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The digital technology holds enormous potential for enabling entrepreneur to drive growth and reduce operational costs. The advanced growth of digital technology is enabling the adoption of enterprise collaboration tools that helps entrepreneur organize intellectual capital and facilitate knowledge sharing. Although there are many overlapping impact of digital technology in business and finance but they differ significantly in many areas. This conference provides an interdisciplinary forum for the presentation of innovative view and research oriented approach. This conference aspires to bring the researchers, business professionals and academicians from relevant disciplines on common platform to discuss the “Use of Digital Technology in Business, Financial Services and Education Systems; Challenges & Opportunities”

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A STUDY OF NPAS AND CREDIBILITY OF INDIAN BANKING SYSTEM

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ABSTRACT
Banking sector is the foundation of modern economic development. Its primary function is to lend funds as loans to various sectors. The persistent and adverse news of NPAs and bank stocks has rattled our banking sector, as well as the economy. This paper is an attempt to know how NPAs of banks affect the EPS, RoE and Stock prices, in recent times. Though ripples in the market with respect to stock prices cannot be ruled out, the increasing NPAs of banks, deteriorates the earning power of banks as reflected by declining EPS, RoE which depresses the stock prices.

Keywords: Economy, Banks, NPAs, Stock price

INTRODUCTION
A well developed financial system enables smooth flow of savings and investments and hence, supports economic growth. Banking sector is the foundation of modern economic development. Its primary function is to lend funds as loans to various sectors such as agriculture, industry, personal and housing etc. and to received deposits. Receiving deposit involves no risk, since it is the banker who owes a duty to repay the deposit, whenever, it is demanded. On the other hand lending always involves much risk because there is no certainty of repayment. The assets of the banks which don't perform i.e. don't bring any return are called Non Performing Assets (NPA) or bad loans.

According to a research report by rating agency CARE, as reported in Times of India, December 28, 2017 "India's NPA ratio is the highest in the group of high NPA's nations'. The report classifies major economies into four blocks – very low NPA, low NPAs, medium level NPA and high NPAs. The 9.85 per cent ratio of bad loans in banks has put India in the group of these nations that have very high NPAs"

Indian banks started recognizing stressed loans as NPAs only after former RBI governor Raghuram Rajan introduced asset quality recognition norms forcing banks to classify stressed borrowers as defaulters of the NPAs of Public Sector Banks, a significant part of which has been fraudulently obtained as advances by debtors from banking system and transferred abroad- from where they may never be recovered.

The situation was so worse that huge amounts of loans were written off by the public sector banks in recent times (Table 1). Several state run banks have reported huge losses in past few quarters.

Table-1: Writing Off Bad Debts

Top 10 Banks in Writing Off Bad Debts in 2017			Top 10 Banks in Writing Off Bad Debts with respect to the Percentage of Net Loans		
S. No.	**Bank**	**(in Rs. Crore)**	**S. No.**	**Bank**	**(Percentage)**
1	ICICI Bank	421593	1	Indian Overseas Bank	13.99
2	Canara Bank	344067	2	Bank of Maharashtra	11.76
3	Punjab National Bank	104109	3	Dena Bank	10.66
4	Punjab & Sind Bank	55370.12	4	Central Bank of India	10.20
5	Bank of India	52044.52	5	United Bank of India	10.02
6	IDBI Bank	44752.59	6	Oriental Bank of Commerce	8.96
7	Bank of Baroda	42718.70	7	Allahabad Bank	8.92
8	Indian Overseas Bank	22859.27	8	Corporation Bank	8.33
9	Allahabad Bank	20687.83	9	Andhra Bank	8.00
10	Andhra Bank	17669.98	10	Punjab National Bank	7.81

Source: https://economictimes.indiatimes.com/markets/stocks/news/indian-oversea-bank-tumbles -4-post-q4-numbers/articleshow/58729475.cms-18th May, 2017

REVIEW OF LITERATURE
Many published articles are available in the area of non-performing assets and a large number of researchers have studied the issue of NPAs in banking industry Rao and Patel. (2015) give an overview of types of NPAs and its causes. They have applied ANOVA test to find out whether there is any significant difference between ratio of Gross NPA to Gross Advances. The findings reveals that the percentage of Gross NPA to Gross Advances is

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increasing for public banks as compared to private and foreign banks. Singh. (2016) study the status, factors contributing and trend of NPAs in Indian & Scheduled Commercial banks for a period of 14 years. The gross and net percentage of NPAs has shown a downward trend from 2001 to 2008 and upward trend after 2008. The study reveals that among various channels of NPA recovery SARFAESI Act is the most effective channel. Rathod, Malpani and Sharma. (2016) study the impact of NPAs on banks and a comparison of various recovery channels of NPAs. The findings reveal that because of mismanagement in banks there is a positive relation between total advances and NPAs of banks. They have listed various strategies by which banks can curtail NPAs. Madhvi and Srivastava. (2017) examine the relationship between NPA announcements by banks and impulsive movement in stock price. Correlation studies does not establish any significant relationship between NPA announcements by banks and impulsive movement in stock price, but the panel-data analysis shows a negative relationship between the two. The result is utilized to develop swing trading model and get benefit out of it. Bhattacharya, Sinha and Ghosh. (2017) throw light on NPAs and the prices of bank stocks in recent times. The study is based on data of 21 public sector banks NPAs, stock prices, sensex and bankex. The findings of the study reveal that there is no significant correlation between NPAs and stock prices, though transient effect is noted. The stock price move in its own way depending on current sentiment with regard to respective bank stock and in the process sometimes disregards the market sentiment and sometimes obey it.

The persistent adverse news of NPAs and bank stocks has rattled our banking sector as well as the economy. This paper is an attempt to know how NPAs of banks affect the stock prices.

OBJECTIVES OF THE STUDY

To study the effect of increasing NPAs on Earnings Per Share (EPS) Returns on Equity (RoE) and Yearly Closing Price (2010-11 – 2016-17)

HYPOTHESIS

H_0: Net Non Performing Assets (NNPAs) do not effect EPS, RoE and Yearly Closing Price.

H_1: NNPAs do effect EPS, RoE and Yearly Closing Price

COLLECTION OF DATA

Data has been collected from reliable secondary sources like Annual Reports of banks, money control.com, indiabulls.com, RBI websites and various other reputed websites.

METHODOLOGY

The data of NNPAs, earning power, return on equity and yearly closing price of shares of 26 banks has been collected on judgmental sampling basis.

FINDINGS

1. **Net Non Performing Assets (NNPAs):** NNPAs is the amount of gross NPAs less (1) interest debited to borrowal and not recovered and not recognized as income and kept in interest suspense (2) amount of provisions held in respect of NPAs and (3) amount of claim received and not appropriated.

Table 2 shows NNPAs as percentage of total advances of 26 banks for 9 years:

Table-2: The Year wise NPAs as percentage of Total Advances of 26 banks for the year 2009-2017 (Percentage)

Sr. No.	Name of Bank	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016 - 17
1	State Bank of India	1.78	1.79	1.72	1.63	1.82	2.1	2.57	2.12	4
2	State Bank of Bikaner & Jaipur	-	-	1	2	2	3	3	3	-
3	State Bank of Mysore	-	-	1.38	1.93	2.69	3.29	2.16	4.18	-
4	State Bank of Travancore	-	-	1	2	1	3	2	3	-
5	Allahabad Bank	0.8	0.72	0.66	0.79	0.98	3.17	4.2	4	8.92
6	Andhra Bank	0.15	0.18	0.17	0.38	0.91	2.45	3.1	2.9	8
7	Bank of Baroda	0.47	0.31	0.34	0.35	0.54	1.28	1.5	1.9	4.72
8	Bank of India	0.52	0.44	1.31	0.91	1.47	2.06	2	3.4	6.9
9	Bank of Maharashtra	0.87	0.79	1.64	1.32	0.84	0.52	2	4.2	11.76
10	Canara Bank	0.84	1.09	1.06	1.1	1.46	2.18	2	2.7	6.33
11	Central Bank of India	1.45	1.24	0.69	0.65	3.09	3.9	4	4	10.2
12	Corporation Bank	0.32	0.29	0.31	0.46	0.87	1.19	2.3	3.1	8.33
13	Dena Bank	0.94	1.09	1.21	1.22	1.01	1.39	2.4	3.8	10.66
14	Indian Bank	0.24	0.18	0.23	0.53	1.33	2.26	2.3	2.5	4
15	Indian Overseas Bank	0.6	1.33	2.52	1.19	1.35	2.5	3.2	5.7	13.99

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16	Oriental Bank of Commerce	0.99	0.65	0.87	0.98	2.21	2.27	2.8	3.3	8.96
17	Punjab & Sind Bank	0.370.	0.32	0.36	0.56	1.19	2.16	3.4	3.6	7.51
18	Punjab National Bank	64	0.17	0.53	0.85	1.52	2.35	2.9	4.1	7.81
19	Syndicate Bank	0.97	0.77	1.07	0.97	0.96	0.76	1.6	1.9	5.21
20	Union Bank of India	0.17	0.34	0.81	1.19	1.7	1.61	2.3	2.7	6.57
21	United Bank of India	1.1	1.48	1.84	1.42	1.72	2.87	7.2	6.2	10.02
22	Vijaya Bank	0.57	0.82	1.4	1.52	1.72	1.3	1.6	1.9	4.36
23	IDBI Bank	1.3	0.92	1.02	1.06	1.61	1.58	2.5	2.9	13.21
24	Axis Bank			0.26	0.25	0.32	0.4	0.44	0.7	2.11
25	HDFC Bank			0.2	0.2	0.2	0.3	0.2	0.28	0.33
26	ICIC Bank			1.11	0.73	0.77	0.97	1.61	2.67	4.89

Source: Annual Report of Banks for 2008-09, 2009-10, 2010-11, 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17.

Table 2 reveals that of the 26 banks only 9 banks managed to control or lowered NNPAs in the year 2012 and 2013 respectively. From that time onwards the NNPAs of all these banks have escalated. In the year 2016-17, 6 banks have alarmingly high percentage, which is more than 10 per cent. Indian Overseas Bank tops the list with 13.99 percent, followed by IDBI, Bank of Maharashtra, Dena Bank, Central Bank of India and United Bank of India. HDFC Bank has managed to occupy lower rug of ladder of banking in relation to NNPAs.

2. **Earnings Per Share:** This is portion of a company's profit allocated to each outstanding share of common stock. EPS serve as a indicator of a company's profitability. EPS is calculated as EPS = (Net Income – Dividends of Preferred Stock) / Average Outstanding Shares. Table 3 shows the EPS of 26 banks for a period of 7 years.

Table-3: The Year wise NPAs as percentage of Total Advances of 26 banks for the year 2009-2017 (Percentage)

Sr. No.	Name of Bank	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016 -17
1	State Bank of India	130.15	174.46	206.2	145.88	17.55	12.82	13.15
2	State Bank of Bikaner & Jaipur	110.18	93.15	104.32	104.53	110.98	121.51	-
3	State Bank of Mysore	106.97	78.88	88.91	42.52	85.14	74.53	-
4	State Bank of Travancore	145.55	102.093	123.01	60.87	56.63	47.5	-
5	Allahabad Bank	29.88	7.33	23.7	21.52	10.87	-12.11	-4.22
6	Andhra Bank	22.64	24.03	23.04	7.39	10.59	7.96	2.56
7	Bank of Baroda	107.98	121.41	106.05	105.44	15.37	-23.42	6
8	Bank of India	45.48	46.6	46.08	42.45	25.67	-74.5	-14.78
9	Bank of Maharashtra	6.86	7.31	11.48	4.6	4.24	0.86	-11.75
10	Canara Bank	90.88	74.1	64.83	52.86	56.87	-51.8	18.78
11	Central Bank of India	30.99	7.24	9.72	1.2	3.66	-6.61	-12.82
12	Corporation Bank	95.41	101.67	93.82	33.53	0.82	0.6	0.61
13	Dena Bank	18.35	22.94	23.15	10.26	4.73	-14.02	-10.97
14	Indian Bank	39.88	40.65	36.79	24.93	20.93	14.81	29.27
15	Indian Overseas Bank	17.33	13.18	6.14	4.87	-3.68	-19.86	-15.78
16	Oriental Bank of Commerce	51.51	39.13	45.51	38	25.93	4.86	-31.61
17	Punjab & Sind Bank	23.59	19.27	13.35	10.92	3.59	8.39	5.02
18	Punjab National Bank	139.94	144	134.31	92.32	4.06	-20.38	5.78
19	Syndicate Bank	18.28	21.82	33.3	27.4	26.69	-24.82	4.21
20	Union Bank of India	39.71	32.46	36.16	26.91	27.67	20.5	8.33
21	United Bank of India	15.21	17.52	10.46	8.46	3.78	-3.36	1.57
22	Vijaya Bank	11.08	11.72	11.82	4.84	5.11	4.44	7.51
23	IDBI Bank	16.76	15.89	14.12	6.99	5.87	-21.33	-24.36
24	Axis Bank	82.54	102.67	110.68	132.33	31.23	34.93	16.48
25	HDFC Bank	84.4	22.02	28.27	35.34	40.55	46.33	57.57
26	ICIC Bank	44.72	56.08	72.17	84.94	19.04	15.83	15.85

Source: Annual Reports of Banks for 2010-11, 2011-12, 2012-13, 2013-14,2014-15, 2015-16 & 2016-17.

From Table 3, it can be concluded that over the period of 7 years the EPS of all the 26 banks have shown a decline. In the year 2017, the highest EPS is of HDFC Bank followed by Indian Bank and Canara Bank. Out of 26 banks, 8 banks have a negative EPS.

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3. **Return on Equity (RoE):** It is the amount of net income returned as a percentage of shareholders equity. RoE measures a corporation's profitability by revealing how much profit a company generates with the money the shareholders have invested. RoE is expressed as a percentage and calculated as Return on Equity = Net Income / Shareholder's Equity. Table 4 shows RoE of 26 banks for a period of 7 years.

Table-4: Year wise Returns on Equity of 26 Banks from 2011-2017 (in Percentage)

Sr. No.	Name of Bank	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016 - 17
1	State Bank of India	12.83	16.18	15.49	10.41	11.01	7.15	0.12
2	State Bank of Bikaner & Jaipur	20.91	18.59	16.36	14.46	13.67	13.34	-
3	State Bank of Mysore	15.77	9.62	10	6.18	8.62	7.03	-
4	State Bank of Travancore	23.09	13.93	14.94	6.53	6.28	5.75	-
5	Allahabad Bank	18.34	19.17	10.87	10.06	5.2	-5.15	-1.86
6	Andhra Bank	23.25	19.04	16.1	5.11	6.96	5.28	1.84
7	Bank of Baroda	23.65	20.87	15.55	14.06	9.8	-11.99	4.24
8	Bank of India	15.85	13.96	12.29	10.81	6.36	-18.84	-4.39
9	Bank of Maharashtra	8.77	8.52	12.76	4.87	5.98	1.39	-16.61
10	Canara Bank	22.78	15.38	12.32	9.5	9.14	-8.03	4.05
11	Central Bank of India	12.43	3.92	6.32	-7.69	3.95	-7.71	-13.4
12	Corporation Bank	21.79	19.53	16.08	5.76	5.68	-4.78	4.94
13	Dena Bank	22.19	19.75	15.83	8.55	4.08	-14.52	-14.39
14	Indian Bank	18.77	17.15	13.99	9.11	8.25	5.41	10.06
15	Indian Overseas Bank	12.73	9.88	4.47	4.06	-3.21	-21.31	-27.52
16	Oriental Bank of Commerce	15.55	9.91	10.74	8.7	6	1.7	-8.38
17	Punjab & Sind Bank	15.9	10.66	7.66	6.25	2.29	5.81	3.32
18	Punjab National Bank	22.14	19.4	15.56	9.91	8.44	-8.8	2.79
19	Syndicate Bank	16.54	16.33	21.1	14.94	11.18	-11.41	2.51
20	Union Bank of India	18.83	12.79	13.4	9.27	9.07	6.32	2.43
21	United Bank of India	11.74	11.93	5.45	-21.73	4.61	-4.64	3.12
22	Vijaya Bank	12.63	11.54	10.83	7.27	7.29	5.54	9.51
23	IDBI Bank	13.33	11.79	9.31	5.14	3.92	-13.7	-19.55
24	Axis Bank	19.12	20.3	18.75	17.64	17.87	16.95	7.19
25	HDFC Bank	12.64	13.43	14.32	15.86	15.48	14.56	14.83
26	ICIC Bank	11.43	13.11	14.77	15.21	15.2	11.39	10.25

Source: Annual Report of Banks for 2010-11, 2011-12, 2012-13, 2013-14, 2014-15, 2015-16 & 2016-17

The earning power of shares has come down in the last seven financial years. In 2017, HDFC is the only bank whose RoE has increased from 12.64 per cent to 14.83 per cent. For all other banks RoE has shown a decline. In the year 2017, 8 banks show a negative RoE.

4. **Yearly Closing Price:** The closing price is the final price at which a security is traded on a given day. The closing price represents the most up-to-date valuation of a security until trading commences again on the next trading day. Table 5 shows the yearly closing price of 26 banks.

Table-5: The Yearly Closing Price of Security of 26 banks from 2011 to 2017 (in Rupees)

Sr. No.	Name of Bank	1.1.2011	1.1.2012	1.1.2013	1.1.2014	1.1.2015	1.1.2016	1.1.2017
1	State Bank of India	281.19	161.91	238.55	176.65	311.85	224.45	250.2
2	State Bank of Bikaner & Jaipur	304	449.85	317.6	656.9	524.65	678.05	771.85
3	State Bank of Mysore	420.65	662	570	570	424.45	535.6	606.05
4	State Bank of Travancore	434.25	547.68	401.76	497.47	418.7	531.95	608.75
5	Allahabad Bank	114.9	170	95.05	132.8	69.15	60.2	75.65
6	Andhra Bank	79.95	117.85	62.7	94.6	65.65	47.45	60.2
7	Bank of Baroda	133.07	173.29	129.11	216.78	156.65	154.4	166
8	Bank of India	266.35	343	237.95	301.8	114.95	107.25	171.85
9	Bank of Maharashtra	38.45	60.35	36	42.8	31.7	28.65	21.95
10	Canara Bank	354.54	483.32	274.54	436.44	226.58	255.71	368.2
11	Central Bank of India	65.8	83.85	51.15	91.55	71.1	83.5	74.9
12	Corporation Bank	70.01	92.19	52.19	67.11	42	41.8	39.85
13	Dena Bank	48.85	114.75	60.8	61.75	40.7	32.65	24.8

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14	Indian Bank	184.95	119.3	116.15	217.95	115.5	220.85	385.6
15	Indian Overseas Bank	73.35	85.65	51.55	62.2	31.05	24.25	22.3
16	Oriental Bank of Commerce	196.3	350.15	228.85	339.55	140.35	106	123.6
17	Punjab & Sind Bank	60.2	72	43.9	62.7	38.85	46.9	48.75
18	Punjab National Bank	156.16	174.26	125.29	219.1	115.7	115.45	174.1
19	Syndicate Bank	68.4	128.2	94.6	131.55	87.75	61.55	80.5
20	Union Bank of India	169.85	274.35	130.4	239.4	148.65	12.1	148.3
21	United Bank of India	46.5	80.4	32.15	41.2	21.9	19.95	17.6
22	Vijaya Bank	45.2	62.3	39.3	50.35	34.05	47.45	70.8
23	IDBI Bank	77.95	111.45	66.45	73.15	88.85	69.4	60.05
24	Axis Bank	161.62	271.31	259.91	502.4	449.1	449.95	554.6
25	HDFC Bank	426.85	678.6	665.65	951.6	1082.15	1206.2	1856.7
26	ICIC Bank	124.48	206.95	199.77	321	237.59	232.09	5 312.8

Source: https:/www.moneycontrol.com/

As seen in Table 5, there is a variation in the movement of the stock prices.

For simplicity and better understanding, of aforesaid banks, have placed them in two groups on the basis of their NPAs

- Top 6 Banks with NNPAs more than 10 per cent (Year 2016-17)
- Top 6 Banks with NNPAs less than 10 per cent (Year 2016-17)

Table-6

Table 6A: Top 6 Banks with NNPAs more than 10 per cent (Year 2016-17)			**Table 6B: Top 6 Banks with NNPAs less than 10 per cent (Year 2016-17)**		
S. No.	**Bank**	**NNPAs**	**S. No.**	**Bank**	**NNPAs**
1	Bank of Maharashtra	11.76	1	Allahabad Bank	8.92
2	Central Bank of India	10.2	2	Corporation Bank	8.33
3	Dena Bank	10.66	3	Oriental Bank of Commerce	8.96
4	Indian Overseas Bank	13.99	4	Punjab National Bank	7.81
5	United Bank of India	10.02	5	Punjab and Sind Bank	7.51
6	IDBI Bank	13.21	6	Bank of India	6.9

Source: Annual Report of above banks 2016-17

In both tables (6A & 6B) we have Public Sector Banks.

Table 7 presents the trend of NNPAs, EPS, RoE and Yearly Closing Price of Selected Banks for a period of 4 years (2013-14 to 2016-17)

Sr. No.	Name of the Bank	NNPAs (in Percentage)				EPS (In Rupees)				RoE (in Percentage)				Yearly Closing Price (in Rupees)			
		2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
1	Bank of Maharashtra	.52	2	4.2	11.76	4.6	4.24	0.86	-11.75	4.87	5.98	1.39	-16.61	42.8	31.7	28.65	21.95
	Trend	Increase				Decrease				Decrease				Decrease			
2	Central Bank of India	3.9	4	4	10.2	1.2	3.66	-6.61	-12.82	-7.69	3.95	-7.71	-13.4	91.55	71.1	83.5	74.9
	Trend	Increase				Decrease				Decrease				Decrease			
3	Dena Bank	1.39	2.4	3.8	10.66	10.26	4.73	-14.02	-10.97	8.55	4.08	-14.52	-14.39	61.75	40.7	32.65	24.8
	Trend	Increase				Decrease				Decrease				Decrease			
4	Indian Overseas Bank	2.5	3.2	5.7	13.99	4.87	-3.68	-19.86	-15.78	4.06	-3.21	-21.31	-27.52	62.2	31.05	24.25	22.3
	Trend	Increase				Decrease				Decrease				Decrease			
5	United Bank of India	2.87	7.2	6.2	10.02	8.46	3.78	-3.36	1.57	-21.73	4.61	-4.64	3.12	41.2	21.9	19.95	17.6
	Trend	Increase				Decrease				Decrease				Decrease			
6	IDBI	1.58	2.5	2.9	13.21	6.99	5.87	-21.33	-24.36	5.14	3.92	-13.7	-19.55	73.15	88.85	69.4	60.05
	Trend	Increase				Decrease				Decrease				Decrease			
7	Allahabad Bank	3.17	4.2	4.0	8.92	21.52	10.87	-12.11	-4.22	10.06	5.2	-5.15	-1.86	132.8	69.15	60.2	75.65
	Trend	Increase				Decrease				Decrease				Decrease			
8	Corporation Bank	1.19	2.3	3.1	8.33	33.53	0.82	0.6	0.61	5.76	5.68	-4.78	4.94	67.11	42	41.8	39.85
	Trend	Increase				Decrease				Decrease				Decrease			

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Sr. No.	Name of the Bank	NNPAs (in Percentage)				EPS (In Rupees)				RoE (in Percentage)				Yearly Closing Price (in Rupees)			
		2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17	2013-14	2014-15	2015-16	2016-17
9	Oriental Bank of Commerce	2.27	2.8	3.3	8.96	38	25.93	4.86	-31.61	8.7	6	1.7	-8.38	339.55	140.35	106	123.6
	Trend	Increase				Decrease				Decrease				Decrease			
10	Punjab National Bank	2.35	2.9	4.1	7.81	92.32	4.06	-20.38	5.78	9.91	8.44	-8.8	2.79	219.1	115.7	115.45	174.1
	Trend	Increase				Decrease				Decrease				Decrease			
11	Punjab & Sind Bank	2.16	3.4	3.6	7.51	10.92	3.59	8.39	5.02	6.25	2.29	5.81	3.32	62.7	38.85	46.9	48.75
	Trend	Increase				Decrease				Decrease				Decrease			
12	Bank of India	2.06	2.0	3.4	6.9	42.45	25.67	-74.5	-14.78	10.81	6.36	-18.84	-4.39	301.8	114.95	107.25	171.85
	Trend	Increase				Decrease				Decrease				Decrease			

FINDINGS

As seen in Table 7, the NNPAs of all the 12 banks have shown an increasing trend since 2013-14, as many well known reputed companies have become defaulters in paying their debt obligations. The banks have also started facing the heat as companies shown inability to service the debt, reflected by declining EPS and RoE. 8 out of 12 banks show negative EPS and RoE. The growing NNPAs has also guided the direction of the price of the stocks, as shown by Table 7. Though ripples in the market with respect to stock prices, cannot be ruled out, the deteriorating earning power of these banks as reflected by declining EPS, with rising NNPAs has played a significant role in directing a downward movement of stock prices. Thus increasing NNPAs of banks depress and show a downward trend of EPS, RoE and Yearly Closing price. The study concludes by accepting H_1 that NNPAs effect EPS, RoE and Yearly Closing price of bank stocks.

CONCLUSION

High NPAs in Indian Banking system, trembles the confidence of investors, depositors and lenders. It has deleterious effect on the deployment of credit and affects the whole economy. Infact high level of NPAs in Indian banks is reflection of the state of health of the industry and trade. It is necessary to trim down NPAs to improve the financial health in the banking system.

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APPLICATION OF ZHOU'S DIFFERENTIAL TRANSFORM METHOD TO MECHANICAL ENGINEERING FOR DAMPED MOTION OF SPRING

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ABSTRACT

The scope of present paper aims in finding analytical series solution of higher order Homogeneous and non-homogeneous differential equations of vibration of string by Zhou's differential transform method, which will be called as ZDTM hence forth throughout the paper. This method can be applied to all engineering fields initial value problems.

Medical as well as Economics. The example quoted below, is applied to Mechanical engineering. Examples of spring mass system by Hooke's Law the solution generated by exact and ZDTM method are almostly the same. Specific …..… is that these are more accurate also.

Keywords : Ordinary differential equations of second order, Homogeneous, Nonhomogeneous, IVP, ZDTM.

1.0 INTRODUCTION

The fundamental base of ZDTM is based on the Tayler's series. A large verity of methods such as exact, Laplace transform, Numerical method are also available for solving the differential equations. This method sure really cumbersome as it requires intensive linearization computationally and lot of trial and error method requires lot of symbolic representation.

Zhou has suggest technique for solving differential equations. This technique was used for solving linear and nonlinear initial value problem in electrical circuits, Later this concept may be applied to science, economics, management, which transfer transform the equation to second order linear differential equations.

Application of Zhou's Differential Transform method to Mechanical Engineering for damped motion of spring.

Kou B (2005) has used this method to find Numerical solution of the free convection problem [l], Arikoglu A and Ozkol have applied ZDTM to obtain Numerical solutions of differential equation [2], Further Hassan (2004) has used this method to obtain solution of double Rayleigh beam-system due to uniform partially distributed moving load [3], Edeki et.al (2014) has used this method to evaluate solution of second order ordinary differential equations [4], Thangmoon (2010) has used ZDTM to find numerical solution of ordinary differential equations [5], Batiha (2011) has used ZDTM to obtained the Taylor's series as solution of linear, non linear system of ordinary differential equations [6], Hasan (2008) have find out series solution and that solution compared with ZDTM method for linear and non-linear initial value problems and proved that ZDTM is reliable tool to find numerical solution [7], Chen and Liu (1998) has applied ZDTM for steady nonlinear beat conduction problems [8], Zeng (2004) has applied ZDTM on system linear equation and analysis of its solutions [9], Dunn and Jain (2008) used ZDTM to evaluate Burger's equation to obtain series solutions [10], Ayaz (2004) used ZDTM to find series solution of system of differential equations [11], Zhou (1986) applied ZDTM for solving electrical circuits problems [12], Chen (2004) used ZDTM to obtained solution of non linear system of differential equations [13], Opanaga (2014) used ZDTM for solving numerical solution of systems of ordinary differential equation by numerical analytical method [14], Biazar (2010) J. et. Al used ZDTM for solving quadratic Riccati differential equation [15], Fernandez (2011) comment on solution of the Duffing – van der pol oscillator equation by ZDTM method [16], Mukharjee (2011) used ZDTM for solving Duffing – van der pol oscillator equation [17], Rashidi (2009) used modified ZDTM method for solving MHD boundary layer equations [18], Erfani (2010) applied modified ZDTM for solving off centered stagnation flow toward a rotating disc [19], Tiaz et. Al (2010) used ZDTM method for solving solitary wave with discontinuity [20], Gokdagan (2012) used ZDTM for finding solution of Genesio System [21], Zhou (2009) used Generalized ZDTM to solve differential – difference equation [22], ….tell (2010) et.al used multistep ZDTM to non-chaotic or chaotic system [23], Keimanesh (2011) et. al study third grade non-Newtonian fluid flow between two parallel plates using multistep ZDTM [24], A lomari (2011) find analytic solution for fractional chaotic dynamical systems by ZDTM [25], Merdan et. al (2012) used multistep ZDTM for approximate solution of Hantavirus infection model [26], Kurnaz et.al (2005) used non dimensional ZDTM for solving PDE's [27], Bil dik et. al (2006) solution of PDE by ZDTM & ADM [28], Ravi Kanth (2008) used ZDTM for solving linear and non-linear systems of PDE [29], Ayaz (2004) study applications of ZDTM for differential algebraic equations [30], Momani et.al. (2007) used generalized ZDTM for solving a space – time – fractional diffusion wave equation [31], Ozkol (2009) used ZDTM for chaos, solitons and fractals using fractional ZDTM [32], Kurulay (2010) find solution of fractional

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modified kdv by ZDTM [33], Alrabtah et.al (2010) find solution of fractional oscillator by ZDTM [34], Wei el.al (2011) solved fractional partial differential equations in fluid mechanics by generalized ZDTM [35], Allahviranloo et.al (2009) solve fuzzy differential equations by ZDTM [36], Gaber et.al (2011) used two dimensional q-ZDTM and its application [37], Finkel (2010) ZDTM and miller's recurrence unpublished [38], Chang et.al (2009) used two dimensional ZDTM for non linear function [39], Abu Gurra et.al (2011) studied application of modified ZDTM for solution of non-linear oscillators [40].

2.0 DEFINATION OF ZDTM

An arbitrary function g (+) can be expanded in Taylor series about t = 0

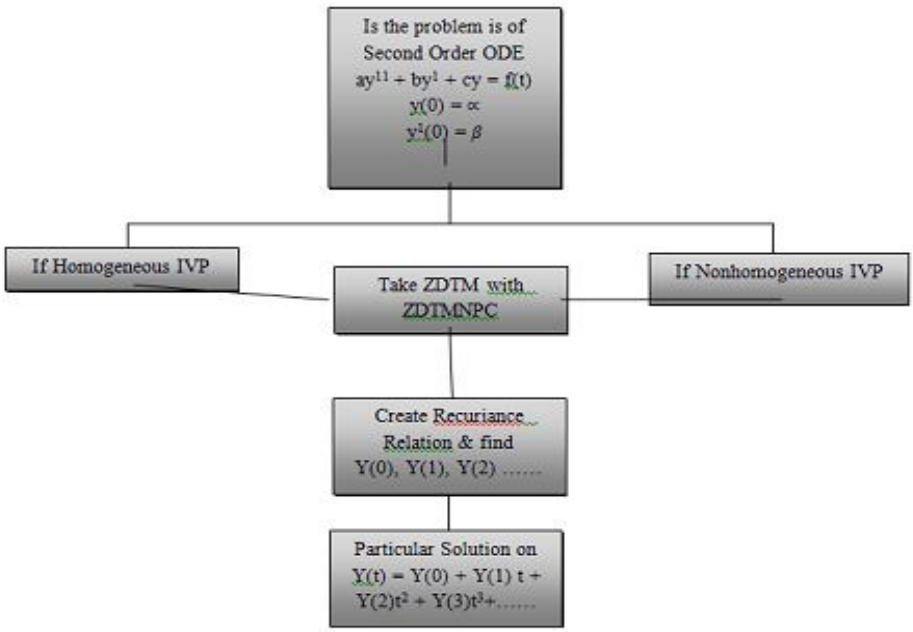
$$h(m) = \sum_{K=0}^{\infty} \frac{m^k}{K!} \left[\frac{d^k g}{dm^k}\right]_{k=0}$$

$$ZDT\,[h(t)] = H(k) = \frac{1}{K!} \left[\frac{d^k h(t)}{dt^k}\right]_{k=0}$$

3.0 A) THEOREMS ON DTM METHOD

	Original Function		Transformation		
1)	$h(t)$	$= x(t) + y(t)$	$H(k)$	$=$	$X(k) + Y(k)$
2)	$h(t)$	$= \propto x(t)$	$H(k)$	$=$	$\propto X(k)$
3)	$h(t)$	$= \frac{d}{dt}x(t)$	$H(k)$	$=$	$(k+1)\,X(k+1)$
4)	$h(t)$	$= \frac{d^n}{dt^n}x(t)$	$H(k)$	$=$	$(k+1)(k+2)\ldots..(k+n)\,X(k+n)$
5)	$h(t)$	$= t^n$	$H(k)$	$=$	$\delta(k-n)$
				$=$	$1 \quad , k = n$
				$=$	$0, \quad k \neq n$
6)	$h(t)$	$= e^{\lambda t}$	$H(k)$	$=$	$\frac{\lambda^k}{k!}$
7)	$h(t)$	$= \mathrm{Sin}(\propto t + \beta)$	$H(k)$	$=$	$\frac{\propto^k}{k!}\,\mathrm{Sin}\left(\frac{k\pi}{2} + \beta\right)$
8)	$h(t)$	$= \mathrm{Cos}(\propto t + \beta)$	$H(k)$	$=$	$\frac{\propto^k}{k!}\,\mathrm{Cos}\left(\frac{k\pi}{2} + \beta\right)$
9)	$h(t)$	$= x(t)\,.\,y(t)$	$H(k)$	$=$	$\sum_{m=0}^{K} Y(n)X(k-n)$
10)	$h(t)$	$= (1+t)^n$	$H(k)$	$=$	$\frac{n(n-1)\ldots..(n-k+1)}{K!}$

4.0 FLOW CHART OF SECOND ORDER LINEAR DIFFERENTIAL EQUATION BY ZDTM



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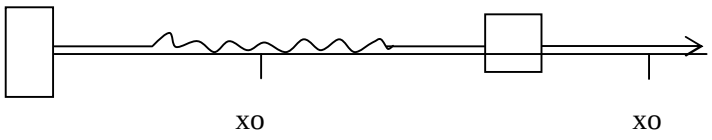
5.0 EXPERIMENTATION OF ZDTMNPC RESULTS

Example : 1

The block in Fig. 1. Weight 32 lb, K = Spring constant 36 lb/ft and the resistance coefficient damping constant β = 13. Determine resulting motion of X = $\frac{1}{2}$ft and V = 0 ft/s when t = 0



Block attached to spring

$$\frac{d^2x}{dt^2} + \frac{\beta}{m}\frac{dx}{dt} + \frac{k}{m}x = 0$$

Subject to x(0) = ½

→ Exact solution is given by

$$x(t) = \frac{e^{-4t}}{10}(9 - 4e^{-5t})$$

Solution by ZDTM is given by

$$(K + 1)(K + 2)\,X\,(K + 2) + 13\,(K + 1)\,X\,(K + 1) + 36\,X\,(K) = 0$$

Put **K = 0, 1, 2, 3, 4 …….**

X (0) = $\frac{1}{2}$

X (1) = 0

X (2) = -9

X (3) = 39

X (4) = -99.75

X (5) = 189.15

Solution is given by

x(t) = X(0) + X(1)t + X(2) + t^2 + X(3) t^3 …….

= $\frac{1}{2}$ – $9t^2$ + $39t^3$ – …….

$x(t) = \frac{e^{-4t}}{10}(9 - 4e^{-5t})99.75t^4 + 189.15t^5 +$ …….

Table - 1

t	Exact	ZDTM	Error
0.0	0.5	0.5	0.000000
0.1	0.499138	0.499138	0.000000
0.2	0.496696	0.496696	0.000000
0.3	0.4928765	0.492876	0.000000
0.4	0.4878588	0.4878600	0.000000
0.5	0.4818064	0.4818108	0.000000

Example : 2

A 16 lb weight is attached to a 5ft long spring. At equilibrium the spring measures 8.2 ft. If the weight is pushed up and released from rest at a point 2ft above the equilibrium position. Find x(t) if it is further known that surrounding medium offers a resistance numerically equal to the instantaneous velocity.

→ $x^{11}(t) + 2\,x^{1}(t) + x(t) = 0$

Subject to x(0) = 2

$x^1(0) = 0$

Exact Solution is given by : $x(t) = e^{-t}(-2\,\text{Cos}3t - \frac{2}{3}\,\text{Sin}3t)$

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Solving By ZDTM

$$(K + 1)(K + 2)\ X(K + 2) + 2(K + 1)\ X(K + 1) + 10\ X(K) = 0$$

Put **K = 0, 1, 2, 3, 4 ……**

$X(0) = -2$

$X(1) = 0$

$X(2) = 10$

$X(3) = \frac{-20}{3}$

$X(4) = -5$

$X(5) = \frac{16}{3}$

Solution is given by

$x(t) = X(0) + X(1)t + X(2)\ t^2 + X(3)\ t^3 + \ldots\ldots\ldots\ldots$

$= -2 + 10t^3 + \frac{20}{3}t^5 - 5t^4 + \frac{16}{3}t^5 + \ldots\ldots\ldots\ldots$

Table - 2 : Comparison between exact and ZDTM solution

t	Exact	ZDTM	Error
0.0	-2	-2	0.000000
0.1	-1.98000	-1.999900	0.01999
0.2	-1.960004	-1.999920	0.039916
0.3	-1.940013012	-1.999733758	0.059720746
0.4	-1.920027042	-1.999371571	0.079344529
0.5	-1.900045521	-1.9987775	0.098731979

Example : 3

An external force given by 3 cos8t is applied to the spring it is found that 6lb weight stretches a certain spring 6 inches it the weight is pulled 4 inch below the equilibrium position and released determine velocity and acceleration of weight 1/2s after it has been released.

→ $x^{11}(t) + 64x(t) = 16\ Cos8t$

Subject to $x(0) = 0$

$x^1(0) = 0$

Exact Solution is : $x(t) = t\ Sin8t$

Solution By ZDTM Method

$$(K + 1)(K + 2)\ X(K + 2) + 16\ X(K) = 16 \cdot \frac{8^K}{K!} cos\left(\frac{K\pi}{2}\right)$$

Put **K = 0, 1, 2, 3, 4 ……**

$X(0) = 0$

$X(1) = 0$

$X(2) = 8$

$X(3) = 0$

$X(4) = \frac{-256}{3}$

$X(5) = 0$

$X(6) = 273.066667$

$x(t) = X(0) + X(1)t + X(2)\ t^2 + X(3)\ t^3 + \ldots\ldots\ldots\ldots$

$= 8t^2 - \frac{256}{3}t^4 + \frac{8192}{30}t^6 - \ldots\ldots\ldots$

$= t\ Sin8t$

Exact solution is exactly equal to ZDTM Solution.

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6.0 VALIDATION AND COMPARISON

Damping motion problems on spring can be stoned by ZDTM method over-damped, under-damped, motion, force motion such type three numerical problems are taken for application for ZDTM. It is found that exact solution of differential equations formed by Hooke's law for spring motion are similar to ZDTM solution series solution which reduces computational work than other method.

In third problem it is seen that oscillations builds up without limit naturally what will happen to spring is bound to break with in short period of time.

7.0 CONCLUSION

In all of the above three quoted examples, the solution obtained by ZDTM is exactly same as that of the exact solution method. Hence it can be depited that ZDTM is also reliable method to solve the problem. This method reduces large computational work.

The accuracy of the series is very high as compared to exact solution. Show that ZDTM is very powerful analytical series solution method.

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A STUDY ON THE CHALLENGES FACED BY MILLENNIALS AT THE WORKPLACE AND FACTORS IMPACTING THEIR JOB SATISFACTION

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ABSTRACT

Purpose: The purpose of this research paper is to highlight the challenges faced by millennials at the workplace and the factors impacting their job satisfaction.

Research Implications: - This research paper clearly highlights the challenges the Millennials are facing at the workplace and how it is creating an impact on their job satisfaction.

Findings: - This research paper consists of the different challenges the millennials are adhered to at the workplace, how it can hamper their relationship with others at the workplace or in the society. Sometimes it becomes difficult to manage millennials and proper guidance is required to bring them back on track for the better. Generation Y also known as "The Millennials" share characteristics with both Generation X and Baby Boomers, but has its own distinguishing characteristics.

Originality/Value: - This research shows the challenges faced by the millennials at the workforce which is hampering their job satisfaction and how it can be managed.

Keywords: Millennials, workplace, challenges, characteristics, Generation Y, job satisfaction, hampering.

INTRODUCTION

The term "Millennials" generally refers to the generation of people born between the early 1980's and 1990's. Children born in the early 2000's can also be coined under millennials. The millennials are known as Generation Y as they come after Generation X. The millennials vary from different characteristics and are categorized in many ways. They are described as lazy, narcissistic and tend to jump from one job to another job. The millennials want flexible work schedules, more of 'me time' and nonstop feedback and career advice from their managers. Millennials may be simply adapting quickly to a world undergoing rapid changes in technologies. Millennials are considered to be more civically and politically disengaged and are in fact more materialistic in nature than the Generation X and Baby Boomers at the same ages.

The millennials follow a trend of focusing more on extrinsic values such as money, fame, image and spend less amount of time on intrinsic values such as self-acceptance, group affiliation and community. Millennials are receptive to new ways of living and new innovative ideas. The events experienced by millennials influences how they view many aspects of life (Erickson,2008). Millennials are difficult to manage, hard to keep them long term as employees they are impatient and short sighted. Following are the major challenges faced by millennials: -

1) **Using outdated software and internal processes: -** The millennials consider technology to be the second language. Without the newly updated technology this generation easily gets agitated. For example, if a millennial in an organization is told to work on a particular project with more productivity with an old version of internal software which lags out after every 15 minutes, the millennial is fighting an uphill battle. Some organizations require the work to be done on manual basis which is quite infuriating, agonizing and slow.
2) **Being managed by someone incapable: -** Millennials do not like being in control of anyone who tries to act/ is superior to them and instructs them on what to do and what not to and also takes credits for the work done by the millennial and blames the millennial when things go wrong. Often millennials do not appreciate when someone calls them impatient.
3) **Working for a company that is all about talk and no walk: -** Many companies proclaim themselves to be great leaders or so but actually they do not promise the same. This basically makes millennials frustrated as it does not turn out to be the way it was expected to be. Some organizations claim to be result driven. But apparently these things turn out to be different and quite upsetting.
4) **The search for purpose: -** They are taught that finding a job which we are passionate about is the key to success. But in reality, this only ends up as a dream for some of the millennials. Millennials look out for a job which has both internal as well as external factors which prove to be fruitful. It is vital for the millennials to think about their medium- and long-term goals instead of getting demotivated about not feeling a sense of

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purpose during the initial years of their careers. Purpose comes with good amount of experience and the number of years investment towards goals and a healthy work/ life balance.

5) **Millennials are impatient: -** Millennials or better known as Generation Y are the generation of instant gratification. They want everything to be done at a faster pace and receive things at the tip of their fingers. This generation needs to realize that successful careers do not work like our smartphones, they need to work hard, persevere and most importantly have patience and willingness to accept that not all the work done well will come with instant rewards or gratification. Sometimes it is necessary to take pride in own accomplishments, keep the head down and enjoy the little things in life.

6) **Millennials are told that they are special: -** Millennials get easily carried away. After the millennials are grown up, they are told how special they are and no one is better than them. But the harsh truth is that the universities or the workplace can show the reality that they need to be something more than just being special. This generation has turned into a generation with very low self-esteem, higher rates of depression and higher suicide rates, obsessed with contest, etc.

7) **Technology has affected the behaviour and brain: -** Millennials have developed an addiction to receive external validation, comments/ praises making it easy to prioritize the technology/ smartphones instead of human relations. The millennials even when attending a meeting or a general conference would never miss a chance to have a glance at their smartphones, instead of living 100% in the moment and interacting with the people in the room.

8) **Obsessed with making an impact: -** The Generation Y feels passionately about making an impact wherever they work. The main problem is that a true impact cannot be made in the workplace within a couple of months. Apart from creating a good job impact, it is essential to create good human relations in the workplace as well as work on the personal happiness of those working around them.

REVIEW OF LITERATURE

As per Debaro Huyler (2015), the ability of Millennials to adapt to evolving change can be attributed to their engagement in the workplace. They believe that teamwork, fostering relationships and work-life balance is the most important aspect to succeed. Millennials have desire to be a part of any decision-making process and provide inputs for the benefit of the organization. If they are not a part of the decision-making and process of input, they feel disengage from the workplace and start finding meaning elsewhere. Millennials are seeking much more in return for their hard-work than a pay-check. They also look for work that is meaningful and fulfilling. Millennials look at company's values and mission and are keen to work for those firms that go beyond simply making money. Millennials are concerned with making a contribution and adding value to the organization, they also place a high value on professional growth which enables them to take on high impact assignments.

OBJECTIVE OF STUDY

1) To highlight challenges faced by Millennials in the organization.

2) To study the different factors at workplace that impacts the Job Satisfaction of Millennials.

RESEARCH METHODOLOGY

The secondary data would be collected from sources like books, journals, research projects, websites, newspaper articles, internet, etc.

SIGNIFICANCE AND IMPORTANCE

Millennials are referred as "civic minded" rejecting the attitudes of the Baby Boomers and Generation X. Millennials believe in abundance that it is ideal that all their heritages should be respected, counted and acknowledged. This shows that definitely there is a generation gap between the millennials and the prior generations.

Millennials are quite open minded with their parents or anyone on controversial topics.

They consider wealth as a very important attribute. They want to feel financially secured all the time. Benefits, salary and health insurance ranks most important among Millennials job considerations. Members of Generation Y, would be in their initial position less than three years and anticipate switching sectors during their career. Many millennials believe that they will have to work harder than the previous generation and save more money for retirement.

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LIMITATIONS OF THE STUDY

The study is not exploratory as it is based only on secondary data from books, journals, internet sources etc.

FINDINGS AND SUGGESTIONS

Millennials also have some pros and cons which do not make them that bad to survive in an organization or environment. It also shows that how there are preconceived notions about the millennials and what they want is misunderstood by the organizations. What millennials expect and want can make any organization a better place to work. It has been seen that the Millennials have a lot to contribute and offer their organizations and they have the ability to develop a big-picture view and the desire of things to be better in their world. Millennials believe that they should make a difference at their work, they want meaningful work and embrace new challenges on a regular basis.

