of walks of human beings. Growth of agricultural sector became a growth of socio-economic development of the country. Therefore, it is concluded that, there is a vast scope in the export of agro based products in future with huge volume of foreign exchange. There is a need of specialized and effective steps to be taken for promoting the agro based export in future.

Thus, sugar industries in India play a pivotal role. The major contribution of significance crops comes from few states Viz., Uttar Pradesh, Maharashtra, Haryana, Gujarat, Karnataka, Andhra Pradesh, Tamil Nadu. It is at a very lower level, or almost the crop is missing in these states viz., Punjab, Assam, Orissa, West Bengal Rajasthan, and Pondicherry Besides, India is one of the longest sugar-producing countries next only to Brazil. It also undertakes the export of sugar to other countries. Further among the south Indian states, Karnataka is one of the south Indian states in sugar cane cultivating and sugar production.

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IMPACT OF ORGANIZATIONAL CULTURE ON EMPLOYEE PERFORMANCE AND BEHAVIOUR: AN ASSESSMENT

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Abstract

Today it becomes crucial to set the organizational strategic objectives due to the dynamic nature of organizational culture, its effectiveness and its relationship with employee performance as well as behaviour. This paper basically aimed to assess the impact of organizational culture on employee performance and behaviour. Review of several literatures and researches from libraries are taken as the basis to assess and evaluate the impacts of organizational culture on employees, processes and systems in an organization. Researches highlight that the organizational culture influences the effectiveness, performance, satisfaction and productivity of employees. Different dimensions of culture have been identified so far and the findings of research indicate that value and norms of an organization are based upon the relationship with employees. The objective of an organization is to improve and increase the overall performance level by formulating appropriate strategies.

Keywords: *Organization, Culture, Employee, Behaviour, Performance*

INTRODUCTION

The effectiveness of Organizational development improves the sustainability on the basis of its certain factors and boost the employee morale and feel them more empowered.. The culture of an organization can be improved by its norms, values and objectives which lead to the improvement of employee commitment as well as the productivity of the organization. The establishment of strong and sound culture in an organization improves the performance level of an employee. The performance of employees can be improve by establishment of a strong and

sound culture of an organization. The employee performance is widely considered as the backbone of an organization which leads to the overall development and performance of the organization effectively. The behaviour of an organization is enhanced by the loyalty of employee that relied upon knowledge and awareness of culture.

Objective of the Study

The main aim of the study is to assess the impact of organizational culture on employee behavior and performance and their inter-relationship based on reviews of some selected researches, articles and studies.

Organizational culture

Organizational culture refers to a system of shared assumptions, values, beliefs and attitude that tend to be manifested in the behavior of its member or people and also guide the way in which its employees think, feel and act. It includes the expectations of organization, experiences, philosophy and its values. These values have a strong influence on employee‘s behaviour as well as organizational performance. Organizational culture is the outcome of a perception that shared by its all the employees within the organization. Gordon and Cummins (1979) define organization culture as the drive that recognizes the efforts and contributions of the organizational members and provides holistic understanding of what and how is to be achieved, how goals are interrelated, and how each employee could attain goals. As explained by Schein (1985), it is developed through the organisation’s attempts to solve its problems of internal integration and external adaptation. Organizational culture plays a dominant role in producing and shaping the distinct respective behaviour styles from individual employees, workgroups, and businesses. It is considered as a powerful force to build a standard way of conduct among the employees and defining the boundaries of what can or cannot be done. Moreover, it ensures the existence of peace, strength and a strong relationship between the employees during their interaction. *Zain et al. (2009)* examined the effect of four dimensions of organization culture namely teamwork, communication, reward and recognition, and training and development on employee performance and found that all the four dimensions of organization culture were important determinants of performance. Organizational culture will relate to each area of employee performance with a significant contribution to organizational culture. The service and quality provided will be strongly influenced by the performance culture. Organizational culture will play a role in driving employees' innovative behaviors, as organizational culture builds commitment among members in the belief of innovation embedded within the organization. Committed employees are always willing to put in extra effort and creativity on behalf of the organization (Nurmantu, 2007). Improve the productivity in organizations and increase competition to make profit will not be achieved except by attention to the organization culture. (Mohammad, 2020) The development of organizational culture driven by core values and given theoretical argument establishes a link between the organizational culture and its components with the performance of this company. *(Mohsen, A Neyazi, N, Ebtekar, S, 2020).* Several dimensions of organizational culture can be seen.

Innovative: This type of culture is basically adoptable and flexible by nature. It also emphasize upon the experiment with new ideas. This practice boosts the creativity and enthuasism among the employees.

Aggressive: This culture concentrates and gives the value of competitiveness and the outperforming competitors but it may avoid the area of corporate social responsibility.

Outcome-oriented: This type of culture holds the employees accountable for success and provides rewards to the employees for good performance

Detail-oriented: Under this culture, attention is given to the details of every aspects of the concern from recruiting of employees to sending report to shareholders. It emphasizes on precision of employees by giving importance on analytical thinking, time management, active listening and observation power.

People oriented: This culture is emphasized upon the fairness of value, supportiveness, and recognition of individual rights. These organizations believe in that the greatest assets of their organizations are people. Moreover, these companies develop an atmosphere where work is full of entertain and fun. In these organizations, respect and dignity towards the people are given high priority.

Team oriented: Organization having team oriented cultures are collaborative and emphasizes upon co ordination and cooperation among the employees. Companies with team-oriented cultures are collaborative and emphasize upon coordination and cooperation among employees. A positive relationship can be observed with their co-workers and with their managers.

Stable: This type of culture is featured with rule-oriented, bureaucratic and also predictable by nature. These organizations have always given importance on the coordination of individual efforts and on highest level of efficiencies. These organizations aim to coordinate and align individual effort for greatest levels of efficiency. Stable environment with certainty provides constant levels of output effectively.

Employee behaviour

Employee behaviour can be explained as the way in which employees respond and react to specific circumstances or situations in the workplace. While different elements ascertain an individual's behavior in the workplace, employees are shaped by their culture and by the organization's culture. Organizational competitiveness is directly influenced by the employee behavior. In order to establish and maintain a healthy work culture, employees are expected to behave gently and sensibly with proper manner. The reactions of employees to a particular situation, pattern of working at workplace on a regular place, overall policy extent the employee work behaviour. It is obvious that each employee should behave with proper responsibly for the betterment of business, organization, customers and probably of their own. Employees always accepts the organizational policies, and advocates organization’s goods and services with positive words and behaviours and helps to maintain healthy, positive working environment, respects organizational value system, working pattern and organizational decisions positively *(Gautam,P.K, 2020).*

Employee performance

Employee performance is described as an individual results depended on the size and behavioral procedures for job related and which followed to result, particularly behavior which can change the surroundings in certain procedures. According to *Bayley (1991),* Employee performance is a verification of the outcomes constructed in a definite job activity or function during particular time period correlated with organizational goals. The degree of an achievement to which an employee fulfills the organizational mission at workplace is called performance *(Cascio, 2006).* Employee performance is considered as an integral part of the growth process of an organization, it fosters employee commitment towards the organization. Employees align their goals and objectives with those of the organization and feel responsible for the overall well-being of the organization. As their efforts are in turn appreciated by the management and suitably rewarded, they

have immense job satisfaction. In such situation, employees are committed to achieving their goals and thus have a positive effect on the overall performance of the organization. Employee performance is the ability of an employee to achieve a specified task measured against predetermined standards of accuracy, completeness, cost and speed. Employees are the blood stream of any business and are the most valuable assets of every organization as they can make or break the organization's reputation and can adversely affect profitability. The culture and performance have been interrelated to each other based upon perfect association between business processes. The culture construct based upon operational complexity, has its basis towards different business processes.