Some of the positive traits seen in this Generation Y are

1) **Thinking of innovation as science: -** Millennials are incredibly disciplined when it comes to innovation. They like to think that innovation and creativity have a great impact whether in an organization or a university or in a society.
2) **Believe in the profit motive:** - Millennials believe that it is possible for an organization to make profits from innovation that benefits society especially if it is done ethically and has a positive social impact.
3) **Could build business: -** Millennials have the tendency to work independently and believe that hard work is the key to success. They can visualise themselves as future entrepreneurs beginning to build their careers.
4) **Hate bureaucracy: -** Millennials hate to work under someone who is incapable to handle situations and wants to take in credits for free. According to millennials the biggest barriers to innovation are management attitude and operational structures and procedures.

Some of the negative traits of Millennials are as follows

1) **Acting overly entitled: -** Millennials often fail to understand that there is a co relation between self-motivation and self-entitlement and a very thin line between confidence and arrogance. Millennials try to push themselves very hard in order to prove themselves in the workplace and also to secure their job.
2) **Being overly certain: -** Millennials can be very confident which can be creating a great impact around others but only when it is actually authentic. It is always better to be honest and accept the fact that you do not know an answer to a question rather than exude false certainty.
3) **Inability to give or take criticism: -** Millennials are often afraid to hurt someone's feelings but on the other hand they also need to learn how to handle criticism. Millennials are a sensitive generation, the most sensitive in history and need to work on their emotions and try to be less petty.
4) **Too casual when handling situations: -** Millennials are casual in approaching to situations if they are not in their favour. It is impossible to be successful with this type of outlook.

CONCLUSION

The other generations always try to detect some or the other mistake in millennials. But managing the millennials is definitely not an easy task overall. Millennials job satisfaction can be easily secured if they are managed well in any organization/ environment. Some advanced tools used in the organization by the managers can help bring job satisfaction and career growth for millennials.

First, try to be a people specialist rather than being a millennial specialist. Millennials are people after all and people are unique indeed. Managers, especially from the Baby Boomers generation often find it difficult to cater to the needs of the millennials in the workplace. One on one coaching and emotional training is necessary for the millennials in an organization. Second, absence of motivation is itself a demotivation. Managers need to motivate the millennials in the organization for the betterment of the organization as well as the millennials. If the managers do not understand the art of motivating the millennials in their respective organizations and tries to apply a one size fits all managerial approach, then they cannot effectively manage the millennials.

Providing opportunities for learning and development is a boon for the millennials. Managers must help them to identify opportunities to develop new skills. Offer a balance between personal and professional life. Millennials need to learn that "money is not everything." Apart from money, millennials are especially motivated by dynamic, cross functional positions in an organization. Managers need to be mentors and not bosses. They should be the ones to treat the millennials in such a way that they face hindrances they could easily seek help from their managers without thinking twice. Last but not the least, managers need to inspire, not just manage,

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because organizations are operating in challenging times and the millennials have a lot to offer to organizations that adopt techniques that will inspire them.

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STUDY OF CHANGING TRENDS IN FINANCING STEEL SECTOR IN INDIA

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ABSTRACT
Steel is an integral part of the growth of Indian economy. India has become the third largest producer in the world and contributes nearly two percent of the country's Gross Domestic Product (GDP). Capital structure of a firm is the combination of equity and debt which affects the management, investors and the lenders. This research paper studies the capital structure positions of selected units of steel sector in India. Secondary data was used for this study and the trend was observed during the study period.

Keywords: Steel Sector, Capital Structure, Debt-Equity Ratio, Trends in Financing.

INTRODUCTION

Capital structure refers to the proportion of different types of financing used by the firm. It is a mix of a company's long-term and short-term debt, equity shares and preference shares. Debt financing includes amount borrowed, plus interest, to be paid back to the providers of debt over a given period of time. Equity financing involves selling a partial interest in the company to investors, usually in the form of stock. In equityfinancing, there is no direct obligation to pay dividend and repay the funds. The financial decision of capital structure is not only concerned with determining an appropriate mix of equity and debt but alsoto maximize the value of the firm and its shareholders wealth.

STEEL SECTOR IN INDIA

India has become the third largest steel producer in the world with 44.96 million tonnes (MT) of production and contributes 2 per cent of country's GDP. The growth in the Indian steel sector is due to domestic availability of raw materials such as iron ore and cost-effective labor. The per capita consumption of steel in India has been steadily increasing, and steel production has doubled in last ten years- from 43.44 million tonnes in 2004-05 to 88.12 million tonnes in 2014-15. Steel is a critical input to key industries in India. Increased infrastructure, construction, the thriving automobile and railways sectors are the demand drivers for future rise in steel consumption.

REVIEW OF LITERATURE

J. Thavamani and Dr. S. Rajalakshmi (2018), examines the capital structure of selected two steel companies over a period of ten years. The financial data has been analyzed using statistical tools like mean, standard deviation, co-efficient of correlation, annual growth rate and t test. The paper concludes that in comparison to Tata steel limited, JSW steel limited is more consistent in maintaining the performance in its capital structure, the analysis of equity, the tangibility of the steel companies and its capital gearing ratio during the study period.However, the analysis of reserves and surplus and the analysis of networth reveals that Tata steel limited has more consistent than JSW steel limited. The analysis of annual growth rate indicates that JSW steel limited has positive growth and Tata Steel Limited has negative growth during the study period.

Dr. Radhey Shyam Sharma and Vinay Goyal (2017), analyzes the financial performance of the selected steel companies. The paper studies the financial statements using various techniques like working capital management, capital structure analysis, cash flow analysis and dividend policy analysis to draw conclusions. They study four major steel companies in the industry over a period of five years. It is observed that the debt equity ratio of these companies are low except for Essar Steel limited. The proprietary ratio of Tata Steel Limited is the highest amongst its peers. The paper also examines the cash flows of the companies to highlight the major activities that impact cash flows and thus affects the overall cash balance. The dividend payout trends of steel companies are analyzed with the help of Arithmetic mean, standard deviation, coefficient of variation.

Dr. C. Balakrishnan (2016), analyzes the performance of ten companies of the Indian steel industry over the period of ten years on the parameters like profitability, utilization of assets, growth of performance, financial strength and capital structure using ANOVA test. The researcher has made an attempt to identify the nature of relationship between the various aspects of financial performance. The paper concludes the there is a significant difference between the mean current ratio, mean quick ratio, mean inventory turnover ratio, mean debtors turnover ratio, mean fixed asset turnover ratio, mean debt equity ratio, mean assets to equity ratio, return on shareholders fund and net profit margin ratio of the selected steel companies.

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Rooh Ollah Arab, Seyed Saadat Masoumi and Azadeh Barati (2015), examines the financial performance of the selected units in the steel industry in India. They study the financial ratios such as Liquidity, Solvency, Activity and Profitability. ANOVA test analysis is used to evaluate the impact of selected variables on the financial performance selected companies in the steel sector. The paper concludes that all the null hypotheses are rejected and there is significant difference in the financial performance of selected units in the steel sector in India with regard to Liquidity, Solvency, Activity and Profitability Position.

M. Krishna Moorthi,, Dr. M. Ramesh and N. Bhanupriya (2012), analyzes the long term solvency of the selected steel companies India. The secondary data is used for this study. They study the solvency ratios of the selected companies andanalyze the data by using of Mean, SD, and one way ANOVA. It is observed that debt equity ratio of Bhushan steel and Visa is more than standard industry ratio, and Bhushan steel is having highest total debt ratio from others. SAIL has been in sound position in proprietary ratio as compared to theother companies. From the ANOVA result it can conclude that companies belong to the same industry followed a different debt equity position during the study period.

OBJECTIVES

The objectives of the study are

1. To study the capital structure pattern of the selected steel units.
2. To examine the Debt Equity Ratios of the selected units during the study period.
3. To analyze the trend in the capital structure pattern of the selected units during the study period.

RESEARCH METHODLOGY

Secondary data has been collected for the study. A group of steel companies listed on the stock exchanges in India are selected for the study for a period of 10 years. The selected units namely, JSW Steel Limited, TATA Steel Limited, Steel Authority of India Limited(SAIL) and Jindal Steel and Power Limited (JSPL) are some of the major players in the steel industry in India and thus, would depict an accurate picture of the individual units in the steel industry. The data is collected from Bloomberg and is then tabulated and analyzed using the trend chart.

DATA ANALYSIS AND INTERPRETATION

Table-1

Debt Equity Ratios of Cement Companies

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
JSW Steel Ltd.	1.70	1.99	1.67	0.86	1.03	1.13	1.56	1.59	2.20	1.86
TATA Steel Ltd.	0.39	1.76	1.87	1.28	1.09	1.61	1.66	2.13	1.60	1.84
Steel Authority of India Ltd.	-0.42	-0.35	-0.15	0.07	0.27	0.44	0.53	0.68	0.82	1.04
Jindal Steel and Power Ltd.	1.61	1.01	0.80	0.94	0.92	1.12	1.50	1.96	1.39	1.48

Source: Bloomberg; Debt Equity Ratio= Net Debt/Equity (i.e. Total Debt-Cash/ Book value of Equity)

** If the value is negative, it indicates that the company has net cash i.e. cash at hand exceeds debt*

The following observations can be made from the above mentioned table

- In JSW Steel Ltd., the debt equity ratio was 1.99 in 2008 which decreased to 0.86 in 2010 which again increased to 2.20 in 2015.
- In the debt equity ratio of TATA Steel Ltd. was 0.39 in the year 2007. However in subsequent years, the company has shown increase of debt levels.
- The debt equity ratio of SAIL shows dominance of equity capital and availability of cash at hand in the capital structure of the company. However the debt equity shows an increase from 2010.
- In JSPL, the debt equity ratio was 1.61 in 2007 which decreased and then again showed a slight increase to 1.96 in 2014.

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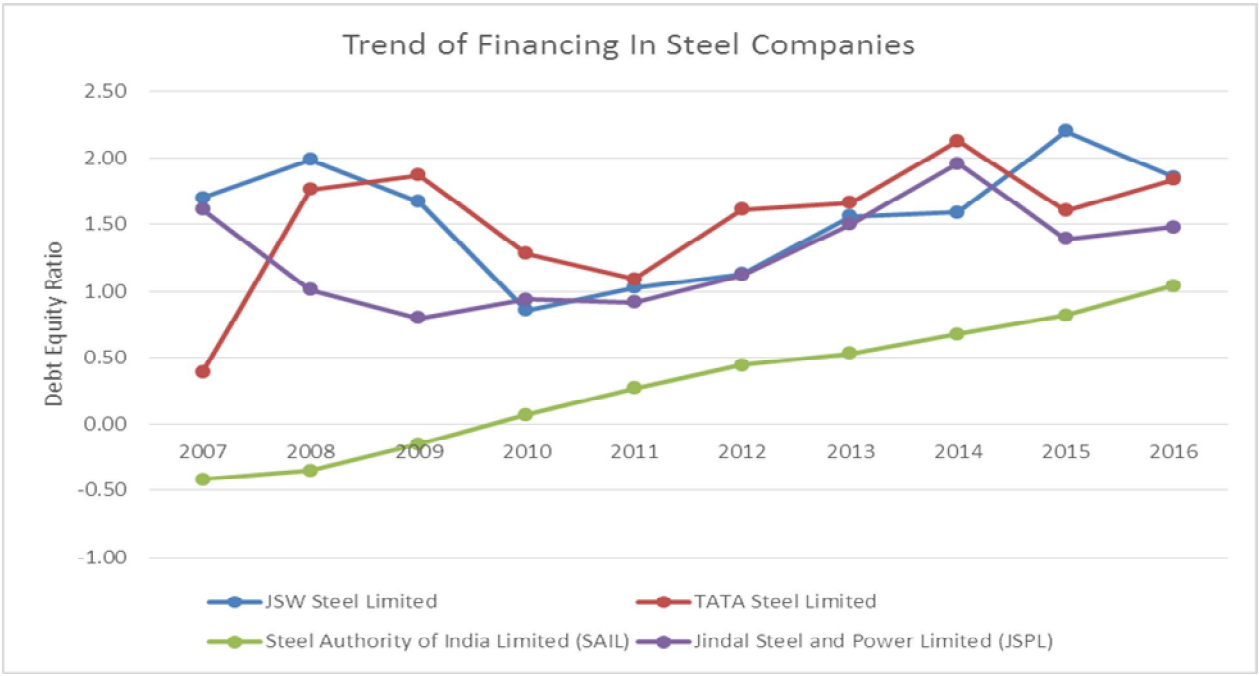
Chart-1



CONCLUSION

Steel companies are, by nature, are capital intensive. Capital is required to expand capacity and to upgrade facilities. The steel industry requires regular and large capital expenditure to maintain modern and efficient facilities. The following conclusions can be drawn from the above trend analysis chart 1:

- JSW Steel's debt to equity ratio over the last few years has shown an increasing trend indicating that the Company operates with high level of debt. They need to maintain the debt and equity position under control.
- Tata Steel's debt to equity ratio over the years has been fluctuating which indicates that the company is vulnerable to economic slowdowns. The decline in steel demand in China in 2015 affected its profitability and stretched its finances resulting in increasing trend in the debt equity.
- SAIL's debt to equity ratio over the years has shown an increasing trend. However, company hasbeen operating with low level of debt moving to moderate level of debt.
- Jindal Steel's debt to equity ratio shows a decreasing trend over the years indicating that the Company is operating with moderate levels of debt.

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INDUSTRIAL ENGINEERING APPLICATIONS OF ZHOU'S DIFFERENTIAL TRANSFORM METHOD BY FIRST ORDER DIFFERENTIAL EQUATION OF REAL WORLD SYSTEMS

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ABSTRACT
The scope of present paper for solving cooling law, population growth and decay, Radio Active Decay, Mixture of two salt solutions, Electrical Series Problems, Survivability with AIDS, Economics and Finance, Harvesting of Renewable Natural Resources by Zhous differential transform method for finding analytical series solution of first order differential equations initial value problems.

In this research work how ZDTM is applicable for Health care Drug distribution in Human Body, Administration by Mathematics Police women and population growth and Decay Problems.

Keywords: Ordinary differential equations of first order, Homogeneous, Nonhomogeneous, IVP, ZDTM.

1.0 INTRODUCTION

The fundamental base of ZDTM is based on the Tayler's series. A large verity of methods such as exact, Laplace transform, Numerical method are also available for solving the differential equations. This method sure really cumbersome as it requires intensive linearization computationally and lot of trial and error method requires lot of symbolic representation.

Zhou has suggest technique for solving differential equations. This technique was used for solving linear and nonlinear initial value problem in electrical circuits, Later this concept may be applied to science, economics, management, which transfer transform the equation to second order linear differential equations.

Application of Zhou's Differential Transform method to Mechanical Engineering for damped motion of spring.

Opanaga (2014) used ZDTM for solving numerical solution of systems of ordinary differential equation by numerical analytical method [1], Biazar (2010) J. et. Al used ZDTM for solving quadratic Riccati differential equation [2], Chen (2004) used ZDTM to obtained solution of non linear system of differential equations [3], Zhou (1986) applied ZDTM for solving electrical circuits problems [4], Ayaz (2004) used ZDTM to find series solution of system of differential equations [5], Zeng (2004) has applied ZDTM on system linear equation and analysis of its solutions[7], Dunn and Jain (2008) used ZDTM to evaluate Burger's equation to obtain series solutions [6], Chen and Liu (1998) has applied ZDTM for steady nonlinear beat conduction problems [8], Hasan (2008) have find out series solution and that solution compared with ZDTM method for linear and non-linear initial value problems and proved that ZDTM is reliable tool to find numerical solution [9], Batiha (2011) has used ZDTM to obtained the Taylor's series as solution of linear, non linear system of ordinary differential equations [10], Thangmoon (2010) has used ZDTM to find numerical solution of ordinary differential equations [11], Edeki et.al (2014) has used this method to evaluate solution of second order ordinary differential equations [12], Further Hassan (2004) has used this method to obtain solution of double Rayleigh beam-system due to uniform partially distributed moving load [13], Arikoglu A and Ozkol have applied ZDTM to obtain Numerical solutions of differential equation [14], Kou B (2005) has used this method to find Numerical solution of the free convection problem [15],

2.0 DEFINATION OF ZDTM

An arbitrary function g (+) can be expanded in Taylor series about t = 0

$$h(m) = \sum_{K=0}^{\infty} \frac{m^k}{K!} \left[\frac{d^k g}{dm^k}\right]_{k=0}$$

$$ZDT\,[h(t)] = H(k) = \frac{1}{K!}\left[\frac{d^k h(t)}{dt^k}\right]_{k=0}$$

3.0 A) THEOREMS ON DTM METHOD

	Original Function		**Transformation**
1)	$g(t) = x(t) + y(t)$		$G(k) = X(k) + Y(k)$
2)	$g(t) = \propto X(t)$		$G(k) = \propto X(k)$

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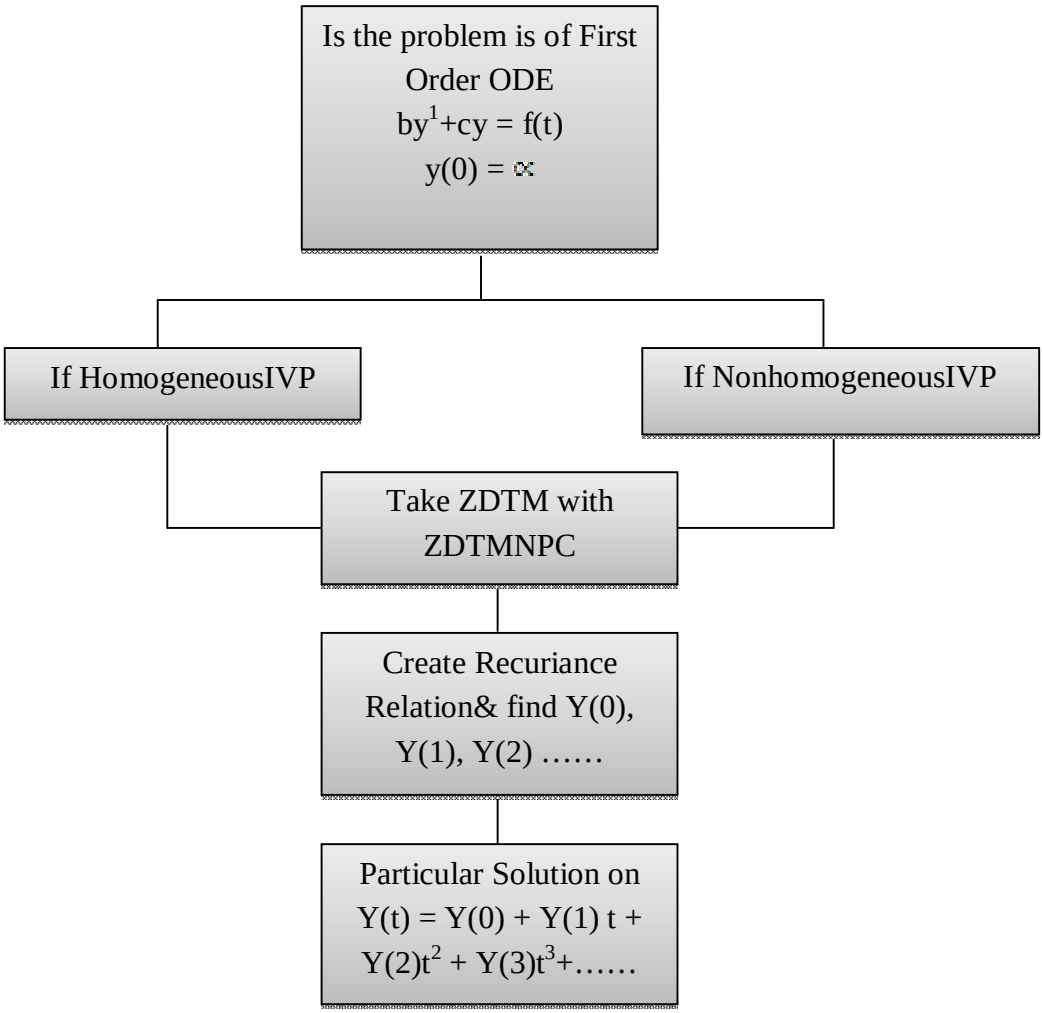
3)	g(t)	=	$\frac{d}{dt} X(t)$	G(k)	=	(k + 1) X (k + 1)
4)	g(t)	=	$\frac{d^n}{dt^n} X(t)$	G(k)	=	(k + 1) (k + 2) ….. (k + n) X (k + n)
5)	g(t)	=	t^n G(k)	=		δ (k – n)
=	1 - k = n					
=	0 - k ≠n					
6)	g(t)	=	$e^{\lambda t}$	G(k)	=	$\frac{\lambda^k}{k!}$
7)	g(t)	=	Sin($\propto$t + β)	G(k)	=	$\frac{\propto^k}{k!}\text{Sin}\left(\frac{k\pi}{2} + \beta\right)$
8)	g(t)	=	Cos($\propto$t + β)	G(k)	=	$\frac{\propto^k}{k!}\text{Cos}\left(\frac{k\pi}{2} + \beta\right)$
9)	g(t)	=	x(t) . y(t)	G(k)	=	$\sum_{m=0}^{K} Y(n)\ (k-n)$
10)	g(t)	=	$(1 + t)^n$	G(k)	=	$\frac{n(n-1).....(n-k+1)}{K!}$

4.0 FLOW CHART OF SECOND ORDER LINEAR DIFFERENTIAL EQUATION BY ZDTM



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5.0 EXPERIMENTATION OF ZDTM RESULTS

Example: 1 Population Growth and Decay

It was estimated that earth's human population is 1996 was 3,030,000,000. Assuming the population increases at the rate of 2 percent find the earth's population in 1996 using model of population growth (1.8). Check this number with the actual population of the earth available from authentic source.

Ans : $\frac{dp}{dt} = kp$

$\int \frac{dp}{p} = \int k dt$

log p = kt tc

$p = e^{kt}.ec$

$p = \alpha \cdot e^{kt}$

$p(t) = \alpha e^{kt}$

t = 0

$p(0) = \alpha$

$\frac{dp}{dt} = \frac{-2}{100} P$

$\frac{dp}{dt} = 0.02P$

$p(t) = \alpha\ e^{0.024}$

p(0) = 306 crores

$p(t) = 306\ e^{0.024}$

put t= 35

p(35) = 306 e0.02 x 35

p(35) = 616.2083285 crores

By ZDTM

(k+1) P(k+1) - 0.02p(k)

k= 0,1,2,3,.....

k = 0

p(1) = 0.02p(0)

k=1

λ p(2) = 0.02p(1)

$p(2) = \frac{1}{2} (0.02) (0.02) p(0)$

$= \frac{1}{2!} (0.02)^2 p(0)$

$p(3) = \frac{1}{3!} (0.02) (0.02) p(0)$

$\therefore \quad p(t) = p(0) + t\ p(1) + t^2\ p(2) + ...$

$=p(0) + t(0.02)\ p(0) + \frac{t^2}{2!} (0.02)^2\ p(0) + \frac{t^3}{3!} (0.02)^3\ p(0)$

$p(t) = p(0) \left[1 + (0.02)t + \frac{(0.02)^2}{2!} t^2 + \frac{(0.02t)^3}{3!} t^2 + \cdots\right]$

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t = 35 i.e.

p(t) = 306$[e^{0.02t}]$

t = 35 $[e^{0.02\times35}]$

p(35) = 616.2083285 crores

Example-2: Mathematic of police women

The time of death of a murdered person is to be determined. A police personnel discovers the body of a dead person presumably murdered and the body is located in room that is kept at a consistent 60^0F. For same time after the deaths the time after the death, the body will radiate heat into room, causing the body's temp to decrease assuming that the victim temperature was normal i.e. 98.6 F at time of death.

Solution: According to Newton's law of cooling, this body will radiate heat energy into the room at a rate proportional to the difference in temp between the body and room If T(t) is the body temp at time t, then for some constant of proportionality k,

T' (t) = k[T(t) - 60]

This is separable difference equation

$\frac{1}{T-60}$ dT = K dt

Ln |T - 60| = Kt tc

$|T - 60| = e^{kt + c} = Ae^{kt}$

Where $A = e^c$ Then

$T - 60 = \pm Ae^{kt} = Be^{kt}$

$T(t) = 60 + Be^{kt}$

The police arrived at 9:40 pm and the body temp was 84.4^0F. This means that of officer considers 9:40 pm, t = 0 then

T(0) = 84.4 = 60 +B

∴ B = 24.4

$T(t) = 60 + 24.4\ e^{kt}$

Another measurement was made at 11:10 pm and the temp is 79^0F

∴ $T(90) = 79 = 60 + 24.4\ e^{90k}$

Then,

$e^{90k} = \frac{19}{24.4}$

So,

$90\ k = \log_e\left(\frac{19}{24.4}\right)$

$k = \frac{1}{90} \times in\left(\frac{19}{24.4}\right)$

The officer has now temp function

$T(t) = 60 + 24.4\ e^{\frac{t}{90} in\left(\frac{19}{24.4}\right)}$

$\therefore \frac{98.6-60}{24.4} = e^{\frac{t}{90} in\left(\frac{19}{24.4}\right)}$

$\log_e(1.581) = \frac{t}{90}\ in\left(\frac{19}{24.4}\right)$

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$t = 90 \frac{in(1.581)}{in\left(\frac{19}{24.4}\right)}$

t = - 164.80 min

∴ The death occur approx 164.8 min before 09:40 pm time of death is 06:55 pm

By ZDTM method

T' = [T-60]

(k+1) T (k+1) = α [T(k) - 60 δ (k-0)]

Put k=0,1,2,3,...

k = 0

T(1) = α [T(0) - 60]

T(0) = 84.4, $\alpha = \frac{1}{90} in \left(\frac{19}{24.4}\right)$

$T(1) = \frac{1}{90} in \left(\frac{19}{24.4}\right)[84.4 - 60]$

$= \frac{1}{90} in \left(\frac{19}{24.4}\right)[24.4] = B$

k = 1

2T(2) = α [T(1) - 0]

$T(2) = \frac{\alpha}{2} T(1) = \frac{\alpha}{2} \cdot \beta$

k = 2

3T(3) = α T(2)

$T(3) = \frac{\alpha}{3} T(2) = \frac{\alpha}{3} \cdot \frac{\alpha}{2} \cdot \beta = \frac{\alpha^2}{3!} \cdot \beta$

k = 3

4T(3) = α T(3)

$T(4) = \frac{\alpha}{4} T(3) = \frac{\alpha^3}{4!} \cdot \beta$

∴ $T(4) = T(0) + T(1)\, t + T(2)\, t^2 + ...$

$= T(0) + t \cdot \beta + t^2 \cdot \frac{\alpha}{2} \beta + t^3 \cdot \frac{\alpha^2}{3!} \beta + t^4 \cdot \frac{\alpha^3}{4!} \beta + ...$

$T(4) = T(0) + \beta \left(t + \frac{t^2}{2!} + \frac{t^3}{3!} + \cdots\right) T(0) + \beta (e^t - 1)$

When

T(t) = 98.60

t = -164.80 mi

The death occurs approx 164.8 min before 9:40 pm i.e. 6:55 pm

Example-3: Economics and Finance

If is given that interest is compounded continuously, the principal changes at the rate equal to the product of the rate of bank interest per annum and the principal. If the interest is compounded at 5% per annum. How many years 100 Rs will be double?

Exact solution is 13.862 year

By ZDTM Solution

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$(k+1)\ P^*(k+1) = \frac{5}{100} P^*(k)$

k = 0,1,2,3,4.....

$P^*(1) = \frac{5}{100} P^*(0) = \frac{5}{100} \times 100 = 5$

$P^*(2) = \frac{25}{200}$

$P^*(3) = \frac{125}{60000}$

-

-

-

$p^*(t) = P^*(0) + t P^*(1) + t^2 P^*(2) + ...$

$= 100 + 5t + \frac{25}{200} t^2 + \frac{125}{60000} t^3 + ...$

at t= 13.862, P* = 200

if P* = 1000 after 10 Year D = 1648

6.0 VALIDATION AND COMPARISON

Cooling law problems, Population Growth Problems, Economics and Finance Problems can be called by ZDTM method which reduces computational work then other method. In all of the above three problems are taken for comparison and it is found that ZDTM gives same solution as similar to the exact solution with zero error.

7.0 CONCLUSION

In all of the higher than 3 quoted examples, resolution the answer obtained by ZDTM is strictly same as that of the precise solution technique. thus it is depicted that ZDTM is additionally reliable technique to resolve the matter. This technique reduces giant machine work.

The accuracy of the series is extremely high as compared to precise answer. Show that ZDTM is extremely powerful analytical series answer technique.

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A STUDY OF FINANCIAL ANALYSIS USING RATIOS WITH SPECIAL REFERENCE TO BMTC

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ABSTRACT
A Financial analysis examines many aspects of a business from its profitability and stability to its solvency and liquidity. The financial statements are generally prepared for the evaluation of financial position of a particular company for a particular period of time. Transport is considered to be the life line of the economy of the country. At a border perspective, mobility that it confers is linked to the level of output, employment and income within the national economy, at the economic level it is linked to producer, consumer and production cost. An efficient road transport sector, in particular, plays a crucial role in a county's economic progress and growth. Bringing together both supply and demand sides, road transport sector influences entire gamut of social and economic activities of a country. The research paper analysis the Bangalore Metropolitan Transport Corporation (BMTC) which is a government organisation that operates the public transport bus service in Bruhat Bangalore Mahanagara Palike(BBMP) area and parts of the Bangalore Metropolitan Region(BMR). At present, BMTC is one of the better run bus transport systems in the country. The research paper evaluates the Ratio analysis with reference to BMTC and provides conclusion as to improve the liquidity position of the organization and the organization has a positive ROI which gives a positive outlook and also has a better solvency position.

Keywords: Liquidity position, performance analysis, returns on investment, economic progress.

INTRODUCTION

The term "financial analysis" is also known as analysis and interpretation of financial statements ,refers to the process of determining financial strength and weakness of the firm by establishing strategic relationship between the items of the balance sheet, profit and loss account and other operative data." Financial statement analysis is largely a study of relationship among the various financial factors in the business as disclosed by a single set of statements, and a study of the trend of these factors has shown in a series of statements". The purpose of financial analysis is to diagnose the information contained in financial statements so has to judge the profitability and financial soundness of the firm.

The term "financial statement analysis" includes both "analysis", and "Interpretation". A distinguish should therefore been made between two terms while the term "analysis" is used to mean the simplification of financial data by methodical classification of data given in the financial statements, "interpretation" means explaining the meaning and significance of the data so simplified.

Ratio analysis- ratio is a simple arithmetical expression of the relationship of one number to another. It may be defined as the indicated quotient of two mathematical expressions. Therefore a ratio "is an expression of the quantitative relationship between two numbers".

Ratio analysis is a technique of analysis and interpretation of financial statements it is a process of establishing and interpreting various ratios for helping in making certain decisions. However ratio analysis is not an end by itself. It is only a means of better understanding of financial strength and weakness of a firm the ratio analysis is one of the most powerful tools of financial analysis it is used has a device to analyze and interpret the financial health of the enterprise.

Bangalore Metropolitan Transport Corporation -B.M.T.C has attained independent existence with effect from 15.8.1997 after bifurcation from KSRTC. It started function under two tier system and later switched over to three tier system due to increase in the volume of the operations. After incorporation the corporation earned profits continuously until 2011-12 but due to steep escalation in costs it had to incur loss in the year 2012-13. Hence this study has been conducted to analyze the performance during the year 2016-17.

OBJECTIVES

- To study the ratio analysis with reference to BMTC
- To gain practical exposure about the working environment in the organization.
- To study the financial performance of BMTC
- To suggest measures to improve the performance level of BMTC

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METHODOLOGY

Secondary sources: Data involves the BMTC manual, BMTC website, annual administrative report BMTC magazines (sanchara) and existing records

REVIEW OF THE LITERATURE

The review of literature guides the researchers for getting better understanding methodology used, limitations of various available estimation procedures and data base and lucid interpretation and reconciliation of conflicting results. Bansal and Gupta (1985) in their study entitled, "financial ratio analysis and statistics" enlightened that the profitability ratio elements in the industry also have quite high correlation as compared with other industry. Zeithaml, Parasuraman and Berry their research showed that service quality can be defined as the extent of discrepancy between customer's expectations or desires of service and their perceptions of the service they actually receive. Shinde Govind.p and Dubey Manisha (2011) has conducted research considering the segments such as passenger vehicle and commercial vehicle, utility vehicle etc and also analysed SWOT analysis. Sharma Nishi (2011) studied the financial performance of passenger vehicle and concluded that profitability and managerial efficiency are important in determining the liquidity position.

ANALYSIS AND INTERPRETATION

Analysis to measure short term financial position

1. **Current Ratio** : this ratio is an indicator of the firms commitment to meet its short term liabilities it is expressed as follows =

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$

Current assets mean those which can be converted into cash within a short time or during the normal operating cycle of the business. Current liabilities mean liabilities payable within a year or during the operating cycle. An ideal current ratio is 2:1

With reference to the balance sheet of BMTC march 2017

Current Liabilities	Amount In Lakhs	Current Assets	Amount In Lakhs
current liabilities and provisions (sehedule7)	58401.83	inventories	2592.06
provision to write off anticipated loss on disposal of obsolete stores	54.81	sundry debtors	2967.77
deposits (other than public deposits)	4436.53	advances	11627.18
		stock adjustment account	3.44
		deposit by corporation	3005.83
		prepaid expenses	272.39
		cash	9295.86
Total Current Liabilities	**62893.17**	**Total Assets**	**29764.53**

Inference: The current ratio is 29764.53/62893.17 = 0.47325 as the standard for current ratio is 2:1 and the actual ratio derived from the balance sheet stands at 0.4735 which indicates for every rupee of liability the organization has 0.47 value of assets which is not a good sign and the organization has to improve its liquidity ratio which will help in attaining better profitability and it is viewed that the amount of current liabilities mention in schedule 7 is huge and the organization as to take steps to reduce the same or else the very liquidity position of the organization will be hampered.

2. **Solvency Ratio**: these ratios are computed to determine the ability of a firm to pay off its long term liabilities when they become due. it is also called as solvency ration . The important solvency ratios are Debt equity ratio, total asset to debt ratio, proprietary ratio , interest coverage ratio.

For the purpose of the study the researcher has opted for debt equity ratio

Debt equity ratio: this ratio indicates the relationship between long term debt and equity (share holders fund)as such these ratios are worked out by dividing long term debts by shareholders fund . Therefore the formula is Debt equity ratio =

$$\frac{\text{Debt}}{\text{Equity}}$$

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Debt= Debentures +long term loans

Share holders fund =Equity and preference capital + reserves and surplus-fictitious assets.

Long Term Liabilities	Amount In Lakhs	
equity capital	10459.48	21871.7141
Karnataka government capital	11382.25	
reserves and surplus	29098.41	
secured loans	47280.99	61656.46
unsecured loans	14375.47	

Inference: The debt equity ratio=2.8190 Given that the debt/equity ratio measures a company's debt relative to the value of its net assets, it is most often used to gauge the extent to which a company is taking on debt as a means of leveraging its assets. A high debt/equity ratio is often associated with high risk; it means that a company has been aggressive in financing its growth with debt.

3. **Profitability Ratio**: Profit earning is the main object of each business concern. The efficiency of business is measured in terms of profits. Thus profitability ratios are computed to analyze the earning capacity of the business. Profit earning capacity may be expressed in the form of sales or capital employed. The different types of profitability ratios are: gross profit ratio, operating ratio, operating profit ratio, net profit ratio, and return on investment.

   The return on investment ratio is being studied in the current research. The return on investment is the, most important test of profitability of a business. It measures the overall efficiency of the business. It assumes significance from the point of view of investors. It is ascertained by comparing profit earned and capital employed to earn that profit and is expressed as percentage it is also known as rate of return or return capital employed

$$\text{ROI} = \frac{\text{Net profit}}{\text{Capital employed}}$$

Capital employed= shareholders funds+ long term liabilities

Long Term Liabilities	Amount In Lakhs
equity capital	10459.48
Karnataka government capital	11382.25
reserves and surplus	29098.41
secured loans	47280.99
unsecured loans	14375.47
Total capital employed	**112596.6**

Inference: ROI=31632.90/112596.6= 0.2809 ROI is performance measure used to evaluate the efficiency of the investment. It compares the magnitude and timing of gains from investment directly to the magnitude and timing of investment cost. It is one of the most commonly used approaches for evaluating financial consequences of business investments, decisions or actions.

If an investment as a positive ROI and there are no other opportunities with a higher ROI then the investment should be under taken. A higher ROI means that investment gains compare favorably to investment costs.

CONCLUSION

Ratio analysis is a technique to study the balance sheet and analyze the financial performance of an organization. Ratios help in decision making and in financial forecasting and planning. it helps in communication and also helps in coordination and to have better control over the organization. It is of immense utility to shareholders ,investors, creditors, employees. And serves tax audit requirements. Hence ratio analysis is considered has a tool to study the performance of BMTC. From the above study it is evident that the organization has to improve its liquidity position so that it can improve its credit worthiness and reputation. The further study shows that the organization has better solvency and return on investment which gives a positive outlook of the organization.

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THE STUDY OF OPPORTUNITIES AND CHALLENGES OF DIGITAL ADVERTISING IN INDIA

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ABSTRACT
A growing Indian economy, poised to become the fourth largest economy, coupled with an increasing per capita income, growing middle class and working population has seen surge in the domestic demand for leisure and entertainment services. As India grows, the media and entertainment industry has been digital with the demand for both traditional and digital content surging. India owns a unique place in the advertising space. While digital and social are at the steep growth trajectory, a large part of the audience still identifies with traditional media with the latter evolving in its own manner through technology infusions along the way. More and more media consumption is happening on the digital platform and people are spending more time on digital media as compared to traditional media. This increase can be credited to the improvement of mobile devices technology, internet technology and internet connectivity which has provided the viewers with the options of accessing digital media content. Marketers are shifting their budget spends in tune with the shift of viewers preference towards digital media from traditional media. The winning mantra is to strike a balance bases on what resonates with the audience mix. Therefore this research paper attempts to understand the opportunities and challenges of digital media in India.

Keywords: Digital Media, Advertising Industry.

INTRODUCTION
The increasing penetration of Digital media among the Indian audience is creating huge 0pportunities for marketers to reach out to untapped audiences in newer ways than before. The Indian advertising industry stands at Rs 55960 crores and is estimated to grow with the CAGR of 11%. Currently the digital advertising industry stands at Rs 8202 crores and could jump 2.3 times to reach to Rs 18986 crores by 2020. This growth can be attributed to the roll out of 4G, reducing mobile data cost, increasing smart penetration and increasing time spent on mobile phones. Currently digital media is contributing to 15% to the total advertising industry and is expected to reach to the share of 24% by 2020. E-Commerce is the biggest contributor on digital media. Almost 19 % of the total digital spend is through E-commerce followed by FMCG, Telecom and BFSI. The rapid up-take of connected devices, especially smart phones and tablets are instrumental in media consumption shifting beyond traditional media formats such as broadcast and cable TV towards digital mediums. Increased digital consumption in India is expected to help media conglomerate drive consumer aggregation. Along with increasing connected device ownership and time spend online, consumers media consumption habits are also shifting. With rapid digitalisation, the face of Digital India is expected to be far more diverse in the near future, moving away from the old, familiar ogure of an urban, mid-aged, upper-middle class male. There is a predominant shift towards using the mobile phone as a primary and only access point to internet.

OBJECTIVES OF THE STUDY
1. To understand the digital revolution in advertising industry.

2. To understand the growth factors responsible for digital advertising in India

3 To identify the challenges of digital advertising

RESEARCH METHODOLOGY
The above study is based on the secondary data collected through various books, business magazine, journals, internet websites and research studies.

DIGITAL PENETRATION IN INDIA
India is one the brink of transitioning into a digital economy with a big push from the government and Public Private Partnership model. The Indian government constant efforts to boost digitalisation coupled with an array of economic reforms and policies infused high momentum into India's participation in a digital economy. The telecom sector has contributed in equal measure due to lower mobile data rates, improved connectivity have put India on a path a mobile revolution of sorts.

According to TRAI estimates the internet population in the country is going to hit to 738 million by 2020. Currently there are 430 million internet subscribers of which 130 are rural subscribers and 300 are urban subscribers. Digital penetration is creating huge opportunity for reaching out to untapped audiences. The internet economy will generate new opportunities and open up fresh markets. This will also create new job

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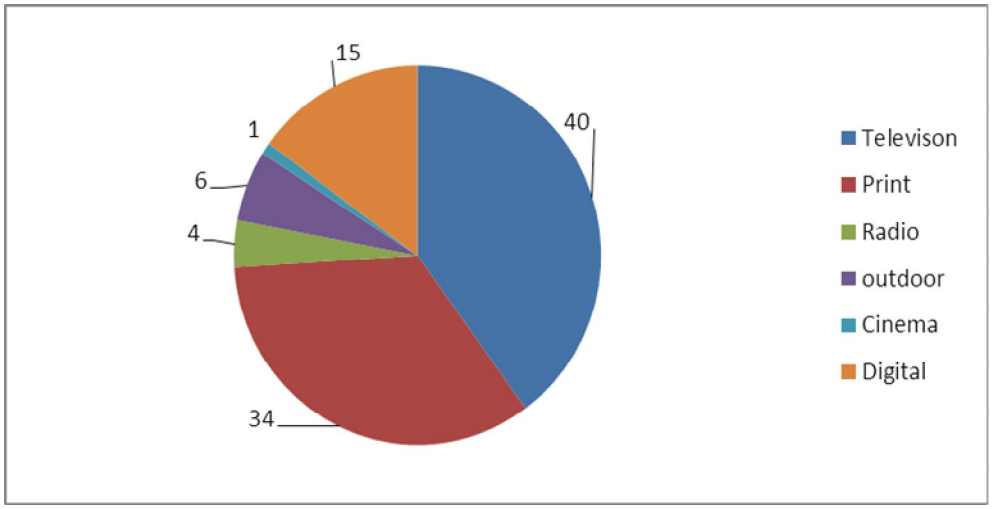
opportunities with the potential to become a huge business opportunity across sectors in the next couple of decades. India's low levels of advertising spending drastically contrast with the population of the country. Even though the internet penetration is comparatively low, digital advertising spending on a per user basis is the lowest of any where in the world.

Brands are slowly shifting their marketing budgets to digital platforms as the digital medium becomes all pervasive and consumer increasingly spent more time on this medium. Even though digital advertising platforms have been instrumental in direct sales, so far they do not match upto traditional media when it comes to brand building. Brand building is largely happening through mature adverting mediums such a T.V rather than digital. The explosive growth of internet-enabled businesses such as e-commerce, digital wallets etc has also caused a shift of advertising money toward this medium as businesses targeting consumers inclined to online transaction rely on digital advertising platforms. Mean while, the smaller brands also prefer to make investment on digital platforms as compared to bigger brands as it provides better rate of returns. Consumers are looking for brand stories. Content has become more story driven. To stay ahead of competition and offer the best experiences to consumers, brands will need to embrace the potential of disruptive technologies such as AR, VR and voice activation. The extent of adoption of these services will depend on a number of factors and brands may be slow to adopt these technologies for advertising. Figure 1 highlights the spending on digital media as compared to other media in India.

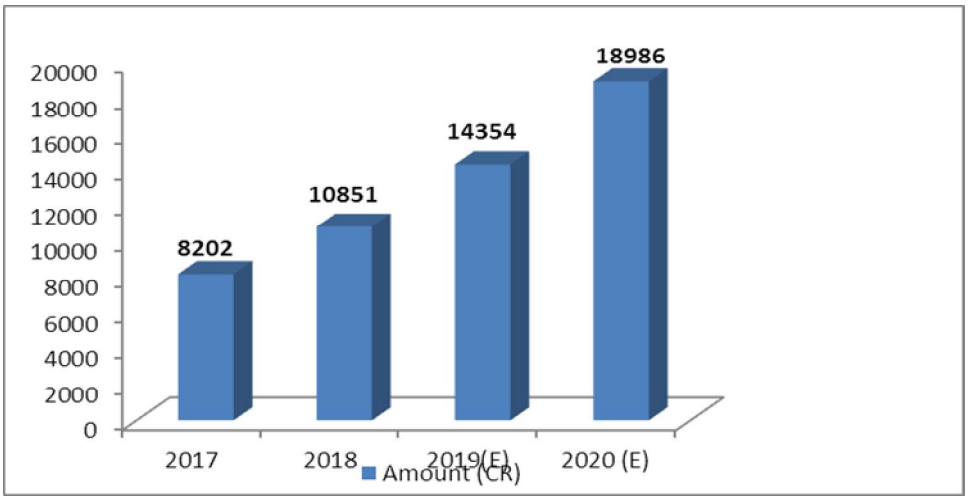
Figure-I: Advertising spending across various verticals



Source: DAN_E4M_Digital_Report_2018

The Digital advertising industry stands at INR 8,202 CR by the end of 2017 and is expected to grow with a CAGR of 32% to reach INR 18,986 CR by 2020. Spends on Video ads have shown a significant increase and accounted for 19% of the overall spends in digital advertising. This category is estimated to witness growth of 38 per cent CAGR till 2020. Spend on mobile advertising also recorded high year-on-year growth.

Figure-II: Advertising spending in various media



Source: DAN_E4M_Digital_Report_2018

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CHALLENGES

Slow Pace of Digital Transformation

The slow pace of digital transformation has been one of the key challenges for the deprioritization of digital marketing in India. Digital advertising in India is catching up with its traditional counterparts as advertisers begin to realise the effectiveness of digital marketing over the print and TV and stop turning a blind eye to traffic quality and targeting. The challenge with non traditional forms of advertising is how to prove effectiveness whether the objective is to make people more aware, change perceptions or take actions.

Lack of Unified Metric System

There is no unified metric system to measure ads which makes it difficult to evaluate ad campaigns against the traditional media formats.

Frauds in Digital advertising

Advertising frauds continue to remain a major issue for the digital ecosystem leading to

misevaluation of advertising impressions and wastage of money. Advertising frauds is one of the key concerns of digital advertising. With the advent of bots, the increase of invalid impression served are robbing advertisers of their money. The detection of ad frauds is mostly based on automated approach, which is prone to security breach as it is not difficult to adapt to the systems of anti-fraud companies and mimic human behaviour. App install frauds have also become profound in recent times. All these factors create deficiency of trust, which is unhealthy for the digital advertising sector.

Growing Use Of Ad Blocking Software Brand Safety

Brand Safety is another concern stemming from the guidelines from multiple regulatory bodies for each industry e.g. SEBI for mutual funds, IRDA for insurance, etc. Furthermore, brands need to protect their reputation by avoiding compromising publishers and inappropriate content especially with increased user generated content being monetised for serving digital ads.

FUTURE TRENDS IN DIGITAL MEDIA

Rise of Video Content Power of Choice

Video content consumption will rise, not just in terms of time spent, but also with big players increasing their content offerings. Innovation in bigger digital platforms like OTT will drive the digital industry.

Power of Choice

Consumers will no longer accept content pushed upon them. The future is a more choice-based, 'pull' environment; more in demand and streaming.

Voice Based Interaction

Voice will be the next big thing. With voice activated search and AI, along with innovation in smart home technology, the way consumers interact with devices is heading for a major change and brands will need to be ready for this new future.

Engaging Mobile Experience

Video advertising is going to enter the next phase and we will see it become more interactive, more responsive and custom built for mobile experiences. We will also see more content developed specifically for mobile, location based marketing, micro-video moments, and rise of m-commerce.

Transformations in Payment Mechanisms

Digital payments and wallets will become main stream. Rise of mobile-first business in a shared economy coupled with innovation in the payments space will cause massive disruption in the way people have consumed products and services.

CONCLUSIONS

Digital Media has a tremendous potential to increase in sales provided business should have knowledge to implement it in the right way. Digital Media companies need to develop a comprehensive framework and an operational ecosystem that manages strategic growth, challenges, transforms traditional operations for seamless digital integration, enables investment for scale and growth while handling taxation and security related challenges effectively. Benefits like increased brand recognition and better brand loyalty can be gained by effective digital plan. Digital marketing campaign help in reduction in cost, boost in inbound traffic and better ranking in search engine.

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A COMPARATIVE STUDY OF CURRICULUM AND COURSE OF B.COM AND SELF FINANCING COURSES OFFERED BY UNIVERSITY OF MUMBAI

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ABSTRACT
Education is means to progress and base of Welfare of the Human Resource in every Culture. Education is the only way which can help to achieve overall development and Empowerment of different Class of People all over the World. Curriculum is an integral part of the Education Process. A Productive Curriculum helps Students to develop Positive Attitude towards Education. Curriculum helps in nation building as the Coursework content and practices of Curriculum can train the Students to become a good Citizen. The Curriculum of different courses is also important to attract the Students. Curriculum should understand the needs of Society and must be as per the challenges exists at National and Global Level. This Study is a Comparative Study of the Curriculum and Coursework of Bachelor of Commerce and Self financing Courses likes B.M.S, Banking and Insurance, Accounting & Finance. The study compares the advantages and disadvantages of the Curriculum and the Course work to know the preferences and attractiveness of the Courses among the Students.

Keywords: Education, Curriculum, Development and Empowerment, attractiveness.

INTRODUCTION

The Word Curriculum is directly and indirectly related to the Education System of the respective Society's. The design of the Curriculum to great extent influences the attitude and the practices of the Students. Curriculum in it own self can be considered as a Training Centre for the Student who is the Responsible Citizen of the Country. The word Curriculum is derived from the Latin word 'currere' which means 'a Course or track for running'. Traditionally Curriculum and Course work was a means to prepare for adult life and child's present interest were overlooked, but the modern approach of the Curriculum emphasizes of the current need of the Students. It does not adhere itself in the limitation of the text books. Modern Curriculum should be practical rather theoretical. The Experiences of the Environment are important for the Curriculum. Curriculum is the most important tool to attract the Students for the particular courses. Curriculum generates interest in the Students regarding the syllabus and the course work. It is the Blueprint or a plan that has to be followed by the authorities, parents, teachers and Students and hence it must be according to the needs and present challenges of the Society, Nationally and Globally.

DEFINITION

As per Kerr, "Curriculum is all the learning which is planned and guided by the School, whether it is carried on in groups or individually, inside or outside the School."

As per Secondary Education Commission (Mudaliar Commission 1954):

" Curriculum included all learning experiences in or outside school that are included in a program devised to help him/her develop physically, emotionally, intellectually, socially, spiritually and morally."

IMPORTANCE OF CURRICULUM AND COURSEWORK:

Curriculum is the most important factor that can touch the Human aspects very effectively. Curriculum plays very important role in many sections of the Society. The effect of Curriculum is directly and indirectly related to the current environment of the Society.

Some of the importance of Curriculum and Coursework are as follows

- Curriculum can help in nation building by including developmental practices and concepts in the content of the syllabus.
- Curriculum can help in framing policies of the nation.
- Curriculum is important as it can relate the knowledge directly to the needs of the Society.
- Curriculum can enhance the abilities of the Student by providing them with challenging tasks and projects.

CURRICULUM OF COURSES OF UNIVERSITY OF MUMBAI

University of Mumbai provides various courses with different Curriculum. The Number of Student differs in the various Courses. There are traditional courses and also modern Self Finance Courses which provides wide range of subjects. The Criteria for the admission in the various Courses are also different. This study is conducted to

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compare the Curriculum and Course work of Bachelor of Commerce Program and Self Finance Course like Bachelor of Management Studies (BMS), Accounting and Finance, Banking & Insurance and to observe the responses of the students regarding the Curriculum and Course work of the above mentioned programs.

OBJECTIVES OF STUDY

The Objectives of the Study can be explained as follows

- To Study the advantages of the Curriculum and Courses of B.Com and Self Financing Courses through comparative study.
- To study the different point of view of Students regarding Curriculum and Courses.
- To Study the level of attractiveness between the Curriculum of B.Com and Self Financing Courses.

HYPOTHESIS OF THE STUDY

H0: There is no difference in the level of attractiveness of Students towards Curriculum of B.Com and Self Financing Courses.

H1: There is difference in the Level of attractiveness of Students towards Curriculum of B.Com and Self Financing Courses.

COLLECTION OF DATA

The Data Collected for the Study of the topic is consisting of both Secondary and Primary Data. The Primary data is collected through the questionnaire prepared with options using 5 points LIKERT SCALE. The Criteria like Practical, Projects & Case studies, etc. were used for getting the response of the respondent. The Population for the Study was the Students of Degree Colleges of Mumbra Region. The Sample was of 100 Students in which students of 3 Degree Colleges of Mumbra region is included of both the Courses i.e. B.Com and Self Financing Course. The Secondary Data is collected through Internet, books and various institutes. The responses were recorded and findings were explained.

LITERATURE REVIEW

Various Sources of Information were used gather information. The Definition given by various writers such as Kerr, and by the institutes have gave light to the study. The Concept of Curriculum is better explained by the various authors as followed:

- The Definition given by **KERR**, explains clearly that the Curriculum is the activity whether it is carried out individually or in group inside or outside School or Colleges.
- **Secondary Education Commission** has explained the Curriculum in light of findings of Mudaliar Commission, 1954. The Commission explains that Curriculum plays important role in developing students Physical, emotional, mental, intellectual, Social, Spiritual and Moral qualities through Learning Experience.

DISCUSSION AND FINDINGS

Curriculum is the very essential part of the Education System. In this Study Comparison is made between the Curriculum and Courses of Bachelor of Commerce and Self financing Courses like Banking & Insurance, Accounting and Finance, BMS etc. As per the Study conducted it is observed that there is difference between the two above mention Curriculum and Courses. Both the Courses are conducted by University of Mumbai under different Program name. There are certain criteria on the basis of which the comparison is made. These criteria include points such as Projects, Eligibility Criteria, Syllabus, Pattern of Examination and marking Schemes, Job Opportunities, internships, Other Activities etc. The following Comparison is made between the Two Courses:

Table no-1: Comparison of Curriculum of Bachelor of Commerce and Self Financing Courses

Criteria's	Bachelor of Commerce (Plain)	Self Financing Courses (Banking & Ins, Acc & Fin, BMS etc.)
Eligibility	Any Percentage/ Repeaters can do.	Minimum 55% for Open, 45% for Reserved/ Only Students passed in First attempt.
Syllabus	Limited Range of Subjects, lack of specialty	Wide range of subjects, Specialty like Marketing, HR, Finance are available.
Exam Pattern	Exam are conducted for 100 marks. No Internal evaluation.	Exam pattern is of 75:25 with Internal evaluation.
Internship/ training	No compulsory provision for Internships & trainings.	Provisions are there for Internships, trainings with marks.

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Job Opportunities	Not connected directly, chances are less.	Connected directly, chances are more due to specialization.
Projects/ Case studies	Projects/ case studies lack seriousness has no marks allotted.	Projects/ case studies is very important has marks are allotted.
Practical Knowledge	Emphasis less on Practical Knowledge	Emphasis more on Practical Knowledge.

As per the study and the data given in Table no. 1 we can see that there is major difference between the Courses of Bachelor of Commerce and Self Financing Courses on the basis of the Criteria given in the table.

Students are the most important stakeholder of the Curriculum and Courses with followed by the teachers and then parents. The idea of getting the review about the Point of view of Students about the Curriculum has never became the main focus of the authorities. The view of students describes their personal choice and attitude towards the different Curriculum of different courses. On the basis of the Criteria's students have different point of view regarding Curriculum of B.Com and Self Financing Courses.

Preference of Attractiveness of Students

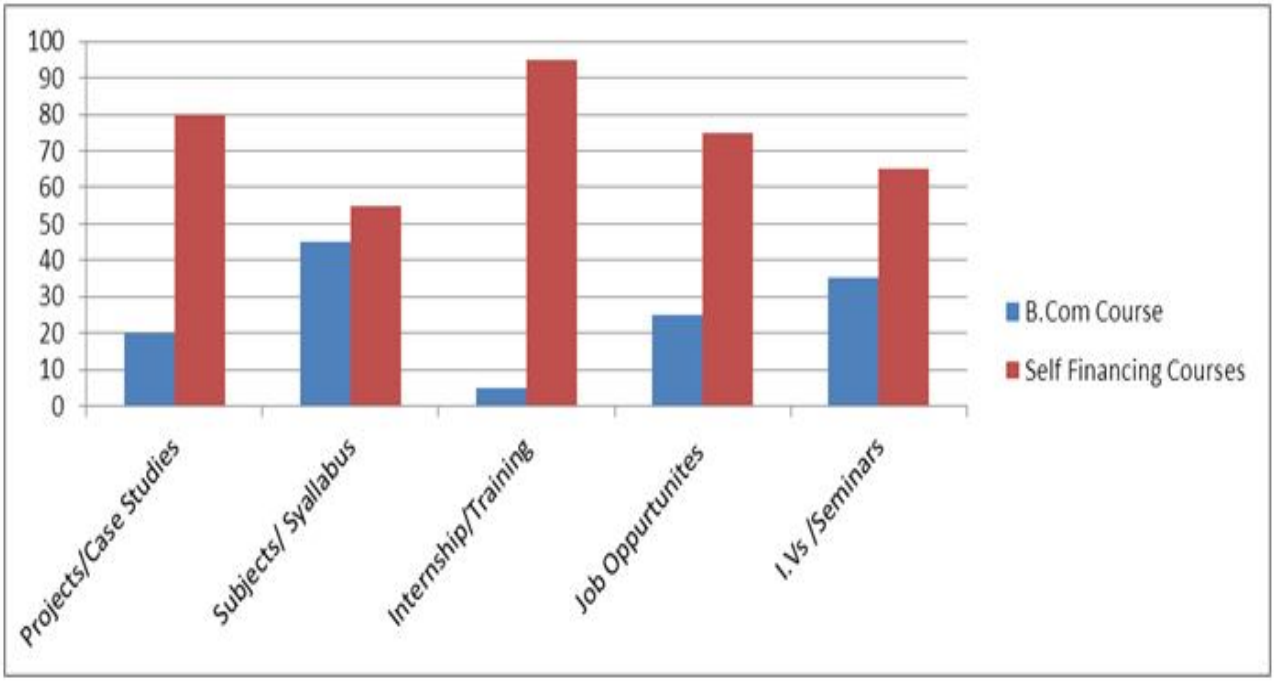

Figure-1: Curriculum Attractiveness as per Students respondents

The above data in graphical form clearly shows that the attractiveness of the Students is towards Self Financing Course in comparison with B.Com Curriculum. The Self Finance Courses Curriculum includes all the major criteria's which are important to make the Course attractive and interesting. The Students are more inclined towards self financing Courses due to presence of different activities in the Curriculum of the Self Financing Course. The Internship Programs and Industrial Visits, seminars make it more fruitful and experience based. So by comparing the Curriculum of the both, we can found that the Curriculum and Course of Self Financing is more attractive to the Students.

SUGGESTIONS

As per the evaluation and analysis of data and as per the responses, the following points are suggested to improve the Curriculum of the Bachelor of Commerce Course:

- Curriculum of B.Com should include the relevant Projects and Case studies to make the Curriculum more active and participative.
- Course of B.Com should have practical concepts like Industrial visits, Seminars, Workshops etc.
- Internship & training programs should be included in the Curriculum of B.Com
- There should be provisions of Research for both the Curriculum.
- Activities related to ability enhancement of the Students should de included in the Curriculum.

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SCOPE OF STUDY

The present study includes the comparative study between the Curriculum and Course of B.Com and Self Financing Courses and also explains the difference between the two courses on the basis of certain criteria's. This Study can be further used as information or data for the study of Curriculum and Courses especially of Degree College level of Commerce and Self Financing Courses. This Study can also be used by the students for getting information of Courses for selection of Courses.

CONCLUSION

The Curriculum and Courses are the most important part of the Education System. The Curriculum is the Blue Print of what is to be done. Students, Teachers, Parents, Authorities and Society as a whole is the stakeholder of the Curriculum. The Comparison between the Curriculum is B.Com and Self Financing Course gave the clear picture that the Curriculum must be interesting and attractive in order to get the Students involvement. A good and productive Curriculum will encourage students to actively participate in accomplishment of the Educational objectives and also that of the nation and the Society. The Study clearly reveal that there is a difference in the preference of students between the curriculum of B.Com and Self Financing Courses and hence the Hypothesis H1 said to be proved correct. Curriculum must be framed and designed as per the needs of the Students and Society and also as per the interest of the various stakeholders.

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DIGITAL TECHNOLOGY IN TEACHING: CHALLENGES AND OPPORTUNITIES

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ABSTRACT
Technology today has a wider scope even in education industry. Teachers are expected to know upcoming technologies to enhance skills and teaching interaction better than traditional teaching method. This study focuses to know about the challenges and opportunities towards digital technology into teaching by the teachers. The researcher has used questionnaires and interview questions for data collection. Research was focused towards teachers who are from commerce stream from the colleges in Navi Mumbai. Structured questionnaire was framed to get the demographic information and technology know how by the teachers.

Keywords: Digital technology, Challenges and opportunities in teaching

INTRODUCTION
There is a need to have quality resource into teaching and learning in higher education. It is a way towards digitized world and a faster access to the developments in education. Technology has an accessible way of working in different ways to approach new world for education. Hence there is a need for teachers to know the developing skills in students and give them a digitized approach for the development towards industrial employment. Though technology is challenging but it gives an access to various information and many different ways to learn. It creates a relationship with teachers and students. It also has a creative and fun approach which every user can experience.

Digital technology is an evolution of internet and other day to day applications. Applications such as smartphones, computers, and laptops has a process of input, processing and giving an output of information as an when needed by the user. The most frequently used social Medias like Facebook, what's app, linked in, Skype messenger, Google Allo has made a link with multiple users and ease of access anywhere and anytime. Information can be also stored in the storage devices like pen drive, Compact disc and be delivered with a good speed. Due to digitization the education system has entered a new paradigm and changed the way of learning with new mode of communication. Moreover it has made paperless system.

There are ways towards digitized system which is not only technology but its adoption by the teachers is also needed. It has enhanced the system towards e learning, mobile learning, interactive whiteboard, MOODLE, video conference, online courses, massive open online courses (MOOC) and many more. There are new technologies like clickers which is student responsive system to give feedback, flash for the students learning etc.

DIFFERENT OPPORTUNITIES TO HAVE DIGITAL TECHNOLOGY IN EDUCATION ARE
- It helps new way of interaction between teachers and students.
- It helps students to be more enthusiastic and interactive online.
- Students can opt for various courses online through different websites like UDEMY, Coursera, Alison etc.
- It creates an environment or paperless teaching and learning which can be accessed through eBooks or online resources.
- Has a way towards learning management system (LMS). It is a software application which can be used into administration, documentation, tracking of data to generate report and deliver educational courses, training and development programs.

STATEMENT OF THE PROBLEM
The aim is to understand the challenges faced in using digital technologies by the teachers in teaching. Education sector should be technically sound and teachers are the major focus in the entire input of learning.

OBJECTIVES OF THE STUDY
1. To know various technologies used in education.
2. To know various opportunities using digital technologies in teaching.
3. To find out challenges by the teachers while using digital technologies in teaching.

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HYPOTHESIS

H_0: There is no technical or professional training to the teachers.

H_1: There is technical or professional training to the teachers.

LITERATURE REVIEW

Condie and Monroe 2007, found that reporting to parents is enabled by digital tools. To teachers it meant that the same information could be provided to all parents and customized for parents and learners.

Hargis and Wilcox 2008, studied about free and ubiquitous resources that can be used to support teacher efficiency, including online collaboration tools like Skype, Google documents, Second Life.

Higgins et al, 2012, aimed to study about extent that teaching continues to innovate using digital tools and resources.

Li and Ma, 2010 have studied that teachers have to adapt to learner-centred approaches to learning if they are using digital tools and resources.

Rosen and Beck-Hill, 2012; Belland, 2009 in their study have focused on the opportunities teachers have to see and how digital resources can be used and pedagogies can be adapted.

Watts-Taffe et al. 2003, have found that teachers can act as catalysts for the integration of technology through ICT. If there are equipment and necessary technological support available for the teachers, developing an ICT class will be easier for them. The main responsibilities of these teachers will be changing their course format, creating and explaining the new assignments, and arranging for the computer lab through their technology learning specialists or assistants.

RESEARCH METHODOLOGY

The study is aimed to find about digital technologies used in teaching, challenges faced by the teachers using technology in teaching and various opportunities in using digital technologies. This study is based on the primary data collected from arts, commerce and science colleges in Navi Mumbai. There were thirty teachers from commerce stream who were considered for the survey on the basis of random sampling.

LIMITATIONS OF THE STUDY

Study is been restricted in the area of Navi Mumbai only. Other colleges like management, engineering is not considered for the study.

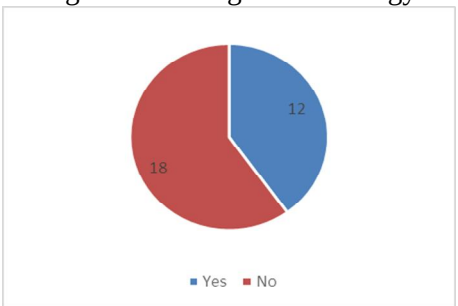
DATA INTERPRETATION OF THE STUDY

Table-1: Demographic profile of respondents

Sr No	Questions		Percentage
1	Gender	Male	12
		Female	18
2	Age	25-30	12
		30-35	10
		35 and above	8
3	Teaching Experience	1 year	5
		1-10 Years	12
		>10 years	13

The above table 1 shows demographic profile of respondents. Male respondents were 12 per cent and female teachers were 18 per cent. Their age was also considered for the research which was 12 per cent respondents was of 25 to 30, 30 to 35 was 10 per cent and 35 above teachers were 8. Their teaching experience was also known for the study where five teachers have 1 year experience, 12 years was 1 to 10 years and 13 per cent was more than 10 per cent.

Fig-1: Use of digital technology



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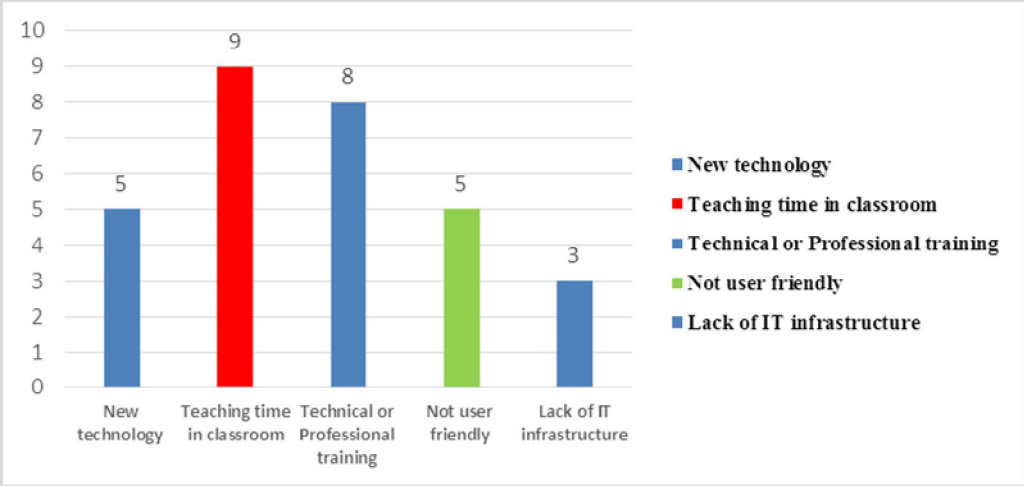
From the above figure 1 it was found that the only 12 per cent of teachers use digital technology in daily teaching and 18 per cent do not use.

Fig-2: Challenges while using digital technologies



It is found from the above figure 2 that there are challenges while using digital technologies which is new technology is 5 per cent, teaching time in classroom is 9 per cent as discussed with the teachers, 8 per cent were of opinion that there is lack of technical or professional training, 5 per cent was not user friendly and 3 per cent was lack of IT infrastructure.

Table-2: Chi-Square test result for Challenges on technical or professional training to teachers

	Value
Chi-Square	2.632
Df	1
P-value	.105

Above table 2 shows that there is no technical or professional training to the teachers and the observed proportion is not significant. Hence the null hypothesis is proved as the p-value is greater than that of 0.05.

RESEARCH FINDINGS & CONCLUSIONS

From the above study it is found that there are teachers not using digital technology in their curriculum because there are technological challenges like new technology to which they are not comfortable, as they are not much familiar with technology their teaching time is consumed more in classroom. Only few teachers do not find any challenge in using digital technologies as they are comfortable using applications and computers. There is also not much of the technical or professional training given to teachers like how to have the basic use of technology, use of software's in their curriculum. They also do not find the technology user friendly as it is not their daily use. The most important is lack of IT infrastructure due to which they find it challenging to have technology in practice in their teaching.

RECOMMENDATIONS

Technology is important part of education which has its pros and cons. It is an important gadget to which challenges and opportunities are embedded together. In order to overcome challenges colleges should enrich IT infrastructure, provide technical training to teachers, they should be also provide on time technical assistance to new technologies, it will help to enrich the knowledge and skill of the teachers and make them independent user towards technology. Colleges should introduce new ways of teaching through digital technologies such as basic compute training, make teachers familiar with new applications and immediate technical assistance especially during lectures.

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A STUDY ON THE IMPACT OF WORKPLACE DIVERSITY ON ORGANIZATION

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ABSTRACT
Purpose: The purpose of this paper is

1. *To study the impact of the Workplace diversity on organization.*
2. *To highlight the role of HR managers to build strategies to reduce problems arising out of workforce diversity.*

Research implications: This paper provides with a clear understanding of the effects of workplace diversity in an organization.

Findings: This research paper consist of the major findings of the effects of workplace diversity like gender, race and caste diversityin an organization. It also consist of different ways how a company can tackle different diversity amongst the employees & yet attain its targets. The effects of workplace diversity in an organization can have negative as well as positive effect on the organization. Negative effect happens only when the company lacks in mentoring & motivating the employees. The study shows that workplace diversity has led to an increase in the productivity but differences in the treatment of different employees can lead to hindrances in the improvisation of the productivity of the company.

Originality/Value: The paper shows different diversities in a company & how they overcome these issues.

Keywords: Diversity, organization, productivity, mentoring and guidances.

INTRODUCTION
There are basically two dimensions of diversities; primary and secondary. Primary diversity includes gender, age, sexual orientation, physical ability, ethnicity and race. These differences usually doesn't matter initially to anyone. Diversities should be recognized and accepted. Secondary diversities include income, geographical location, education, religion etc. These diversities are noticeable after first interaction. Due to globalization people are more open minded in marketplace now. But not all workplace or organization are that open towards people. These have led to positive and negative impact on the organization's productivity.

The company on the basis of their perspective has adopted a new diversity so that all the employees in the organization are treated equally with respect. Due to so many cultural differences in the organization, managers get to learn many things and also teach the same thing to others so as to how you will sustain in a multi-cultural company. Diversity at a workplace also leads to respect amongst the employees. They learn to respect different cultures & work in harmony. Of course, getting an idyllic norm at workplace is not possible but people therein recognizes each other's strengths and talents and they respect them (smallbusiness, 2018). But sometimes diversity can lead to conflicts among the employees. If a group of employees are given a common goal or a target, they usually neglect all the diversity issues and work in sync with them. Workplace diversity provides us with a number of different talents.

REVIEW OF LITERATURE (ROL)
Impact of Workplace diversity on organization
Priscilla Dike (2013) found out whether the workplace diversity contributes to the organization's success. She examined five companies from Ghana and Finland to find out the answers. She interviewed three of the companies and gathered information on the rest of the two companies. So the conclusion she found out was, in most of the companies diversity at workplace contributes to productivity but in some of the companies it is vice-versa because of the differential treatment amongst the employees. Also, she stated in her conclusions that big companies are more passionate about diversifying their company and striving hard to implement it whereas small companies take it as an option and evict it if they find it too hard.

OBJECTIVE OF STUDY
1. To understand how workplace diversity is important in big international companies as well as give the reader an idea how to manage it using different management tools.
2. To know the role of an HR Manager in managing diversity in an organization.

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RESEARCH METHODOLOGY

The secondary data would be collected from sources like books, journals, research projects, web, newspaper articles, internet etc.

SIGNIFICANCE AND IMPORTANCE

The main aim behind the study is to come up with different methods in organization to handle diversity at a wider level. There has been countless number of studies on impact of workplace diversity in an organization but a gap has been left unfilled which is its importance in the corporate culture. Now-a-days managers are finding it difficult to cope up with the employees of different cultural background and how to make them feel equal.

The study is significant and important to academicians, students, HR Managers in organization and policy makers, who can use this research for their benefits(dike, 2013). Diversifying the workplace not only adds value to the company but also brings in innovative ideas. Diverse set of people bring into different sets of ideas and innovation which results into different results. It helps bringing individuality in the organization. It leads to enhanced productivity with better and new ideas. Diversity in an organization makes the organization better as it is seen by others as a reputed organization which uses better ways to handle employees. It helps in improving the decision making power of the company. With diverse workforce there arises different problems which can handled in different ways. People with different backgrounds come up with different solutions or ideas which are creative to business of the organization. Also interacting and working with people from diversified background helps them on an individual bases. It enhances their personal growth and development. It helps the organization achieve its business more smoothly. For example, an employee from a certain background can be given to handle the customer from the same background which will make him feel more comfortable and will also bring in more business without any hassle. Such a company has the ability to retain talents as well as experienced professionals and put a competitive edge to others. Diversity gives rise to competition, motivation but also gives rise to biasness, racism. So managing these things are a big of a task for the HR managers.(sokolava)

LIMITATIONS OF THE STUDY

The study is not exploratory as it is based only on secondary data from books, journals, internet sources etc.

FINDINGS AND SUGGESTIONS

There are various reasons for a company to have diverse workforce. It may change from company to company. The most important reasons or things to be taken into account for diversity are as follows:

1. Company Location
2. Company type
3. Organizational culture

Company Location: Company location is important to companies which have their manufacturing plants or units at different locations. So they have no choice other than hiring people from the local areas or from that country origin. But for companies that are set up at one place, they have the choice of hiring people either from their company origin or from different countries. This leads to diversity in an organization. (dike, 2013)

Company type: Different companies have different rules and regulations w.r.t employing employees. Usually a public sector company or a company which is bigger in size requires more employees, so they hire more and more number of employees. If a company employs diverse employee it would mean that the organization is well convinced with them and will work better with them on board.

Organizational culture: Every company has their own sets of rules and regulations. So before hiring any employee they have to look after the company's norm and then hire people. There are basically five important components of an organizational culture and those are practice, vision, value, people, place and history.

HR managers should provide trainings related to diversity. The company can also have policies and rules to deal with conflicts that arises in the company due to problems which involve diversity. According to a survey conducted by **Glassdoor**, 67 percent of people those who were seeking a job said that a diverse workforce was important whereas 57 of the employees think that their company should be more diverse. Having people from multi-lingual background can help the company expand their business in international markets.

Demographic search of US by Pew research center concluded that by 2055 US will not have a single people from any racial or ethnic background. This will impact the business and productivity of the organization.

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Some of the suggestions for managing diverse workforce in an organization are as follows

Prioritize communication: Communication is the most important factor which can cause or make the employee feel a part of the organization. The policies, safety rules, procedures should be communicated to them properly and if required should be made them understand in their own language. To overcome language barrier symbols or pictures should be put wherever applicable. (peoplescout, 2018)

Treat each employee as an individual: Some of the employees which belong to different race, culture or have different sexual orientation are assumed differently and indirectly treated differently. Instead avoid looking at their background and treat them as an individual rather than discriminating them on their differences. (peoplescout, 2018)

Encourage employees to work in diverse work group: If the company allow employees to work in a diverse work groups this will lead to the breakdown of their mental wall and they will learn to respect them as well as their differences, not only in smaller run but as well as in bigger run.

CONCLUSIONS

The main aim of this research was to show the readers that diversity have had a major impact on big as well as small companies. Big companies as well as small companies constantly thrive to come up with solutions so as to how make the workplace a healthy environment for the employees. Mentoring is one of the best ways to ensure that there is not bias related to diversity. Due to cultural mentoring there has been so many improvisations in the workplace. The managers should change some part of their techniques if the techniques for managing diversities has no fruitful solution. But for this the managers should also constantly change the vision and communicate the same with their employees. Diversity plays a major role in the upbringing ofany organization. It helps the personnel managers to deal with problems and makes their thinking power more open. Nevertheless, the decision of employing diverse employees lies totally on the organization. Due to their difference in their policies they may think about employing employees from diverse background since it can have negative as well as positive effect of the organization. Moreover diversifying the workforce is the best strategy to improve productivity & to implement it. But for this the company should have solutions if problems arises due to diverse workforce. Similarly it is also difficult in managing the same. Managers should give more room for the employees to communicate with each other and try to know their differences and respect them.

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USE OF PAYTM – A BOON FOR CASHLESS ECONOMY

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ABSTRACT
With the development of Information Communication Technology (ICT), people have a lot of advantage of using the internet services. One of the information technologies revolutionary is Smart Phone, who has many features in one place. It has brought out a very huge change in the lives of people. Hence people are able to enjoy great knowledge and comfort with the advancement in information technology. By using technology now a day's people don't have to rely on other people, for e.g. if they are going to some new place, they just need to open a Google map and a person reaches at the place without any hassle.Through its mobile app, Paytm is the Indian mobile first financial services company that offers payments, lending, banking, insurance and shopping to consumers. There are more that 100 million user'scustomer from India. It has got extreme high brand awareness across India. After demonetization, Paytm was able to scale up business quickly. It offers multiple cash back option to customer. This paper attempts to draw research attention towards tothe consumer to make them aware the benefits of using Paytm

Keywords: Digital economy, internet, Paytm, Paytm wallet.

INTRODUCTION
In this digital economy, internet is easily available; gone were those day where only one telephone was available in one village or home but today due to internet availability anyone can access internet. Digital economy refers to an economy that is based on digital computing technologies, although we increasingly perceive this as conducting business through markets based on the internet and the World Wide Web. The digital economy is also sometimes called the Internet Economy, New Economy or Web Economy. Currently in India there are affordable numbers of Smartphone that are available in India which offers variety of services. Hence, smartphone has become an essential part of our daily life. Smartphone offers variety of services like mobile banking, online shopping, order food online etc.People are busy in their day to day life, they do not want to travel to market for purchase any items, they prefer to shop and do payment online with a click of button, so internet has made our life easy.

On 8thNovember 2016, our respected Prime Minister of India on behalf of Government of India announced the demonetization of all ₹ 500 and ₹ 1000 bank notes of the series of Mahatma Gandhi. Further, he has also announced the issuance of new currency of ₹ 500 and ₹ 2000 bank notes which people can exchange for the old demonetized bank notes. The government stated that this action would curtail the shadow economy and reduce the

illegal activity and terrorism which are funded by these notes. As soon as the demonetization were announced people started rushing to the bank to exchange their old demonetized notes, hence there was shortage of money left in people pocket; so due to this mobile wallet transactions picked immediately after the demonetization. Further, one of the main intentions behind the demonetization was digitalization of India and to push our country towards cashless economy and to make India a Digital Economy. Thus, one company i.e. Paytm (Pay through mobile) took the opportunity of the situation and came to a rescue of the people.

OBJECTIVES OF THE STUDY
1. To make consumer aware of the benefits of using Paytm.
2. To understand the various flexible services offered by the Paytm.
3. To encourage more people to use Paytm; which will directly help our India to become - A Digital India.

METHODOLOGY
The study is based on secondary data was collected from various published sourceslike magazines, wikipedia, newspaper, journalsand research articles related to Paytm.

WHAT IS PAYTM?
Due to demonetization people were running shortage of cash. Paytm, an Indian e-commercepayment system and digital wallet company studied the situation and grabbed the opportunity.Paytm is an Indian e-commercepayment system and digital wallet company, based out of NOIDA SEZ, in Uttar Pradesh inIndia. It is a private type of business organization, founded in 2010 by Vijay Shekhar Sharma. The area served by Paytm is

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India and Canada. It is an industry which is totally dependent on internet. Its products are Paytm Mall, Paytm Payments Bank, Paytm Money and PaytmGampind.Services offered by Paytm are online shopping, payment systems, digital wallets.

In 2013, it started its services as a prepaid mobile recharge and DTH recharge system, and later it addedpostpaid mobile, landline bill payments and data card. In January 2014, it launched Paytm Wallet, wherein Uber and the Indian Railways added it as their payment option. Later it launched its business into E-commerce with online dealing and bus ticketing. In 2015, it started its services into like education fees, metro recharges, gas, electricity and water bill payments. In 2016, it further launched movies ticketing, eventsticketing and amusement parks ticketingas well as flight ticket bookings. Even any person who is doing wholesale, retail business uses paytm App. Paytm is also used by Petroleum pump owner.Paytmprovides exciting payment offers and shopping offers.Paytm Mall is latest buzz word where people can shop anything with exciting offers and discount and further it also provide cash back facilities. Inorder to use Paytm, one need to download Paytm App on it smartphone and can avail varieties of services offered by Paytm; any cashless transaction can be through this Paytm App called Paytm wallet.

BENEFITS OF USING PAYTM

1. It is quick and safe to use,
2. In single application one can make bill payment, recharge, book ticket and lots more and one can also keep a track of all under order history.
3. It is widely accepted today
4. No need to carry debit or credit card, if your Paytmwallet is loaded which means fewer chances for being fraud,
5. Easy & automatic refund to Paytm wallet in case of product cancellation at partners store.
6. One can transfer money from Paytm to any Paytm account or bank.
7. Cashback on most of the transaction as many stores are using Paytm wallet.
8. Less documentation is required to upgrade Paytm wallet limit.
9. Good wallet limits (up to 1 lakh).
10. Avail Paytm postpaid if you have a good history with Paytm same like credit card & pay later.
11. Bank to bank transfer using UPI like BHIM or Google pay is also free on Paytm.
12. Use your credit cards to load money in Paytm Wallet and earn reward points.
13. Paytm offers various discount, cashback offers.

As customer satisfaction is one of the important key factors of Paytm, they have gained this due to their quality service; so word of mouth of cashless transaction and ease of use has been well accepted by the people.Paytm strong marketing campaigns have helped them to spread brandawareness. Security and privacy of users is an important concern for Paytm.

CONCLUSION

Paytm is one of the best technological tools used by the people. It has made people life easy, its focus is mostly on customer satisfaction. As more and more customers are satisfied, it is observed that Paytm has reached a stage where wherein they are putting more and more emphasis on retaining their customer. Paytm are ensuring that only a quality conscious and reputed brand authorized seller can sell their product on Paytm mall. Due to good discount and cashback facilities, consumer can save a lot of money in their pocket. All this will help India to achieve a dream of cashless economy and I believe this is one of the important steps toward Digital India.

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SECURITY IN WIRELESS AD HOC NETWORK

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ABSTRACT
This paper focuses on security issues in the network. We all are aware of the term Network- a group of computers and associated devices which are located all over the world and is connected to each other through metallic cables, optical cables or satellite links in order to provide communication, information sharing and resources sharing. In today`s world, tons of important information are exchanged every second on internet or any network of an organization which can be misused by attackers.The network needs security against attackers and hackers which includes two basic securities. The first is the information security i.e. to protect the information from unauthorized access. And the second is computer security i.e. to thwart hackers. Nowadays mobile office movement is gaining momentum, and following it comes wireless networks and various access points. However, wireless networks are at more risk in terms of security as compared to wired ones. This makes it more vulnerable to hackers, and hence, the wireless network security must be strong. Ad Hoc network implements dynamic mobility i.e. nodes can move from one place to another. A wireless ad hoc network is a decentralized kind of wireless network, in which any node can join and leave the network at any point of time.

This paper highlights the potential security threats a wireless ad hoc network is subjected to.

Keywords: Wireless network, Ad hoc networks, MANET, WANET, Security attacks

INTRODUCTION
In Wireless networks, radio waves are used to transmit the signals and they are available in two configurations, namely- infrastructure and ad-hoc. In infrastructure mode, transmission of Traffics between the nodes are done via an access point which controls the routing in the network. Whereas ad-hoc network does not require any access points for transmission. 802.11 standard or Wi-Fi is the most commonly used standard for wireless networks.

The security in wireless networks using Wi-Fi consists of WPA, WPA2 and WEP.

Wireless mobile ad hoc network is a collection of nodes that are dynamic and self- configured and can move freely. Hence, they are also known as MANET(Mobile Ad hoc Network). Ad hoc networks can be formed, partitioned into separate smaller networks or merged together to form a large network depending on the area of application. In MANET, each node can act as both, host as well as router. Network topology is dynamic i.e. a node can join or leave the network anytime. MANET also supports multi-hop routing if the source and destination node is out of range.

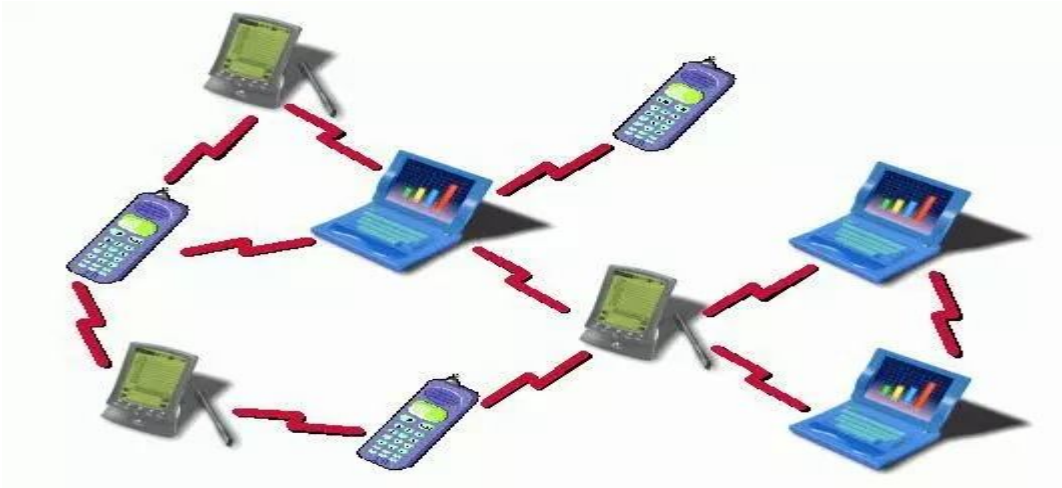

Figure-1: Wireless Ad hoc Network

SECURITY ATTACKS
Just like Wired networks, Wireless networks also face Security threats.As it has no centralized authority who can supervise the nodes and its operation in the network, Security in WirelessAd hoc network is a big challenge. The security attacks can come from within the network or from outside the network.Some of the attacks are listed below:

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1. Eavesdropping
It's a kind of passive attack in which the confidential information like location, public key, private key, password etc. can be collect by eavesdropper by overhearing and snooping the traffic. In mobile ad-hoc network, wireless communication use RF spectrum and messages transmitted can be pried.

2. Modification
In modification attack, intruder make some alteration in the messages, and thus jeopardize the decency of the packets in the networks.

3. Denial of Service (DOS) attack
In DOS attack, an attacker tries to restrict legitimate users from accessing imperative information or services. For instance, sometimes you enter a website URL into the web browser, a request is sent to the hosting server to review the page. But if an attacker overloads their hosting server with requests, it can't process your request and hence your unable to access that site. This is "denial of service".

4. Masquerade Attack
A Bogus registration attack is an active attack in which an attacker masquerades itself as another node either by creating a false identity or by stealingsomeone else`sidentity. It can then snoop the transmitted packets or may disrupt the network altogether.

5. Man in Middle Attack
In Man in Middle attack, the malicious node sneaks into aroute and sniffs packets flowing through it. A way to protect packets is to encrypt each packet in the network.

6. Black hole attack
In Black Hole Attack, a malicious node takes advantage of the vulnerabilities of route discovery strategy of a reactive routing protocol. The malicious node as a provisional node on receipt of a RREQ (route request) message forwards a RREP (route reply) with the destination sequence number larger than in the RREQ message signifying the discovery of new route to the destination. This RREP from malicious node will reach the original node before the reply dispatch by legitimate/destinationtransitional node. Thus, the source node will choose the route which goes through malicious node. By restate this for RREQs received from other sources. The malicious node takes account of several routes entrancing the traffic from all sources towards it thus fabricating a black hole in the network.

7. Grey Hole attack
In Grey Hole attack, data packets are dropped by the malicious node depending on two types of norms:

i) Node specific attack – It drops thedata packets intended to a specific victim node or imminent from certain node. while for other nodes routing ofdata packets to the destination nodes properly.

ii) Time specific attack – It drops the data packets based on some programmed/trigger time while during other instance it behaves normally.

8. Worm Hole attack
In astrophysical term,Worm hole connects two distant points through a shortcut route. In MANET, similarapproach in donei.e. one or more malicious node interrupts the routing.Thus, disrupting normal flow of packets. If this link becomes the lowermost cost path till the destination then packets will always be sent to the specific destination through these malicious nodes. The attacking node

then can either disrupt the flow (via one of the DATA traffic attack) or monitor the traffic. Wormhole attack can be achievedby also single node but generally two or more malicious nodes are connected via a wormholelink.

9. Rushing Attack
Each node first establishes a route to destinationbefore transmitting data. Sourcehost broadcasts a RREQ message to the neighbouring host and valid routes replies with RREP with the route information. Rushing attacker quickly forwards with a malicious RREP on behalf of some legitimate node capering any proper processing. The attacker node does send message to the destination node after its filtering is done, so everything seems normal from outside the network. But it increases delay in packet delivery to the destination node. It is also known as novel attack or sudden attack.

10. Jellyfish Attack
Unlike Black-Hole &Grey-Hole attack, it simply delays the data packets before finally delivering them to the destination node instead of droppingthe packets. It can even scramble the order of packets in which they are sent and received. Jellyfish attack can degrade the Quality of Service by significant end to end delay.

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11. Blackmailing Attack

In a blackmailing attack or co-operative blackmailing attack, attacker nodes accuse an innocent node as harmful node. Also, attacker may send invalid RREP messages of route to certain nodes of high cost.

12. Sybil Attack

Sybil attack reveals itself by faking multiple identities by pretending of multiple nodes in the network. So, one single node can monitor or hamper multiple nodes at a time by assuming the role of multiple nodes. If Sybil attack is performed alongwith blackmailing attack, then the resultant level of distraction can be quite high.

Figure-2: Sybil attack

Here, node M1 magnifies itself with fake identities of node M2, M3, M4, M5 and interacts with node B.

SECURITY MECHANISM

The security mechanisms are used for detecting, preventing and recovering from the security attacks. It`s basically categorized into two namely high level and low-level.

Low-Level Mechanism

Low-level security mechanisms for securing sensor networks consists ofTrust setup and Key establishment, Authentication and Authorization, Secrecy and Privacy Robustness to communication, Secure routing, denial of service, Resilience to node capture and so on.

High-Level Mechanism s

High-level security primitives for securing sensor networks consists of intrusion detection, secure group management,secure data aggregation and so on.

CONCLUSION

We have observed that most of the presently existing attacks have some features in common. Secure communication link is required for secure communication. But each node on the link should identify another node before establishing a secure connection.While modelling a new security mechanism for wireless mobile ad hoc networks, the various attacks as well as the characteristics of the attacks mentioned above as well as existing detection and mitigation schemes must be considered. Identity and credentials should be authenticated and protected. Security attacks in the network cannot be completely eliminated but prevention and vigilance will go a long way in keeping security attacks at bay.

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GROWTH OF WIRELESS COMMUNICATIONS IN DIGITAL INDIA

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ABSTRACT
Wireless Communication is the subject of today's discussion in order to extend wired network which is technically not feasible. To have complete coverage to connect unconnected area, we need to extend wireless network for transmission of data & voice transmission. It is not intended to replace wired data communications but instead to be utilized in areas that it would be otherwise impossible to communicate using only through wires network.

Laying of wired network is not only expensive but also difficult to manage a required experienced resources to manage and many approval to make communication between two points (Source & Destination) through.

Keyword: Wireless Network, Digital communication, Data Transmission

INTRODUCTION
Wireless communication system is a flexible data communications system, which uses wireless media such as radio frequency technology to transmit and receive data over the air, minimizing the need of wired connections and extend reachability up to the area which is not feasible on wired and not justified the cost investment to have the connectivity in each & every area under govt. of India scheme under state wide area network in every state (SWAN Network)

Wireless Communications Understanding
Wireless Devices that use wireless technology include personal computers, video-game consoles, smart phones, digital cameras, tablet computers, digital audio players and modern printers. Wireless compatible devices can connect to the Internet via a WLAN network and a wireless access point. Such an access point (or hotspot) has a range of about 20 meters (66 feet) indoors and a greater range outdoors. Hotspot coverage can be as small as a single room with walls that block radio waves, or as large as many square kilometres achieved by using multiple overlapping access points.

Wireless commonly uses the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands. Having no physical connections, it is more vulnerable to attack than wired connections, such as Ethernet. Web pages that use Transport Layer Security (TLS) are secure, but unencrypted Internet access can easily be detected by intruders. For protection, Wireless has adopted various encryption technologies. The early encryption Wired Equivalent Privacy (WEP) proved easy to break. Higher quality protocols, such as Wireless Protected Access (WPA, WPA2) were added later. An optional feature added in 2007, called Wireless Protected Setup (WPS), and had a serious flaw that allowed an attacker to recover the router's password.

The Wireless has since updated its test plan and certification program to ensure all newly certified devices resist attacks.

VARIOUS TYPES OF WIRELESS MEDIA
- Wireless network
- UWB
- RFID System
- MANET
- 3G / 4G
- Bluetooth
- CDMA
- Satellite

Wireless Communications growth: Connecting unconnected area
Wireless Service offerings and deliver state-of-art solutions quickly in order to maintain their competitive advantage. For doing so we need to build Secured, Scalable and Reliable Network infrastructure.

Network with high availability has become the vital infrastructure component in today's competition. Almost all processes in organization are automated today with more and more number of computers being put on the

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network. To have suitable network, we need to have redundant network in place in order to have 100% availability of the infrastructure which ensure customer satisfaction which help in return the business growth.

A leading VPN Service by TSP Providers are having presence across India Cities all with last mile on Wireless Rural/State Connectivity and Network Integration lines of business.