Job Stress: job stress is taken from a condition of job environment which shows threat to anyone or individual. Some organizations may require achieving a certain work level, while their employees might be incapable to manage assigned works. Job stress has been identified generally as a social issue (Mizuno et al., 2006) which has a mixture of components which interrupts the workers psychologically and physically

Motivation: Motivation is described as the desire or willingness to perform something, stated by the activity or the capability to satisfy some requirements. The motivated employees belong to self-satisfied manners, self-achievement and commitment which are expected to create better work quality and respect to the organizational policies which extensively will materialize competitive advantage and efficiencies.

Communication: Communication refers to the act, contact or double interacts among the individuals in delivering information, meanings and understanding. Good internal communication leads to stronger employee engagement and therefore better organizational performance. Absenteeism, lower productivity, frustration and higher employee turnover are the results of lack of communication.

Training and Development: Employee training in organisations is a tool by which employers can shape employees' competencies and develop their potential. It is a systematic process of changing work behaviour and level of competencies *(Urbancova, H, Vrabcova, P 2021).* Training contributes a significant role in the growth of employee's performance. Those employees who attend the more training and development program need less supervision and direction. Training is justified for the employees as the success of organization depends on the worthy performance of personnel. By enhancing skills and knowledge of the employees through proper training, the organization improves work quality, increase organization productivity and effectiveness.

Interrelation between organizational culture and employee performance and behaviour

The culture and performance have been interrelated to each other based upon perfect association between business processes. The culture construct based upon operational complexity, has its basis towards different business processes. Linkage between Organizational Culture and Employee Performance Culture is largely invisible to individuals just as the sea is invisible to the fish swimming in it. Even though it affects all employees' behaviours, thinking, and behavioral patterns, individuals tend to become more aware of their organization's culture when they have the opportunity to compare it to other organizations (Amah, 2009). The culture of an organization sets the rules for employee behavior and guides the actions and behavioural patterns of the employees within the organization. Generally the organizational culture focuses on employee centricity, teamwork and continuous process improvement. The competitiveness of the organization is

actually reflected in its culture. A positive culture in the organization promotes healthy development of the organization which also mobilizes the performance of the employees, and makes them work with more enthusiasm. Researchers found a relationship between organizational culture and employee performance, with respect to success indicators such as revenues, sales volume, market share, and stock prices leading to realization of the organizations goal. It is important to have a culture that fits with the demands of the company‘s environment, so that it can improve the shared values of the company and also propel employee performance. organizing function to enhance employee performance and promote the realization of the organizational goals. Several researches have carried on to find out the way to optimize employee performance with a view to realize organizational goal have taken place in the past two decades. It has been argued that strategic group membership and associated collective behaviours are the primary sources of durable differences in firm profitability and effective employee performance (*Caves and Porter, 1977*). This implies that the collective behaviour of organization members which culture helps to control is important to its effectiveness. In relation to this argument, *Glasister and Buckley (1998)* identified organizational culture as one of the factors responsible for organizational effectiveness and employee performance. Six dimensions organizational culture viz. power distance, collectivism, uncertainty avoidance, masculinity, long term orientation and indulgence versus restraint affect the functioning of the organization as well as the behavior and performance of the employees. Openness, confrontation, collaboration, communication, trust, autonomy etc. are such factors of organizational culture that deeply affect the employee involvement, control their behavior and increase the performance level of the employees. Additionally it transform the employees' self-interests into something bigger which coincides with the organizational goal. organizational culture considered as one of the core determinants of the organizational success as it influences employee work behaviour and performance.

Concluding Remarks:

The different values and beliefs based upon employee performance help in organization‘s association. The organizational culture helps in internalizing harmonious management and employee relationship that leads to effective organizational performance. The productivity and culture of organization helps in improving performance. *Amah (2009)* concluded in his studies that organizational culture and employee performance have a significant relationship. The positive association between culture and performance helps in improving results of an organization. The norms and values of organization, based upon different cultures influence on work force, have increased the output of the work force. The attributes of organizational have significant positive influence over the performance of employees. organizational culture is an open system approach which has interdependent and interactive association with employee's performance.*(Wambugu L.W, 2014)* Organization culture and the employee performance show a significance correlation (Sheridan, 1992) and all the elements of organizational culture influence the employee performance positively and are statistically significant except in the case of Managing Change. In an organization, strong culture enables effective and efficient management of work force. Existence of positive association between culture and performance is useful to improve the overall results of organization. Employees' performance can be enhanced in a better way than what has expected by adopting individualism

work culture and nurture a sense of ambition in the mindset of employees at work *(Jie, Djubair, 2020).*Performance of employees and productivity can be improved and grown by increasing the amount of net profit. Different cultures developing and operating in the same company can also impact on employees overall performance and behavior. The culture of an organization binds together and provides a direction for the enterprise. The organizational culture relating to the widest range of staff performance is being work environment, and other dimension relating to the treatment of staff like supervision, job security etc. It is also related with different outcomes, such as commitment to the concern, job satisfaction and turnover intention *(Priyadharsan, Nithiya, 2020).* In order to sustain high standard of performance the employees should be effectively motivated, offer rewards and incentives scheme recognition and opportunities for realizing various individual goal and creations of aspirations which are not possible without a sound corporate culture. Employees should be involved in the process of goal setting. Proper strategies should be framed regarding this aspect. Values in the organizational culture make the employees feel and consider themselves as a part of the organization and stimulate them to behave and perform well towards the attainment of organizational goals.

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THE DIGITAL – VIRAL NEXUS – A STUDY OF THE 'SHARE RATE' OF DIGITAL ADVERTISEMENTS OVER SOCIAL MEDIA

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Abstract

In this metamorphosed world of marketing, we are well aware of the concept of Digital marketing which basically uses the internet and web based services for the purpose of spreading product and service related information among the mass. With the growth and advancement of internet usage and availability and affordability of web connectivity, the use and success of digital marketing is increasing by leaps and bounds. On the other hand we can define Viral Marketing to be a by-product of Digital Marketing where the advertisements on the digital platforms are received, shared and re-shared by viewers in such a way that the content gets viral over the web platform. This can be defined as a low-cost or no-cost mode of promotion using the digital platform. The conversion of a digital marketing message into a viral marketing message is done by a group of people who may be called "Netizen" or "Market Mavens". In a nutshell, therefore, the rise in number of Netizen or market mavens is the principle cause behind the greater usage and success of Digital Marketing & Viral Marketing. Keeping in mind the digital and viral marketing concepts in mind, the paper further examines the share –rate of advertisements over the social media in order to find out to what extent the digital gets viral.