We provide End-to-End IT Connectivity Solutions that includes Intra City and Inter City connectivity with Last Mile on Point-to-Point and Point to Multipoint Wireless.

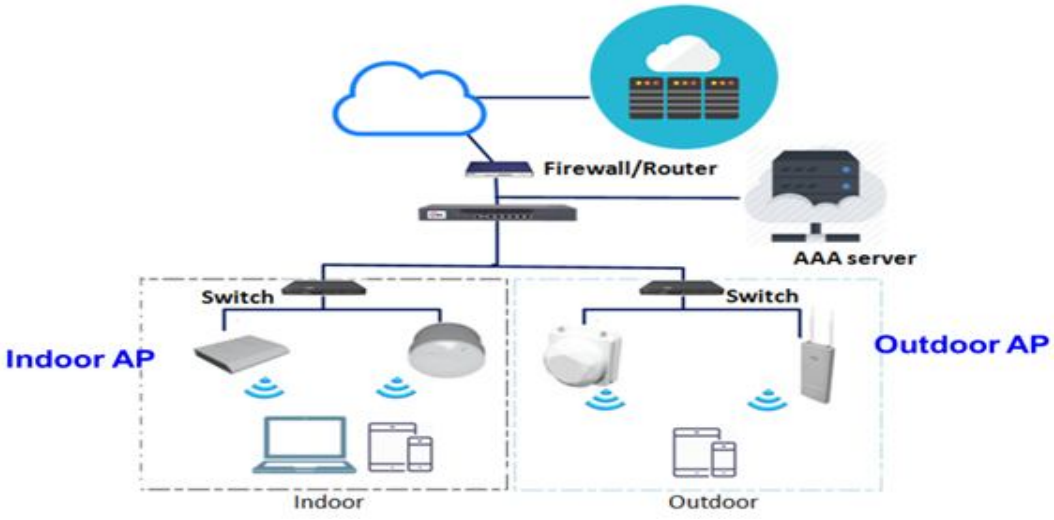
Wireless also provides high end Facility Management Services for complete outsourcing of IT services for large, multi-location enterprises. Today we are the leading Systems Integrators in providing broadband managed services with redundant failover across country.

A wireless controller is a centralized Wireless management device that manages all the access points in a campus. The following points illustrate why a controller is inevitable for larger networks.

Wireless LAN (WLAN) controller is used in combination with the Lightweight Access Point Protocol (LWAPP) to manage light-weight access points in large quantities by the network administrator or network operations center. The wireless LAN controller is part of the Data Plane within the Wireless Model. The WLAN controller automatically handles the configuration of wireless access-points for medium and large institutions/ enterprises/ larger network.

Centralized Authentication: No more individual MAC address tables and updating in each access point, controller provides for a centralized authentication mechanism through individual user name-password based Radius Server/ Active Directory/ LDAP Integration , centralized MAC address filtering or certificate/ shared key based authentication for all the clients from a central location.

WIRELESS COMMUNICATIONS SYMMETRIC LAYOUT TO CONNECT INTERNET



CENTRALIZED RADIO MANAGEMENT FOR ALL WIRELESS CONNECTIVITY

Wireless Security: After authentication, all the wireless packets are encrypted end to end using 128 bit encryption technology making it difficult for any casual intruders to get in to your network.

Wireless Intrusion Detection/ Prevention Systems (Where dedicated access points can act as scanners for wireless threats) can identify and block a whole range of wireless attacks like:

- Ad-hoc network
- Mis-association of AP/Client to other network access points
- Rogue Access Points detection and prevention
- Multiple futile attempts to connect to the wireless network
- Honey pot attacks/ Man-In-The-Middle Attacks
- Denial of Service Attacks etc.

Branch offices and remote offices are also protected as the controller can form a Secure VPN tunnel between the HO and branch locations. Rogue Access Points and Laptop's can be even located using location visualizers.

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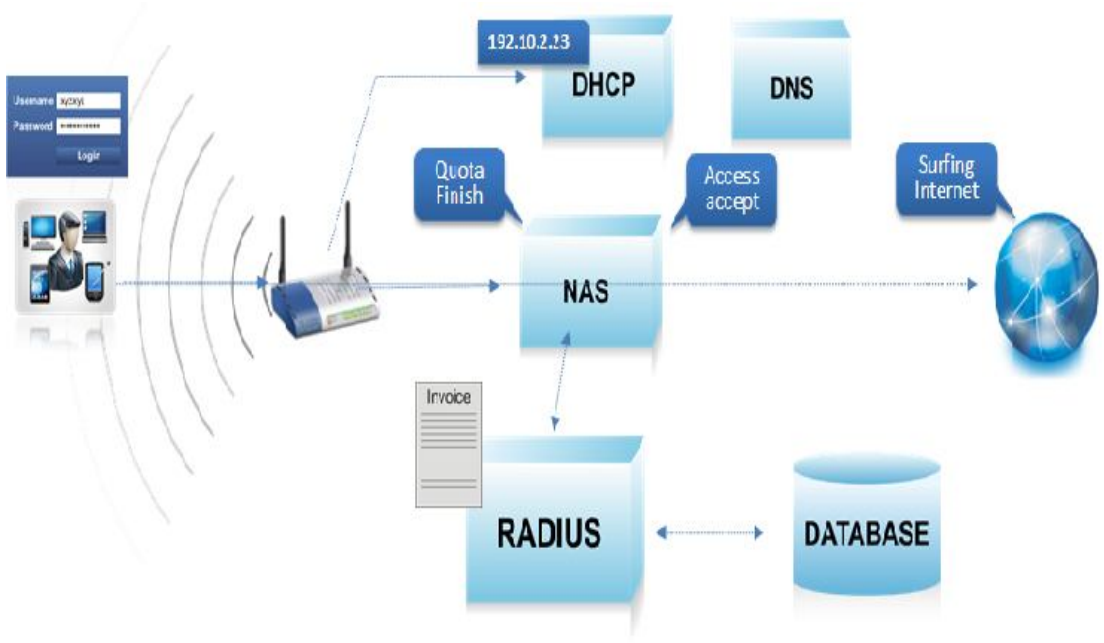
Bandwidth Restriction per user/ per group: You can prevent a few wireless users from clogging the entire network by restricting the bandwidth available to them at any point of time. You can also reserve a minimum bandwidth to all the critical users.

QoS: Quality of Service through Traffic Prioritization: A centralized controller based wireless infrastructure can identify and differentiate between different types data packets and prioritize the critical traffic on the wireless network infrastructure – This is crucial for real time wireless traffic like voice, video etc.

WIRELESS COMMUNICATION ARCHITECTURE WITH CENTRALIZED AUTHENTICATION
(Captive Portal & SMS authentication.)



Wireless Features

- Scalable controller-less Cloud Based Management
- Hardware agnostic (Any brand or any network)
- Centralized management intelligent system
- LTE – Wireless device with seamless Mobile offload
- Plug-And-Play deployment and operation
- Location based analytics
- Built-in best-in-class Wireless Security
  - Carrier 'Ready' / Hotspot 2.0 / VoWiFi
- Centralized control System.
- Appliance based WLAN / Cloud model solutions
- On-Boarding users / devices
- Unified Security / Management
- Secure guest access

Wireless components integration for wireless users authorization , Mobility & security

❖ **SMS Gateway Integrations**
GupShup, NetCore, SMS it, infoBip

❖ **Payment Gateway Integrations**
PayPal, Webpay, TechProcess & SecurePay

❖ **Roaming Partners**
iPass & boingo

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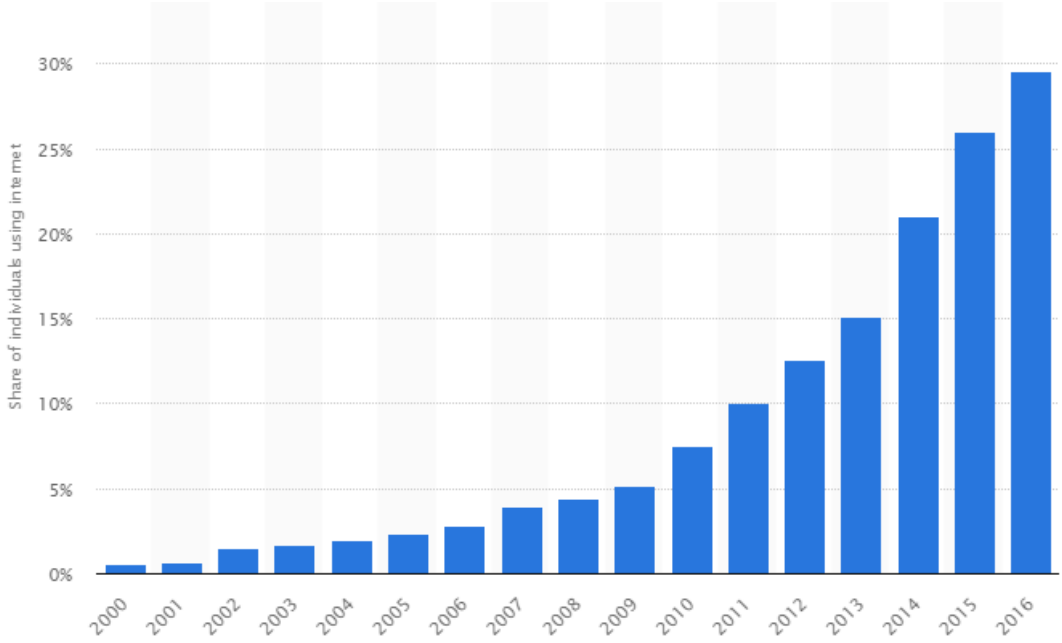
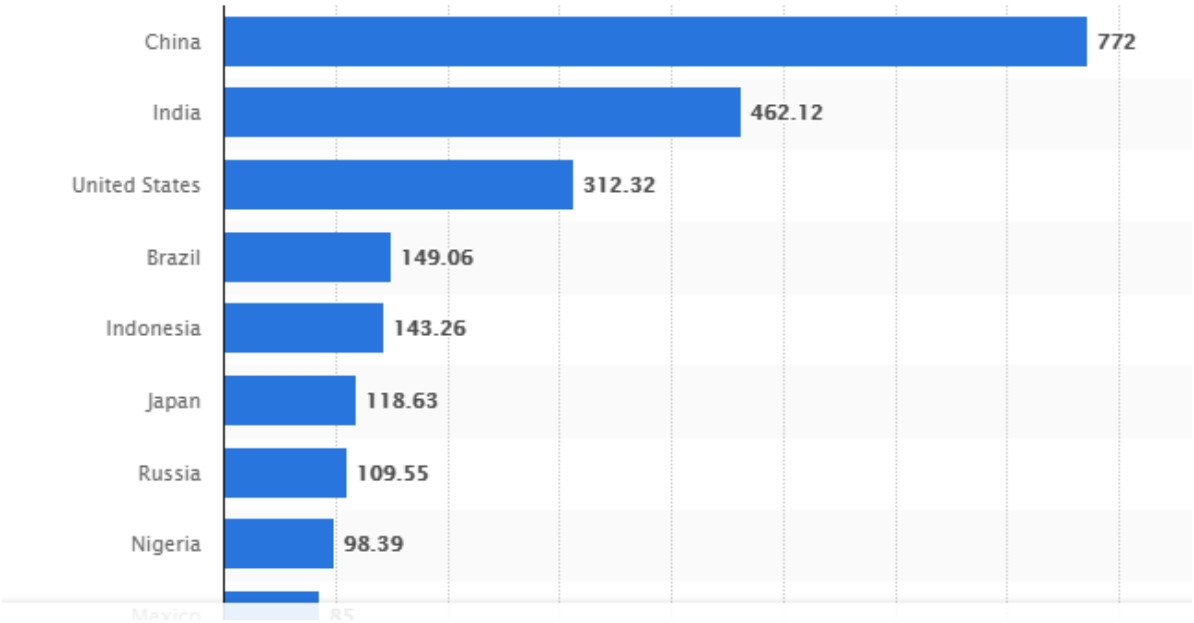
WIRELESS USERS GROWTH STATISTICS



India is second largest numbers of internet users as of December 2017 (inmillions)



As of 2017, China ranks first in a top of countries with most internet users. Due to its ongoing and fast-paced economic development, but also to a cultural inclination towards technology, more than 731 million of the estimated 1.38 billion populations in China are online. Some of the other notable emerging markets are India, with a projected number of internet users of 636 million by 2021, or Indonesia, which is expected to have 144.2 million of its citizens surfing the World Wide Web around the same year.

WIRELESS COMMUNICATIONS ADVANTAGES

East to Reach

Wireless equipment can connect in locations that are difficult or not suitable to wire network.

Maximum Coverage

Wireless networks can cover large spaces inside and out, permanently or temporarily. Shows, seminars, concerts, sporting events, public spaces, factories, galleries, museums, social clubs, hotels, spas, fetes and fairs.

Location flexibility.

Any wireless equipment can connect at any area under the range of a wireless network, so therefore can any wireless user and devices.

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Mobile connectivity
A wireless device can transmit and/or receive data as it moves within the range of a wireless network.

Less Dependability
Devices can be connected by multiple wireless routes to ensure connectivity, and obviously radio waves are much less susceptible to damage. The more critical network connectivity is the important wireless connectivity is. Even where a wired connectivity method is in place an additional wireless method can provide extra connectivity guarantees.

Easy Adaptability
Wireless networks are more adaptable to changing needs than wired networks, because the technology includes extra possibilities

Scalability
Wireless networks need less frequent changes to manage additional devices that need TSP connecting only to expand the network.

Connection density
More equipment can be connected wirelessly than is practical with wires, because many connections are as easy as a few connections compare to traditional wired network.

Security
Encrypted access can be controlled at the point of connection making wireless networks secure end to end with the help of encryption methodology. In addition it is possible to detect, track the movement of, and block unknown but potentially rogue devices within the range of the network, even before they attempt to connect to the network.

CONCLUSION

In the relatively short time of the Information Revolution, the world has seen several technologies, first introduced as "convenient", become "essential" the basic structure of the modern lifestyle. The automobile, telephone, and the refrigerator are easy examples to cite. **The wireless revolution** will transform another "convenience" to a necessity. "Emerging wireless systems will provide the technology to allow people and machines to communicate anytime, anywhere, using voice, video, data and messaging services through telecommunications." The wireless revolution began with the introduction of the cellular phone networks. This coupled along with the reduction in size of the microcomputer and an increase in the applicable technologies. Standardized mobile networking protocol will allow interoperability between open wireless systems. Advanced signal processing and speech coding techniques will allow more efficient use of bandwidth and data transfer speed. Security research at all levels will continue to remain an issue and must stay one step ahead of the criminal leelements. All of these areas will help to bring about the wireless computing revolution.

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CONSUMER PREFERENCE AND SATISFACTION TOWARDS M-WALLET IN INDIA: SPECIAL REFERENCE TO AMBERNATH TALUKA

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ABSTRACT
In current scenario technology plays a vital role in the routine life of every individual. M-Wallet user has been increased because of digital technology. M-wallet is a digital mobile-based technology which has created virtual transactions with the help of online mode. M-Wallet provides services such as mobile recharge, bill payment, railway ticket booking, hotel booking, and air ticketing, funds transfer and many more. It is payment system applications that can be downloaded from Google play store and can make many transactions much easier and more convenience for all users. Paytm, PayUMoney, SBI Buddy, Axis lime etc. are the examples of application which is popularly used. These studies will emphasis on adoption of M-wallet in Ambernath area with primary & secondary data. The mobile wallet is a modern concept in India that has been surpassing debit/ credit card usage and slowly replacing the traditional payment methods. M-Wallets are rapidly growing and also helping in increasing awareness among the E-wallet users. RBI is providing new guidelines regarding fraudulent transactions to safeguard the interest of M-wallet users and creates safety with satisfaction among the users.

Keywords: M-wallet, Consumer satisfaction, Preference, Smartphone's digital technology, virtual transaction, importance.

INTRODUCTION
M-wallet is a type of payment service through which business organizations and individuals can transfer their money through the help of mobile. Mobile wallet which is also known as M-wallet, digital wallet refers to a mobile technology used as a real wallet. Use of smartphone has become more popular nowadays. In India almost every individual uses smartphones. Due to Demonization and digital India campaign number of online transactions are increased and one of them is M-wallet. As per the data of National Payments Corporation of India (NPCI), BHIM Unified Payments Interface (UPI) transactions value skyrocketed to INR 1 Tn while the volume of transactions reached 913 Mn, up from a meager 7 Mn in April 2017. However, in spite of all this, the cash in circulation as of June 22, 2018, was only 9.8% more than it was on June 23 in 2017. Contribution from phones and tablets is expected to increase to 30 percent by 2020. Mobile payments in India are estimated to grow from $86 million in 2011 to $1.15 billion in 2016, with a compounded annual growth rate (CAGR) of 68 percent, according to estimates. There were between 80-90 players till 2017, of which some 55 were non-banking players like Paytm, Mobikwik, Oxigen, and ItzCash. While in November 2018 there were approximately 100 million e-wallet consumers increased in India.

RBI has given a guideline for M-wallet users as on M-wallet is a virtual wallet where people keep their money in a digital way not physically. There are certain service providers who provided the M-wallet facilities to load the money from there bank account. Where people do not have to pay in cash or swipe their plastic card for offline mode. Minimum KYC of M-Wallet users can be done using a One-time Password and status track by RBI.

This includes

1. **Mobile-based billing** – Where user can receive and send payment via their mobile service provider.
2. **SMS based transaction** – Transaction is done by sending an SMS short code.
3. **Mobile payments** – Allow a user to receive/send payment through a mobile app.

In India, there are 3 types of M-wallet,which are as follows

(1) Closed wallet: - Money cannot be withdrawn from a wallet. The company provides points to the user accounts. Example: Amazon wallet, Ola money.

(2) Semi-closed wallet:-There has a specific contract between issuer and merchant. This is also same as a closed wallet. A user cannot withdraw money but can be used to purchase goods and services. example: Paytm,PhonePay, Mobikwik wallet, Jio money

(3) Open wallet:- Money can be withdraw with the help of plastic card by the services provider at ATM. Open wallet can be used for online transactions such as fund transfer, online shopping, payment of utility bill etc. example:: Rupay card, Master card, Visa card.

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NEED OF THE STUDY

Today, a very powerful driver of any M-wallet service provider is very similar to MURPHY'S First Law of Business *"every consumer has a choice"*. In India also the range of choices has gone much beyond any competing players in the same service category to new competitive service from different categories so as to satisfy the same need.

This study helps to know which age group of the user using M-wallet and also helps us to know the services used by the user in Ambernath Taluka. This study aims to know about consumer preference and satisfaction level towards M-Wallet.

THE OBJECTIVE OF THE STUDY

a) To check the awareness of M-wallet users in Ambernath Taluka.

b) To find the age group who used M-wallet Facilities.

c) To study the preference of users for using M-wallet

d) To study the satisfaction of users for using M-wallet.

e) To study the services used by users of M-wallet.

RESEARCH METHODOLOGY

In this paper, an attempt has been taken to study *on* ***"Consumer Preference and Satisfaction towards M-Wallet in India"(Special reference to Ambernath Taluka)***

DATA COLLECTION

Data were gathered from two different sources-primary and secondary sources

1. **Primary data collection –** The primary data was collected by means of an online survey. It was collected from different customers through a questionnaire.
2. **Secondary data collection –** This data was collected from the website, internet, reference books and magazines.

a) SAMPLE SIZE

Sample size was restricted to 65 respondents, since it is not possible to cover all the customers in the available time period.

b) SAMPLING METHOD

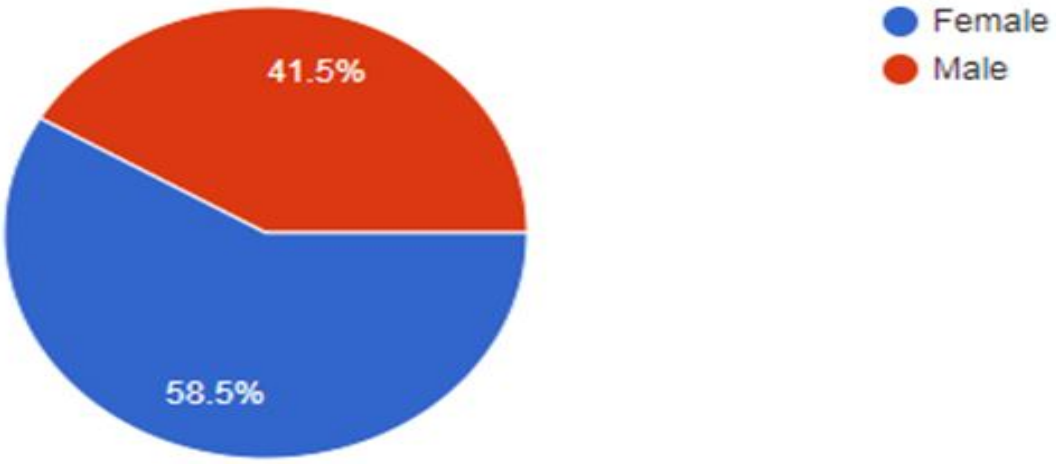
For this research non-probability convenience sampling has been used because the time limit for the completion of the work is limited.

DATA ANALYSIS AND INTERPRETATION

Among all the respondents 93.85% of the respondents are from the Ambernath and remaining 6.15% of the respondents are from other city or town.

Demographic profile of the student's

Table 1 Sources: Primary data



Interpretation: As per **Table 1** Male respondents are 41.5 % and Female respondents are 58.5%.

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Table-2: Sources: Primary data

AGE	IN NUMBERS	%
BELOW 18	6	9.23
18-30	46	70.77
31-50	12	18.46
51-64	1	1.54
ABOVE 65	0	0
TOTAL	65	100

Interpretation: As per (**Table 2)** 9.23% respondents are below 18 years, 70.77% respondents are between the age of 18-30 years, 18.46% respondents are between the ages of 31 – 50 years, 1.54% respondents are between the ages of 51 – 60 years.

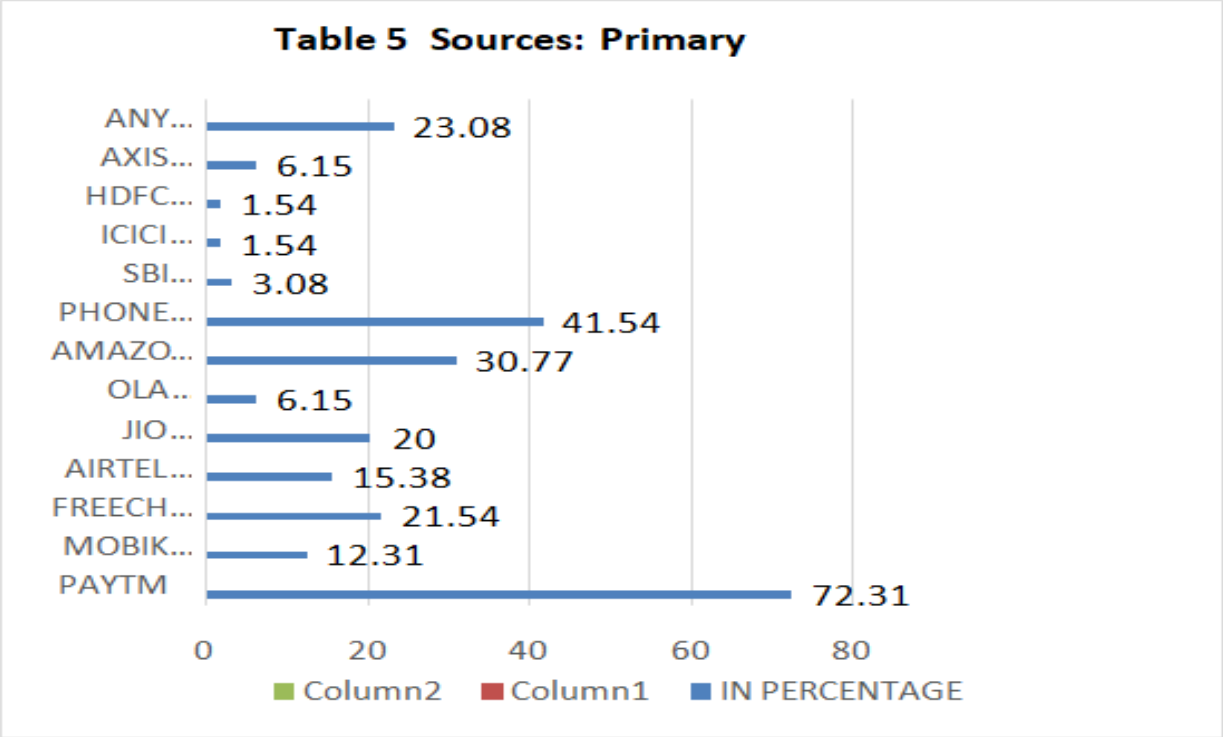
Table-3: Sources: Primary data

PROFESSION	IN NUMBERS	%
GOVT. EMPLOYEE	1	1.54
PRIVATE EMPLOYEE	17	26.15
BUSINESS	0	0
SELF EMPLOYEE	0	0
HOUSEWIFE	1	1.54
STUDENT	46	70.77
OTHERS	0	0
TOTAL	65	100

Interpretation: As per (**Table 3)** 1.54% respondents are Govt. Employee, 26.15% respondents are Private Employee, 1.54% respondents are Housewife and 70.77% respondents are Students.

PARAMETER	IN NUMBERS	%
YES	42	64.62
NO	23	35.38
TOTAL	65	100

Interpretation: As per **(Table 4)** 64.62% respondents use their own smartphone for completing the monetary transaction online whereas 35.38% respondents do not usetheir smartphone foronline transaction.



(Table 5) 72.31% respondents are aware of PAYTM, about 42% are aware of PHONEPE and remaining are aware of mobikwik, free charge, Amazon pay, Ola pay, etc.

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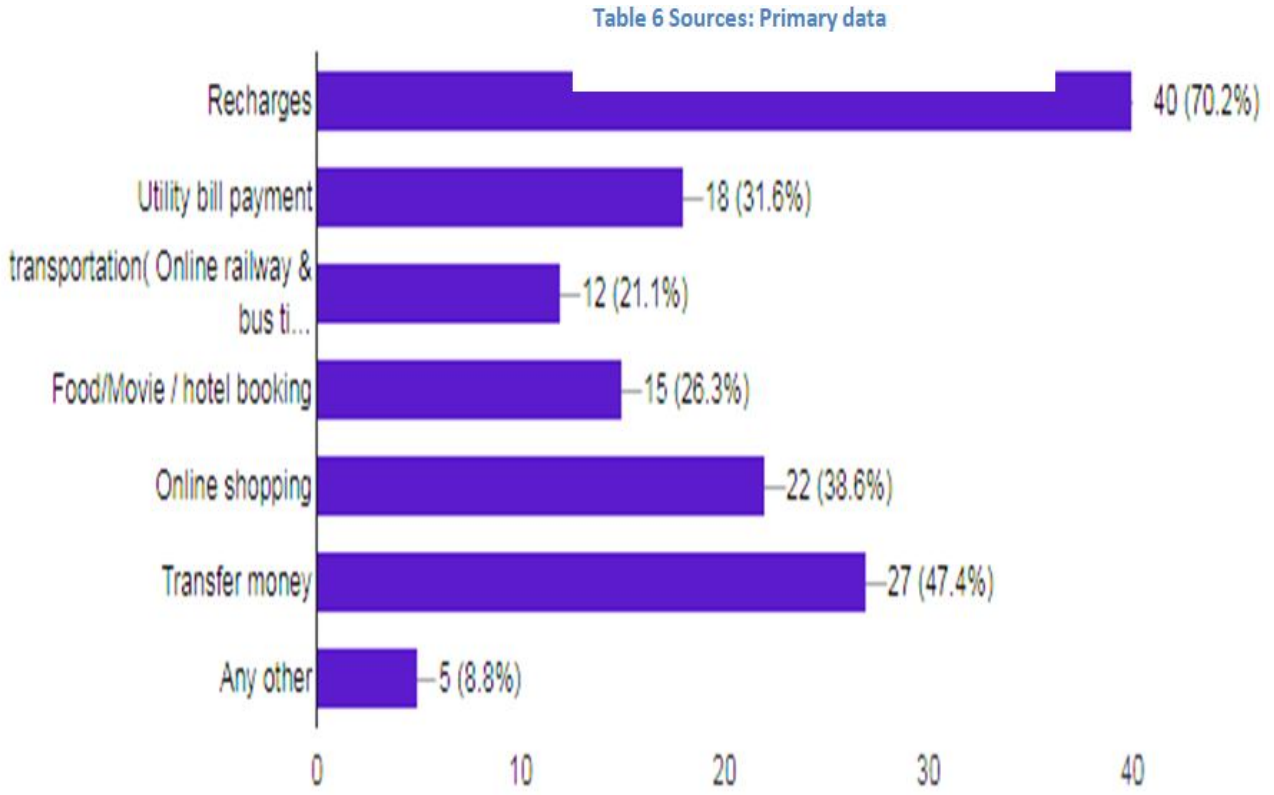

Interpretation: As per (**Table 6)** 70.2% respondents uses M-wallet for Recharge, about 47.4 % of respondents use for money transfer, 38.6% of respondents are using for online shopping and remaining using for payment of utility bill, transportation, online ticket booking, etc. respondents do not use their smartphone for online transaction.

Table-7: Sources: Primary data

PARAMETER	IN NUMBERS	%
YES	47	72.31
NO	18	27.69
TOTAL	65	100

Interpretation: As per (Table 7) 72.31 % of respondents were satisfied with the services provided by M-wallet Company. 27.69 % of respondent were not satisfied because of network connectivity issue, the security issue, a limited amount of transaction only done, less infrastructure issue.

FINDINGS

1. 98.5% of respondents have own smartphone out of the 66.7 % of respondent are aware of M-Wallet facilities.
2. 49.23% of respondents use M-Wallet in a month.
3. In this study, we find that maximum respondents are between the age of 18 to 30. It means that the younger generation of respondents is more comfortable in using M-Wallet in Ambernath Taluka.
4. 64.62% respondents use their own Smartphone for completing thrmonetary transaction online
5. Most of the users use M-wallet for the purpose of Recharge and for money transfer.
6. 27.69% of respondents faces problem in using M-Wallet services.
7. 72.31 % of respondents were satisfied with the services provided by M-wallet Company.

LIMITATION OF THE STUDY

1. This study focuses on Consumer Preference and Satisfaction towards M-Wallet in Ambernath Taluka only.
2. The study confined 65 respondents only.
3. Some respondents may not have given true responses.
4. Findings of the research study do not have universal applicability due to small sample size

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CONCLUSION

Consumer awareness about technology advancement is growing rapidly and changes the lifestyle accordingly. The present study tries to find the consumer preference and satisfaction towards M-Wallet. Satisfaction is a feeling and happiness of a person or disappointment that result from comparing a service perceived to their expectations. When the performance of services of M-wallet falls, the expectation also falls and dissatisfaction in created and vice versa. The result shows a positive impact on consumer perception and satisfaction. About 64.62% respondents use their own smartphone for completing the monetary transaction and out of this 72.31 % of respondents are satisfied with the services provided by M-Wallet Companies.

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ATTRACTING AND RETAINING THE KEY EMPLOYEES IS A CHALLENGE TO INFORMATION TECHNOLOGY SECTOR

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ABSTRACT
Human beings are evolved as social animal who cannot afford to exist and work in isolation which results in a complex and dynamic social structure to formulate the rule and structure for the development and advancement of human resources. Human resources play a crucial role in the development process of modern business world

Talented employees are scarce and the concept of retaining talented employees is very important for the organisations as there is always demand for these skilled employees and the competitor firms are ready to grab them by paying better financial rewards. Now a day's the business environment has a very competitive therefore making and retaining skilled employee the major differentiating factor for most organizations. Hence how best the organisation can perform depends upon its talented employees existing in the organisation and it is a great challenge to retain such employees who are considered as the assets of the organisation. The motivating factor for each employee may vary hence it is necessary to understand their motivating factor and support them in the same which helps in building a bonding between the employee and the management.

There are many tactics and strategies used to retain employees in organizations. The basic purpose of these strategies is to increase employee's satisfaction, boost employee morale, and achieve retention. Sometimes, retention strategies are not used properly and wrong retention strategies are used. As a result of this, these strategies fail to achieve the desired results. There are costs associated with employee turnover. The impact of employee turnover on organizations is that it often engenders far-reaching consequences and may jeopardize efforts to attain organizational objectives.

The research paper analysis the data collected from the employees of the IT industry and attempts to find out the reasons for employee turnover and the strategies followed by the organization to retain its key employees as they are the assets of the organisation

Keywords: Employee Retention, Talent Enhancement, Employee Satisfaction, job enrichment.

OBJECTIVES OF THE STUDY
1. To evaluate the influential factors, causes increase in employee turnover
2. To assess the level of employees satisfaction towards various retention strategies of small and medium scale IT industries
3. To assess the various organisations strategies which are planned and implemented in the small and medium scale IT industries to retain employees

RESEARCH METHODOLOGY
Primary data: Questionnaires have been prepared and circulated among the IT employees and their responses have been collected and analyzed to arrive at the results.

REVIEW OF LITERATURE:
Companies today are interested in retaining valuable employees and good employees are increasingly becoming more difficult to find (Panoch, 2001). "As our community continues to experience significant growth in the hospitality industry, employee recruitment and retention has become a priority"(Czurak, 2011). Retention matters because high turnover creates high replacement costs and is clearly associated with low levels of customer satisfaction, customer loyalty, and lost revenues. Retention is particularly challenging today due to an aging work force and a growing imbalance in the supply and demand of qualified personnel (Padron, 2004). Many of the companies that already spend big bucks to recruit and train talented employees are bracing for even stiffer competition as baby boomers start to retire amid a shortage of skilled labor (Rawe, 2006)

ANALYSIS AND INTERPRETATION FROM THE DATA COLLECTED
Table no 1: Table and chart showing the profile of the respondents with response to the questionnaire with reference to their age

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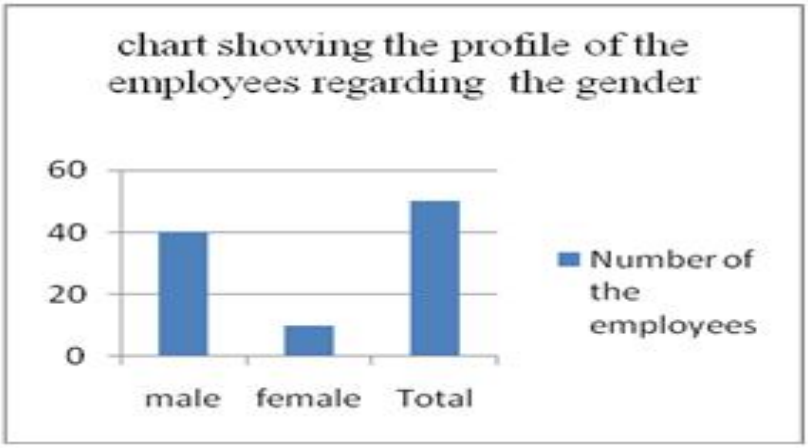
Age of the employees		Number of employees	Percent
	20-25	14	28
	26-30	13	26
	31-35	6	12
	36-40	12	24
	41-45	2	4
	over 46	3	6
	Total	50	100

Inference: As per the table no 1 and chart no 1 it is found that 28% of the employees belong to the age group of 20 to 25 years, 26% belongs to the age group of 26 to 30 years 12% under the age of 31 to 35 years, 24% under the age group of 36 to 40 and about 10% over 40 years of age this depicts that the company has more of younger people working for the organization rather than experienced people which shows that this can also be the reason for employee turnover as the younger employees always lookout for more challenging jobs and better salaries if not been provided in the present workplace they may lookout for a better place to work

Table no-2: Table and chart showing the profile of the respondents with response to the questionnaire with reference to gender

Gender of employees	Number of the employees	Percent
Male	40	80.0
Female	10	20.0
Total	50	100.0



Inference: As per the table no 2 and chart no 2 it is found that the company consists of 80% of male employees and 20% are female employees which depicts that the company consists of a majority of male employees who may continue to stay in the company for a longer period of time if the organization provides them a feasible work environment but women employees may have their own personal reasons to quit the organization, even if the work environment is feasible for them to continue. Hence in most of the IT organizations' the ratio of male employees is more compared to women employees.

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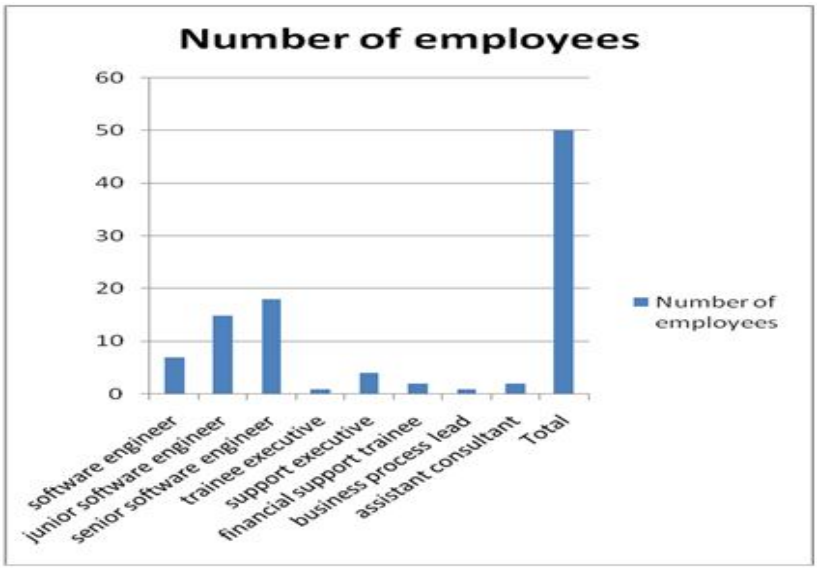
Table no-3: Table and chart showing the profile of the respondents with response to the questionnaire with reference to their Designation

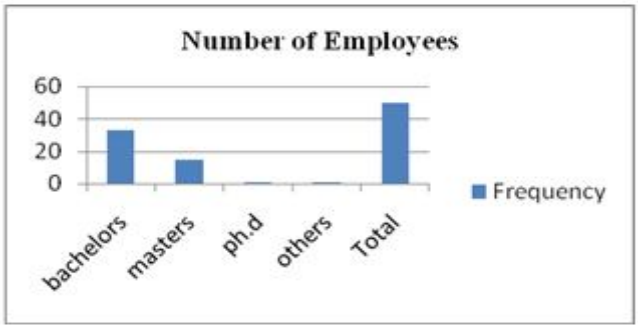
Designation	Number of employees	Percent
software engineer	7	14.0
junior software engineer	15	30.0
senior software engineer	18	36.0
trainee executive	1	2.0
support executive	4	8.0
financial support trainee	2	4.0
business process lead	1	2.0
assistant consultant	2	4.0
Total	50	100.0



Inference:As per the table no 3 and chart no 3 it is indicated that the company is having employees of different qualities and capabilities and the manpower planning has helped the organization to get the right person in the right place and which has supported for the betterment in the working of the organisation and the chart denotes about 30% of the employees are junior software engineers and 36% of the employees are senior software engineers which depicts the fact that there is an opportunity for the juniors to learn from theirseniors and also proves that the recruitment policies are supporting and encouraging the young engineers by providing them employment

Table no-4: Table and chart showing the profile of the respondents with response to the questionnaire with reference to their qualification

Qualification	Frequency	Percent
Bachelors degree	33	66.0
Masters	15	30.0
Ph.D.	1	2.0
Others	1	2.0
Total	50	100.0



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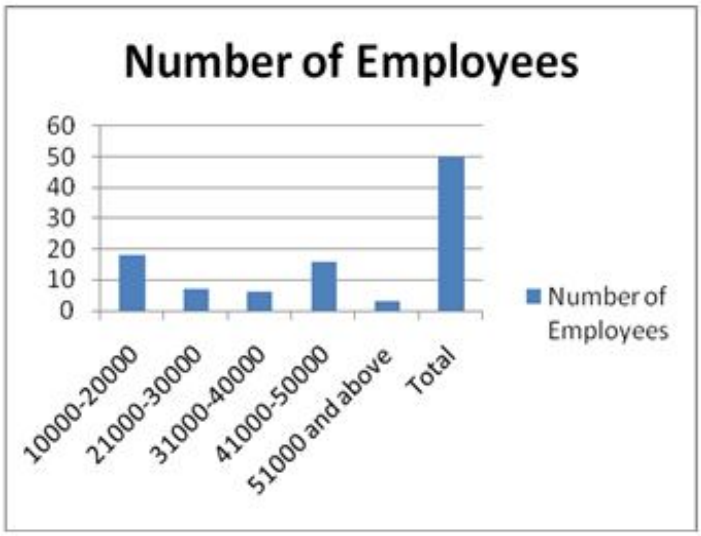
Inference: As per the table no 4 and chart no 4 it is indicated that the company has 66% of the employees with the bachelor's degree, 30% from master degree and 2% of the employees are doctorates and other degree.it depicts the fact that the IT companies need more employees with bachelor's degree rather than other qualifications for pursuing their organizations' growth as the people with Ph.D and other degrees may not be required in more number for the running of the company

Table no-5: Table and chart showing the profile of the respondents with response to the questionnaire with reference to their salary

Salary in rupees	Number of Employees	Percent
10000-20000	18	36.0
21000-30000	7	14.0
31000-40000	6	12.0
41000-50000	16	32.0
51000 and above	3	6.0
Total	50	100.0



InferenceAs per the table no 5 and chart no 5 it is indicated that the company has the employees in the salary range of 10000 to 20000 is about 36% , 21000 to 30000 is about14%, 31000 to 40000 is about 12%, 41000 to 50000 about 32% and 51000 and above is 6% which indicates that the employees are paid according to their qualification and experience as the company has more of junior software engineers and they have their bachelor's degree which also are paid in the first two categories which is acceptable in the IT sector. The salary is also one of the important factors in the retention of the employees as the financially dissatisfied employees are tend to move out of the organisations hence the salary factor is also a retention tool.

TOOLS TO RETAIN KEY EMPLOYEES

- Actively encourage learning in every employee
- Moral Support
- Open and transparent culture
- Communication and contacts
- Employee Remuneration and Employee Appreciation
- Clarity of Role
- Encourage Flexibility.

CONCLUSION

This paper has thrown light on how IT companies make strategic moves in retaining their talent. This study attempted to fill the gaps by analyzing the impact of the demographic factors also in retaining the employees Retention strategies are an inexpensive way of enhancing workplace productivity and engaging employees emotionally. The main aim of any organization is to earn profit. But to attain the maximum profit, the organization should concentrate more on employees and the ways to retain them for their long run.

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DEMOGRAPHIC TRANSITION AND INNOVATIVE BANKING PRACTICES IN RURAL INDIA

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ABSTRACT
The New Economic policy has brought structural and technological changes in Indian banking industry. Globalization and privatization has resulted in stiff competition in the banking sector. Banks along with their traditional function need to bring innovative banking products to fight competition and sustain its business. Banks in India are also assumed to perform social banking function in order to attain inclusive economic growth.

This paper tries to study the existing banking innovative practices and specify the necessity to invent products based on demographic transition of India. Banks need to design products which will cater the needs of current population as well as be ready to adjust product as per demographic features in India. Such practice will help bank to survive in tough competitive market structure as well as help in attaining the social banking objectives.

Keywords: social banking, inclusive growth, globalisation

INTRODUCTION
The New Economic policy of 1991 necessitated the reforms in financial sector to attain higher economic growth. However, almost 25 years have passed for new economic reforms and India is experiencing rising economic but excluding growth. There is need to attain inclusive growth and financial sector has potentials and therefore an important role to attain the objective of economic development along with equality. After 1991, India has experienced declining share of agriculture in GDP, migration of skilled and unskilled labour to urban areas, urban growth , transformation of rural into semi urban areas, growth of informal sector, rising education, growth of social media and advancement of information technology.

RBI brings policy changes to suit to the financial need of people. At present Indian banking sector is sufficiently capitalized and well-regulated. With privatization and globalization in financial sector, banks are constantly exploring their potential to face competition efficiently and also make a profitable business. However, banks need to adapt to the demographic changes to make their business sustainable and profitable.

Necessity is said to be the mother of invention. That is why the financial sector have been constantly innovating, more so in the informal and the rural part of the financial sector wherenecessity is the highest. As India has observed demographic changes, the banking system needs to update its practices in compliance with the demographic features otherwise Indian economy will be in deep financial trouble.

OBJECTIVE OF STUDY
The present paper wish to study the existing pattern of innovative practices of rural banking and suggest a change in these practices based on current demographic feature of rural India.

RESEARCH METHODOLOGY
The above study is based on secondary data. Data has been collected from different sources like scholarly articles, annual reports of RBI, newsletters and various websites.

The demographic transition has created challenges for the banking system on both demand and supply side front. They are:

DEMAND SIDE
- Declining profitability and sustainability of agriculture
- Stagnant rural employment
- Marginalization of land holding
- Diversification of skills and resource use options
- These challenges can be met by flexible ec0-specific institutional policies.

SUPPLY SIDE
- Increasing cost of lending with declining profitability of banking system.
- Manpower constraints with banks to provide adequate follow up of loans and reduced ability to discriminate genuine and willful defaulters.

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- Weakening relationship between rural borrowers and bank staff due to very large and wide coverage.
- Lack of suitability of standardized organizational design for highly variable environmental needs.

Several institutional innovations have been introduced in the past to make banking more accessible and to an extent responsive as well as accountable. To name few, Indian banks have invented Rural service centre scheme, farm clinics, farm information and exchange clubs, future farmers club, satellite branches, rural service volunteers(RSV) etc.

In addition to the above innovation by individual banks, there have been macro level organizational innovations such as Lead Bank Scheme, Farmers' Service Societies (FSS),Large Agricultural multipurpose cooperative societies (LAMPS), RRBs, NABARD, loan melas and credit camps etc.

The emerging Indian rural market is playing a big role in charting out a trend for the growth of banks. With the economy surging, the income levels have increased in rural areas. Agricultural income is on the rise. Rural market is not just for micro credit, it also possess tremendous potential for commercial banking. However, even today policymakers and banks are having common focus on three factors. They are:

- Credit for cultivation
- Farmers
- Interest rate

All the bank priority sector lending policies are keeping these factors in centre while introducing innovative banking products for rural sector. It is because of such conservative focus typically only on these 3 factors, that even after developing rural banking, there is no much impressive growth observed in rural development.

Thus banking system needs to update their banking practices as per the need of time. Banks while lending to rural sector focus mainly on crop credit but there are many other financialservice demand in rural areas like investment finance for farm and nonfarm enterprises, risk management etc.

Banks consider farmers as being the main customer for their product, but as per the census data 2011, the number of farmers hasdeclined from 110 million to 9 million only. Rather the larger segment of population is covered by women (nearly 570 million) and youth (nearly 331 million).