Keywords: *Netizen, Market-mavens, Digital Marketing, Viral Marketing.*
***JEL Classification**: M30, M31, M37*

INTRODUCTION

The modern world of marketing is characterized by several changes in techniques and strategies and one such important change is found in the form of increased usage of digital marketing along with the traditional techniques of marketing. The companies nowadays do not only put stress on digital marketing but also take steps to ensure that their

digital marketing campaigns are seen and understood by more and more people. The phenomenon of spreading of the digital advertisements and their becoming widespread and famous over the web-space is termed as viral marketing. In simple words, when digital advertising stuff gets shared over the web space and gets noticed by more and more people, it takes a turn towards a viral marketing campaign. Almost all companies and organisations have their web pages and social marketing sites, which they use for the purpose of getting their products and services popular. A study has been conducted to show the extent to which digital advertisements are shared by viewers of social marketing sites, namely Facebook.

1. Objectives of the study:

This research is carried out with the following objectives:

1. To explain the process of how the digital becomes viral in the world of marketing.
2. To find out the general 'share rate' of advertisements over the social media.
3. To find out whether seasonal factors or special events/ situations have any effect on the share rate of advertisements over the social media.

3. Research Methodology:

For the purpose of research, both **primary** and **secondary** sources of data are used.

The primary data is collected using **Observation method**, where the digital advertisements shared over the social media have been carefully observed and some of their digital parameters are noted for careful analysis. (The primary data is collected over a period of 4 months from August 2020 to September 2020)

The secondary source includes a careful study of books, journals and reports for collection of relevant information.

4.1. Digital and Viral:

The present world has been experiencing several changes in marketing and promotional techniques & strategies. Among the most highly used modes of marketing to reach the potential customers, Digital Marketing even today continues to be a predominant one. ***Kotler, Kartajaya & Setiawan (2016)*** opine that digital marketing is a set of processes that employs all digital media and channels for the promotion of a product or a service or for building a digital brand. This helps marketers and companies to navigate easily and effectively in the web-connected world. The growth of web connectivity and the affordability of data plans have made the internet available for many people for longer duration. Factors like global reach, lower transmission cost, ease of access, easy shareability, better conversion rates etc have made Digital Marketing a highly effective mode of promotion. Nowadays it is clearly noticed that almost all organizations have their digital marketing departments which carefully look after promotion of the products and services of the company over the digital platform. These include e-mail marketing, search engine marketing, social media marketing, pay-per click advertising etc.

Now, once the promotional materials and advertisements are posted or floated in the digital space, it is to be ensured that they are seen by most number of people. This is necessary to ensure that the benefits from such digital advertisements are maximized and multiplied. Here comes in the concept of Viral Marketing. Viral Marketing refers to a concept in marketing management which actually takes the form of e-word of mouth marketing (e-WOM). Here, a marketing message originally posted or floated in the digital space is seen, shared and re-shared by people in such a way that the advertising campaign becomes viral over the internet. Here, people share the messages to others due to the

entertaining and interesting content in it , or for helping others with product and service related information etc.

4.2. Market Mavens & Netizens:

The introduction clearly explains that whenever a digital marketing message is liked by the audience and is shared again and again by the audience, it becomes viral marketing. This Viral Marketing can be termed as a by-product of Digital Marketing. The power of viral marketing depends on how much and to what extent it is spread and re- spread over the internet based platforms. The groups of people who carry out this sharing activity are known as "market mavens" and "netizens".

Feick & Price (1987) define market mavens as "diffuser of marketplace information". According to ***Clark & Goldsmith (2005)*** market mavens are the people (consumers) who come across a wide range of products and services and marketplace information and play an important role in sharing such information with other consumers. **Hauben & Hauben (1998)** explains that Netizen are the people active over the internet and help others by spreading information over the internet. They respect participation and knowledge sharing over the e-platform. According to **Sazuki** netizen are the people who use digital network in order to find information, for communication with others and to disseminate information with the objective to make the digital world a better and more informative place.

Thus it is clear that any Digital Marketing information available over the internet becomes viral due to the advertisement or the content being shared again and again. This is done by a group of people who continually search, find and share information with an objective to make the digital space more informative. This is how the Digital advertisements and marketing messages becomes Viral.

The following figure depicts in a nutshell, how the Digital gets Viral:

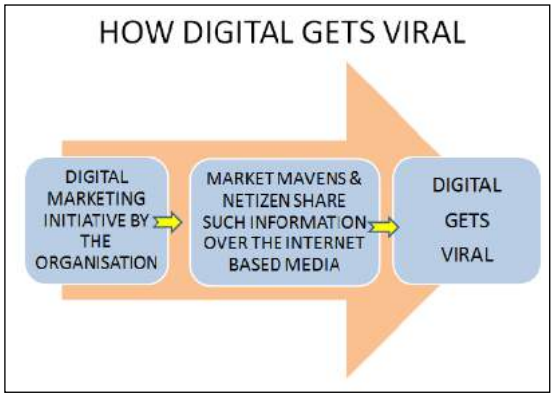

Figure 1: *How Digital gets Viral*

(Source: Prepared by the Researchers**)**

5.1. A Study of Share Rate of Advertisements uploaded on Social Media:

An observation was made for sponsored advertisements uploaded over the most popular social networking site-Facebook to find out the general rate at which such advertisements are shared by the people who have noticed & understood such advertisements. This rate is hereafter called the share rate.

Type of Data: Primary

Method of Data Collection: Observation Method

Period of Data collection: August 2020 – September 2020

Sample size: 150 digital advertisements shared as sponsored ads over Facebook

Method of sampling: 150 digital advertisements randomly selected over a period of two (2) months as they appeared on the Facebook news feed page.

Caution during sample selection/ inclusion: At the time of finally selecting the advertisement, for calculation of share rate, caution is taken to ensure that the advertisements are those which a considerable number of people have seen and understood. This is ensured as follows:

1. Only those advertisements having at least 100 like/love/care reacts (in Facebook terminology) are considered. This is a firsthand confirmation of the fact that such advertisements are not

only merely seen by the people but their contents have also been noted & understood by them.

2. Further, the advertisements are not selected on the basis of views, but on the basis of likes / love/ care reacts in order to ensure that the viewer has simply not scrolled past the advertisement, but has seen/ understood the message behind the advertisement.

Description of the sample: Out of the **150 selected advertisements**, **20 advertisements are relating to Covid Care products** like Lung care medicines, masks, throat infection tablets, immunity boosters, Covid treatment packages, oxygen concentrators, disinfectants, Covid insurance packages etc , whereas the remaining **130 are general products** like car paints, smart phones, computers, photography equipments, home paints, water purifiers, hair oils , cosmetics, MBA courses, hair removers, beauty products, real estate products, food products, financial products etc.

5.2. Calculation, Analysis and interpretation of results:

The **'Share rate' of all the 150 selected advertisements** is calculated by using the following formula:

Share Rate of a digital advertisement = No. of Shares ÷ No. of like, love or care reacts

Using the above formula, the following are found:

Table 1
Share Rate Statistics

	Share Rate (%) - All Selected Facebook Advertisements (150 Advertisements)	Share Rate (%) - Non Covid-19 Associated Advertisements (130 Advertisements)	Share Rate (%) - Covid-19 Associated Advertisements (20 Advertisements)
Mean	8.04	6.46	18.32
Median	5.97	4.89	12.68
S.D	7.53	4.98	12.19
Highest Share Rate	47.06	26.42	47.06
Lowest Share Rate	0.60	0.60	8.59

Source: *Prepared by the Researchers*

5.3. ANALYSIS OF RESULTS:

a. Highest & Lowest share rates

The **highest share rate of 47.06%** is noticed in case of Tata Nutrikorner (Home Remedy for Shortness of Breath) - which is a product for Covid 19 Care.

On the other hand the **lowest share rate of 0.60%** is found in case of Preganews- Pregnancy Detection Kit – which is a non Covid- 19 related product. The probable reason for its low sharing rate is perhaps due to the fact that the Indian population is still not comfortable in sharing these kinds of advertisements which are related to adulthood/ pregnancy etc.

b. Effect of Special events /situation on share rate of advertisements over social media:

The **mean share rate of non Covid – 19 associated advertisements is 6.46%,** whereas that of **Covid-19 associated advertisements is 18.32%.** This shows that during the occurrence of any special event/situation (in this case Covid -19 outbreak) people tend to share such event related advertisements much more in order to create awareness and

to ensure that this sharing may help the people in need.

c. **General Share Rates:**

In order to get an idea about the general share rate of advertisements over social media, it is best to consider the figures of Non- Covid – 19 related products. Here the results are considered to be best for developing a general idea because they are most likely to be not affected by any kind of seasonal variances / special fluctuations (like Covid 19 outbreak, in our study). Thus it can be concluded that the average share rate of advertisements of social media is about **6.46%** with highest rate of **26.42%** in case of Diabetes Care & Management (Diabetic Socks) & Lowest Of **0.60%** in case of Preganews- Pregnancy Detection Kit

Conclusion:

It can therefore be concluded that any type of marketing and promotional activity conducted using the digital media is called digital marketing. However, being digitally present is not enough nowadays. It is highly necessary that apart from being digitally present, a marketing campaign should also become digitally viral. A digital campaign becomes viral in nature only when market mavens and Netizen play a positive role by sharing the message or the advertising content again and again. The study has also found that people in general do tend to share advertisement which they come across the social media. The share rate of such advertisements can generally range from 0.60% to 26.42%. However special events, seasonal factors or specific situations may even push the share rate of such advertisements to as high as 47%.

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ANTENNAL DEFORMITIES OF CHIRONOMID LARVAE (DIPTERA: CHIRONOMIDAE) OCCURRING IN RICE FIELDS OF HOOGHLY DISTRICT, WEST BENGAL

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Abstract

Aquatic environments are under pressure by complex blends of contaminants whose effects are not always easy to assess. Due to this, organisms are sought in which early warning signs may be noticed upon the presence of potentially toxic xenobiotic substances. Thereby, the study evaluated the incidence of deformities and other morphometric variations in the antenna Chironomid larvae exposed to water from rice fields of Hooghly district. Morphological deformities of Chironomid (Diptera: Chironomidae) larvae have been proposed as a bioindicator of sediment quality and environmental stress. Chironomid larvae were collected from rice fields and physico-chemical parameters of water and sediment were recorded. Field data exhibit high incidence of deformity in Rishra compared with Serampore and Khanakul. Analysis of sediment and water indicate the presence of heavy metal pollutants like lead, zinc, copper and cadmium. These metals are responsible for deformation of chironomid larvae. Percentage of deformity positively correlated with heavy metals in industrial belt i.e. industrial effluents in the adjoining rice fields

Keywords: *Antenna, Chironomid larvae, Deformity, Pollution, Pesticides, sediment*.

INTRODUCTION

The chironomid larvae are considered as model organisms for bioassays because they spend most of their developmental occasion in sediments surface where they remain exposed to different toxicants; also, they are somewhat easy to culture and have a short life cycle. These criteria create them appropriate organisms for ecotoxicological monitoring (Warwick 1985; Vermeulen 1995; Al-Shami et al. 2010). Rice fields are a unique man-made environment supporting a rather wide diversity of aquatic organisms which is closely related to environmental changes of rice agro-ecosystems (Ali 1996; Al-Shami et al. 2008). Species of chironomidae have been recorded in rice fields throughout the world including

India, Australia, and the USA (Stevens et al. 2006). Routine agricultural practices, such as ploughing, draining, fertilizing, and pesticide applications and wet and dry climate cycles influence diversity of inhabiting aquatic communities (Che-Salmah et al. 1998). Morphological deformities in chironomid larvae represent more traditional and useful criteria for biological assessment of water quality. Hamilton and Sæther (1971) reported the relationship between morphological deformities in chironomid larvae and occurrence of heavy metals and pesticides within their habitat sediments. Bhattacharya et al. (1999) recorded high incidence of deformity in mouthparts of chironomid larvae occurring in the River Damodar flowing through the industrial zone of West Bengal, India. Such deformities could provide a useful tool for assessing aquatic pollution, specifically relating to industrial wastes and agricultural runoff (Wiederholm 1984; Warwick 1985, 1990; Warwick and Tisdale 1988; Janssens de Bisthoven et al. 1992; Vermeulen 1995; Hamalainen 1999; Bhattacharya et al. 2005; MacDonald and Taylor 2006; Al-Shami et al. 2010). Bhattacharya et al. (1999) demonstrated that high percentage of deformity in mouthparts due to heavy metal pollutants in the river water. Al-Shami et al.(2010) observed that metal induce morphological deformities in *Chironomus* spp. and also observed that concentration of metals, particularly Ni and Mn, were highly correlated with larval deformities. The objective of the present study was to investigate the use of chironomid mouthparts deformities to assess environment pollution in ricefields of Hooghly District.

Materials and Methods

The study was conducted at three locations in Hooghly District, West Bengal, India (**Fig. 1**): (A) Khanakul is mainly an agricultural area. (B) Serampore is a pre-colonial town on the right bank of the River Hooghly while (C) Rishra is an industrial town having polluted area with various types of periodically discharged industrial effluents into surrounding rice fields in addition to usage of large amount of pesticides in the rice fields.