Following factors to be kept in mind by banks while framing their policies and schemes:

1) Capital Formationin agriculture

India is endowed with abundance of natural resources and labour, the only factor that hampers the economic growth is dearth of capital. Thus in order to achieve rural development, bank need to design their banking products for building up long term capital for rural sector. Schemes like KCC and crop credit only provides short term credit and that only to farmers. Such credit, only provide small short term gains in the agriculture production. At the end, after sales returns are minimal, as he faces problem in storing and marketing his products due to poor infrastructure. Theseare perennial problem faced by Indian farmers from past many years and are yet unresolved. So provision of long term credit scheme is a needed for capital formation in India.

It has been observed that capital formation is rather declining steadily and now has reached at alarming lower level. With the opening of Indian market for global trade, we observe an agricultural transformation from crop cultivation to now horticulture, floriculture, dairy and poultry farming. This has created demand for investment finance so banks also need to bring transformation in their lending policy from crop credit to investment finance. Although innovative practice like MUDRA loans was introduced but all benefits were reaped by urban sector.

Thus rural banks, instead of introducing schemes directly benefiting farmers, can indirectly improve the rural productivity including agricultural productivity by financial products which will increase investment in rural infrastructure like roads, warehouses, telecom, energy, education and health. Of course, there is a budgetary allocation for it, but observing the urgency of such resources, financial sector support is must.

As far as risk management is concerned the Crop insurance scheme and PradhanMantriFasalBimaYojana (PMFBY) launched in 2015 are the recent innovative practices observed in the banking. However, farmers are not concern with only yield on farm but also about its sales and returns. So market risk especially price risk has become the major cause of concern for the farmers.In order to cover this risk, commodity derivatives, futures and options are introduced recently but utilization of such products is less among Indian farmers due to lack of awareness. So banks need to design a simplified derivative product and it should be easily and readily accessible by farmers.

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Borrowing takes place when individuals earning lags behind his present consumption. With joint family system on the verge and declining support for elderly family members, there is an urgent need to design financial products for elderly and widows. In case young population facing the cut throat competition in securing job in labour market, they need to invest in their human capital. The traditional method of family financing or government funding or occasional charitable scholarships will not be adequate. Banks need to design a financial products catering the needs for these youngsters for enriching their productivity by lending them and also providing avenues to save their then earned increased income. Although financial products are available for the entire life cycle from birth to death of a person, they are more accessible and utilized by urban people.

2) Investment finance

One main reason for why farmers are suffering with losses is dearth of investment in farm. Banks program need to shift from credit to farmers to investment in farm. Farmers should be given 10-12 years long term loans.

Out ofabout 48 crore workforce in 2011, about 55% or 26.3 crore persons were engaged in agriculture in2011. Of these, 11.9 crore were cultivators and 14.4 crore were agricultural labourers. Around half of the rural workforce need to be moved out of agriculture. Bank can provide financial assistance to agriculturallabour in their education and training and to the cultivator who then will face scarcity of labour, funding them for farm mechanization.

Assuming that minimum Rs. 2 lakh per person needed for training and education to move agricultural labour from farm to non farm enterprise, given an approximate agricultural labours population of 13 crore, we need 26 lakh crore funding in their human capital for over 10 years. So on an average bank credit 2.6 crore is needed per year which is very much within the capacity of banks who had given net bank credit of Rs. 79 lakh crores on 31st March 2016. Thus banks can contribute in rural transformation of India by focusing more on long term loans and education loans.

3) Women

Coming to women who comprise half of the population, we find they have not been adequatelyserved by the rural financial sector. The women's savings and credit self-help group (SHG)movement is about to celebrate its 35th anniversary, dating from 1992, when the Reserve Bank ofIndia approved a pilot project to link a few hundred SHGs formed by NGOs to banks for credit.

Starting from a very small beginning, the movement has truly earned its name as by 31st March2016, 1010 lakh families in 79.4 lakh SHGs had been linked with banks, that is, their SHGs hadsavings bank accounts, with Rs 13,691 crore of deposits; and 46.7 lakh SHGs had loans outstandingfrom banks worth Rs 51,429 crore. This is the world's single largest financial inclusion program. Butwe must remember that for all the effort, SHG loans were 0.65% of Net Bank Credit as on 31st March2016. Even if add the money that flowed to women through the microfinance institutions, most ofwhose credit goes to urban areas, the number is barely 1% of the Net Bank Credit.

4) Youth

Youth are the largest segment of population and the number of young people in the age group 16-30is over 300 million. They need financial services and they need it now – for education, skill trainingand self-employment. The organized sector is providing only 7% of the total employment.The non-farm unorganized sector accounts for 33%. Remaining young population in agriculturedo not want work. So the employment in the rural non-farm sector, largely located in smalltowns, and into urban self-employment sector has to be massively enhanced.

At today's costs, it takes about Rs 25,000 to Rs 50,000 to give proper skill education to a youngperson and another Rs 150,000 to 200,000 to get her or her started off as a self-employed personwith the capital going into equipment and working capital of the enterprise. Given that at least halfof the young persons will be self-employed, the total capital requirement for skill building and selfemploymentof 15 crore youth is Rs 30 lakh crore, or Rs 3 lakh crore per year in 2016 Rupees, overten years. This figure needs to be compared to total net bank credit of Rs 79 lakh crore in March2016. Thus, it is conceivable that the required level of skill building and self-employment can indeedbe financed using banks loans, over a period of five years.It is obvious that banks, even public sector banks, will not offer this kind of credit for skill buildingand self-employment unless they see a profitable business opportunity in it. This requires threethings – (a) the process of originating, appraising, disbursing and collecting the repayments on theseloans, (b) there should be incentives for prompt repayment and serious consequences of willful default and (c) the interest rates on such loans should be good enough to yield a good net interestmargin to banks. Of these pre-conditions, the first is more or less in place

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with what the ChiefEconomic Advisor, ArvindSubramaniam called JAM (Jan Dhan bank accounts, Aadhaar identity cardsand Mobile connectivity, all linked to each other digitally). Add to this the existence of creditbureaus which can indicate the credit status of each borrower, again through a low cost, high speeddigital process. Thus transaction costs of such loans can be brought down far below today'smicrofinance loans.

Similar to women, even for youngsters financial products needs to be diversified. savings for accumulating home loan equity, and for pensions should become widelyavailable. Health insurance should also be provided to them. Rather a product should be developed such a way that it hascombination of health insurance and pension. Demographic features are although acting as dividend today, will create an issue after 30 years as the same young working population will turn dependent. This will then lead to pressure on the government and increase fiscal burden. Thus at present the financial sector can resolve this future unavoidable issue by providing the youngsters the pension and health insurance schemes.

5) Elderly population

As the populationgrowth rate of India declines, this segment of the population will not only increase in numbers butalso in proportion. Already in the 2001-2011 decade, while the population of the elderly grew from76.6 million to 103.8 million, a rise of 27.2 million. Notably, while the overall population rose by17.7%, the elderly population grew at exactly double that rate at 35.5%. Along with the other demographic trend, increase in life expectancy, the number of older people is going to increasedramatically.Given the tendency of the younger people in rural India wanting to migrate to urban areas, the rural share of the elderly is likely to be higher than the projected 19% overall share of the elderly in the population in 2050.

Although organized sector employees have access to pension scheme, it is almost absent in informal sector. Only 2.1 million were covered in the informal sector through micro-pensions. With the existing trend of rising employment of informal sector, banks have potential unserved customers for introducing new pension schemes.

6) Minorities

As per the Reserve Bank of India, the extent of priority sector lending (40% of net bank credit) whichwent to minorities was about 16% of the total. This should be compared to the percentage 20.2%for minorities in the total population. Further, the Sachar Committee (2005) had estimated thatMuslims who account for 14.2% who receive only half of the amount of bank credit allotted to them.The Muslim community has certain self-imposed reasons for financial inclusion as wellas their faith does not permit the taking or giving of money on interest. In order to overcome this issue, RBI should permit Islamic interest-free products like (trusted agency) Murabaha,micro-equity (Musharka), leasing (Ijara), forward purchase (bai-salam), etc. to enhance access tofinance for the Muslims. In the absence of these, the better-off Muslims save in the form of cash,gold and real estate, which are not productive assets nor benefit the majority of poorer Muslims.Thus commercial banks have potential in capturing thses customers by providing them Islamic banking facility.

7) Financial regulation

Financial regulation in India seems to be highly conservative and discouraging any innovation which misfits the rules led by RBI. Although credit, savings and pensions are available they are not allowed to be customized as per the demographic changes and life cycle ofa financial service consumer. Importantly all these financial products are stand alone products and not provided in combination. This is mainly because pension fund regulatory authority is different from the insurance regulatory authority of India even though they deal with long term financial issue.

The individual consumer has composite and integrated financial need. Universal banking practices are trying to create an integrated products but they need to comply to different regulations under different regulatory authority. Rather regulators are imposing restrictions of specializing only on few financial products.

It is also important to note that innovation rarelycomes from the government, even less from the regulator, because of their (valid) concerns ofensuring user protection and avoiding systemic risk. So, the private sector, both the profit-orientedone as well as the service-oriented one, should be encouraged to innovate.

However, innovative banking practices will become successful only when people are financially literate. It is assumed that financial education must precede the financial innovation. Rather initial elementary information about various financial product and then by giving practical experience of the product through actual investment is a better way to increase financial education and thereby the financial innovation acceptable and appreciable by people. Such approach of providing step by step financial education will be highly beneficial in rural sector. Jan DhanYojana has led one step in attaining financial education where 200 million new bank users have been added.Banks can rather take benefit of inclusive technological invention i.e. mobile phone by spreading information about new banking products through informative videos on it.

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CONCLUSION

Looking at demographic reality of India of over 600 million women not havingaccess to even small amount of credit for economic activities; over 300 million young people to beeducated, skilled and employed; and over 100 million elderly already among us. In addition, over172 million Muslims suffer from severe financial exclusion, partly due to their own views. Such demographic feature provide wider opportunity to banking system to design accordingly innovative banking product. By doing so banking system will attain efficiency in terms of volume and returns as well as contribute in the process of economic development by bringing social banking without sacrificing their goal of maximizing profit.

There are now scores of examples, covering millions of persons, where these principles are beingpracticed. One outstanding example is the Self-Employed Women's Association (SEWA) where themembers own a banks, in which they save and from where they get credit as they need, for theirlivelihood activities and lifecycle events. There is also a contributory health insurance coveragethrough Vimo SEWA and micro-pensions are also available.

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A STUDY ON AWARENESS AND GROWTH OF ONLINE MARKETING IN ULHASNAGAR CITY

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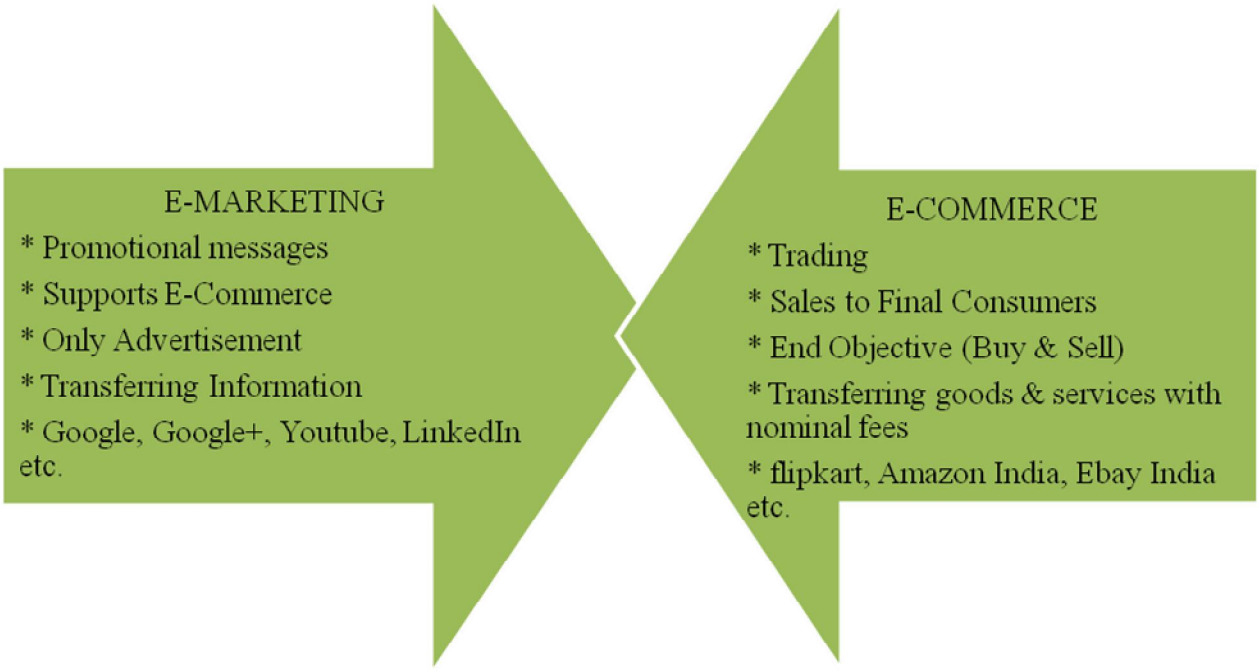
ABSTRACT
Digital technology has created its impact on all aspects of life including marketing. Internet access has not only mainstreamed the professionals, but also the population at large due to the accessibility of Smartphones with good connectivity. The visibility of any product and services are on the tip of the finger as compared to traditional marketing techniques. This reveals the confidence of the buyers and high usage accessibility of digital technology. An average Indian spends more than 90 minutes a day on online activities. The given paper highlights the awareness level of online marketing among the residents in Ulhasnagar city. It is also going to evaluate the growth of online marketing and differentiate between E-Marketing and E-Commerce. The mentioned objectives are studied by drafting relevant questionnaire which was distributed in Ulhasnagar city. Graphical presentation will elaborate the conclusion and suggestion of the study highlighting that social media and use of Smartphones has contributed the pace to online marketing.

Keywords: Online Marketing, Techno-World, E-Commerce, Social Media

INTRODUCTION
Digital technology converts huge amount of data to be compressed on small storage devices for ease in transferring and preserving. It converts all information recorded in binary code of combinations of the digits 0 and 1 also called as Bits, which represents words and images. The modern 'Techno-world' is a blend of digital technology with internet, which is reflected from the growth of 'Online World'. According to financial express bureau, an average Indian spends more than 90 minutes a day on online activities. Online Marketing also referred to as Internet Marketing or E-Marketing means marketing of goods and services over the internet. The dictionary meaning of marketing in simple words, " An activity of showing and advertising a company's product in the best possible way." When marketing is added to website based advertisement and placements, E-Marketing is commonly referred to as Web- Marketing amd Web-Advertising. Internet Marketing is interconnected with several business models viz.,

- E-Commerce – Where goods are sold without an intermediary to buyers or other businesses.
- Advertising – Where goods are broadcasted.
- Lead based Websites – Where an organization creates its value by increasing sales leads from its website.

There is line of distinction between the roles played by E-Marketing and E-commerce both being part of E-business, can be well understood from the following schematic representation:



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AIM OF STUDY

The main aims of the paper are as follows

- To find out the awareness of Online Marketing in Ulhasnagar city.
- To check the growth of Online Marketing in Ulhasnagar city.
- To evaluate that consumers of Ulhasnagar city are able to distinguish between E-Marketing and E-Commerce.

NEED FOR STUDY

As the use of digital technology and internet has increased worldwide, it has entered every field viz., business, trade, finance, researches, medical, government departments, marketing etc. Online marketing has also grown with its pace which has touched every individual's lifestyle, standard of living, buying behavior, decision making process and so on. Many researches have been already conducted to prove the impact and growth of E-Marketing, but still there is need to study more. This paper tries to evaluate the degree of awareness of Online Marketing among the consumers of Ulhasnagar city along with its growing usage and to check whether the population of the suburban areas is able to distinguish between E-Marketing and E-commerce.

RESEARCH METHODOLOGY

In this paper researchers had used descriptive and convenient sampling method for the survey.

DATA COLLECTION

This study is an integration of primary and secondary data to support each other. Primary data was based on simple and relevant questionnaire drafted to find out general awareness of Online Marketing along with its usage rate and also whether common man are able to distinguish between E-Marketing and E-Commerce residing in Ulhasnagar city, Mumbai Suburban. Questionnaire was send through http://www.smartsurvey.co.uk/s/MMSLN/ to 100 respondents including housewives, businessmen, professionals, students and service. But due to unwillingness, unawareness and also incomplete survey forms only 70 responses were considered.

LIMITATIONS OF THE STUDY

- This Paper studies about Awareness and Growth of E-Marketing in Ulhasnagar city from consumer perception only.
- The study is restricted to 70 respondents only.
- Findings of the research study do not have universal applicability due to small sample size.

DATA ANALYSIS

The data collected through the questionnaire are presented in table and bar chart. With the help of the questionnaire an attempt has been made to find out the degree of awareness, growth and whether common people are able to make a distinction between E-Marketing and E-Commerce.

Demographic Information	
Age Group	
15-24	43
25-50	26
50 & Above	1
Occupation	
Housewives	4
Professionals	8
Business	5
Services	13
Students	40

Source: Primary data

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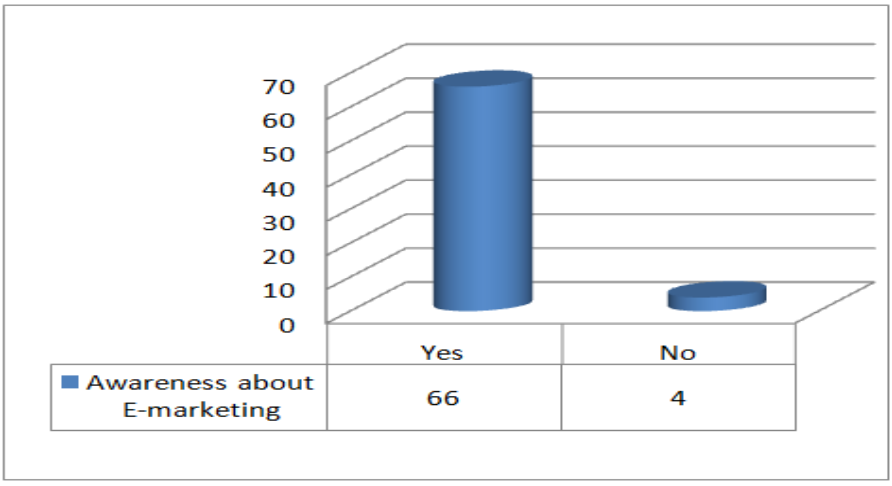
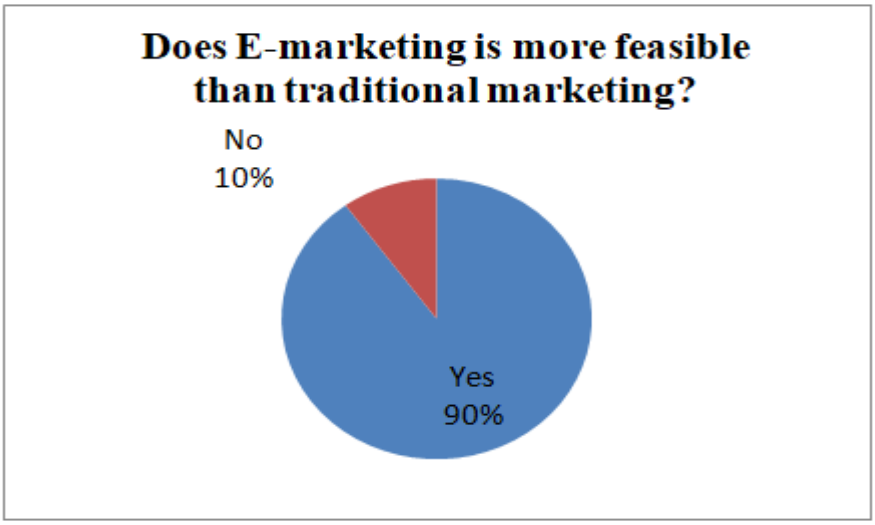


Source: Primary data

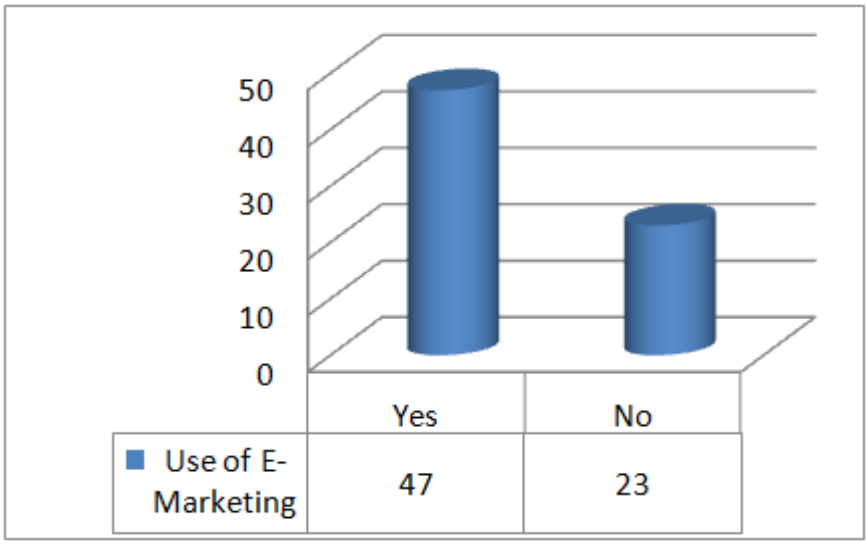
The study proves, 63 respondents agree to the fact that e-marketing is more feasible than traditional marketing and only 7 respondents are still convenient with traditional marketing methods

The study shows that 66 respondents are aware about E-marketing and 4 are not conceptually aware about E-marketing.



Source: Primary data

From the study of 70 respondents, in the above graph it is clear that - 47 respondents agreed that they use E-marketing while 23 respondents disagree for the same



Source: Primary data

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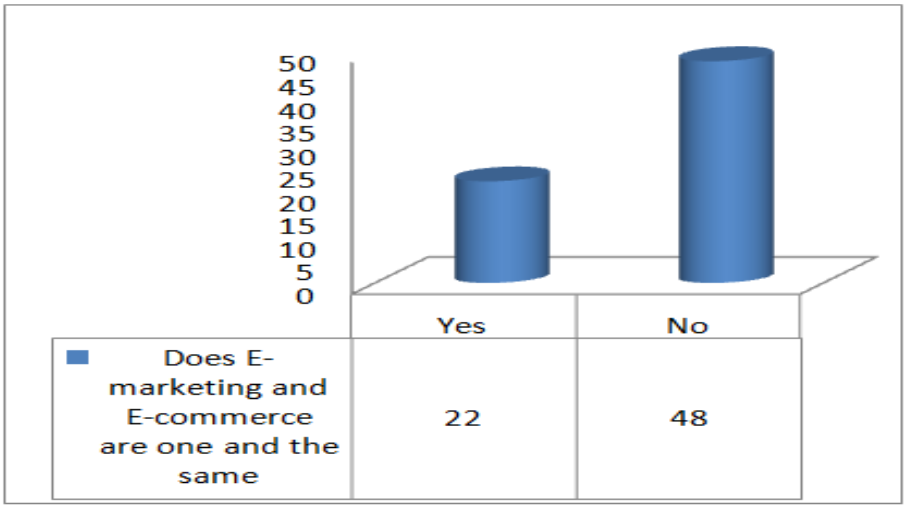
The diagram shows that only 22 respondents are not aware about the difference between E-commerce and E-marketing and majority i.e. 48 respondents are conceptually clear with both the concepts.



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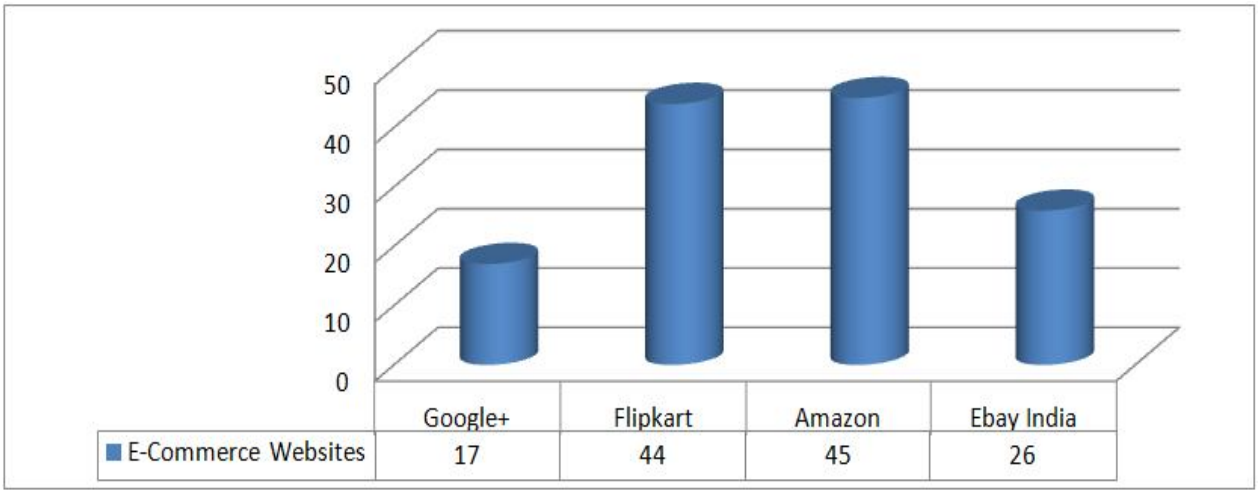
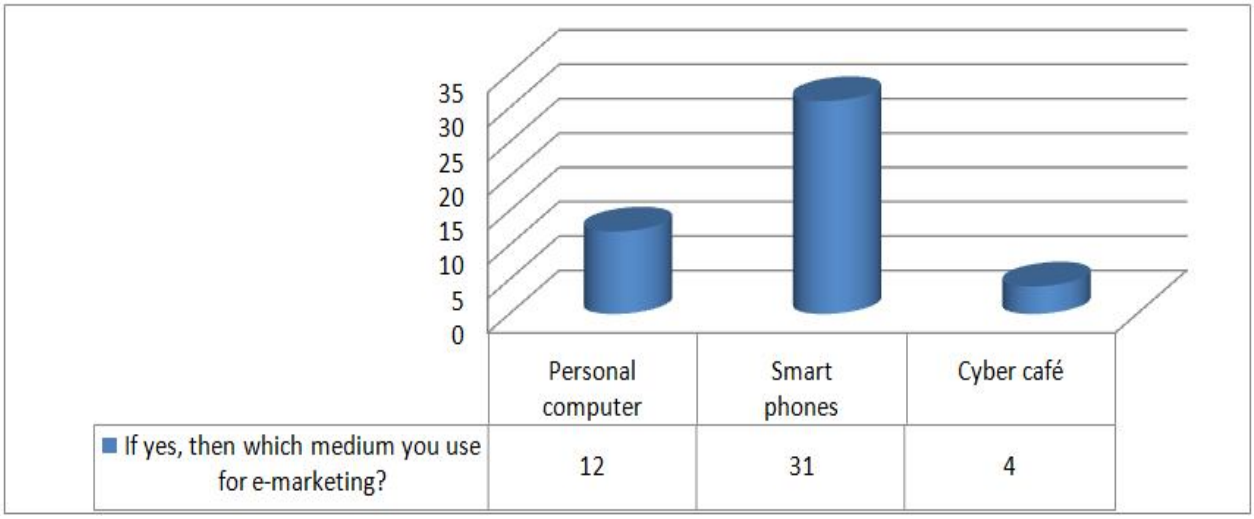


Source: Primary data

The study reveals that 17 responses were in favor of Google+ which is a Search Engine Optimization (SEO) along with other E-commerce websites. This proves that some respondents are still not able to distinguish between e-commerce and e-marketing website.



Source: Primary data

The above chart clearly depicts that 44.28%of respondents use Smartphones for e-marketing, 17.14% users use personal computers while only 5.71% users still prefer going to cyber café.

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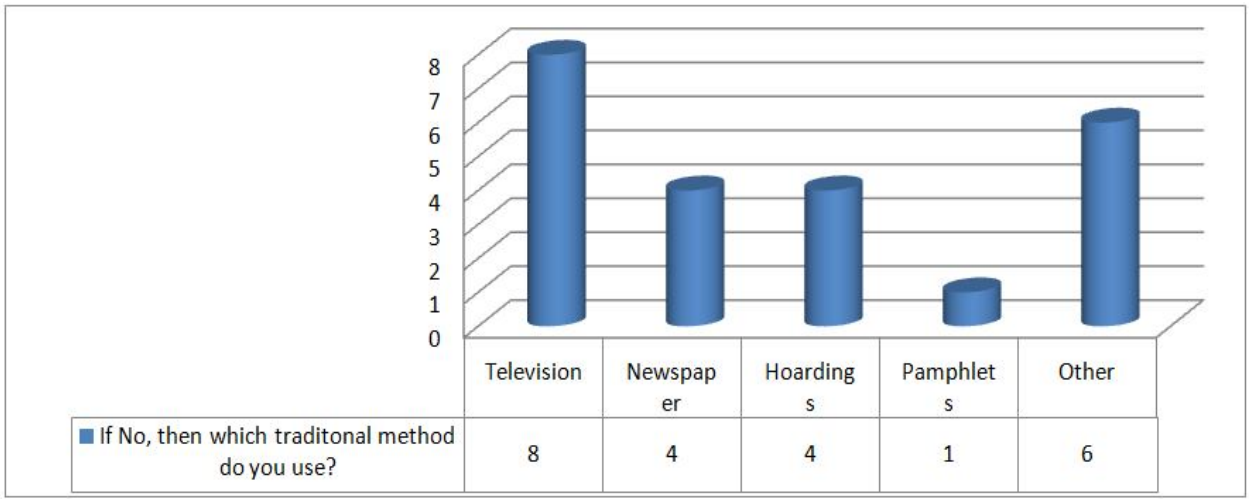
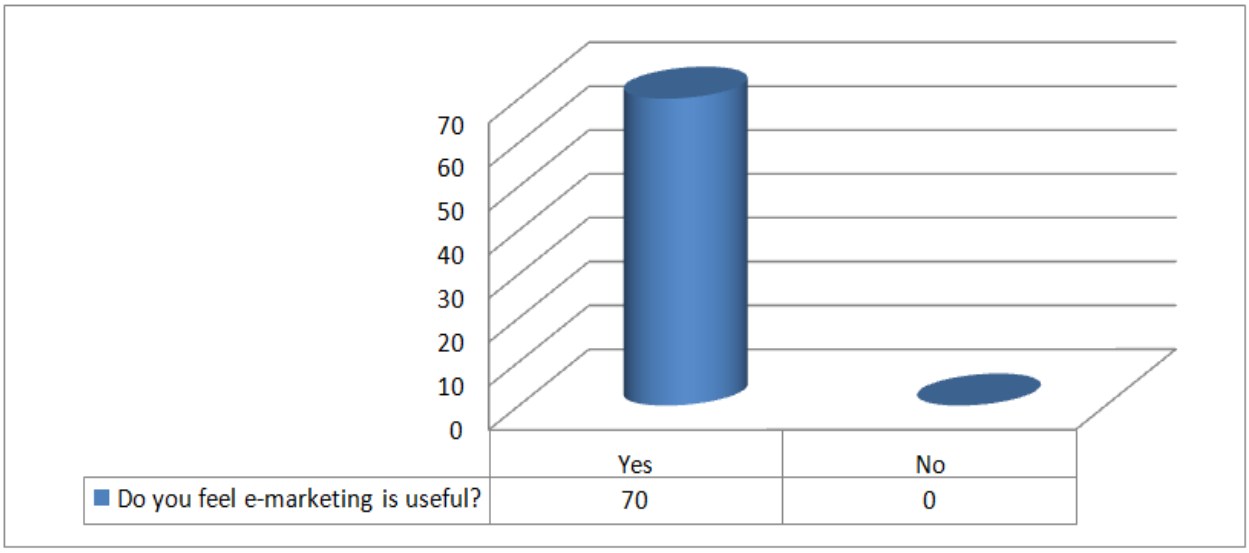


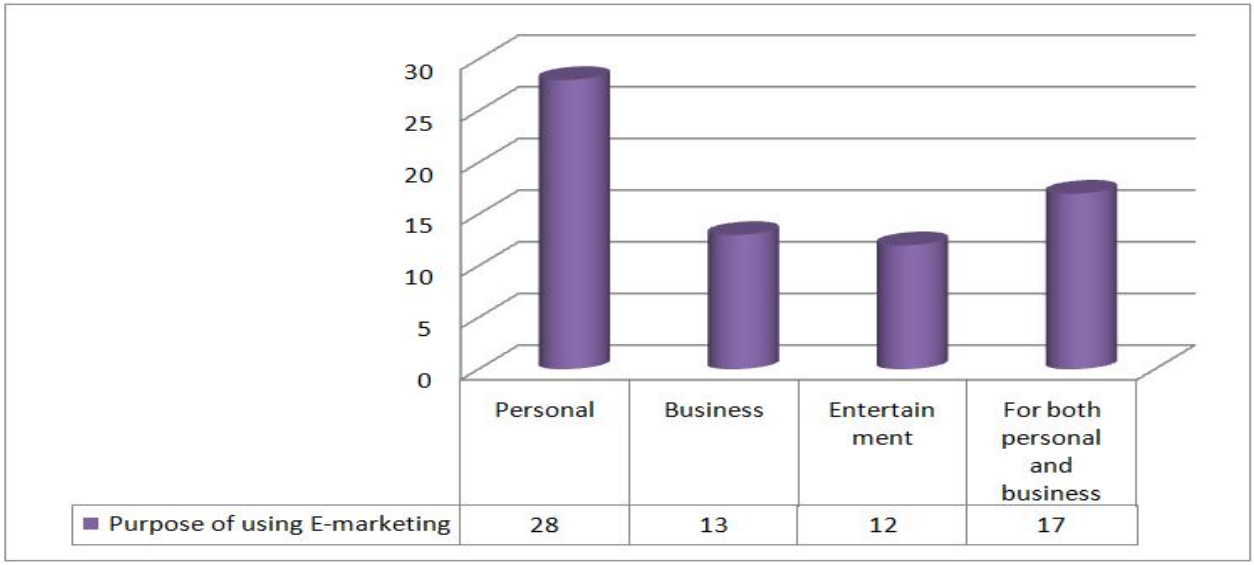
Source: Primary data

The above graph makes it clear that people preferring traditional methods, among them 35% prefer television while 26% prefer other modes of traditional marketing (Magazines, Radio, in transit advertising etc.) and remaining 39% users refer newspapers, hoardings and pamphlets.



Source: Primary data

As per the above graph and data collected by the researchers it is proved that 100% respondents are agreeing to the fact that e-marketing is useful.



Source: Primary data

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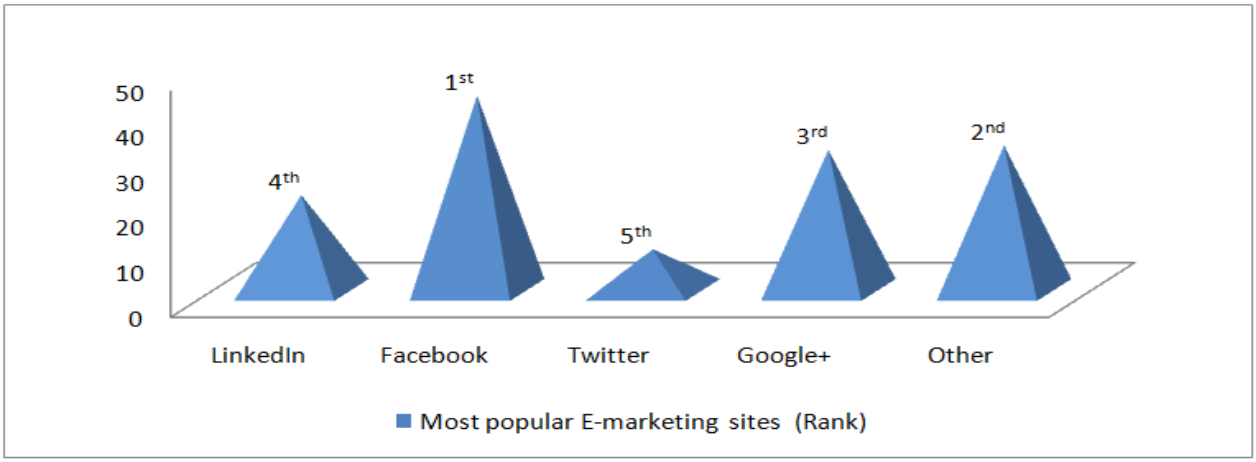
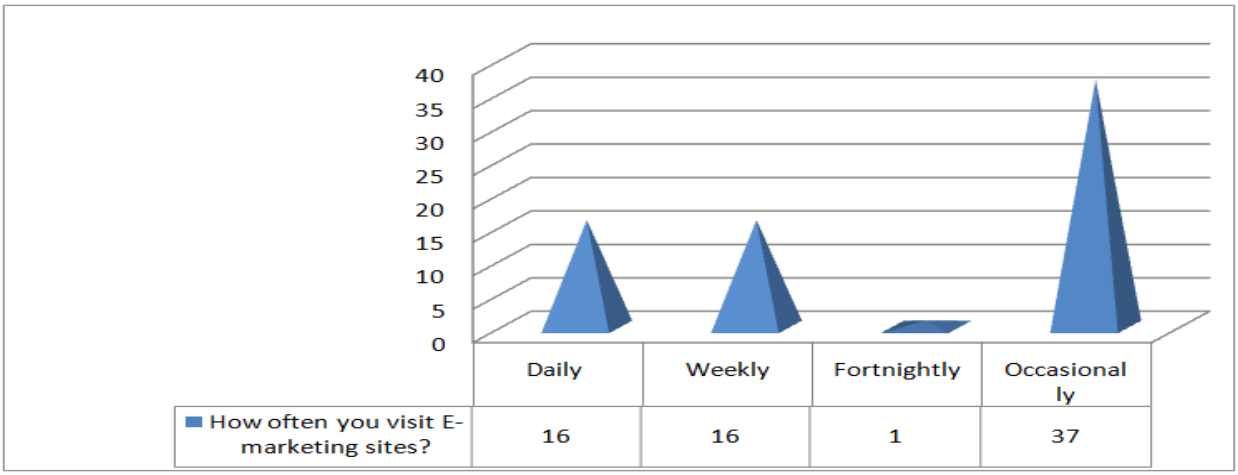
As per the above table, 40% respondents use e-marketing for personal work, 24.28% respondents for both personal and business, 18.57% respondents for business only and 17.14% respondents for Entertainment purposes.



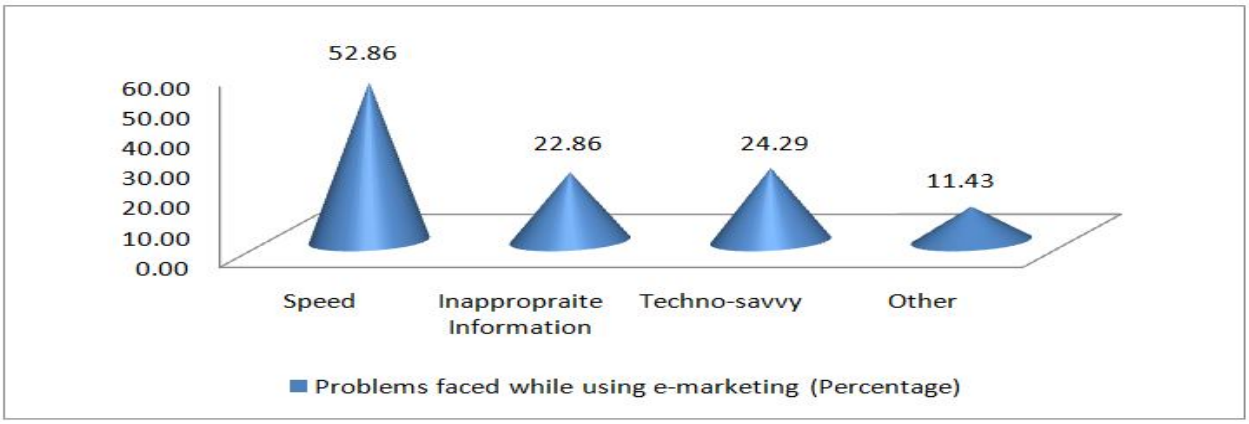
Source: Primary data

The study proves that Facebook is the most popularly used e-marketing site and has got 43% responses, while 33% respondents prefer other e-marketing websites, 31% of respondents' visit Google+, 21% - LinkedIn and least i.e. 8% respondents tend to choose Twitter.



Source: Primary data

This chart brings out that 53% respondents visit e-marketing sites occasionally, 23% respondents visit on Daily and Weekly basis (Individually) and 1% of respondents visit fortnightly.



Source: Primary data

The above graph specifies, 37 respondents face the problem of speed, 17 respondents agree that they are not techno-savvy, 16 respondents faces problem due to inappropriate information and 8 respondents face other problems like quality of the product, connectivity issue, no feel and touch approach etc.

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CONCLUSION

- The study has given us mixed response to the degree of awareness, growth and conceptual clarity of e-marketing and e-commerce among the residents of Ulhasnagar city. It proves that even if people are aware of the terms e-marketing and e-commerce, but still many respondents are not conceptually clear with both the terms and also unable to distinguish between them.
- People from the suburban area of Mumbai (Ulhasnagar city) uses e-commerce and e-marketing in their daily life by using social media and SEOs, which are used for e-marketing (Facebook, Google+, YouTube etc.) but they are unknowingly using the same.
- Approximately 53% respondents visit e-marketing websites occasionally for personal use and still are unaware that the sites they are using belong to the category of 'E-marketing'. From the study it is clear that 24.29% respondents are not techno-savvy and still they prefer using traditional marketing tools such as televisions, newspapers, hoardings etc.
- Growth of e-marketing is reflected from the data showing that 67.14% respondents use e-marketing that too because of social media like facebook (43%), and among them 40% use it for personal purpose while 24.28% respondents use e-marketing for business as well as personal purposes.
- It can be concluded from the study that people would prefer using e-marketing as 100% respondents are in favor of it but there is need to make it more easy to use and familiar among the common man through social media which had already contributed to its growth and also television as non-users find it more reliable.

SUGGESTIONS

- Using the traditional tool of marketing viz. television and radio the conceptual clarity of the term e-marketing can be made familiar.
- Web developers should provide a pop-up message mentioning 'Welcome to e-marketing/e-commerce website' which will enable the users to identify the difference between e-marketing and e-commerce.
- Entertainment films showing the various aspects of e-marketing and its benefits in usage should be made as people are more influenced by them.
- More specific information regarding products and services should be included along with better network service and easy to use technologies are required to increase the growth of online marketing.

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EDUCATION IN THE DIGITAL ERA IN INDIA

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ABSTRACT
Digital inventions and innovations in the contemporary era of globalisation have changed the landscape of many sectors – education being no exception. Rising trend in the adoption of online learning courses has changed the ecosystem of the Indian education sector as well. India being a country with a large population provides a big market for online players providing such services in different towns and cities. A wide number of such online courses are helping learners from all the backgrounds to learn new things faster and with more convenience and ease. Also a wide variety of course content at affordable prices are attracting more and more learners towards this new experience of learning and as a result the Indian online education market is expected to grow at a fast pace in the years to come. The paper tries to focus on the aspect of digitalisation of education and the ways it is capable of contributing towards a new way of learning and also pivots around the growing trend of up-taking digital education in India.

Keywords: Digitalisation, Digital Education, Internet, Learning, Online Courses

INTRODUCTION
"It is not the strongest of the species that survive, nor the most intelligent, but the ones most responsive to change". The Darwinian theory of survival of the fittest is probably pertinent to every facet of human lives, especially in today's era of fast growth with intense competition. The contemporary education sector too is no exception. The advent of 19th century globalization is perhaps the most powerful force that entered human lives to drastically change it and the sectors or sections of the economy not willing to wittingly fall into the overwhelming arms of this force will have to patently perish. Globalization has brought about variegated forms of inventions and innovations in its sway, but the most formidable, influential and the mighty invention of globalization has been the aspect of *digitalisation*. Gartner's IT glossary defines *digitalisation* as the use of digital technologies to transform business models in order to open up new routes to seek higher revenue and additional opportunities for other value practices. The education sector worldwide in order to save itself from the precarious condition of dwindling into obsolescence has also submitted itself to the radical change that digital globalization has brought in and is being increasingly driven by the newfangled technological progresses that has swayed the economies.

Gone are the *Gurukul* days when education was imparted by *gurus* to *shishyas* in open gardens under the trees or in closed lecture rooms. The old classroom based teaching process is giving way to a dialectical process of open communication between students, teachers and third parties in today's age of digitalisation. The change was however not brought about all at once, rather it occurred through three waves (Taekke and Paulsen, 2017). Before the rise of internet, the teaching process was restricted into the classrooms, attended by students and their teachers. The introduction of the aspect of digitalisation, as a part of reforming the education sector worldwide, required teachers to use information technologies in the process of knowledge dissemination. It was then that the schools in all parts of the globe started investing in building up wireless networks, installing computers in their labs etc. Also, it became quite recurrent for both students and teachers to bring their mobile devices to classes for their personal use. This phase is marked as *the first wave* of digital media where a huge drop is found in the educationally relevant attention. Students were hugely distracted in classes owing to responding to their personal messages on mobiles and teachers didn't know how to manage them. As a result of such inattentiveness on the part of the students grades were affected and the classroom process of educational interaction, information dissemination and note taking process slowed down (Kuznekoff, Munz and Titsworth 2016). *The second wave* of digital media arose when both students and teachers started using the digital technology for better interaction between them. This phase is marked by revival of attention of the students as teachers started using digitally based interaction modes within the class. They shared online study documents that helped the students collaborate and students' participation in the class started growing as a result of adoption of these engaging modes of teaching. However, despite the positive impact of the second wave to promote better interaction between the students and the teachers and also imparting a dynamic character to the process of cognitive learning by making available a wide range of online study materials, the classroom setting was still persisting as before (as in the first wave and before) without any radical change. It was only *the third wave* of digital media insemination in the education sector that radicalised the process of learning like never before. In the third wave, the classroom based education system gave way to third party concatenation, where

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persons, other than the students and their teachers, became an integral part of the educational interaction (Taekke and Paulson, 2017). Students, under guidance of their teacher (though it is becoming minimal with passing days), started interacting with groups of students in other schools, within or outside the territorial boundary of their state or nation, and started meeting persons online (through videos and other social medias) with different perspectives that helped them broaden their views on topics they are primarily taught in their classrooms. The teacher-student interaction level reached a new height as the students too now contributed in enlarging the pool of knowledge by bringing into classrooms other perspectives to the teachers they learnt from the online sources. Thus, the learning process no longer remained uni-linear (from teachers to students alone) but started becoming a two-way process where teachers too started to come to know about new things from their students. Thus *teaching* categorically shifted from a closed activity of knowledge dissemination to an open process of learning continuously from new and varied sources. The role of the teachers subsequently changed from being mediators of knowledge to 'mediators of otherness' (Taekke and Paulson, 2017) where their role is to connect their students with pertinent 'others' in the virtual world such that educational interactions can occur without any barriers and knowledge sharing can be made possible across national and international borders, across all castes, creed, gender, ethnicity and so on.