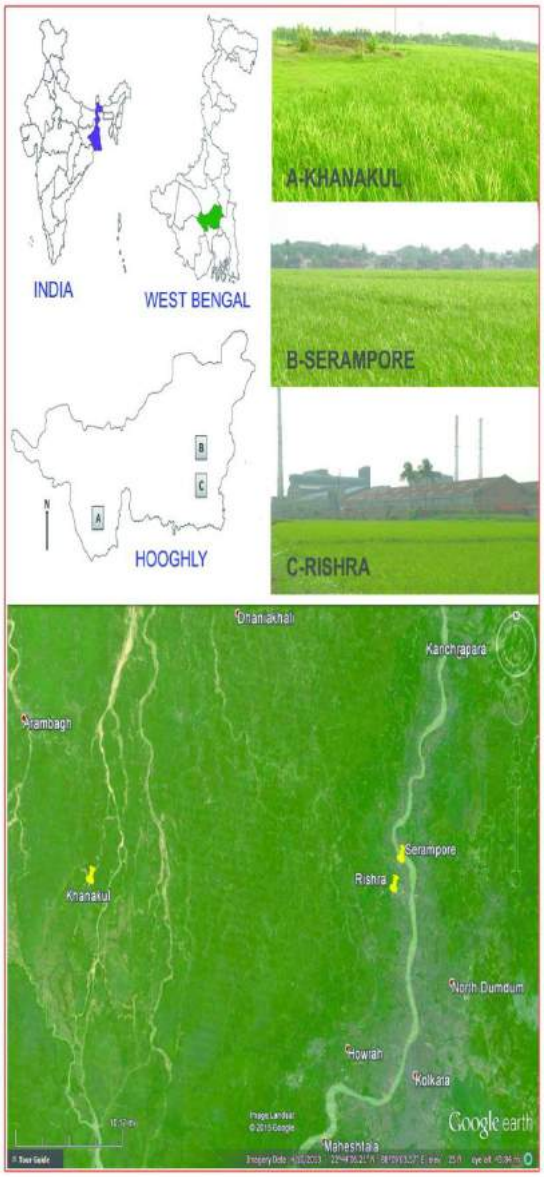

Fig.1. Map showing location of the three field sampling sites.

The samples were randomly collected from the three predetermined sites from July 2009 to September 2012. Adult chironomids were collected by sweep net around the sampling sites. Larvae were collected from mud bottom (10 cm) in the rice fields with mud scrapers and a scoop sampler (Chaudhuri and Chattopadhyay 1990). Each sample was transferred to a plastic bucket and

then washed with water and passed through a sieve (300-µm pore). The physico-chemical parameters were measured at each sampling site in the rice fields on monthly basis during 2009 and 2012 as described in Bhattacharya et al. (2006) and Chaudhuri and Chattopadhyay (1990). The soil samples were air dried at room temperature and was crushed and sieved using a 0.5 mm sieve. The concentration of heavy metals like Copper (Cu), Zinc (Zn), Lead (Pb) and Cadmium (Cd) of the soil samples were estimated by XRFS in the laboratory of, Geological Survey of India, Salt Lake, Kolkata.

Chironomid larvae, pupae, pupal exuviae and adults were preserved and stored in 70–90% ethyl alcohol. The phenol–balsam technique of Wirth and Marston (1968) was mainly adopted in preparation of microslides of material for study. The immature midge stages and adult chironomids were identified following Epler (1995) and Pinder and Reiss (1983). Deformities of chironomid larvae were evaluated after Warwick (1980) and Warwick and Tisdale (1988).

Deformity (% def.) was calculated with the following formula:-

$$\%\ \text{def} = \frac{\text{Number of deformed larvae}}{\text{Total number of larvae examined}} \times 100$$

% deformity of particular structure in mouth parts of deformed larvae calculated as follows:- % def of particular structure =

$$\frac{\text{No.of larvae having deformed parts}}{\text{Total number of deformed larvae}} \times 100$$

The data of each site were subjected to statistical analysis to find out the correlation, regression coefficient and Principal Component Analysis (PCA). Statistical analysis was done by using software SPSS 17 and Minitab 16.

Results and Discussion

Physical and chemical water and soil quality variables (means and standard deviations) of the three sites of rice field during 2009-2012 are presented in Table 1. These parameters varied in the three sampling sites. The mean water temperature was (1-2°C) higher in Rishra compared with the Khanakul and Serampore. The mean value of water pH in three sites ranges from 6.9-7.7. The Biological Oxygen Demand was higher in Rishra in compare to other two sites. Faria et al. (2007) demonstrated that water temperature and pH were higher in highly contaminated site compared to relatively less contaminated site. This indicates that Rishra site was more polluted than the other two sites.

Table 1

Physico-chemical characteristics (Mean ± SD) of three sampling sites during 2009-2012

PARAMETERS	KHANAKUL			SERAMPORE			RISHRA		
	Jul	Aug	Sept	Jul	Aug	Sept	Jul	Aug	Sept
Humidity	70.1± 1.45	68.7± 1.64	68.2± 1.48	67.4±1.71	66.8± 1.40	66.6± 1.35	68.5±2.12	67.6± 1.35	66.7± 1.16
Air Temp.(°C)	27.8± 0.79	27.6± 0.52	26.6± 0.70	28.3±0.95	28.1± 0.74	27.3± 0.82	30.2±0.79	29.3± 0.95	28.2± 1.03
Water Parameters									
Temp.(°C)	24.7±0.82	24.5±0.71	23.6±0.84	26.5±1.08	25.9±0.88	25.1±0.99	26.3±0.95	25.3±0.82	24.9±0.74
pH	6.9±0.16	7.3± 0.24	7.5± 0.12	7.4± 0.36	7.3± 0.25	7.5± 0.13	6.9± 0.30	7.5± 0.42	7.7± 0.33
DO (mg/l)	7.7± 0.33	7.9± 0.13	8.1± 0.21	7.3± 0.24	7.5± 0.13	7.4± 0.36	6.6± 0.37	7.6± 0.33	7.4± 0.18

BOD (mg/l)	4.5± 0.33	4.0± 0.18	4.0± 0.20	5.8± 0.32	4.0± 0.23	3.9± 0.23	5.0± 0.19	4.0± 0.20	4.4± 0.32
EC in µ simens/cm	139.50±8.43	135.00±10.89	132.25±14.86	430.25±38.42	431.25±35.72	406.75±42.52	1101.75±59.49	1113.00±49.49	1094.50±72.83
HCO_3^- (ppm)	107.25±4.86	107.25±3.20	110.00±5.89	173.25±10.31	173.50±5.26	173.75±10.60	449.75±11.18	454.75±5.00	455.75±9.03
SO_4^{-2} (ppm)	0.93±0.25	1.06±0.41	1.05±0.36	7.12±1.02	7.76±0.86	7.43±0.43	17.91±3.13	18.47±2.90	18.03±2.62
NO_3^- (ppm)	0.16±0.05	0.10±0.08	0.11±0.08	0.30±0.05	0.29±0.05	0.28±0.06	0.38±0.07	0.34±0.06	0.35±0.09
Cl^- (ppm)	29.75±3.69	30.25±1.71	31.00±2.94	42.50±4.80	44.00±3.47	43.50±5.07	70.50±4.20	70.50±1.73	72.00±2.94
Total Hardness(ppm)	126.25±7.50	128.75±6.40	127.75±6.85	190.75±6.50	191.50±3.00	192.50±5.00	427.50±8.66	426.75±9.54	429.50±11.00
Ca^{++} (ppm)	26.50±1.73	26.75±2.06	27.50±1.00	53.50±5.50	53.25±6.50	53.50±5.20	156.00±10.99	159.00±10.68	159.75±7.14
Mg^{++} (ppm)	14.60±1.42	14.55±1.32	14.45±1.71	16.80±1.76	16.63±1.88	16.30±2.45	11.18±2.89	11.43±3.07	11.20±3.71
Na^+ (ppm)	1.76±0.53	1.77±0.55	1.92±0.70	6.41±0.93	6.32±0.80	6.55±0.63	21.11±0.75	21.19±0.72	21.16±0.73
K^+ (ppm)	0.58±0.39	0.62±0.42	0.70±0.66	3.82±0.87	3.80±0.81	3.62±1.20	10.82±1.88	10.84±2.26	10.52±2.04
PO_4^{-3} (ppm)	0.08±0.07	0.11±0.08	0.09±0.09	0.27±0.05	0.30±0.07	0.25±0.12	0.80±0.13	0.92±0.21	0.95±0.27
SiO_2 (ppm)	1.57±0.58	1.63±0.55	1.32±0.47	2.22±0.97	2.36±0.84	2.13±1.06	12.32±1.56	12.56±1.50	12.26±1.71
TDS (ppm)	83.25±14.22	82.75±12.66	85.25±12.39	278.00±18.74	280.25±18.08	282.00±15.21	689.00±18.01	692.00±7.44	694.00±10.23
F^- (ppm)	0.42±0.12	0.43±0.14	0.44±0.08	0.58±0.12	0.57±0.12	0.56±0.10	0.58±0.07	0.58±0.11	0.54±0.15
Soil Parameters									
SiO_2 (%)	17.00±0.84	17.33±0.65	28.15±22.63	30.46±2.19	30.36±1.79	39.46±17.57	65.19±1.83	65.85±1.29	65.01±3.16
Cu (ppm)	33.00±3.37	32.50±4.80	33.50±3.51	38.00±4.32	38.25±3.86	38.50±1.00	64.00±4.55	63.00±8.29	63.75±1.50
Zn (ppm)	76.25±4.19	76.75±2.99	78.50±3.32	85.75±3.09	84.75±3.10	85.75±3.40	217.50±4.12	217.25±2.50	217.75±3.40
Pb (ppm)	29.50±2.08	29.00±2.16	29.00±1.41	40.25±1.70	40.00±2.70	38.50±3.00	79.00±2.58	79.50±2.38	78.50±2.08
Cd (ppm)	0.08 ± 0.02	0.09 ± 0.03	0.12 ± 0.04	0.11 ± 0.04	0.12 ± 0.03	0.17 ± 0.05	0.17 ± 0.07	0.23 ± 0.05	0.28 ± 0.04

A total of 13408 larvae comprising 6 taxa (Table 2) taken from three sampling sites of rice agro-ecosystem represent 4 taxa in Khanakul (16.96%), 6 taxa, Serampore (27.84%) and 4 taxa in Rishra (55.2%) during July 2009 to September 2012.

Table 2
Different taxa of Chironomid larvae collected from three sampling sites (A-Khanakul, B-Serampore and C-Rishra)

.

Taxa	2009			2010			2011			2012		
	A	B	C	A	B	C	A	B	C	A	B	C
Chironomus circumdatus	+	+	+	+	+	+	+	+	+	+	+	+
Chironomus javanus	-	+	+	-	-	+	-	+	+	-	+	+
Dicrotendipes pelochloris	+	+	-	+	-	-	+	-	-	+	+	-
Einfeldia sp.	-	-	+	-	+	+	-	+	-	-	+	+
Kiefferulus calligaster	+	+	+	-	+	+	-	+	+	+	+	-
Microchironomus tener	+	+	-	+	+	-	+	-	-	+	+	-

Morphological deformities were studied in 6 taxa of chironomid larvae of three main rice agro-ecosystems in Hooghly District. Out of the total deformity the highest percentage of deformities (53%) was found in Rishra, whereas 28% and 19% occurred in Serampore and Khanakul respectively (Fig 2).

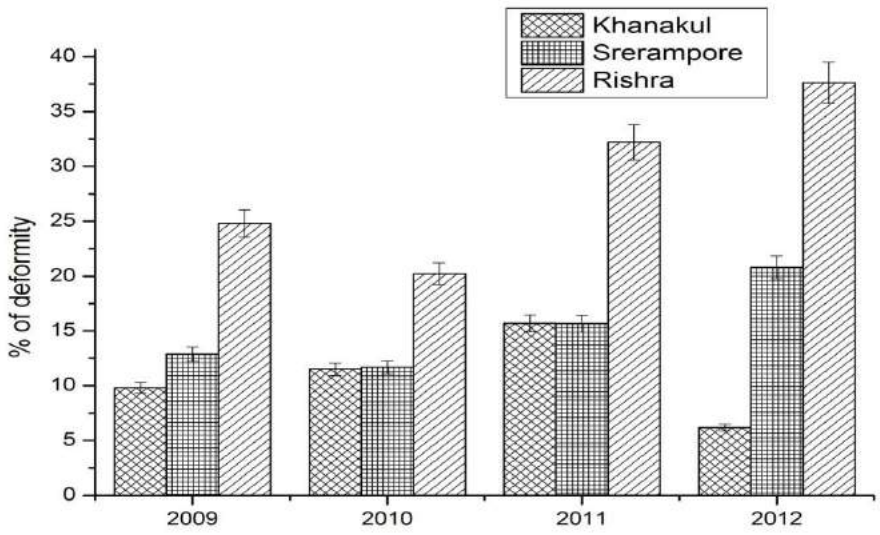

Fig. 2. Percentage of deformity incidence in three sampling sites.

Antenna five segmented, with third segment usually shorter than the fourth and bears number of mechanoreceptors and chaemoreceptors (Warwick 1985). The ratio of 5 segmented normal antennae was 25 (20-32): 7.7 (6.50-7.90): 2.4 (1.90-2.70): 2 (1.80-2.20): 1.5 (1.30-1.80), basal antennal segment 0.08 (0.07-0.10, n=15) long and 0.025 (0.020-0.028, n=15) wide, ring organ 0.008 (0.007-0.009, n=14) in diameter situated at the lower half of

basal segment, lauterborn organ of 0.007 (0.006-0.01, n=14) long with ring of hair like structure on the distal rim of second antennal segment. The antennal deformities observed in larvae of the sites showed various types of changes which included the loss of individual segment, appearance of new structures and additional segment and displacement or total loss of ring and lauterborn organs at times (Fig 3).