The latest wave of digitalisation in the education sector is considered to be helpful because:

1) It helps students to acquire better skills in handling media and IT related activities (Lowe and Laffey, 2011)
2) Active use of social media in classrooms and outside, prepares the students for the contemporary societal structure that is heavily digitalised (Shannon 2011)
3) It gives better opportunities to students to interact with different communities, making friends, maintaining peer relationships etc. and hence help in knowledge sharing and cultural convergence (Lovari and Giglietto 2012, Jenkins 2008, Blanchard and Markus 2004; Wright 2010; Atkinson 2010; Webb 2012).

HELPFUL WAYS OFFERED BY DIGITAL EDUCATION

Digitisation is helping the education sector to adapt to the dynamic environment by allowing it to keep pace with the highly competitive world. It is changing the face of today's education system on a global scale by making possible:

1) Availability of Online Classes and Programs: Online schools and classes are widely available. Free online classes known as Massive Open Online Courses (MOOCs) are being increasing made popular these days. It is not only helping in uniting students from all across the globe but also enabling people from all age group to participate in the learning process at their convenient time from their convenient places.
2) Digitalisation of Learning Texts: The text books of high schools and colleges are increasingly being replaced by iPads, tablets and laptops. The fast paces development of online media has brought in e-books, e-readers and learning programs developed for iPads, smart phones, Kindles etc. Such developments have already replaced the loaded backpacks of students with light weight devices. We may soon expect a total extinction of textbooks!
3) Mobile learning: Different MOOCs allow one to learn to the go. Students can easily access the courses offered, from their smart phones. Plugging in the headphones is clicking the start button is all that is needed to be done. Doesn't matter whether they are taking a bus ride or a train ride, they can instantly connect with the classroom discussions.
4) Customization of Teaching and Learning: Digitalisation offers fluidity to the process of teaching and learning. The traditional approach to teaching and learning had a uniform approach. Teachers had to offer uniform lessons and ask them all to work on uniform projects and assignments. The technology availability these days is enabling teachers to customise and personalise lessons and assignments for each group or child depending on their field of interest. This helps the children to enjoy the learning process at their own pace.
5) Wide Availability of instruction from Diverse Teachers: The digital technology has also made students seek knowledge from teachers with multi-cultural backgrounds. As students interact with teachers from all across the globe through the digital media, they get to interact and know unique perspectives, cultures and languages that undoubtedly enrich their palette of knowledge.
6) Data Driven Result: With digital insemination, the process of evaluation of students is also getting online and use of OMR sheets or concepts of online examination are gaining popularity. Online grading tools and devices are not only providing more accurate results regarding students' performance but also saving a toll of time on the part of the teachers.

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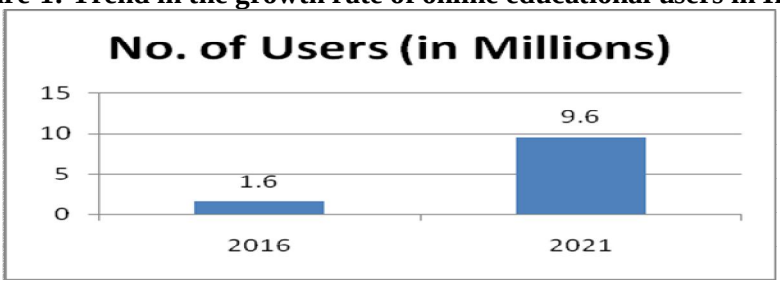
TRENDS OF ADOPTION OF DIGITAL EDUCATION IN INDIA

Digital education leapfrogged in India with the management colleges, like IIM, offering computer labs and computerised libraries to their students. Laptops became a common feature in the process of offering different business management courses in these institutions. Slowly and steadily, technological insemination started in other domains of education like engineering, humanities and other social science courses. Technology even frayed in banking examination and other all-India level competitive examinations too where written tests have been replaced by computerized test.

The future trend of online education is India, as predicted, is quite impressive. As per a recent report by Google, KPMG (2017) online education in India will witness an approximate growth of eight times in the next two years. The edtech market in India, which contributed to $1.96 billion in 2016 is expected to rise at $247 million by year 2021. The number of online users in India for education purpose is expected to grow at an unprecedented rate like never before. The following figure (Figure.1) shows the trend in the growth rate of such online users in India in the education sector.

Figure-1: Trend in the growth rate of online educational users in India



Source: KPMG in India's research and analysis (2017)

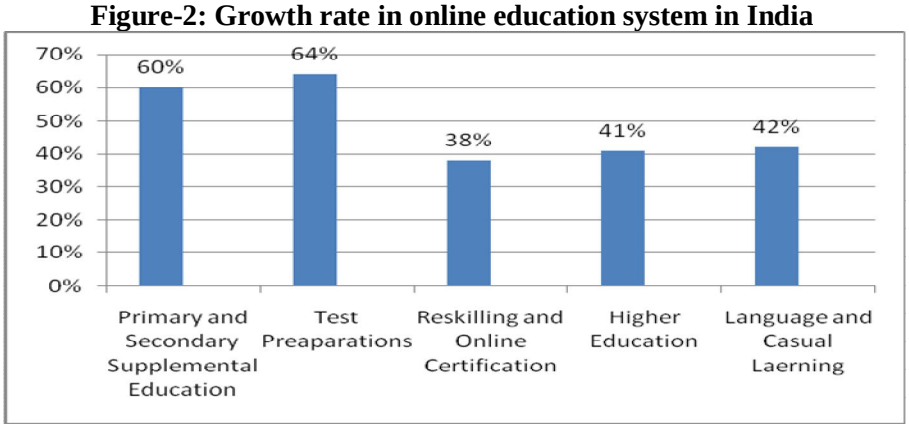
The education industry in India largely consists of school students and working professionals. The key vendors and institutions serving the Indian education market in the arena of online education are Educomp solution, NIIT, IGNOU, BYJU'S, Tata Interactive System, TCY learning solutions, Sikkim Manipal Universityand Maeritnation to name a few. Educomp solution has been the pioneer in this field, followed by others. BYJU'S is becoming justly famous for introducing *gamification* of its learning resources of late. The famous saying, "play is the work for children" is what is believed by the edtech companies today and their continuous effort in fostering creativity in kids by clubbing *playing* while *learning* is fetching them good prospects.

The recent trends of uptaking online courses across different categories, regions and nature of the courses in India are as follows

1) Primarily, there are five categories taking India's online education system to the next big level. These are, primary and secondary supplement education, test preparation, reskilling and online certification, higher education and language and casual learning. As suggested by the KPMG report, all these categories of online education in India is going to increase in the near future (2021) with test preparations and primary and secondary supplement education rising the most. Figure. 2 shows the predicated growth rate of these categories in the upcoming years.

Such prediction has important implication. The second highest expected growth in the primary and secondary supplemental education category in India brings in the hope that a revolutionary change is yet to come in K-12 level and general degree colleges where classroom education system has prevailed long.

Figure-2: Growth rate in online education system in India



Source: KPMG in India's research and analysis (2017)

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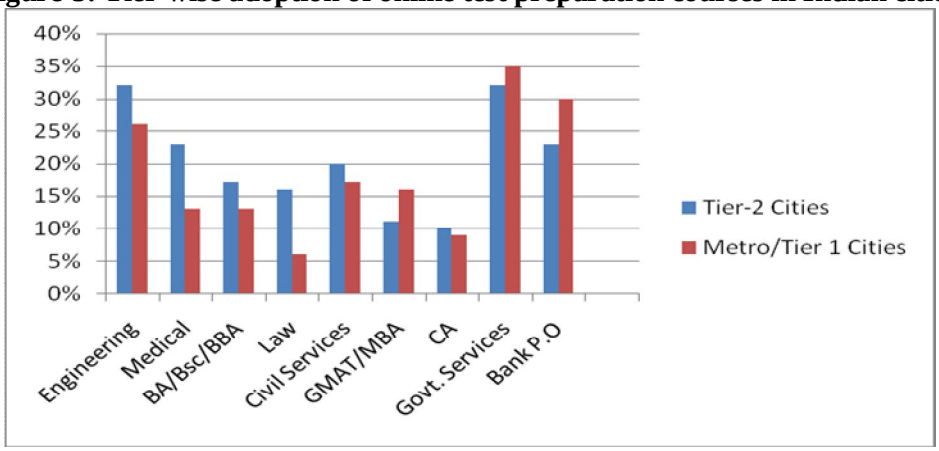
2) The online adoption of the test preparation category has varied trends across tier 1 and tier 2 cities. Metro/ tier 1 cities are have higher adoption rates of test preparation courses that results directly in government jobs or probationary officers in banks. They also have a higher uptake of GMAT/MBA test preparation courses than their counterparts in tier 2 cities. Tier 2 cities, on the other hand, goes more for test preparation for undergraduate courses. Figure 3 shows the tier-wise split in adoption of online test preparation courses in the country.

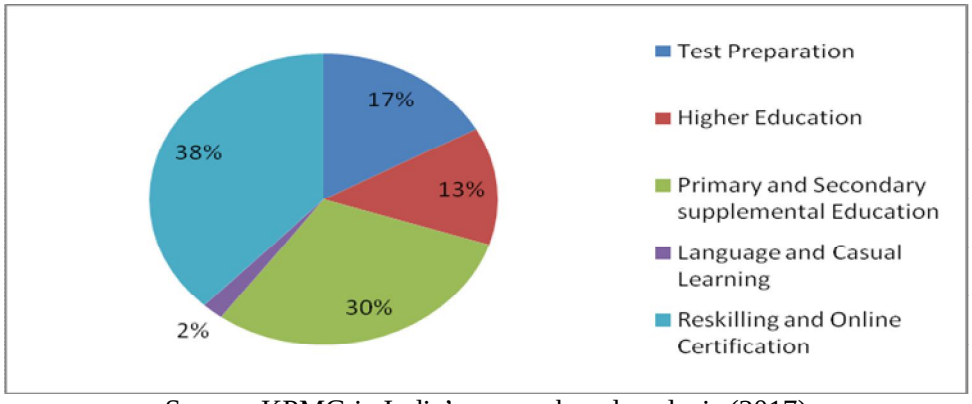
Figure-3: Tier-wise adoption of online test preparation courses in Indian cities



Source: Nielsen Primary Survey (2016)

3) The dissection of the Indian online education market data, for the year 2016, shows that Indians are keener at undertaking reskilling and online certification courses with much enthusiasm. Figure. 4 shows the category-wise split of the online education market in India.

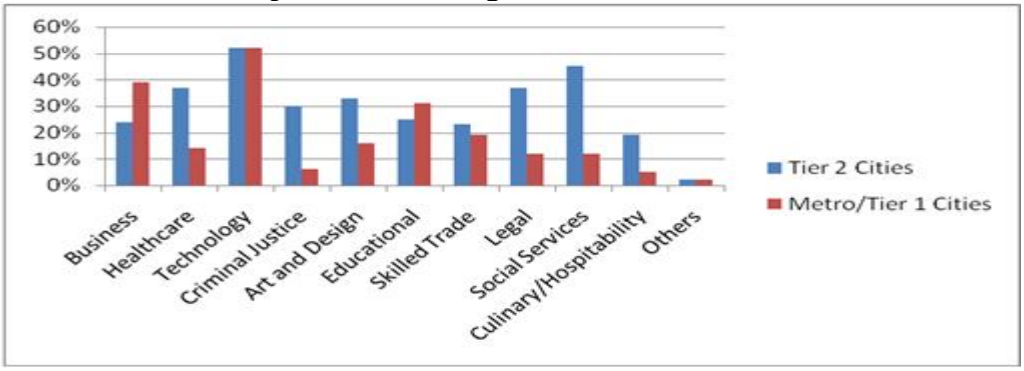
Figure-4: Category-wise split of the online education market in India (2016)



Source: KPMG in India's research and analysis (2017)

With the reskilling and online certification courses, the technology related courses are evenly distributed across tiers. While tier 2 cities are keener in up taking niche courses like social services, legal services, criminal justice, healthcare and arts, tier 1 cities are consumers of certification courses related to business management (as shown in figure 5).

Figure-5: Level of consumption of Reskilling and Certification courses across tiers in India



Source: Nielsen Primary Survey (2016)

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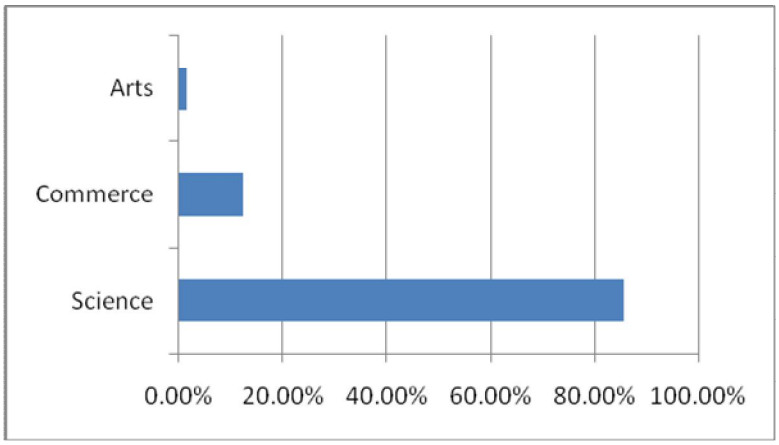
4) Students with science background are using the online courses much more as compared to the students from arts/commerce background. These students, prefer quality supplementary content to help them preparing for competitive exams besides using school curriculum. The arts/commerce content availability is relatively lower thereby restricting these students into their school curriculum alone. Figure 6 explains shows the adoption rate of online preparatory courses by students from different backgrounds in the higher secondary level of education in India.

Figure-6: Adoption of online preparatory courses by higher secondary students from different backgrounds in India



Source: Nielsen Primary Survey (2016)

5) Data from KPMG report is used to test whether the online courses are evenly taken up by all the regions across the country –

A chi-square test was conducted for checking the homogeneity of courses adopted across different regions.

H_0: The courses are homogenous in all regions

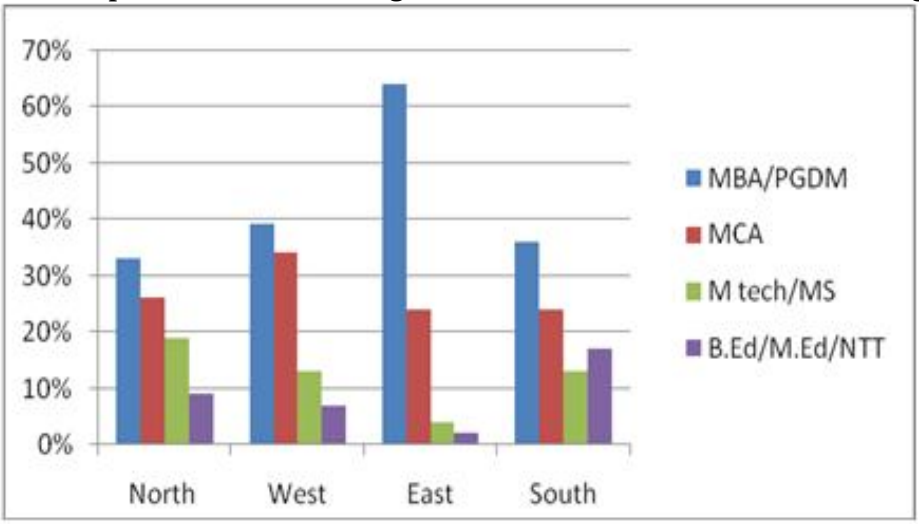
H_1: The courses are not homogenous in all the 4 regions

The result of the test is interpreted using the P-value which came to be < 0.05

On the basis of the result obtained from the P value, the null hypothesis is rejected and the alternative hypothesis is accepted which implies that the courses taught in the 4 regions are not homogenous. Figure 7 shows the adoption rate of different online courses across geographies in India.

Limited availability of institutions in the eastern part of the country has led to higher adoption rates of online courses in the eastern zone of India. Four out of top 50 business schools and only 60 out of 690 colleges in India are located in the eastern part of the country. While the eastern part remains deprived of sufficient educational institutions, they form the largest consumer base for online courses in the country.

Figure-7: Course wise preference of online higher education courses across different regions in India



Source: Nielsen Primary Survey (2016)

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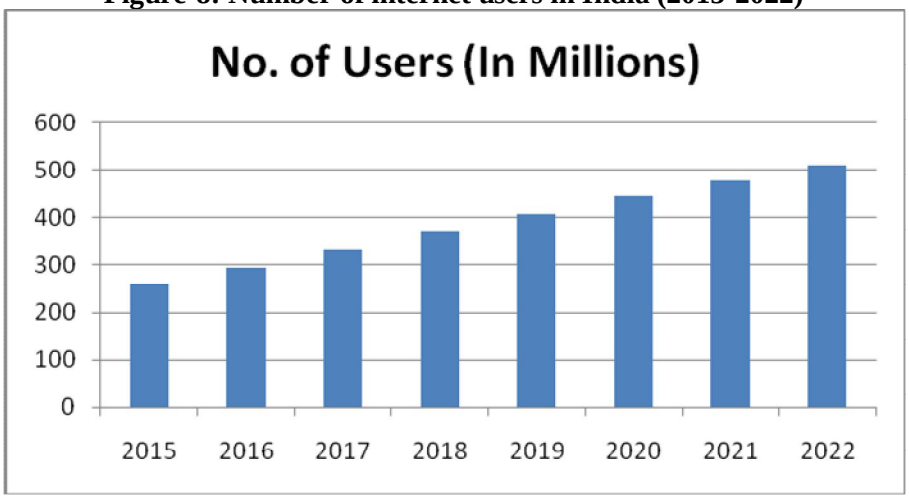
KEY FACTORS CONTRIBUTING TO THE GROWTH OF ONLINE EDUCATION IN INDIA

The key factor leading to the growth of online education market in India is the increasing penetration of internet. The wide availability of IoT (Internet of Things) has helped more than 900 startups in provisioning online education service in the country in the past four years. As per the report, India has witnessed a remarkable growth of total internet users in the period 2011-2018 and the future of internet penetration seems to be promising with a expected growth of more 252 million users (approximately) by 2022.

With the rising trend of consumerism and increased urbanization in recent years like never before, people will seek for more efficient alternative modes of learning. The increasing use of machine learning and artificial intelligence in delivering personalised courses, in India, that considers individual's unique learning patterns will add to the efficiency of such courses.

Figure-8: Number of internet users in India (2015-2022)



Source: Statista; Statista DMO 2019

Moreover, the costs of such online courses are quite low (Rs. 15,000 – Rs. 20,000) as compared to the price of courses offered in private colleges and institutes (Rs. 8 lakh – Rs. 10 lakh). Owing to low price, online education will be quiet attractive for students belonging to low income category. The rising middle class population is expected to increasingly respond to such affordable courses which will play a vital role in the expansion of demand for online education.

Apart from that, increased convenience of undertaking such courses, from anywhere a anytime, increased reach through wide availability of smart phones and other digital devises across all strata of the Indian economy will be some other few factors responsible for such unprecedented growth of online education in India. The flexibility of commencement dates of different courses as well as availability of wide variety of quality study materials serves to be the most influential factor in the growth of specific brands in the industry.

Active role of the Government of India to promote digitization is also adding momentum to digital education in the country. Government initiatives such as SWAYAM, E-Basta, Rashtriya Madhyamik Shiksha Abhiyan (RMSA), Skill India and Digital India are enabling rapid availability of infrastructure needed by students to study online.

CONCLUSION

Though digital education comes with certain limitations like people often find it hard to motivate and organise their own learning in the absence of real guides and some even feel isolated, at times, being away from friends and other social interactions, yet digital education proves revolutionary for levelling the playing field for all students and learners. For a country like India, that homes the largest world population of children, digital education is a must potion for curing the problems plaguing the country's education system. The state of education, especially in the rural area of the country, is deplorable. Shortage of teachers, low teacher-student ratio, inadequate teaching infrastructure etc. afflicts both the primary and the secondary education sector in these areas. Digitalization of education can play the mitigating factor provided proper government initiatives are taken. However for a large country like ours, digital education cannot replace the physical presence of classrooms and teachers therein. There are huge pools of people in our country who are still fighting for a day's meal and to make both ends meet. Though digital education is a reality in Indian towns and cities, "digital divide' is also a reality, where people in remote villages have not yet heard of internet. For a country like India, a hybrid model of a combination of physical presence of teacher and technology is needed.

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Another crucial aspect that digitalisation has brought to our lives is, it has increased the necessity of individual time management. As Förster-Beuthan points out in her latest book – *Experience of time and ontology* – we "subjectively feel an acceleration of time" in today's hyperconnected world with all our devices – mobile phones, laptops, tablets, palmtops, etc. – pouring on us truckload of information from diverse sources all in parallel. What we need is a better time management strategy to choose the best courses for ourselves from the best brands, to enhance our learning experience. Only if these information are well simulated our learning experience will enhance our lives and lived experiences.

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INNOVATIVE MARKETING STRATEGIES ADOPTED BY BANKS IN RURAL AREAS WITH REFERENCE TO THANE DISTRICT

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ABSTRACT

India is the developing country consisting of 640897 villages having a population of 83.3 crores. For the development of Indian economy, upliftment of rural population is considered as a key factor by government and RBI. Various guidelines have been issued by RBI in order to inculcate the banking habits among the rural people. Banks have introduced various schemes like zero balance account, credit and debit card, online payment, NEFT etc. for attracting the rural people and to make banking easily available to them.

E-banking refers to electronic banking in which the customer conducts transactions electronically through internet and mobile applications. E-banking is designed for the purpose of easy and safe access to bank account and also execution of all types of utility services, managing credit and debit cards, transfer of funds etc. only on single click. E-banking has made life much easier and faster for both customer and banks. In India currently 45 million people uses internet banking which consist of 70% users from urban area and only 30% from rural area. It shows that many people from rural area unaware about the e-banking services due to limited access to technology, lack of financial literacy, unawareness about the various e-banking services etc.

This paper discusses the innovative marketing strategies adopted by banks in rural areas and to assess the awareness level of e-banking facilities provided by banks to rural consumers with special reference to thane district.

Keywords: Marketing strategies, Rural area, E-banking services

INTRODUCTION

In today's world e-banking is on the rise. The uses of e-banking services came into existence in mid of the 90's. E-banking refers to the use of technology which allows customers to access banking services electronically whether it is a pay bill, transfer funds, view account or to obtain information and technology and advices. As medium of universal communication e-banking implies the most pragmatic use of information technology. For the development on sound lines of e-banking and would not pose a threat of financial stability of related challenges in e-banking, the RBI has continuous monitoring and reviewing the legal and other requirements of e-banking. Credit of launching e-banking in India goes to ICICI banks followed by Citibank and HDFC bank in 1999.

E-banking provides complete package of banking at your convenience in the comfort of your home at 24 hours a day, 7 days a week and 52 week a year. E-banks cannot think for the profit, they charge very low service charge for their transaction. E-banking has capability to cater to a very large customer base also offer a lot of personalized services to their customers and ensure the clock banking transaction to customers and provides very low setup of cost and saves lot of operational cost.

Today more than 50% branches of the banks are found in rural area. Rural banking has to face competition with unorganized sector. Banking in rural area is highly regulated activity by the government of India. Success mantra for rural banks is personalized banking among rural customers it because of lack of literacy level and hesitation to depend upon technology based services. . Marketing through customer service in rural area is different from urban area. Now a day's banks adopt strategies like *camps in villages, employee customer meet, demo session for uses of banking services, other promotional tools like providing calendar's, pen drives etc.* which attracts rural customers. But instead of all these the awareness and adoption rate of banking services among the rural customers is still found very low because of many factors like security and privacy, trust, innovativeness, familiarity, awareness level, increase the acceptance of technology based banking services among rural customers. For more effective marketing in rural area bank should have staff with right soft skill like concern for customer's problem, positive attitude, good communication and negotiation skill.

OBJECTIVES

1. To study the awareness level of rural population regarding e-banking facilities provided by banks.

2. To identify the marketing strategies adopted by banks in rural areas.

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REVIEW OF LITERATURE

The following earlier studies have been conducted by various researchers in the area of consumer attitude of e-banking user:

Dr. A vinayagamoorthy, M. Ganesan, (CA study on rural consumer perception towards internet banking services in Salem district) analyses that when integrated with other channels, internet banking becomes a powerful tool for improving consumer satisfaction and increasing cross-selling opportunities.

Panda S. K. and Dr. Misra D. P (customers perception on e-banking: an empirical study on rural banks in the selected districts of Odisha) says that, In the era of IT revolution, the banks particularly the rural banks can adopt net banking to a larger extent for consumer satisfaction, this in turn will bring the rural customers as well as the banks to a win-win position.

Bhavesh J Parmar, Daeshan B Ranpura, Chirag R Patel, Naineshkumar P Patel (Rural banking through internet: A study on use of internet banking among rural customers) highlights that the different facilities of e-banking which are provided by the bank in that, balance inquiry is the mostly preferred out by its various facilities. The concept are not much developed so the other types of facilities are provided by the banks are not having much usage like term loan, online fixed deposit, demand draft facilities etc.

Dr. G. P. Sharma and Harsha Sharma (Innovative banking practices by Indian banks – A study of SBI) conclude that the banks are able to increase their market share with the implementation of IT. Banking has spread its branches and has reached those customers who never availed banking services. It has promoted paperless banking that has supported sustainability measures.

RESEARCH METHODOLOGY

For the present research work data have been collected from the primary data and secondary sources. Primary data was collected from respondents through survey. A structural questionnaire was prepared and administered among 40 respondents from rural area and also from the direct interview with employees of 10 branches rural banks. Secondary data was obtained through various published documents such as research reports, articles, periodicals, bank prospectus etc.

DATA ANALYSIS AND INTERPRETATION

Demographic Information

SEX

Gender	No. of respondents
Male	27
Female	13

Age Group

Age group	Total
Below 20yrs	06
21yrs – 30yrs	11
31yrs – 40yrs	11
41yrs – 50yrs	04
51yrs – 60yrs	04
Above 60yrs	04

Educational Qualification

Group	Total
SSC and Below	08
HSC and Below	10
Graduate	13
Post-Graduate	08
Other	01

Annual Income

Income group	Total
50000 and Below	12

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50001 – 100000	02
100001 -150000	05
150001 – 200000	06
200001 – 250000	01
250001 – 300000	05
Above 300000	09

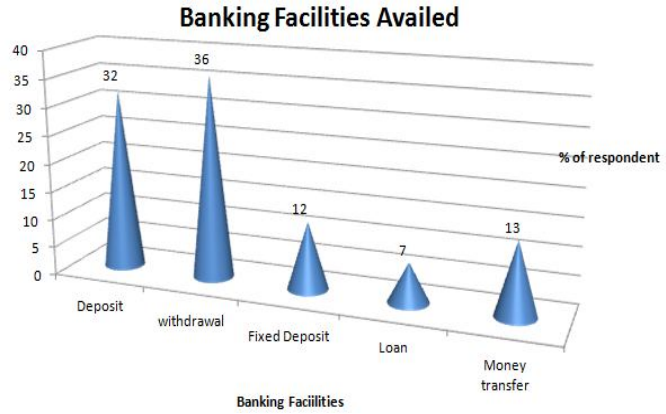
Do you have bank A/c

Class	No. of Respondents
Yes	40
No	00

The above table shows that 100 % respondents have their bank account. Because of efforts taken by government like jan dhan yojna etc.

Which banking facilities you avail

Facilities	% of respondents
Deposit	32
withdrawal	36
Fixed Deposit	12
Loan	07
Money transfer	13

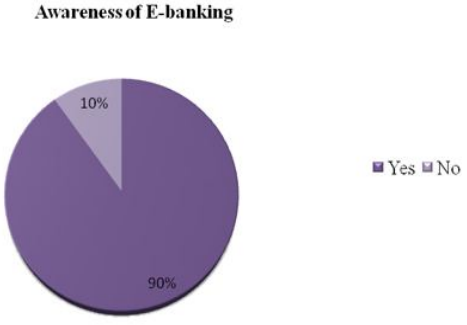


Source: Data collected by researcher through survey

Majority of the respondents (i.e. 36% and 34% respectively) avail only withdrawal and deposit services of banks whereas only 12% of respondents have taken fixed deposits from bank. The percentage of respondents using money transfer facility is also low (13%). The response of people towards loan facility of bank is limited to 7% only.

Awareness of E-banking facilities provided by banks

Total	No. of respondent
Yes	36
No	4



Source: Data collected by researcher through survey

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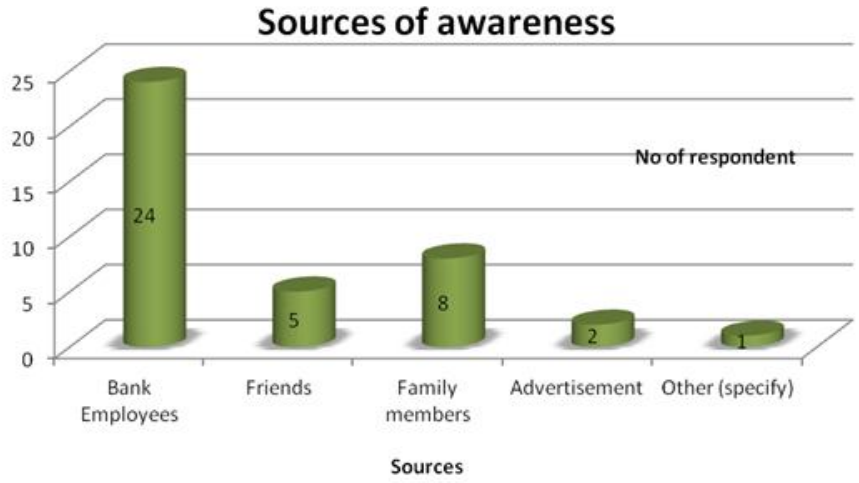
Above diagram shows that 90% respondents are aware about the e-banking services and reaming only 10% respondents are not aware e-banking because of literacy level and lack of technology knowledge.

Sources of Awareness

Sources	No. of respondent
Bank Employee	24
Friends	05
Family members	08
Advertisement	02
Other (specify)	01

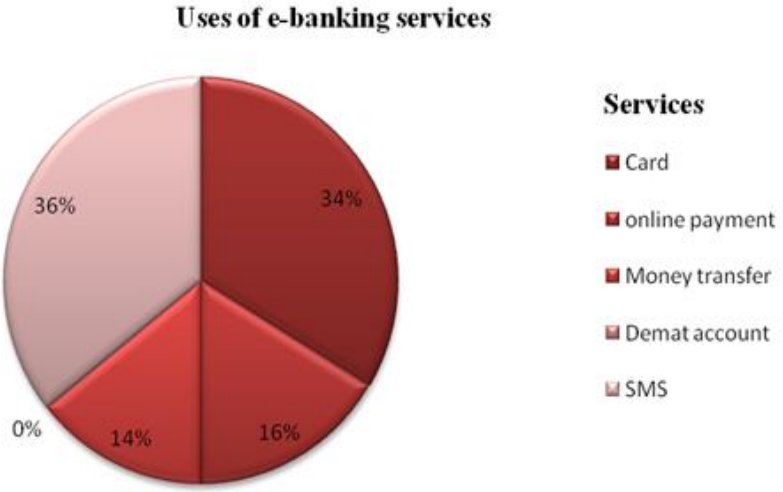


Source: Data collected by researcher through survey

Above graph shows that bank employees are the major source for creating awareness about e-banking services followed by family members and friends its means advertisement not plays the key role in source of awareness.

Uses of E-banking services

Services	% of respondent
Card	34
online payment	16
Money transfer	14
Demat account	nil
SMS	36



Source: Data collected by researcher through survey

Majority of respondents uses SMS (i.e. 36%) and cards (i.e.34%) facilities. Only 16% respondent's uses online payment and 14% uses money transfer facilities. It shows that no one uses demant facilities provided by banks and they use only basic services of e-banking.

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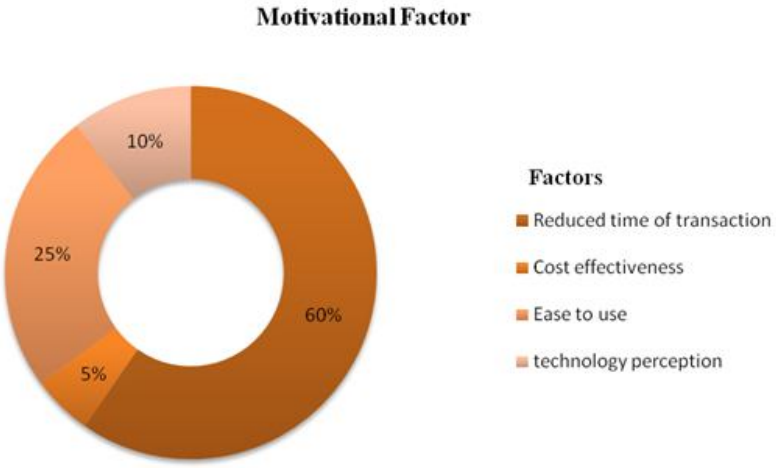
Factor motives to use E-banking service

Factors	% of respondents
Reduced time of transaction	60
Cost effectiveness	05
Ease to use	25
technology perception	10

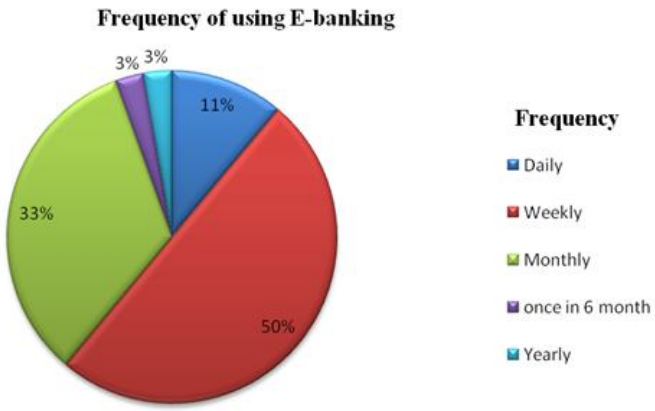


Source: Data collected by researcher through survey

Above graph shows the main reason for using e-banking services is to reduce the time of transaction and save valuable time of people.

Frequency of using E-banking facilities

Frequency	% of respondent
Daily	11
Weekly	50
Monthly	33
once in 6 month	03
Yearly	03



Source: Data collected by researcher through survey

Above diagram shows that 50% respondent use e-banking services on weekly basis and 33% uses on monthly basis it means respondents regularly uses e-banking services.

Data collected from Bank

Marketing strategies	No of banks	% of respondent
Camp Conduct in villages	08	47
Customer meet	05	29
Attractive loan facilities	03	18
Other	01	06

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Source: Data collected by researcher through survey

Above diagram shows that major banks focuses on camps conducted in villages (47%) for create awareness among people for various government schemes like PMJDY, PMJJBY, APY, PMMY etc. followed by customer meetings (29%) conducted by banks on monthly basis. Some banks provided attractive loan facilities (18%) to their customers like agriculture loan, vehicle loan etc. Only 6% banks adopt other promotional facilities like gifts (Pen drive, self-stick, bedsheets, calendars etc.)

FINDINGS

Research shows that all rural people have their bank accounts and they availed about the basic banking facilities like deposits, withdrawal, money transfer etc. But this rural area consist of Adivasi people which have low literacy level because of that bank employees give attention to aware them about basic banking transaction and they are far away from technological chances like e-banking. The research focuses on e-banking services which show that 90% respondent aware about e-banking facilities but their uses limited to 50% which consist of 80% uses for SMS and card and only 20% uses is for other important e-banking services. Reduction in time of transaction and comfortable for uses motivates them to use e-banking services frequently i.e. 50% respondents use on weekly and 33% respondents on monthly basis. Banks takes initiative to create more awareness among rural area peoples for using more and more e-banking facilities which save their time for go to bank and stand in queue for manual transaction.

SUGGESTION

1) Banks can create awareness among rural people about e-banking services like money transfer, online payment etc. through demo session in customer meeting and camping in villages.

2) Banks should provide user friendly mobile application which promotes customers to use e-banking service effectively at their convenience.

3) Government need to take strong efforts to increase the literacy level of the rural youth so that they can use e banking facilities and various other technologies effectively.

5) Proper measures should be taken by banks to ensure full security of customer's funds. By employing well trained and expert technicians in field of computers avoid technical defaults so the loss of data can be awaited.

CONCLUSION

Now a days Banks provides numerous products and services for the benefit of its customers that helps in saving their precious time and cost. The concept of e-banking and digital technology are new to the rural consumers in recent year; most of the people are using these services from last 2 to 3 years. People in rural area have their bank accounts because of the efforts taken by current government through various schemes like PMJDY, PMJJBY, APY, PMMY etc. these schemes have helped for developing their standard of living and inculcating the saving habit among them. E-banking services are not yet popular in rural customers. Bank employees are taking initiative by conducting camps, meeting with customers on regular basis for creating awareness among the rural customers towards e-banking facilities and its importance. But the efforts need to be more rigorous. Youth in rural areas prefer e-banking services but the usage is restricted only for SMS and ATM services. It shows that people are unaware of the other important services like online money transfer, online payment etc. Though the world is moving towards digital technology, still the inclusion of rural areas towards this advancement is insignificant. Educating them about the latest technology is foremost important for the holistic development of the country.

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USE OF MOBILE APPS IN EDUCATION: BENEFIT AND CHALLENGES

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ABSTRACT
Mobile Apps is mobile applications designed for the mobile devices for particular use. It is generally small, individual software units with limited function. Mobile technological innovations and applications are creating some challenges as well as some benefits for students and teaching in education institute. The teachers and students should integrate Apps in their daily professional work. The role of Apps in today's learning environment is also important for teachers. The mobile Applications can serve the emerging mobile learning process and delivery needs of the students and teachers learning community. This will provide healthy learning environment that meets the current digital learner's requirements and supports learning experiences that are collaborative, portable, flexible and accessible, and can be integrated with the world globally, beyond the traditional classroom. This paper explains some benefit and challenges of mobile Applications in educations.

Keywords: Apps, Application, Mobile, Education, Students

INTRODUCTION
App is abbreviation for Application. Mobile Apps (Mobile Applications) is a Computer program software designed for a specific purpose. Mobile App provides limited functionality. It can download onto a mobile device for particular use. It is frequently serve to provide users with similar services to those accessed on Personal Computers. Mobile technological innovations and applications are creating some challenges as well as some benefits for user in education institute. The teachers and students should integrate Apps in their daily classroom as well as professional work. The role of Apps in today's learning environment is also important for teachers. The mobile Apps can serve the emerging mobile learning process and delivery requires of the learning community. This will provide well balanced learning environment that meets the current digital learner's needs and supports learning experiences that are portable, collaborative, accessible and flexible. It can be integrated with the globally and beyond the traditional classroom.

The mobile applications are available in the various uses such as Calculator, Calendar, Game, Maps. Also, there are applications for money transection such as Paytm, PhonePe, FreeCharge, GooglePay etc., similarly for traveler transportations are OlaCabs, Uber etc. Apps for books readers are Amazon Kindle, Audible, Blinkist, Goodreads, Libby etc [1-5].

MOBILE APPS IN EDUCATION
Now days, the students and teachers are motivated towards mobile devices such as smartphone, mobile tablet etc. for many educations applications purpose. Using Apps, the students and teachers can get access to particular information easily inside the class room and outside the classroom.

BENEFIT OF MOBILE APPS
The researchers are working with new methods to import knowledge in education. This includes various activities that engage the students in learning innovative ways such as mobile apps. Mobile Apps help to reduce books and notebooks. The students can focus on their courses and subject oriented studies using the graphic and pictures and other format. There are some benefit of mobile applications shown in Fig.1.

The some benefit of mobile apps in education are given below.

(a) Innovative Learning Techniques

(b) Parents-Teacher-Students Communication

(c) Students performance

(d) Education 7x24

(e) Admission process

INNOVATIVE LEARNING TECHNIQUES
Introduction of mobile apps in the education has managed to the introduction of new learning techniques. On base of course and subjects, there are exciting photographs and games available on mobile apps that indulge the students and teachers into a positive thought process and support them understand courses from a different perspective.

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PARENTS-TEACHER-STUDENTS COMMUNICATION
The mobile apps support in building the healthy communication between parent-teacher-students in institutes of educations. Mobile apps help to solving their problems and queries in the transparent ways in education institutes

STUDENT PERFORMANCES
The mobile apps help in communicating the overall performance of students in education. This help to know the performance of students in examination, presentation, co-curricular activities and other area base on academic.

EDUCATION 7X24
Using the mobile applications, the students, parents and teachers can get access to particular information easily everywhere any time. This facilities help the parents to monitor the overall performance of students in their busy schedules.

ADMISSION PROCESS
The mobile applications help in communicating to the parents regarding admission forms, admission fees and other information related to the admission in their busy schedules. Also, This support to the transparent ways admission in education system.

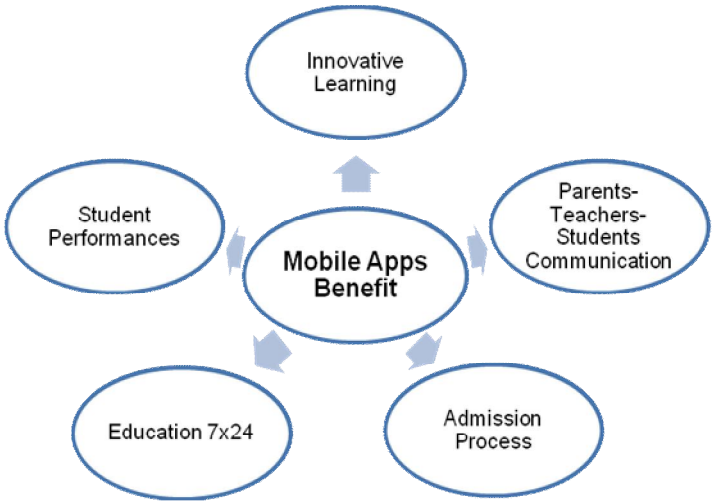

Fig. - 1: Mobile Apps Benefit

MOBILE APPS CHALLENGES
There are various challenges of mobile apps in educations. Some challenges are shown in fig.2, they are learning materials, cost of mobile devices, up gradation of mobile, security and privacy, internet connectivity etc.

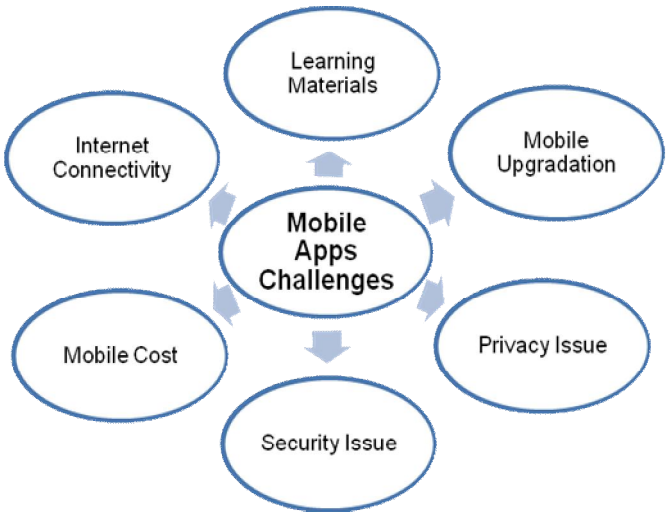

Fig. - 2: Mobile Apps Challenges

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LEARNING MATERIALS
The making the learning materials base on mobile applications for the different courses and subjects are the challenges in education. The learning materials should be compatible to the mobile device.

MOBILE COST
Due to rapid change of future of mobile devices, the up gradation of mobile devices requires to compatible with new applications. Therefore, changing the mobile devices due to change of futures, increases the additional cost, this create measure problems among the students and teachers in educations.

MOBILE UPGRADATION
Due to rapid change of technologies, the up gradation of mobile devices and applications are very importance so that devices compatible to the new applications. Also it needs to ensure that device capacity updated.

SECURITY AND PRIVACY ISSUE
The security is important for stored data in the mobile devices such as personal information of students, personal data of their parents, an academic performance of the students, professional data of the teachers and course plan of the students. Access of these data must be protected from the misuse and use by some unknown.

INTERNET CONNECTIVITY
The internet infrastructure play very importance role in the downloading the mobile applications in mobile devices for particular use. Access to so many mobile devices at the same time, it make some problems if internet capacity not updated. It can download onto a mobile device

CONCLUSION
There are many software companies that provide apps for finance transaction, travel education management and various other mobile apps for different purposes. The mobile apps in education help to inform the students and parents about educational activities. A mobile application helps in modern way learning to the students and teachers inside the classroom as well as outside the classroom. The mobile applications reduce the student problems and facilitate learning. Mobile applications are the future of the education sector and growing towards its development.

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EDUCATION SYSTEM IN DIGITALISED ERA

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ABSTRACT
21st Century is considered to be an era of Digital revolution. Although many developments have taken place in this period but the developments in the field of digitalization is noticeable. It has affected various sectors like Business, Science and technology, infrastructural developments and Education too. Digitalization has dramatically changed the state of education over the last few years. With the help of this rapidly moving digital system, we are finding new ways to change our traditional education system. The ICT teaching aids are being incorporated at a large scale to make teaching learning more effective. In this era of digitalization the traditional places associated with the Education like Schools, Colleges, Research Institutes, Libraries etc are getting dominated by the digital aids. Moreover, it has increased the level of transparency amongst students, teachers and parents. The most useful thing teachers can do to students in this digital eco system is to provide them a technology enhanced learning experience.

Keywords: Education, teaching learning, Digitalization, ICT, digital ecosystem

INTRODUCTION
Analogous to the agricultural and industrial revolution in 18th Century, the latter half of the 20th Century and the ongoing 21st Century has been an era of Digital revolution. A drastic shift has taken place in the field of technology in this period i. e. from mechanical and analogue electronic technology to digital electronics with the adoption and proliferation of digital computers. This digitalization has significant impact on Industries, Governance, Trade and Business and so is on Education System. Although traditional education is still centered on Schools, Colleges and Institutes through teachers and print media, the digitalization has played a vital role in modifying the Education system to a greater extent. The mode of teaching and learning at the educational establishments, the availability of literature, the modes of evaluation have undergone an evidentiary change.

Advances in digital technology have opened up many avenues of learning. Digitalization has made information accessible anywhere and at anytime. The libraries have become Knowledge resource centers rather than just center for collection of books, journals and reading materials. In this era of digitalization there are no more boundaries in the Districts, States and Nations for the cause of Education. So students can float the sea of knowledge irrespective of their locations.

OBJECTIVES
The objective of the study is to analyze how digitalization has influenced our present (also considered as digitalized era) education system at Schools, College and also at higher study level. The study includes both positive and negative aspects of Digitalization.

RESEARCH METHODOLOGY
The study is explanatory in nature and sources of the data is secondary, books, Magazines, website and the opinion received from the stake holders of the education system have been considered.