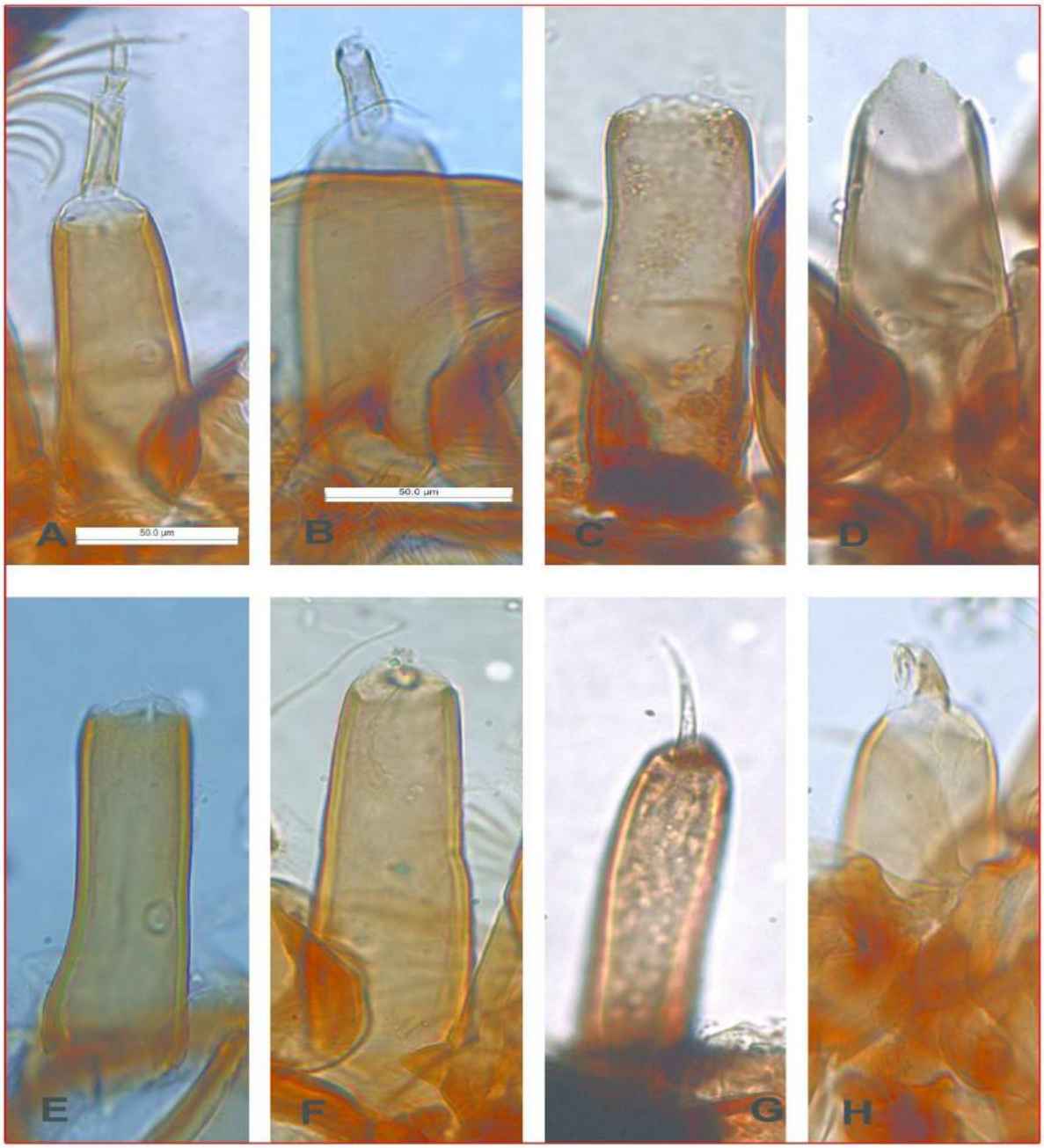

Fig. 3. A-Normal Antenna, B-H Deformed Antenna

Types and indexing of severity of antennal deformities

Severities of antennal deformities of larvae of the different sampling sites were not similar to establish the effect of pollutants and to quantify the subjective severity in numerical figures. Geometric increase of points allocated to types of severity following Warwick (1985) has been summarized in the table 3.

Table 3
Categorization and allocation of points for different types of antennal deformities (Warwick 1985).

Group	Type of deformities	*IMR$_{(mentum)}$ points
I	Basic classification categories (BCC)	1, 2, 4
	(a) Loss of genuine segment	1, 2, 4, 8, 16, 32
	(b) Presence of questionable segment	64
II	Reduction of length (LR)	1, 2, 3, 4, 5, 6, 7, 8
III	Displacement of Ring organ (Ro D)	1, 2
IV	Displacement of Lauterborn organ (Lo D)	1, 2, 3
V	Displacement of accessory blades (Ab D)	1, 2, 3
VI	Fusion of apical with basal segments (FA)	2
VII	Presence of unknown abnormal structures (AS)	1, 2

*IMR= index of morphological response

From the principal component analysis, it has been demonstrated that Cd has profound effects on the deformities of *C. circumdatus* larvae. However, the water quality parameter such as DO, EC and BOD has no direct effect on such deformation in Khanakul rice field sampling site. On the other hand, Serampore and Rishra rice field samples showed almost similar observation with some deviation in water quality parameters.

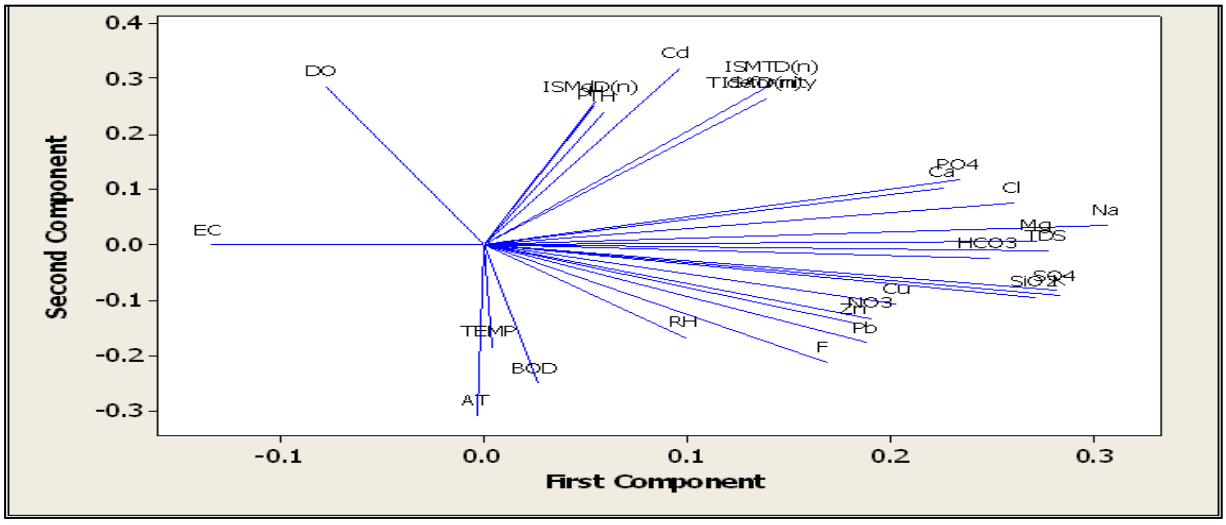

Fig. 4. Biplot of PCA showing the relationship of environmental parameters and index of severity of antennal deformity of *Chironomus circumdatus* larvae collected from Khanakul rice field sampling site.

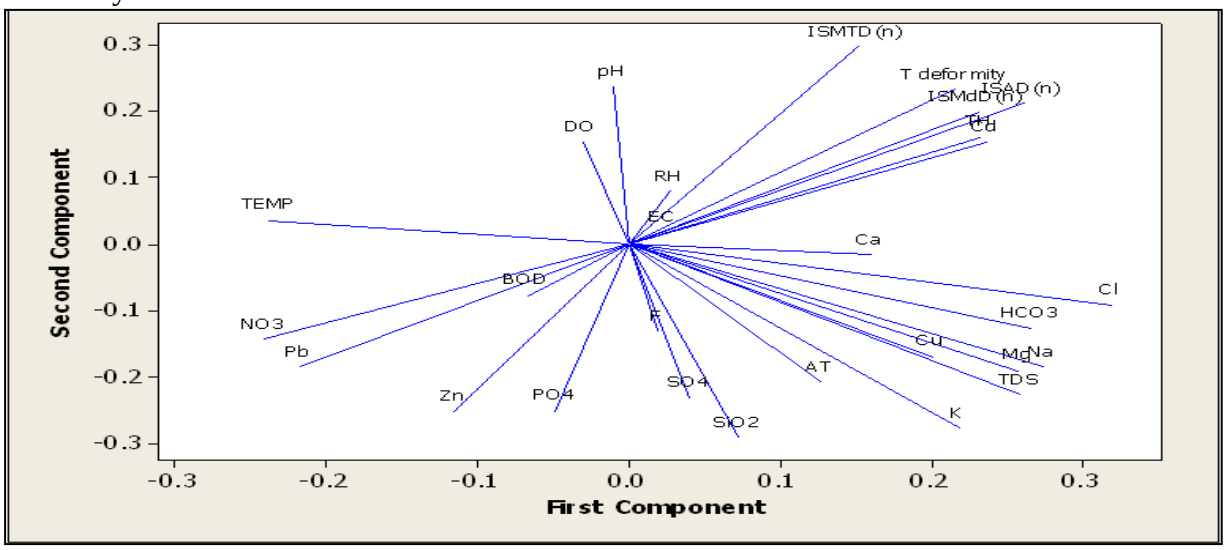

Fig. 5. Biplot of PCA showing the relationship of environmental parameters and index of severity of antennal deformity of *Chironomus circumdatus* larvae collected from Serampore rice field sampling site.

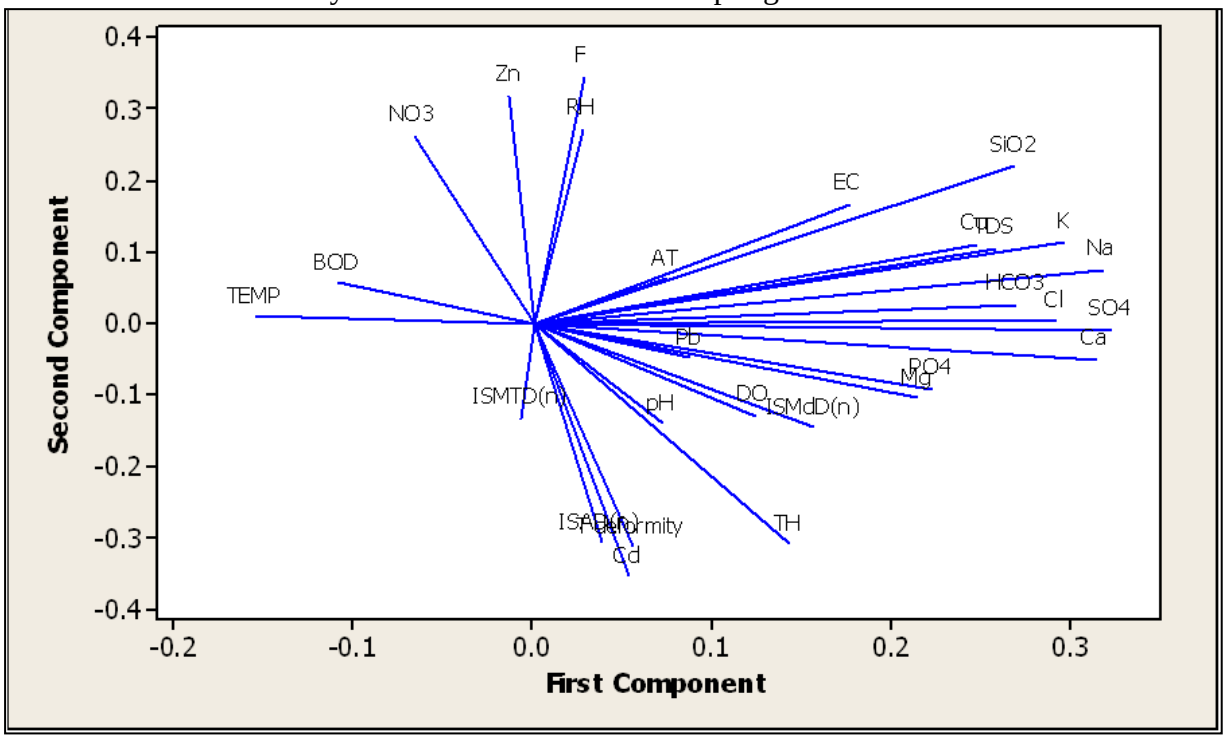

Fig. 6. Biplot of PCA showing the relationship of environmental parameters and index of severity of antennal deformity of *Chironomus circumdatus* larvae collected from Rishra rice field sampling site.

Conclusion

The occurrence of antenal deformities in the rice field of industrial region was relatively higher compared to non-industrialized agricultural areas. The antennal deformities of chironomid larvae are considered as indicators of environmental stress caused by water pollution. This study illustrates the use of chironomid deformities as tool for environmental degradation. The identified deformities are indicative of certain environmental stresses on the studied habitats and could provide as an empirical tool for their assessment. Based on bio-monitoring assessment, the study identifies the perturbations occurring in the rice field that are detrimental to inhabiting organisms, thus necessitating appropriate steps for improvement of water quality.

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