DIGITALIZATION
Digitalization is a term derived from a branch of Electronics called as Digital Electronics. The initial days of electronics were dominated by analogue signals, that is, signals representing a continuous range of values but the current generation of electronics is digital electronics which is based on only two voltage level i. e. low and high corresponding to binary codes (0s and 1s). Although digital electronics was developed little later but took over the market and publicity of analog electronics and became so popular that almost each and every branch of technology has become digitalized. The technologies of digitization enable the conversion of traditional forms of information storage such as paper and photographs into the binary codes (ones and zeros). The expression of data as ones and zeros facilitates its generation, replication, compression, and dissemination its analysis and its organization. It also encourages the replacement or augmentation of the physical with the virtual or online presence.

In general people think digitalization means all those things which are associated with Computers and Information and Communication technology. It also deals with the Storage, transfer and Extraction of data by means of Computer and its peripherals.

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ROLE OF DIGITALIZATION IN EDUCATION SYSTEM

Education systems have undergone under drastic and significant change in the Last quarter of the 20th century, teaching, learning and evaluation at all levels of education have Changed in phased manner.

Teaching and learning: Gone are the days when 'Shishyas' use to stay in 'Gurukuls' under the patronage of their Guru who use to be the most respectable person in the life of a child. The training given by Gurus used to be the final words for the Shishya. Gradually, the trend changed and the nomenclature for the Gurus changed to Teachers at the Pre primary, Primary and Secondary School level and Lecturers at the Higher studies level. But still teachers/lecturers use to be ultimate source of knowledge. In 90s when computer technology came into existence, gradually the use of ICT technology in the teaching, learning became an attraction to the students and teachers. Successively Computer education became part of curriculum and dependency over the ICT went on increasing. The present era is nothing but an era of information technology. The teaching with the ICT tools have become a regular routine where the lessons are taught in the most attractive and effective ways. Teachers are neither required to carry Chalk and dusters nor to draw figures to explain any concept. It has become very easy to draw pictures and explain the most difficult concepts too. The invention of 3D movies/picture have added a value to the technology and students are able not only to see the pictures but to feel the veracity of the concept. Due to the advancement in the Internet technology, the boundaries of educational institutes have broken down. Students are able to access the study materials of the most renowned institutes and faculties sitting at home. The leading institutes like IIT, MIT etc. have uploaded their lectures on YouTube Channels so as the enable students to refer to their lectures globally. For example National Programme Technology Enhancement Learning (NPTEL) is a Joint initiative of Seven IITs . Similarly 'SWAYAM' portal provides free online courses across the country from Secondary to post graduation. Due to the search engines like Google and Wikipedia, almost all topics are available to the students at one click. Time is no more constraint to the distance learners. The digital technology has not only help students; it helps the teachers too. They can upload their lectures through the technology like MOOC (Massive Open Online Course). Cloud Enabled E-learning Modules are also introduced in addition to conventional teaching environment. The Power Point presentation helps teachers to make their lectures more effective by incorporating animations and videos. The availability of various memory devices and digital books like Kindle are reducing the load of buying and carrying heavy books physically. Gradually the libraries are getting converted to knowledge resource centers in the digitalized era. Thus it can be said that digitalization in the present era is boon to the students and teachers.

Evaluation: Digitalization has helped the academic administration, teachers and in many folds in the evaluation process also. Due to digitalization of the evaluation system, many exams particularly the aptitude and entrance exams are conducted online. Many universities including University of Mumbai have adopted the On Screen Marking (OSM) system for evaluation which not only helps to accelerate the assessment process but also helps in the preparation and declaration of the result in time. Many leading institutes conduct online Internal Tests and encourage online submission of Project reports and assignments by the students.

Research: In higher education, research has become an integral part of education system. In the present era of digitalization, research activities have experienced a big boost in the form of facilities for quick literature survey, Characterization and data analysis etc. Due to information technology enabled email facilities the time involved in the publication of research papers have reduced drastically. The referees are able to send their expert reports globally within few days or even hours as compared to earlier days when they use to require months to send one report. One of the advantages of digitally available software is to identify and catch the plagiarism attempts by many researchers which are not a healthy practice. But these software's have passed an alert to such people who use to attempt such plagiarism for cheap and quick recognitions.

LIMITATIONS OF DIGITALIZATION

Although digitalization has many advantages in the field of education as compared to the popular traditional systems of teaching learning and evaluation, but there are many short comings too of digitalized education system. Due to the digitally available resources of all kind, the dependency over the online resources has increased drastically. The book reading habit amongst the students has almost vanished. Dependency on the online resources is decreasing fellowship culture day by day. Extensive use of Computers and social media causes distraction, increased stress level and anxiety amongst the students. It is also noticed that the literature available on the internet are not always authentic. Therefore, sometimes it creates confusion too. Although the use of PPT and other modes of ICT make teaching more attractive, but the traditional 'Chalk and Talk' methods cannot be replaced. Similarly, although online methods of evaluation are comparatively easier and quick, but the other skills of the student remain unevaluated in such modes of evaluations. On one side the digital software's detect the plagiarism attempts, but digitally available resources are the cause of plagiarism too.

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CONCLUSION

The present education system is considered to be in the Digitalized era. This digitalization helps the education system at many fronts viz. teaching, learning, evaluation, research and publications. The locations of educational institutes and the sources of knowledge have become immaterial due to the internet facilities and online resources. The time of teaching learning has no more importance in the digitalized era. But at the same time the emotional intelligence amongst the teachers and students have deemed to such an extent that dignity of student-teacher relationships is lost. Therefore, many stake holders of the education system have expressed their views that digitalization has many advantages in the system but the importance of traditional methods of teaching, the teaching skills of the teachers and the values learned in the Schools and Colleges cannot be replaced even if the current era is considered to be the digitalized era.

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DIGITIZATION OF MSMEs IN INDIA – CHALLENGES AND OPPORTUNITIES

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ABSTRACT
India has become the 6th largest economy in the world this year, has jumped to the 77th rank in the EODB rankings from 130th last year and is already recognized as the fastest growing emerging economy globally. Despite these accomplishments, she is still not able to make a mark on the industrial development front. So, where does the growth potential of India actually lie? It can be nowhere else but in the MSME sector with its large employment generation potential by using relatively lesser capital and its ability to cater to both rural and urban India. One prime agenda of our development programme along with inclusive growth is women empowerment through their participation in the workforce. This can be best attained by promoting the MSMEs. Another advantage is they serve as ancillary units for large scale Industries. Many initiatives to strengthen MSMEs have been undertaken by Governments in the past as well as by the incumbent central Government. However, are all these initiatives and schemes reaping their fruit as is expected of them? The sector has been confronted with several challenges – traditional as well some digital challenges. Can these issues be addressed effectively? Chances seem to be bright since some Government schemes are making headway and few more are in the pipeline for the benefit and promotion of MSMEs. In this paper, we will throw light on the present status of MSMEs and will examine the digitization challenges and opportunities for them in the near future.

Keywords: MSMEs, Digitization of MSMEs, Cloud Computing, e-commerce, Demonetization, use of ICT, EODB of MSMEs

1. INTRODUCTION

In a labour surplus and capital deficient country like ours, Micro, Small and Medium Enterprises (MSMEs) are of great significance. That they play a pivotal role as the growth engine of Indian economy is a fact well acknowledged by all of us. By virtue of being the second largest employment generator next only to agriculture, the sector is looked upon as a key to inclusive growth. Catering to both rural and urban areas, serving as ancillary units to large industries and creating a framework conducive to participation of women in the workforce are some of the major advantages of MSMEs in India.

2. ROLE OF MSMEs IN INDIAN CONTEXT

The role and importance of MSMEs in socio-economic development of India can hardly be overlooked. MSMEs contribute 31% of Indian GDP (25% from services and 6% from manufacturing), 40% of exports and employ 40% of the total workforce. They have maintained an average growth rate of 10%. These statistics indicate that MSMEs are indeed the backbone of Indian economy. They constitute a vibrant and dynamic sector fostering the entrepreneurial initiative. The MSMEs are widening their domain across all sectors of the economy today to meet domestic as well as global demand.

3. CLASSIFICATION OF MSMEs

Classification of MSMEs	New classification (Annual Turnover) Rs	Previous classification Investment plant & Machinery (Manufacturing)Rs	Previous classification Investment Equipment (Services) Rs
Micro	Not more than 5 crore	Not more than 25 lakhs	Not more than 10 lakh
Small	Between 5 & 75 crore	Between 25 lakh & 5 crore	10 lakh to 2 crore
Medium	75 to 250 crore	5 to 10 crore	2 to 5 crore

Source: Section 7 of MSMED Act

The New classification based on turnover of firms was suggested by MSME minister Mr. Giriraj Singh and was approved by the parliament in February 2018. This new definition is likely to promote EODB and will make operation of GST smoother unlike the previous criterion where it was possible, by showing less investment to fall in the ambit of MSMEs, to unduly grab concessions granted to them and also evade taxes.

4. CHALLENGES FACED BY THE MSME SECTOR IN INDIA

The story of small businesses in India is characterized by a paradox namely large scale employment with least job security. Let us first discuss the traditional challenges faced by this sector:

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1. Problem of raw materials- Scarcity of raw materials, low quality and higher costs are three dimensions to this issue. Very often small units have to make open market purchases at heavy costs reducing their competitiveness vis- a-vis large rivals.
2. Finance hurdles – Scarcity of capital in general and weak credit worthiness of small enterprises in particular make it difficult for them to avail capital in required quantity. Inability to offer collateral stands in the way of borrowing from commercial banks and other financial institutions. Hence, they are left with no option but to borrow from moneylenders who exploit them with exorbitant interest rates. The central government in India is making all possible efforts to improve institutional credit flow to this sector through various measures which are yet to achieve any significant success.
3. Marketing problems – In most cases, there exists no definite marketing platform whereby MSMEs can sell their products. As a result, they face an unfair competition from large industries, which puts the MSMEs at a huge competitive disadvantage. The STC and NSIB are looking into this matter and helping small industries obtain Government orders for their products and locate export markets for them.
4. Under utilization of capacity – A study shows that there is gross under utilization of the installed capacity in many such units due to power supply problem. Less than 50% capacity is utilized in many mechanical engineering units, leather producing units, plastic industry and automobile ancillary units.
5. Other problems – Technological backwardness, non-availability of sustainable technology, lack of modernization and expansion constraints, dearth of skilled labour at affordable wages, lack of follow up with Government agencies to resolve problems due to absence of knowledge and manpower.
6. Demonetization – It hit the sector hard as most of such units operate in cash based economy and when bulk of currency was abruptly withdrawn from circulation, it collapsed.
7. Informal sector – Employing casual labour or family members not having the skills to deliver required results leads to lower quality and hampers the overall efficiency of an MSME.

We will now throw light on some **DIGITAL CHALLENGES** faced by MSMEs in India which are now becoming more crucial in the era of globalization:

1. Lack of up to date information of latest technology present in the global market.
2. Lack of managerial skills, entrepreneurial knowledge and technology intensive education.
3. Limited use of ICT particularly in rural areas ie information bottlenecks
4. Mastering new technology needs acquisition of new skills and methods which is a costly process. However, need of the hour is adopting them to have global access and competitiveness. New concepts such as cloud computing will help MSMEs to progress and innovate.
5. Lack of investment in technology. Indian MSMEs have their own challenges related to technology adoption and scale of operation.
6. Low skills among labour even for normal jobs are a prominent reason why MSMEs lag behind in digital technology.

5. OPPORTUNITIES AND INITIATIVES BY THE GOVERNMENT TO PROMOTE EODB OF MSMES

Given the above challenges, it is critical to build upon digital literacy in MSMEs to ensure they make optimum use of technology enabled platforms. They must bring about digital transformation to realize their true potential in the years to come. Digitization through cloud computing for adoption of ICT, machine learning, IOT (Internet of Things) etc could improve quality of their goods and services.

Various digital initiatives are introduced by Ministry of MSMEs to contribute to their growth potential as follows:

1. Udyog Adhar Memorandum (UAM) – It is registration forms under which MSME units will self certify its existence, Bank Account, Adhar details of its owner or promoter etc. On doing this free of charge. UAM number will be generated for the unit which will promote its EODB.
2. MSME Samadhan Portal – This is a delayed payment portal to empower MSMEs to register cases relating to delayed payments by central or state governments.

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3. MSME Sambandh Portal – It is launched to monitor implementation of public procurement from MSMEs by Central Public Sector Enterprises.
4. MSME Sampark Portal – It is a digital platform for trainees and job seekers to register for getting jobs and for recruiters to get right type of manpower.
5. Yes Bank under its flagship CSR program namely "say yes to sustainable MSMEs in India" has piloted an E commerce training program to train MSME entrepreneurs on e commerce and help them understand technology. Yes bank has a target of reaching out to 1 lakh MSMEs in this regard by 2020.

CONCLUSION

MSMEs are labour intensive and what is needed utmost is to create an enabling environment for them to invest, grow and flourish. They must create jobs for the young Indians, push demand and thereby growth. GST with its impetus on increasing the number of tax payers through formalization of the economy shall boost this sector for rewarding entrepreneurship and generation of job opportunities in the formal sector. Digital technology and super-computing powers combined with other innovations will create an ecosystem conducive to better performance of this sector. In a recently concluded Global MSME Business Summit in Delhi on 19th December 2018, the MSME Minister said that Indian MSMEs have the capability to compete with global companies and can successfully become a part of 4th Industrial Revolution which is round the corner. The need of the hour is for MSMEs to take lead in adopting digitization and make it an integral part of their business strategy if they wish to cope with changing times.

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OVERVIEW ON PAYTM DIGITAL WALLET

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ABSTRACT
Digital wallets are launched before three decades ago. From this three decades digital wallet change the economy and commerce drastically. There are so many digital wallets are available in the world for example Samsung pay, airtel pay, apple pay etc.

Under this research paper, Researcher takes a Paytm Digital wallet. Paytm digital wallet is India's most used digital wallet. Paytm launched in August 2010. During last one decade, its changes the Indian economy and commerce also. In India Paytm make a revolution in E-commerce. Here we study the limitations, advantages and financial services provided by Paytm in India.

From this research we exactly know that why Paytm is useful in India and how it contributes to development of Indian Economy and E-commerce. Paytm Digital wallet is the need of modern and young India.

Keywords: Cash Back, demonetization, Electronic Form, Merchants, Paytm Digital Wallet, PIN & Biometric, Software & Data

INTRODUCTION
Digital wallets are found in early 1990. Digital wallets are consists of two major things i.e. software and data. Under software entire information is store in safely manner in wallet & in data, it contains user input information such as user name, card details, billing address, shipping address and payment mode. The term Mobile wallet & e wallet are implementations of the digital wallet for the mobile device and for the desktop/browser environment

There are so many examples of digital wallet in India like Mobikwik, Freecharge & Citrus Pay, but out of this Paytm is the leading one. In august 2010 one97 communication was launch Paytm. Vijay Shekhar Sharma (CEO) is the founder person of Paytm. Paytm offers there services in India & Canada & having headquarter in Noida. Paytm is the India's first Payment app to Cross over 100 million downloaded app. In financial year 2016-2017 the revenue of Paytm is ₹ 814 crore. While shopping almost every Indian know the word "Paytm Karo"

OBJECTIVES
- To know the advantages of Paytm digital wallet in India.
- To aware about limitations of Paytm wallet.
- To get the information of services provided by the Paytm wallet.
- To understand the use of Paytm wallet in India.

RESEARCH METHODOLOGY
The research work is descriptive in nature and based on secondary data only. The sources of data collected from different website. The accuracy and depth of the research paper is greater keep in objectives view.

ADVANTAGES
1) Merchants friendly
Paytm wallet is easy to begin. It is merchants friendly, even without bank account merchants can start their Paytm wallet. In India during demonetization ₹ 500 & ₹ 1000 notes were demolished from the economy, at that time so many small merchants did their daily business transactions though Paytm. Merchant need bank account only when they need to withdraw cash from Paytm wallet.

2) Viral in consumers
Paytm was viral in customers because of its approach. If any customers of Paytm refer it to another, at that time Paytm gives them cash back at certain percentage. Through this approach payment got viral in Indian consumers as well as merchants.

3) Convenience
Paytm offers more convenience to users. When consumer using a Paytm wallet there is no need to carry hard cash. Paytm is most used digital wallet in India. Mostly micro as well as macro merchants are using the Paytm wallet, because it provides more convenience to users.

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4) Security
Paytm provides more security to their users. For example if cash in wallet is lost then there are least chances to recover it. But our device is lost at that time Paytm provide all the relevant data are kept secured in the password or biometric.

5) Mostly used by merchants
India is moving toward cash less economy. For that digital wallet play a very important role. Paytm provide offers to merchants and consumers also so that they are mostly used by the merchants.

6) Authorize transaction
Every transaction on Paytm is authorized. They can authorize their transaction through PIN or Biometric. This is providing too much security and also has safety transactions. Without authorization transaction cannot be proceed in Paytm.

7) Offers & reward
Paytm offers reward and discount to its customers to use Paytm. For example they offer reward on purchase of fuel, food etc. Thought this reward and discount customers can save their money. This type of reward and discount are not available in traditional payment modes.

8) Budget
Paytm maintain a record of each and every transaction of the consumers. They also prepare reports on expenses of the consumers so that helps the consumer to know their budget. Thought this budget consumer can manage their buying habits.

LIMITATIONS

1) Not fully available in India
Paytm is mostly used digital wallet in India. But still it is not fully available in Indian merchants. There are still so many merchants in India, they are not aware about the digital wallet. They still use traditional methods of payments.

2) Requires Smart Phones
Without a device Paytm is not possible, to pay money consumer requires smart phone or any other devise which support Paytm. At the time of shopping we need not to carry hard cash but at the same time we must carry out smart phones to make the payments. It means we need to carry smart phones at the time of shopping.

3) Device have to charge
When consumer using a smart phone for Paytm wallet. At that time their must a device charge. Without charging a device, it will not work and payment still pending. So before using Paytm the device must have to be charge.

4) Security risk
If our device is not having password at this situation someone can access your bank details or credit or debit card details. He can make a wrong use of these details. The security is depends upon the setting we use from the device.

5) Reckless spending
When using a Paytm wallet there is a chance of reckless spending. Paytm money is in electronic form that's why layman doesn't know his actual spending. So it's a main reason proper budgeting is not possible. When layman struggle with budget in traditional method, under this situation Paytm wallet make it very worst.

FINANCIAL SERVICES OFFERED

1) Paytm Bank
Paytm bank gives a new bank model to the world. Paytm is authorized by the reserve bank of India .Paytm Payment bank offer saving account with no opening charges and zero opening balance. Account holder can deposits upto ₹ 1 lakh and get the benefits of rupay debit Card, Passbook and interest at 4% Per annum.This Bank is very useful to the Small & middle Business.

2) Paytm Forex
Paytm offers prepaid forex cards which helps in travelling abroad easily. Forex card is the safest way to carry a currency in VISA/MASTERCARD they are accepted globally. Paytm offers forex services in 20 international currencies.

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3) Paytm Gold

Paytm launched Paytm gold alliance with MMTC-PAMP (Gold & Silver Refining Company) to enabling Indians to buy, store and sell pure gold instantly. Paytm gold is claimed to be one of the first in the world to buy sell & Store gold digitally. Paytm gold makes an easy to buy, sell or store gold in digital form. Paytm gold will be famous in few years in India.

4) Paytm mall

Paytm mall aims to offer a unique combination of the mall and bazar Concept of a Indian consumers. Paytm mall focused on electronics, Fashion brands & FMCG product. Paytm mall offer a trusted shopping experience to Indian consumer. Paytm mall has 1.4 million sellers on board.

5) Paytm Food

Paytm food offers a benefit like Compliant, Convenient, Effective and Secure to employer. It also offers a benefit to employee also to save tax, Delightful, Safe and Easy. In Paytm mall the food product are available at huge discount and additional cash back.

CONCLUSION

Paytm digital wallet is the need of Modern and Young India. Paytm contributed to the development of India in near one decade. Its changes the E-commerce in India and also affects positively on Indian economy. Its provides so many opportunity to the small and medium businessman's. Paytm provides E-platform to the Indian small retailers and it also drastically changes the business format from traditional to modern.

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EFFICACY OF SOUND THERAPY USING ANDROID BASED APPLICATION IN INDIVIDUAL WITH TINNITUS

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ABSTRACT
Tinnitus is described as the perception of sound or noise in the absence of acoustic stimulus. It is one of the major symptoms affecting 17% of the general population and occurs in individuals with normal hearing as well as with hearing loss. Tinnitus causes extreme feeling of anxiety, depression and insomnia, and it requires immediate remediation. Various medical and non medical procedures such as sound therapy, tinnitus maskers, neuromonics, medications, general cognitive therapy and others are used to treat tinnitus. However use of mobile based android applications are rarely discussed. The method highlighted in this study is underlying the principles of sound therapy using android based application which is very cost effective and easily accessible. Ten adults in the age range of with tinnitus as their primary complaint served as participants. Tinnitus handicap inventory was administered to measure the severity of tinnitus and were enrolled for tinnitus therapy using "Tinnitus therapy lite" android application. Participants were trained on use of application and used for 30-45 minutes every day at home. Results showed that, on an average, the severity of tinnitus were reduced to 25-30% with the reduction in score of Tinnitus Handicap Inventory in comparison to pre-therapy. The participants had reported of partial relief from tinnitus and complete satisfaction after using android application for sound therapy. Thus, android based application can be a used as a successive tool to reduce tinnitus which is cost effective and easily accessible by any individual. Further, there is a need to explore the efficacy of android application in large sample of population with tinnitus.

Keywords: Android application, Sound therapy, Tinnitus, Tinnitus handicap inventory, Tinnitus Therapy lite.

INTRODUCTION
Tinnitus is an acoustic signal perceived in the ears or head, without any external acoustic stimulation (Chen & Nelson, 2004). Tinnitus can be either Subjective where the person can only detect the presence of sound or Objective tinnitus which may be audible to others ((Moller, 2006)). Such tinnitus usually occurs with other conditions like hearing loss, dizziness, hyperacusis, gender, age, noise exposure at work (Gopinath, McMahon, Rochtchina, Karpa, & Mitchell, 2010) and noise exposure during recreational time (Bhatt,Lin & Bhattacharya, 2016. Severity of the tinnitus varies depending on the conditions it is accompanied with and it completely impacts the quality of life of the individuals. In its more rigorous forms, tinnitus can be accompanied by depression, anxiety, concentration difficulties, insomnia, or headaches (Tyler and Baker, 1983; Scott et al, 1990; Folmer et al, 2001; Nagler, 2003).

According to different studies, the tinnitus which affects 17 % of the general population and is seen in 33% of the elderly group, constitutes the primary symptom for 60% of patients presenting to the audiological department(Davis & Rafaie, 2000 ; Jasterboff, Gray & Mattox, 1998).

As per the statistical report of National Centre for Health, 32% of the USA population was having tinnitus, in which 6% of them were reported to have severe degree of tinnitus. However in Indian scenario the exact prevalence is unknown. A one year retrospective analysis showed that 5.24% of the children suffered from tinnitus and among those children, 79.63% had hearing loss as associated problem (Thirunavukkarasu & Geetha, 2015). Similarly, retrospective study on geriatric population revealed the prevalence of tinnitus to be 16.81% (Thirunavukkarasu & Geetha, 2013). The percentage of prevalence of tinnitus were more for males (60.9%) and most of them (97.5%) had hearing loss. Studies also reported that the prevalence of tinnitus increase with age (Thirunavukkarasu & Geetha, 2013). Sreeraj et al (2013) survey based study reveled 9.6% of studied population had tinnitus.

During the tinnitus information gathering phase it may become clear that the person with tinnitus has complicating emotional or psychological issues. There are many tools which audiologist use for assessing tinnitus impact. Among these, popular measures are the Tinnitus Handicap Inventory (THI) developed by Newman et al. (1996) and the tinnitus intake form devised by Jastreboff and Jastreboff (1999) and Tinnitus severity index (TSI).

The THI estimate the impact of tinnitus in daily life activities. The 25-item, rated in one hundred point scales includes questions assessing functional limitations posed by tinnitus, emotional attitudes about the tinnitus, and

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catastrophic thinking concerning to tinnitus. Newman, Sandridge and Jacobson (1998) evaluated the efficacy of THI in assessing the tinnitus treatment outcome. The results showed THI had adequate retest reliability and small standard error measurement. Hence its believed that THI will be the best tool to evaluate the tinnitus treatment outcome.

Currently, for those who are suffering from tinnitus, there is no so specific treatment methods that provide complete relief for the problem (Rauschecker, Leaver, & Mühlau, 2010). Management depends on the interview, casual factors and the assessment. There are numerous tinnitus management programs available such as medical, surgical, hearing aids, tinnitus masking, Tinnitus Retraining Therapy, Cognitive Behavior Therapy, electrical stimulation and Complementary and Alternative methods and each treatment methods aim to reduce the severity of the tinnitus and its impact. However, not a single tinnitus treatment approach can claim unequivocal research evidence demonstrating consistent success for all cases. According to Ariizumi, Hatanaka and Kitamura [2010] patients with shorter duration of tinnitus show better prognosis in Tinnitus Retraining Therapy (TRT) with Sound Generator (SG). However as far as India is concerned very limited database is available in the area.

Makar, Kumar, Narayanan, & Chatterji, (2012) studied the treatment status in India. Survey based study showed 37.14% of the institutes opting for Tinnitus Retraining Therapy followed by Tinnitus Masking (54.28%), Progressive Tinnitus Management (14.28%), Cognitive Behavior Therapy (5.71%) and 34.28% of the institutes opting for Drug Therapy. Though not a single institute is seen opting for Neuromonic tinnitus treatment and alternative methods.

Sound therapy using sound generators coupled with suitable counseling has gained extensive acceptance in the aural rehabilitation of tinnitus. For many years, ear level sound generators (SGs) have been used to offer masking relief and to promote tinnitus habituation. Barros Suzuki, Suzuki, Yonamine, Onishi, & Penido, (2016) evaluated the effectiveness of customized sound therapy using sound generators like Reach 62 or Mind 9 models in the chronic tinnitus patients. The result showed improvement in the tinnitus handicap inventory after the treatment. Newman & Sandridge (2012) compared the two treatment methods like sound therapy and neuromonic tinnitus treatment in the tinnitus rehabilitation. Both therapy using sound generators and neuromonic tinnitus treatment provided considerable reduction in perceived tinnitus handicap in the patients. But time duration given for the treatment was 6 months. Cost involved to purchase tinnitus masker device was also high. Hence in this study we evaluated the cost effective sound therapy option by using android application Tinnitus Therapy lite.

NEED OF THE STUDY

There are various studies on tinnitus and tinnitus management (Suzuki et. al, 2016; Newman & Sandridge, 2012). Most of the studies on tinnitus management have focused on Tinnitus retraining therapy, various sound therapy techniques and effects of medications. Recent advances in gadget software's have developed mobile applications which can be used in tinnitus management. Most of these android applications are simple, uncomplicated and can be operated by one and all. One study by Wise & Ma (2016) reports more than 200 tinnitus connected applications available across two popular smart phone platforms (IOS & Android). However there is no scientific data regarding the efficacy of these mobile applications in tinnitus therapy. Hence this study was planned to evaluate the effectiveness of android platform in treating tinnitus.

AIM & OBJECTIVE

To evaluate the effectiveness of android based application for tinnitus sound therapy

METHOD

Participants

A total of five male subjects with the complaint of tinnitus were selected for the study. Prior to conducting the study, each subject was explained about the study and consent was taken.

Procedure

Phase I: A routine Audiological evaluation was carried out for each subject which included visual examination of the ear canal and tympanic membrane of the both the ears using a hand-held otoscope followed by Pure tone air conduction (AC) and bone conduction (BC) thresholds estimation using modified Hughson and Westlake method. Interacoustic AD 629 audiometer with TDH 39 headphone and B71 bone vibrator was used for Audiological evaluation. AC thresholds from 250 Hz to 8 kHz and BC thresholds from 250 Hz to 4 kHz at octave frequencies were measured. Speech audiometry measures including speech reception assessed by spondee words developed by Yathiraj and Vijayalakshmi (2005) and speech identification scores were obtained using Phonetically balanced words developed in Kannada by Mayadevi and Vyasamurthyi (1974). All the

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participants had undergone standard 226 Hz tympanometry and acoustic reflexes thresholds (Ipsilateral & contralateral) for 500, 1000, 2000, and 4000 Hz pure tones. Otodynamics ILO v.6 OAE analyzer was used to obtain TEOAE and DPOAE.

Phase II: Evaluation of tinnitus was determined for each of the participants according to the procedure described by Henry, Zaugg & Schechter, 2005. The tinnitus pitch and loudness were estimated and residual inhibition was evaluated by presenting white noise at the level of MEML+10dB for 1 minute.

Phase III: After the routine audiological and tinnitus evaluation, THI was administered to all the subjects as a part of pre therapy assessment of tinnitus and scores were recorded. Tinnitus therapy lite application was installed to all the participants' android phones. Participants were counseled regarding the usage of the app and the treatment plan. Once the soothing sound was chosen by the patient further volume adjustments were made in such a way that the sound just masks the tinnitus. All the subjects were instructed to use the application for 45 minutes every day for 1 month without altering the settings. Regular follow up regarding the usage was done every 5 day period. After one month of training, THI was re-administered to evaluate the effectiveness of using android application for tinnitus rehabilitation and scores were noted.

RESULTS AND DISCUSSION

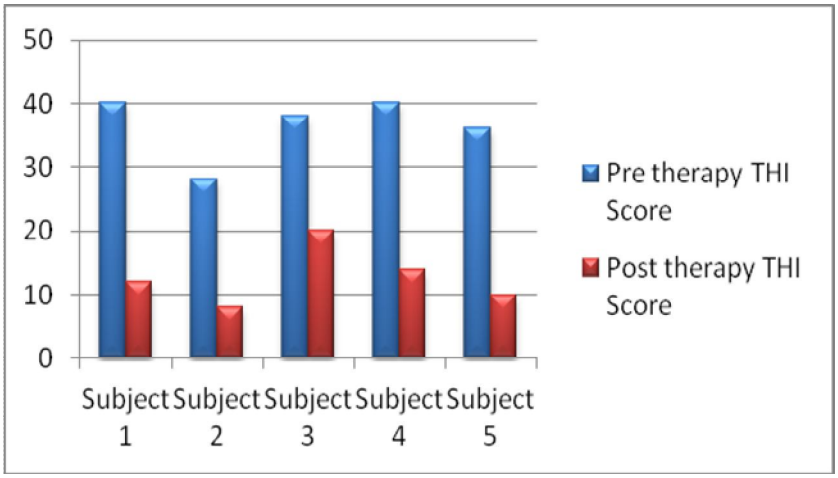
The participants of the study had unilateral tinnitus without any notable cause. All the participants had normal hearing sensitivity except one participants (Subject 4) having bilateral mild sensorineural hearing loss.

Tinnitus evaluation Frequency matching and intensity matching was measured for each of the participants where subject 1, 2 and 3 had 06 kHz (Right ear) pure tone with loudness of 21 dB SL, 14 dB SL, and 23 dB SL respectively; subject 3 had 03 kHz pure tone with 23 dB SL and subject 5 had 06 kHz pure tone with 28 dB SL. Loudness inhibition was present for all the participants except subject 03.

Pre -Tinnitus Handicap Inventory (THI) scores for each of the subjects indicated the scores of 38 to 40 (Grade 3) for subjects 1, 3 and 4; between 28 and 36 (Grade 2) for subject 2 and 5. All the participants had undergone Tinnitus rehabilitation for a period of 1 month with the prescribed settings using android lite application. After a period of 1 month, THI was measured once again. The results indicated that there was a decline in THI scores for all the participants irrespective of the status of loudness inhibition, i.e. the subjects with grade 3 THI scores were improved to grade 2 level and with grade 2 THI scores were improved to grade 1 level.

The comparison of Pre and post results of THI shows positive shift in the scores for all the subjects (Fig 1). All the participants had shown decrease in tinnitus level and are satisfied with the use of android tinnitus lite application.

Fig - 1: Comparison of THI scores Pre and Post therapy



Data was collected as a part of this research at JSS Institute of Speech and Hearing, Dharwad.

Tinnitus Retraining Therapy is a well-established training method for most of the tinnitus patients and typically results in decline (improvement) of THI scores after a certain course of treatment (Henry et al., 2006). Studies also indicated that a decline in THI score of more than 20 points are considered a statistically significant improvement in perceived tinnitus (Newman, Sandbridge & Jacobson, 1998). Our results revealed that the THI score declined by 10 dB SL using a simplified TRT using android application in a shorter duration. A long term treatment using the application is required for obtaining a significant difference in tinnitus level.

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CONCLUSION

The present study results can serve as a database to employ android platform in treating individuals with tinnitus. In recent years, there has been an increasing interest in the potential of internet-and Smartphone-based technologies for the support of tinnitus patients. Since, it requires long term treatment, such mobile technology will be beneficial for treating tinnitus in the prescribed course of time. However, limited subjects in this present study cannot be overseen. Further research is planned to focus on large number of subjects with varying tinnitus, severity level and to find the efficacy across age and gender.

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A PRACTICE OF USING MOTIC IMAGES DIGITAL MICROSCOPY SOFTWARE FOR MUCOCYTES INDEXING IN SKIN OF A WALKING CATFISH *CLARIAS GARIEPINUS*.

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ABSTRACT
The measurement of density and area occupancy of mucous cells (mucocyte indexing) is of greater significance now a day as it provides valuable information about the change in mucus cells behavior when the fish are exposed to any aquatic pollutant/xenobiotic. The mucous cells are the unicellular glands present in the outermost layer of the epidermis of the skin and regularly synthesize and secrete mucus containing glycoproteins that come onto the surface of the fish body. The glycoproteins are the chelating in agents and hence neutralize the effects, if any caused due to the aquatic stressors. In toxicological research studies, the investigators very often use Camera Lucida for mucocyte indexing. Motic Images Advanced 3.2 is digital microscopy software that allows the researchers to measure the density and area occupancy of mucous cells directly on the Computer's screen. Hence in this paper an effort has been made to facilitate the process of mucocyte indexing using Motic Images Advanced 3.2 digital microcopy software. The Alcian blue pH 2.5/Periodic Acid Schiff (AB 2.5/PAS) stained skin sections were used for the purpose. The Alcian blue pH 2.5 stains the acidic glycoproteins containing carboxylic and/or O-sulphated esters while Periodic Acid Schiff stains the neutral glycoproteins having glycogen. The photomicrographs of AB 2.5/PAS stained sections were captured at predefined magnitude, processed for mucocyte indexing. The data were exported into excel and represented through the bar and/or pie diagram for further interpretation.

Keywords: Software, Motic Images, mucocyte indexing, skin, fish

1. INTRODUCTION
The Motic Images is a Digital Microscopy Software best suited for the measurement of cells/tissues dimensions in histological sections/slides. The software is also meant for improving the live image before capturing the final picture. Several advance features such as resolution, colour correction, white balance etc are available to adjust the live image. The exposure time can also adjusted according to illumination situation of the microscope. Along with all these facilities, the software has a separate module through which still Images can be processed for the analysis.

The Motic Images Advanced 3.2 software is the latest version used for the present study. It is available online on official website of the company for purchase. The trial version of this Motic Images Advanced 3.2 software is also available free of cost but for limited period (14 days). The software is available in Windows versions and contains powerful tools required in a wide range of applications from Professional to Educational Digital Microscopy. The software is unique in sense as it unlocks the potential of a research microscope for multi-media research, demonstration and analysis.

The fish *Clarias gariepinus* is easily available alive in the fish market hence selected for present study. The fish is very hardy in nature and hence is easy to maintain in the laboratory conditions. It has dual mode of respiration that is it respires by both the gills and air-breathing organs present on 2nd and 4th gill arches (Singh et al. 2016). The skin of the fish forms the interface between external and internal environments hence very prone to changes happening in its surroundings. Histologically, fish skin is composed of an outermost layer, the epidermis and innermost layer the dermis. The epidermis is made up of epithelial cells intermingled with mucous cells (Singh and Banerjee 2008). Mucous cells are the unicellular glands engaged in synthesizing and secreting mucus, a defense tool for fish, onto the surface of fish body. The chemical nature of mucus however changes according to the surrounding factor(s).

For the measurement, still images captured can be shown full real time live on computer. Since the shape of skin epidermis and mucous cells are irregular, the Irregular Marquee command is used for defining the boundaries of epidermis and mucous cells. They (epidermis and mucous cells) can be simply defined by clicking and dragging the left button of the Mouse. The computing can done on entire area of the epidermis of the skin and on the mucous cells stained with blue, violet, bluish-violet and magenta were selected for indexing purpose. Finally the image is resaved with the measurement superimposed on it and data is exported into the Excel for tabulation and representation through the graph.

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2. MATERIALS AND METHODS

2.1 Fish procurement and their maintenance in the laboratory.

The catfish, *Clarias gariepinus* was selected for the present work. The fish was brought from a fish market situated near railway station of Ulhasnagar city and kept into a glass aquarium having 10 liter of tap water. The fish were washed with 0.1ppp potassium permagnate for 10 minutes to minimize the changes of infection, if any. The fish were maintained for at least 15 days for the purpose of acclimation and feeding and renewal of water was done after every 24 h.

2.2. Collection and processing of fish skin.

A skin piece of 10 mm X 20 mm dimension was dissected out from lateral side of the body near the head region and in between the dorsal fin and lateral line. The skin was washed with normal saline and then fixed immediately in Bouin's fluid to prevent the postmortem changes, if any in the cells/tissues. The skin after 22 h of fixation period was washed with 70% alcohol two times (each for 1 h) in order to remove fixative and yellow colour from the tissue. The skin was then dehydrated with ascending grades of alcohol (90 % and absolute alcohol), cleared in xylene and stored in cedar wood oil for one week for the purpose of softening. The infiltration and embedding of skin pieces was done in paraffin wax having 58-60 ^{0}C melting points. The sections (5 µm) were cut using rotary microtome, spread on hot plate and dried in hot oven at 40 ^{0}C before start of staining process.

2.3 Staining of sections with AB pH 2.5/PAS

The following protocol was used to stain the sections for mucocyte indexing.

1. Tissue sections were deparafinized using xylene (two times; each for 15 minute).
2. Rehydration of tissue was done using descending grades of alcohol up to distilled water.
3. Sections were treated with 3% glacial acetic acid for 5 minutes.
4. Sections were stained with Alcian Blue pH 2.5 for 5 minutes.
5. Sections were rinsed with distilled water and then treated with periodic acid for 5 minute.
6. After that the sections were stained with Schiff reagent for 20 minute followed by washing with running tap water for 15 minute.
7. After washing, the sections were dehydrated with ascending grades of alcohol.
8. Sections were mounted on glass slide in DPX and kept for complete drying.
9. Sections were viewed using trinocular research microscope and photomicrographs were captured using 10 megapixel still camera and 40X objective lens. (Total magnification 400).

2.4 Mucocyte Indexing

The mucocyte indexing was performed using Alcian Blue pH 2.5 and Periodic Iodic Acid-Schiff stained sections of the skin. The following steps were followed:

1. Double click with left mouse button on icon "Motic Images Advanced 3.2" opened the program.
2. A captured final photomicrograph of the skin was opened through the Menu bar "File" followed by "Open". The photomicrograph was finally displayed in Image Preview Window.
3. Size of the image was fixed by selecting Menu bar "Image" and "Image size"
4. Now the measurement panel was opened for performing the measurements.
5. Irregular Marquee command was selected measurement panel for defining the boundaries of epidermis and mucous cells.
6. Before performing measurements, objective lens and units of measurements was also defined.
7. The data from "Measurement table" was exported to Excel format for further representation through the bar diagram.

3. RESULTS AND DISCUSSION

Mucocytes indexing is one of important parameters in tissues sections for evaluating the histomorphological changes, if any imposed on the mucous cells (Singh and Banerjee, 2008ab; Singh and Banerjee, 2009; Johansson et.al. 2013; Singh and Banerjee, 2014; Singh et. al. 2016). In several research studies it has been seen that the approach towards measurement of hyperplasia (increase in number) and hypertrophy (increase in size)

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was purely qualitative and was based on the assumptions made by the investigators. The invention and use of Camera Lucida was a little advancement in this field. This facilitated the researchers to measure the number and area of mucous cells directly on a graph paper kept just below the free end of Camera Lucida. The measurement procedure includes Camera Lucida attached to one end (eye piece) of the light compound microscope and other free end that was provided with a reflecting mirror was just kept above the graph paper. The graph paper provides the base for the reflected image of a mucous cell to be drawn on graph paper. The main disadvantages noticed with this method were- i) poor quality of reflected image ii) hand drawing and manual calculation procedures and iii) time consuming process. The Motic Images advance 3.2 digital microcopy software, on other hand is user friendly and greatly simplifies the workflow and improves efficiency as it allows an investigator to do all measurements on Computer's screen. These softwares are also easy to install on any window system and are available free of cost (only trail versions) on the company's website.

A single left button mouse click opens the finally captured photomicrographs of the skin in the window and also the size of the image was fixed by selecting Menu bar "Image" and "Image size" to fit the image into "Image Preview Window". Irregular Marquee command selected from "Measurement panels" facilitates the marking of boundaries of epidermis and mucous cells (Figure 1). The units of measurements can also be defined in these measurements (figure 1 and Figure 2) which are generally set as micron meter. During measurement, the values of area and perimeter of mucous cells are arranged in table as "Measurement table" that allow us to export either into text file or excel file (Figure 3) for further representation through bar diagram (Figure 4).

The area occupancy and density of mucous cells in any given epidermis of fish skin indicate performance level especially in terms of synthesizing and secreting the mucus and/or slime (Singh and Banerjee, 2009; Singh et.al. 2016). The mucus secretion is one of the defense systems in the fishes. Mucus is highly soluble in water and hence easily worn out in the water along with toxic substances and harmful microorganisms. The chemical nature of this mucus also fluctuates according the change in its surrounding water. The acidic components present in mucus allow it to bind more and more with variety of toxicants. These acid components react with Alcian blue dye at different pH especially the pH 1.0 and pH 2.5 (Singh and Banerjee, 2008ab; Singh and Banerjee, 2009; Johansson et.al. 2013; Singh and Banerjee, 2014; Singh et. al. 2016).

The Motic Images Advanced 3.2 digital microscopy software hence provides more accurate platform to measure the density and area occupancy of the mucous cells in skin epidermis of the fish. The software is very easy to handle, simplifies the workflow and enhance the efficacy of users. The data obtained can easily be transferred into presentable form by the other compatible softwares like MS Office Excel.

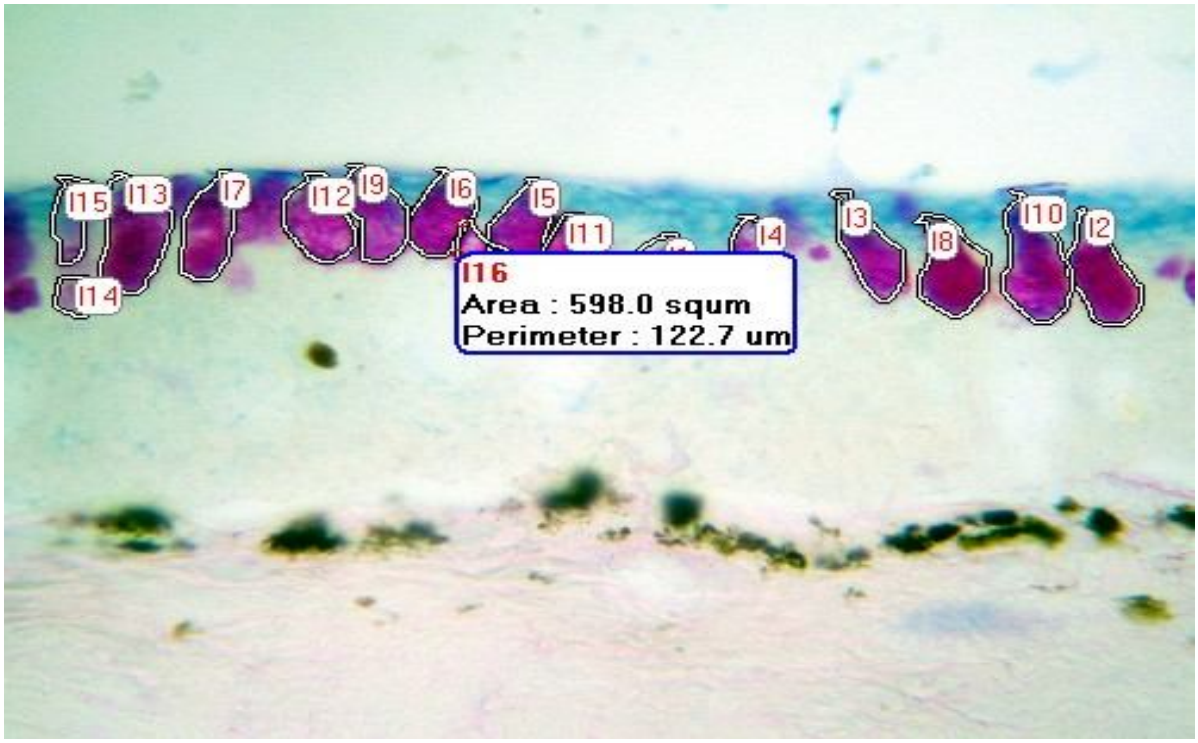

Figure-2: Photomicrograph of fish skin showing marking of boundaries of mucous cells by using Irregular Marquee command. Note total 16 mucous cells have been marked showing numbering from 1 - 16. Also note area and perimeter of mucous cells numbered 16th is 598.0 sqμm and 122.7μm respectively.

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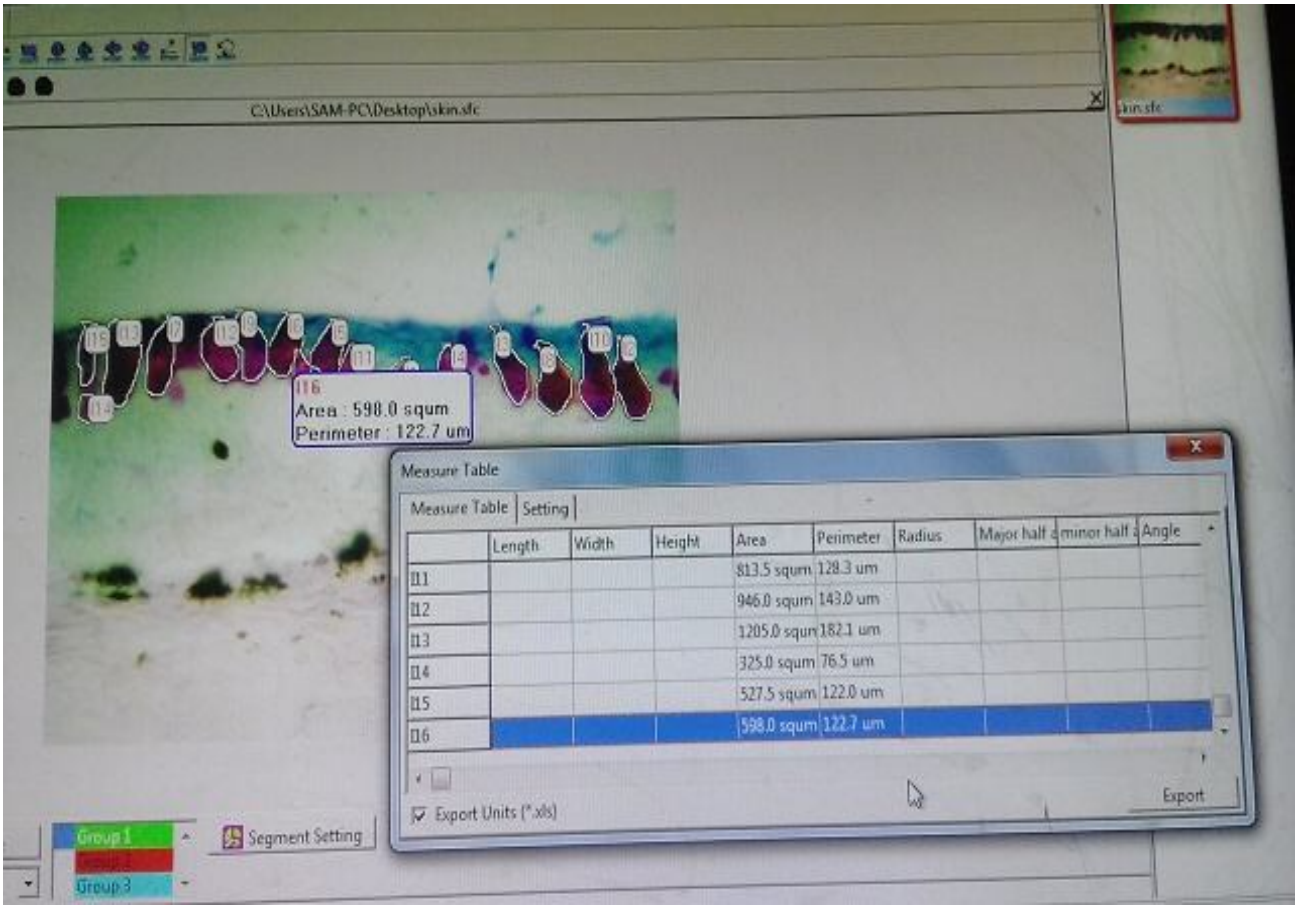

Figure-3: Screen shot showing superimposed image of skin. Note measuring table with information of area and perimeter of all mucous cells under investigation. Also note area and perimeter of 16th mucous cells hilighted with blue colour.

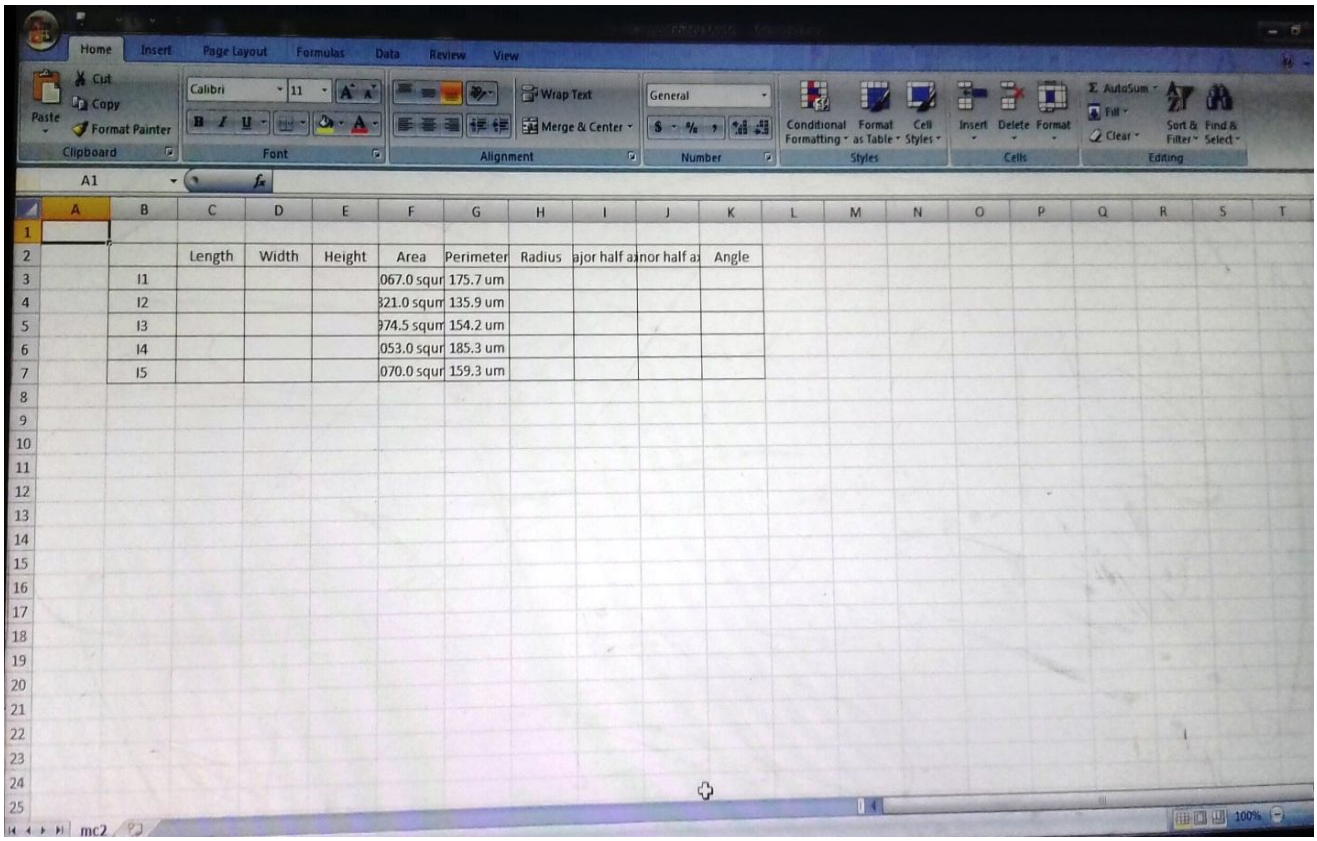

Figure-4: The Screen shot showing area and perimeter sqμm and μm measured by using Motic Images Advanced 3.2 software. Note measurement exported into Excel format.

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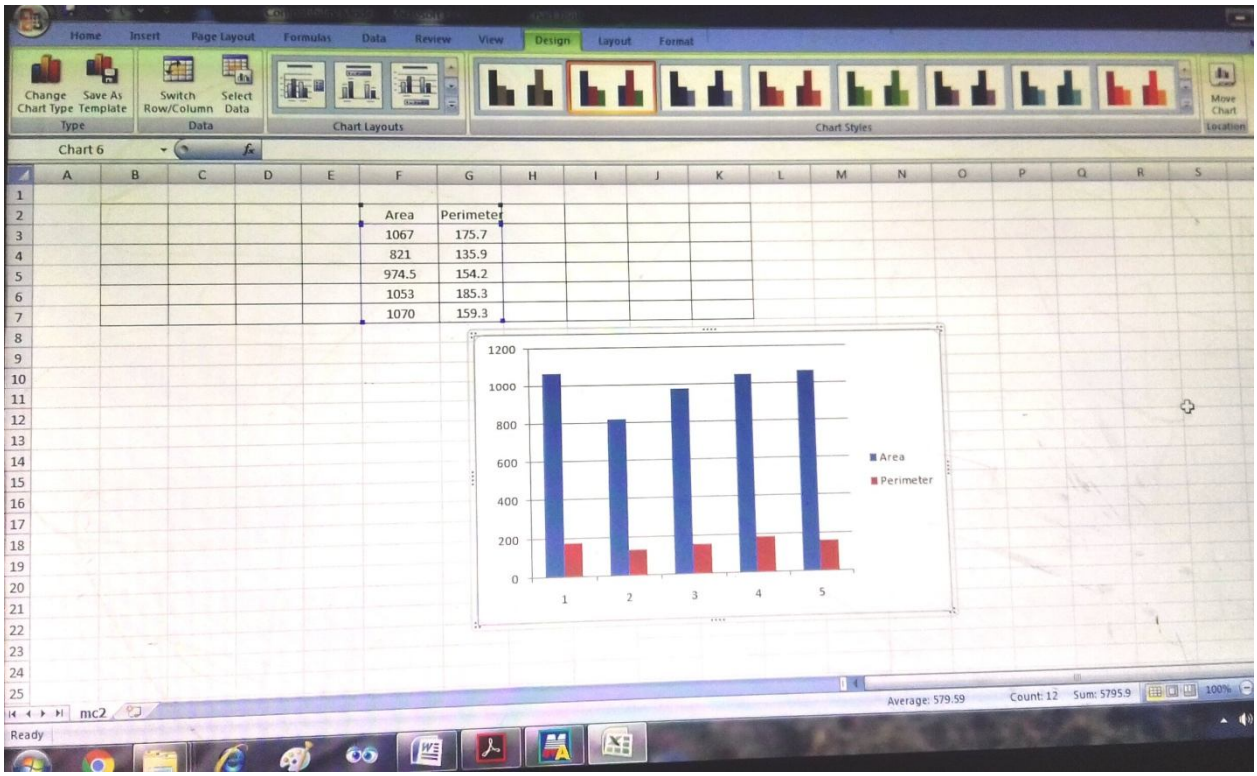

Figure-5: Screen shot showing area and perimeter of mucous cells under investigation and corresponding graphical representation. Note area as blue and perimeter as red coloured bars.

4. ACKNOWLEDGEMENT

The authors are very thankful to Motic Microscopy (Motic Asia) for providing Motic Images Advanced 3.2 digital microscopy software (trial version) for 14 days in order to facilitate the present work.

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A CASE STUDY OF A MATHEMATICAL SOFTWARE GEOGEBRA FOR MATHEMATICS TEACHING AND EXPLORATION

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ABSTRACT
Today we are living in a world of ever growing technology. With Digital Technology becoming more accessible, embedding it in Education has become inevitable. Specially, for the subject like Mathematics which is considered to be abstract, technology can serve as a pedagogical tool to foster and enrich students learning process. There are various Mathematical softwares available that can be integrated in class room teaching along with the chalk and talk method. GeoGebra is one of such softwares. Its a Free and Open Source Software. We can plot graphs of various functions, sequences,3D objects. Also, we can perform various operations on functions such as differentiation, integration. We can also record the steps that are being performed by us. It is becoming a very useful tool under Information Communication Technology(ICT), to make classroom teaching more participatory and hence learner centric.

The aim of this paper is to introduce and explore the potential use of GeoGebra as an effective teaching and computational tool.

Keywords: ICT, GeoGebra, Free and Open Source Software (FOSS).

1. INTRODUCTION

Over the last two decades digital technology has made a rapid progress. Today's generation of students are living in the era of digital technology. Technology has formed an unavoidable part of their everyday life. Hence, the use of technology in education has become more significant than ever. Specially for the subject like Mathematics which is considered to be abstract and non-tangible, technology can be used as a pedagogical tool which will facilitate in understanding and learning of the subject. There are various Mathematical softwares available now a days.

These softwares can be used to plot 2D and 3D graphs of functions, different surfaces. There are softwares which can be used to perform operations such as finding derivative, integration etc. They can also be used for solving certain differential equations, system of linear equations, determining eigen values of matrices, finding order of an element in a group etc. Hence integrating these softwares in classroom teaching can enhance students learning process by presenting content numerically, graphically as well as symbolically without having to plot various complex graphs by chalk and board. Since, this takes less time, this helps to discuss more examples in classroom.

The process of embedding these softwares in Mathematics Education has been affected by the commercial nature of these softwares. Softwares like Mathematica, Maple are propriety software and expensive too. But this problem can be solved by using Free and Open Source Software known as FOSS. FOSS are not only freely and easily downloadable but also their source is open and hence can be modified by anyone. GeoGebra is one such software. Geogebra is such a mathematical software which can be used for teaching and learning Mathematics from school level to college level.

The main idea of this paper is to introduce and explore the potential use of GeoGebra as an effective teaching and computational tool with some illustrations in GeoGebra.

2. ABOUT GEOGEBRA

GeoGebra is an interactive geometry, algebra, statistics and calculus application, intended for learning and teaching mathematics and science from primary school to university level. GeoGebra is available on multiple platforms with its desktop applications for Windows, macOS and Linux, with its tablet apps for Android, iPad and Windows, and with its web application based on HTML5 technology.

Its creator, Markus Hohenwarter, started the project in 2001 (as part of his master's thesis) at the University of Salzburg, continuing it at Florida Atlantic University (2006–2008), Florida State University (2008–2009), and now at the University of Linz together with the help of open-source developers and translators all over the world.

It provides online as well as offline apps. GeoGebra is also provided in the form of mobile app. Following are the variety of apps provided under GeoGebra:

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i. Graphing Calculator : Graph functions, investigate equations, and plot data with our free graphing app
ii. 3D Graphing : Graph 3D functions, plot surfaces and do 3D geometry with our free 3D Grapher
iii. Geometry : Construct circles, angles, transformations and more with our free geometry tool
iv. GeoGebra Classic 6 : Apps bundle including free tools for geometry, spreadsheet, probability, and CAS.

Depending upon user's requirements, they can download and use the specific application. GeoGebra provides a feature to record the steps while creating any figure or graph in graphics window. This helps teachers to explain learners about how to create our own diagrams. Due to this, learners can themselves try various graphs or diagrams and come up with conjectures.

Constructions can be made with points, vectors, segments, lines, polygons, conic sections, inequalities, implicit polynomials and functions. All of them can be changed dynamically afterwards. Elements can be entered and modified directly via mouse and touch, or through the Input Bar. GeoGebra has the ability to use variables for numbers, vectors and points, find derivatives and integrals of functions and has a full complement of commands like Root or Extremum. Teachers and students can use GeoGebra to make conjectures and to understand how to prove geometric theorems.

Geogebra provides two windows

I. Algebra View
II. Graphics View

For every object in the algebraic window there corresponds an object in the geometry window and vice versa. GeoGebra classic provides the following more options which opens in separate part of a window:

I. Spreadsheet
II. CAS
III. Graphics2
IV. 3D Graphics
V. Probability Calculator

GeoGebra can help students to gain better understanding of Mathematics. The object properties of free objects like points, vectors can be easily changed by dragging in geometry plane or by using sliders and the affect on the dependent object can be seen and investigated dynamically.

3. APPLICATIONS OF GEOGEBRA IN TEACHING AND COMPUTATIONS

I. To teach and explore geometry

Geogebra has a whole set of tools useful for Geometric Construction. Construction of equilateral triangle, isosceles triangle , square, rectangle, circumcircle , tangent to a circle can be dynamically demonstrated using these tools. In addition one can review the construction step-by-step using Navigation Bar. Also one can get the detailed information about the construction steps using Construction Protocol available in View menu. Learners can explore Mathematical fact about a geometric shape by dynamically changing the values in Algebra Window and by dragging in Graphic Window.

The fig 4.1 illustrate how construction of a tangent to a circle from a given point can be done using various tools available in Geogebra. The construction can be reviewed any number of times pressing PLAY button in Navigator Bar. Also sequence of construction can be seen by selecting Construction Protocol from View menu.

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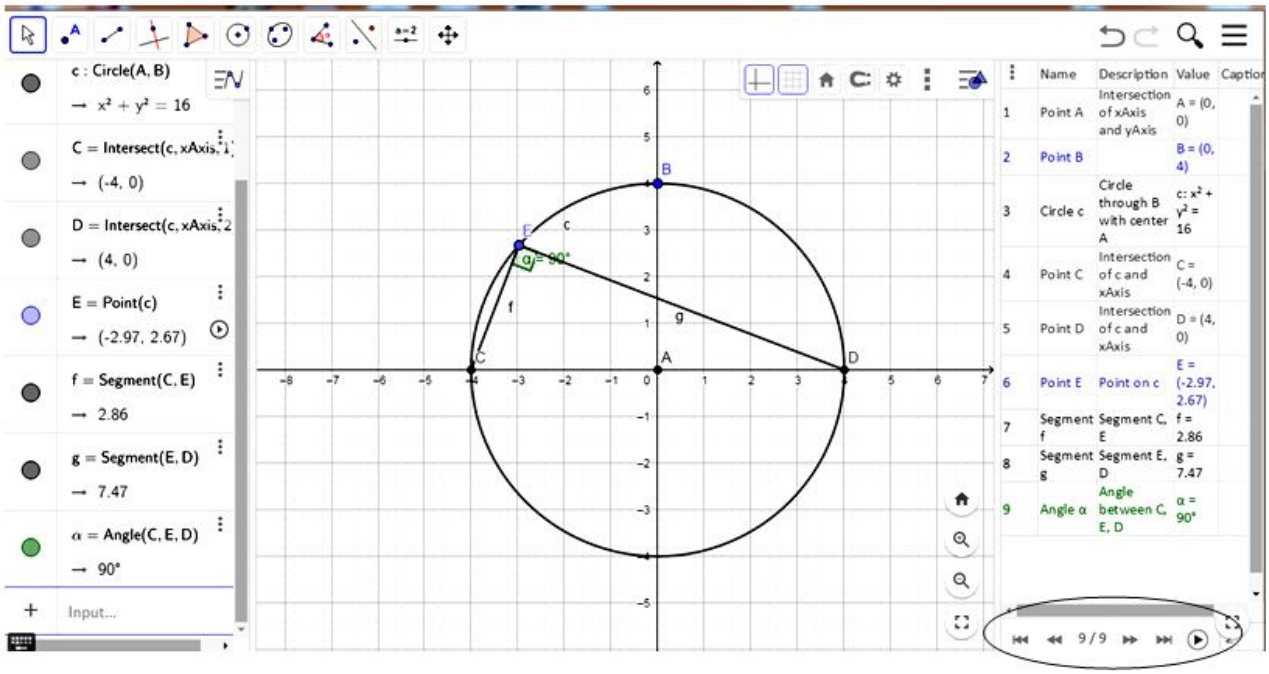


This becomes a very useful tool for the learners to explore different results on their own.

II. Teaching Linear Algebra

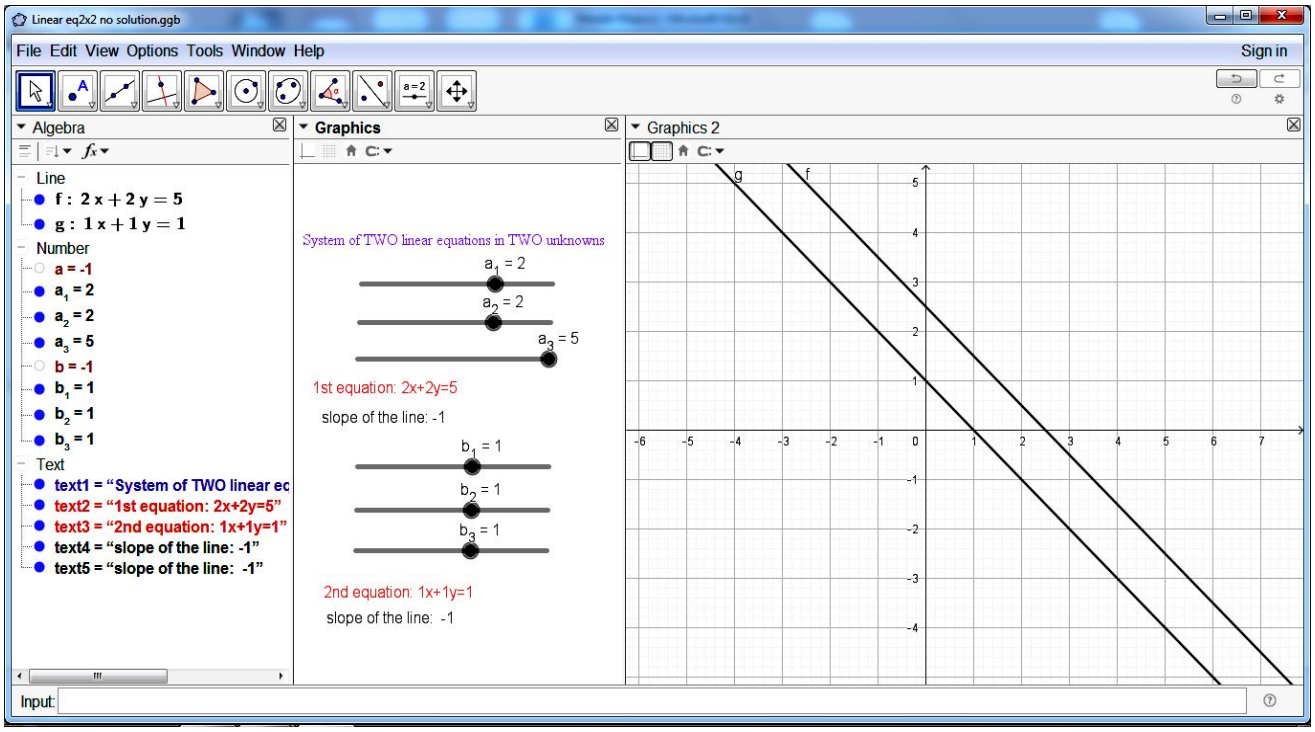
System of linear equations: This is one of the important topic that learners are working with since their secondary education. At undergraduate level, it is expected that students learn geometry behind the system of linear equations. Ask various questions like does the system always have a solution? If no, under what conditions system must have a solution? How many solutions does a system can(should) have? And many more…

The answers to these questions can be explored by the learners themselves using the following GeoGebra module: Consider a system of two linear equations in two unknowns :

$a_1x + a_2y = a_3$ and $b_1x + b_2y = b_3$.

Students can visualize the above possibilities again by changing values of coefficients.

(i) No solution



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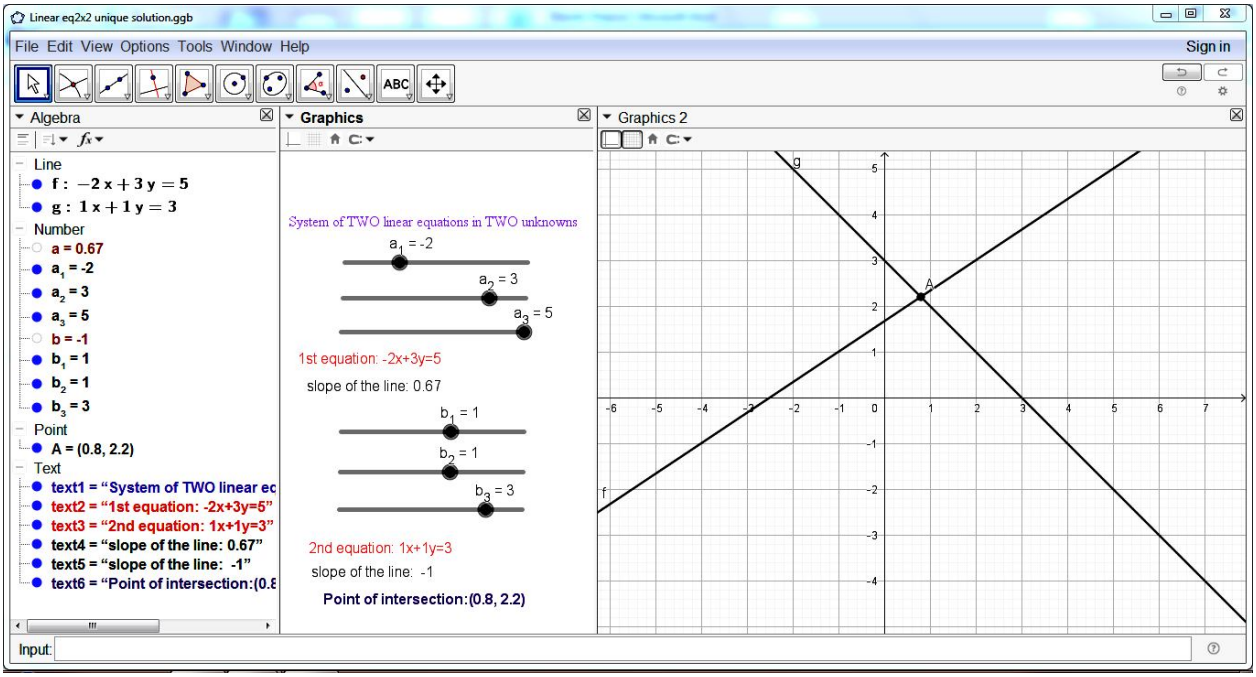
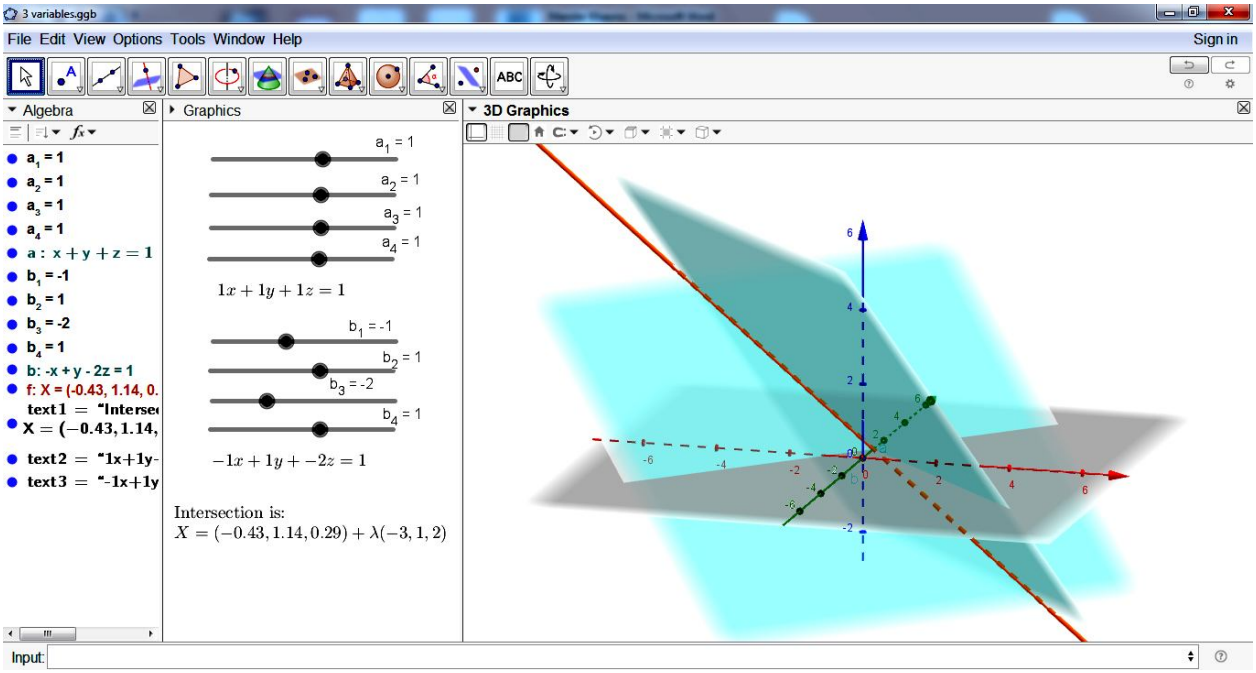
(ii) Unique solution



For 2 equations and 3 unknowns, we can observe that the intersection is a line:

$a_1x + a_2y + a_3z = a_4$ and $b_1x + b_2y + b_3z = b_4$.

Students can visualize the above possibilities again by changing values of coefficients.



III. To explain $\epsilon - \delta$ definition of limit

Certain fundamental topics like Limit, continuity, differentiability of a function, are being taught to students at various levels. It is observed that students are not comfortable with definitions of these concepts. It is essential to bring out the rigour in the fundamental concepts from Calculus and give better insight to students. A module using GeoGebra can be developed and can be one of the tools for the teachers to build a strong base of very fundamental concepts from Calculus for students. In fact, many definitions can be illustrated using various examples which is time consuming if only blackboard and chalk is used.

It can be done in two steps:

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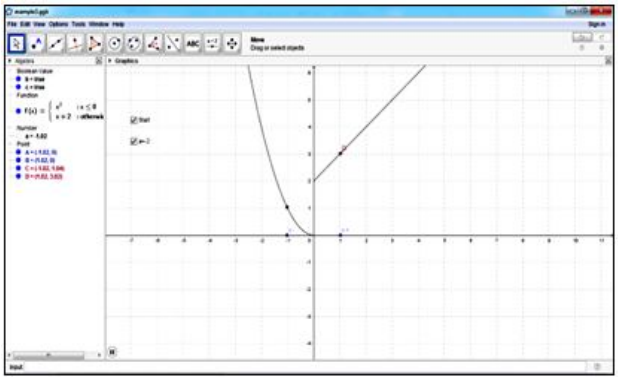
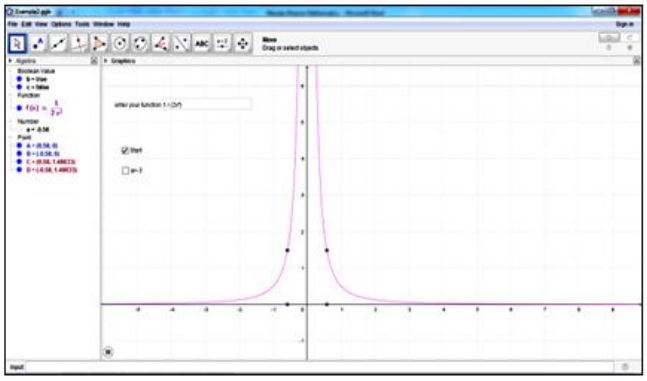
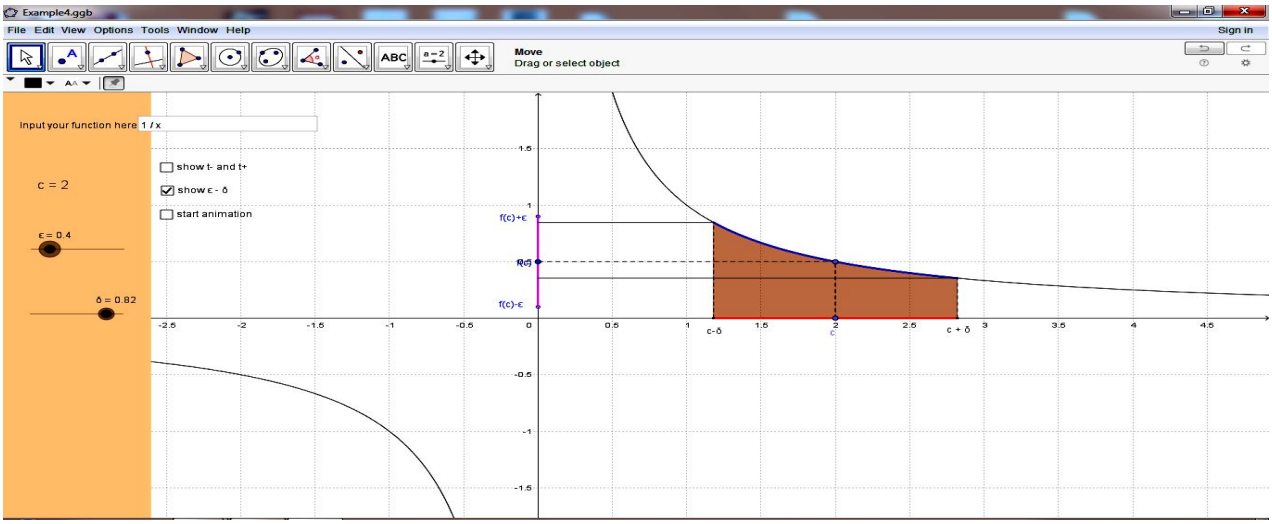
i. To make the students comfortable and to start the interaction, we begin with the problem they can solve. i.e. a problem based on H S C level. This is a problem which is calculative. Following two examples explains the idea.



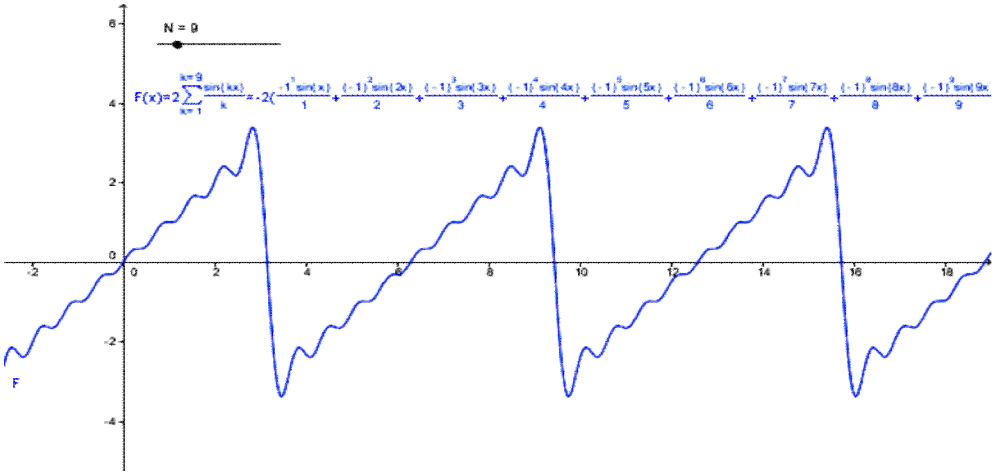


ii. In this screenshot, we can see that there are two rulers: ne for epsilon and another is for delta. We fix a value of epsilon as 0.4 and we should be able to adjust value of delta in such a way that the image of each x between $c-\delta$ and $c+\delta$ lies in the violet line representing the interval $(f(c)-\epsilon, f(c)+\epsilon)$.



IV. To observe the convergence of Fourier series of a function

For various functions we can observe the convergence of the Fourier series. There is a slider for n which decides total terms in the series expansion. We can observe that as n increases, the graph of Fourier series of the function goes very close to the graph of the function.



GeoGebra also provides a facility to generate a TikZ code of any figure drawn in Graphics window. This code can be inserted into any LaTeX document. It reduces lot of efforts of typing a complicated code for printing the graphs in a document.

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4. OPPORTUNITIES AND CHALLENGES

GeoGebra is one of the FOSS and hence there are many developments and modifications that are taking place very fast. All these developments can be incorporated into classroom teaching to enhance the learning experience of the learners. A very important usefulness of GeoGebra is, it can be used for teaching school geometry to higher mathematics like real analysis or calculus, linear algebra. The GeoGebra module can be shared online and can be made interactive using Java script. There are various modules already available to use at www.geogebra.org/materials. It can also be used as CAS. It provides ample of opportunities to explore various concepts and come up with conjectures. This becomes one of the very effective methods of learning mathematics. There are many more branches of Mathematics for which we can use GeoGebra during teaching learning process.

Although GeoGebra is becoming very effective teaching tool, there are certain challenges as follows:

i. To make learners to explore the concepts and make the conjectures, we need to provide a computer to the students, which is practically not feasible.

ii. We also need to give time for the learners to explore the modules. The semester based credit system does not allow so much time to be spent with students.

iii. To use GeoGebra in classroom teaching, a teacher needs to be given a classroom equipped with LCD. This is difficult to arrange (in most of the colleges) if there are many lectures we need to take using ICT.

5. CONCLUSION

Today the technology is reaching the unreachable. With this integration of technology in education is gaining popularity. But the subject like Mathematics is still taught in traditional way using chalk and talk method. Though it can not be completely replaced but technology, specially mathematical softwares, can be used as teaching aids. The process of embedding mathematical softwares also known as CAS has been slowed by commercial CAS. But Free and Open Source Softwares can solve the problem as they are accessible to one and all.

GeoGebra is one of such FOSS which can be used by the teachers of all levels from school to undergraduate. It is a very effective tool that supports classroom teaching. It stimulates curiosity and hence makes the learners to involve themselves in the teaching learning process.

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DEMOCRATIZATION OF TECHNOLOGY

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ABSTRACT
The elementary significance of a paper is a transition from authoritarian to authoritative regime i.e. democratization. It involves infinite number of factors like economic growth and development, recession and boom period, national income etc. Although democratization ensures right to vote and have a common voice into the political system but democratization in technology means proper access to more and more people of technology. Improving access of technology leads to better utilization of user friendly and innovative products and services with extension of knowledge.

Keywords: Access, Democratization, Improvements, Information, Technology.

INTRODUCTION
Merriam Webster defines democratize as "to make (something) available to all people." We are witnessing the democratization of technology as technology providers are able to put increasingly powerful solutions in the cloud, making industry-leading capabilities available to even the smallest retailers. An era of globalization have propounded the democratization of technology, finance and information. "Technology has been democratized; most of us have access to it and it is integral to everyday life". Democratization of technology means access of technology to innumerable people. New technologies are improving user experiences of those outside the technical industry and access technological products and services. People can purchase elegant products and contribute in forming user friendly products. As it is a common place and digitization is playing a major role in it. Democratization is a way to change people's perception and to increase their knowledge and skills which lead to more innovations and development of the world. By providing a platform through access to technology, amateur developers can get wealthy by producing their innovative products. As democratization is a better concept for future as it will assist the areas of entertainment rapidly as ever before. "You know, I believe that technology is the great leveler. Technology permits anybody to play. And in some ways, I think technology - it's not only a great tool for democratization, but it's a great tool for eliminating prejudice and advancing meritocracies" Carly Fiorina.

Patents were a hurdle in the field of technology so people were not supposed to imitate but later on democratization of technology played a significant role and people started sharing their innovative ideas on a common platform for consumers as well as developers to promote technology further. The internet is currently providing a tribune to communicate their innovative ideas and views instantly. Internet is a proximate cause of democratization of technology. It can influence people's lives with new opportunities and choices.

Internet alone cannot discover democracy but with proper modification of technology and participation of large groups for certain societies can destine democratisation of technology. It will be beneficial not only for developed countries but also for developing economies and can trickle down to the masses. Democratisation of technology will transform the approaches towards biology, sociology, partnership procedures and laws with many more prospects. Due to technology people can transfer their money to other bank accounts. Government is also providing free Wi-Fi (wireless fidelity) facilities at Railway stations and Airports for exclusive utilization and access of technology towards all classes of people i.e. low, middle and higher classes. Dissemination of information about agriculture, Exim policies, public distribution system etc can best be achieved due to democratization of technologies. Political elites can also exploit certain polices which can diffuse technological changes.

OBJECTIVES
1) To make people aware about certain benefits of technology.
2) To foster democratization of technology in masses.
3) To assist about the new era of democratization.
4) To make people understand technology for innovations and explore their desirable fields.
5) To transform from autocratic to democratic technology.

METHODOLOGY
The study is based on internal and external secondary data and it is collected from various sources like books, journals, Wikipedia , research gate and other websites related to democratization of technology.

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IMPACT OF DEMOCRATIZATION OF TECHNOLOGY

Democratization can have a positive or negative impact on people. In developing countries, it will have an empowering effect on people. It will also create a paradigm shift into the lives of people and set a benchmark of technology. Researchers can also collect secondary data and supplementing primary data through various means of technology. It can leverage technology to introduce innovative solutions to meet its customer's needs. It will have a great impact on national, supranational and regional needs of people. Countries are also experiencing the devolution of communication technology.

1) Impact on manufacturing sector

Democratization will have a better influence on trade with effect on exports and imports. The developers can expand their business at a sudden rate because users feedback is readily obtainable at low cost. Due to decrease in overhead cost and diversification leads to increase in volume of products and optimum utilisation of resources. The unqualified amateurs rather than qualified professionals are also capable of manufacturing novel products and it leads to decreased cost for industries. Easy access and real time information streaming can precede to synchronization of people and industrial sector. Democratization does not mean absolute freedom but rationalized freedom of technology in age of new trends of media. Technology also opens a new path for manufacturers, wholesalers, retailers and consumers. Technology Democratization also diagnose the problems in any sector and provide probable solutions for solving it. Due to increase in investment agreements the exports and imports can improve in open and closed economies. Manufacturing sector can reach pinnacle by using technology to provide training to unskilled workers. Adoption of technological modification will lead to increase in income and productivity of workers. It will allow businessmen to easily communicate not only with member countries but also continents. Also democratization of data is the process of enlarging business information and the tool to capture wider audience by providing a new level of customer service and strategic planning about them.

2) Impact on women and working classes

In 2015 People participation and government reactions redefined the technology. Due to democratization people can access higher education by enrolling in universities (including deemed universities) and boards through internet and by their own convenience of centres. They can also apply for their online and offline exams on sites of educational institutions. It will also empower women and working-class people to appear for their exams and provide a platform towards uniformity of course syllabus. In 2014 Digital Literacy mission was launched by government for imparting digital literacy to at least one among the five per household. By using bipartism technique equal participation by government and common users of technology can decide about the best technique which will be suitable to be democratized and provide a better explanation for the users in case of problems in it. Democratization is increasing employment opportunities but it is leaving behind the vulnerable and unskilled sections of developing economies and it will increase issues of inequality and inclusivity. Education plays a major role for increasing skills and lifelong learning for women and other working classes.

3) Political impact

Trade liberalization is linked with democratization and it will get another wave of democracy. Internet will be useful in encouraging people engagement and transparency of government. There is certain differentiation between democracy and democratization. Government can adopt new polices and strategies so that they can help people and increase their standard of living with better incomes. During elections, online voting will be useful because few people are not interested to vote and waste their time by standing in a queue so that people can vote online as per their own convenience. Government can also survey about population and other problems by using primary data and it can supplement secondary data which will be useful for future reference and by democratizing technology people can have access to useful information. People can also connect the political elites through online portals and other networking sites with their queries and problems about certain polices and procedures so on that basis government can diagnose the problems and it can provide viable solutions .In 1998 ,the central government operated "Government on line "facility with the sole aim of 60% online government organization within a year , with the objective to provide relevant news and documents online . E-facilities will be encouraging only when countries are democratized rather than centralized. E-government facilities can also make information available on the sites and government services can also be provided through that sites like Umang application on mobile and site, which provide comprehensive services that include EPFO, ESIC, Passport facilities, Income tax filing, Provision of pan and Aadhaar cards and Pradhan Mantri awas yojana etc. Although E-government facilities will be beneficial for government but also for the citizens by providing them flexibility and it will save time too. Decentralized decision making between government and citizens will be a foremost step towards democratization.

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4) Impact on Education

If technology is democratized school going children will also have access and they can reach the pinnacle of success in formative and summative work . Not only school going children but individuals with autism , down syndrome , visionary , hearing and speaking difficulties can also communicate with better technology . The market has expanded to include new age groups and at affordable prices to communicate in a better way. Distribution of communication devices is not restricted and accessible to handful of companies but it is nowadays accessible to other companies also so that they enhance the technology further. Children also get more opportunities to learn and use communication tools for increasing their skills. Through technology democratization , the communication tools will enhance trade and reduce ambiguity between Teachers ,Students and Parents. Digital literacy and technology education is also increasing among women and young children. As modern technology is advancing its pace in the world , access to education is also increasing rapidly with free and low cost . There are certain obstacles to reach technology for few people like language barriers , lack of skill to use technology in a better way . There is also an issue that approximately 60% people are not having access to internet . Through online courses ,the marginalized groups can also get empowered and it can increase employment opportunities for them . Effective guidance of experts , online sessions , workshops ,seminars can also be attended through effective technology . MIT initiatives aims to "educate students in science and technology that will best serve the world in 21st century".

BENEFITS OF DEMOCRATIZATION OF TECHNOLOGY

1) People can expand and diversify their business.
2) People will get to know about new technologies and opportunities.
3) It will not only help to transform lives but also will protect vulnerable sections and can eradicate poverty.
4) Government can disseminate significant economic regulations to people via digitalized technology.
5) It will assist in creating awareness and transparency of technology to the masses.
6) Real time assessment of important resources used in various sectors can also help various environmentalists to reduce usage and ensure better utilization of non-renewable resources.
7) It will help amateurs to explore their desirable fields and use technology for further research.
8) Engineers and young students of developing countries can also outperform professionals of developing economies with democratization.
9) The raw talent and creativity of people from vulnerable sections will also get showcased due to democratization of technology.
10) It safely allows people to record their health problems with doctors and businessmen can also get tenders online.
11) Masses can also vote to any parties digitally during political elections.
12) Technology democratization can also increase efficiency of employees.
13) Democratization will be beneficial for risk averse people because they can get the data about various companies and their profitability in market.

CONCLUSION

Technology have become the buzzword and its joining the developed countries culture. Although this is a challenge for government to democratize the technology but for betterment of citizens it is essential that people get proper access of it. As consumers will expect certain improvements in technology. Counterintuitively if people are acquainted with technology then only democratization will be useful in countries. This paper predicts the existence of complementarity between democracy and technology for efficiency of employees . The usage of autocratic technology will reduce the productivity and profitability of employers and if it is accompanied with rational democratization then will lead to better utilization of democratized technology.

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A REVIEW OF LEARNING MATHEMATICS USING MOBILE APPLICATIONS

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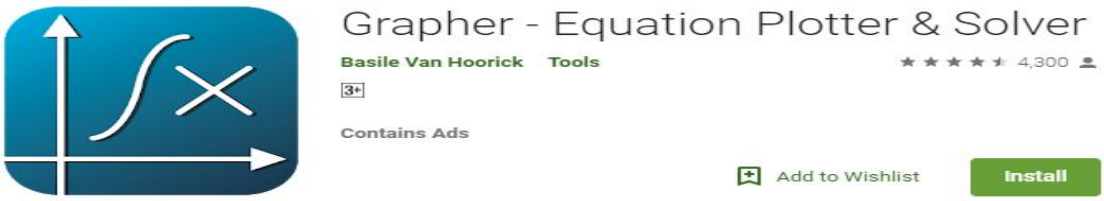
ABSTRACT
Today, more and more people are using technology for teaching and learning purposes and moving away from traditional classrooms. People are realising the benefits and the features of mobile learning. Mobile learning refers to learning by making use of mobile devices like smart phones, laptops or other similar portable technologies. The aim of this paper is to introduce and explore the potential use of mobile learning applications in the subject mathematics in which students show less interest and find it difficult due to theoretical concepts. Few mobile applications are represented in this paper, one is "Grapher Free"; using which graphs of given equation can be plotted, another is "Tower of Hanoi". Use of mobile learning apps for mathematics can improve arithmetic skills, graph representation, algebra problem solving and geometrical objects construction.

Keywords: Calculus, integration, limit, function, derivative.

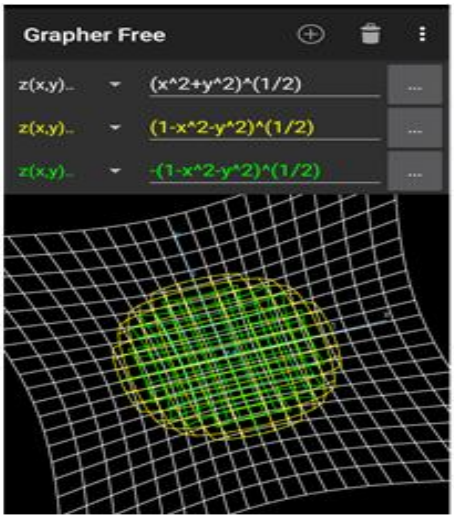
INTRODUCTION:
From decades, mathematics education has become a challenge for education system due to less interest of students towards mathematics and this is because the subject is considered to be abstract. Maths education in Schools and Institutions is a necessity. Actually mathematics is not all about numbers and calculations. Today students are living in age of technology in which use of Smart devices like Android phones, iPhones, iPads, tablets etc. has become popular. Students can access more information with no restrictions on time and space. These smart devices are becoming a learning tool.

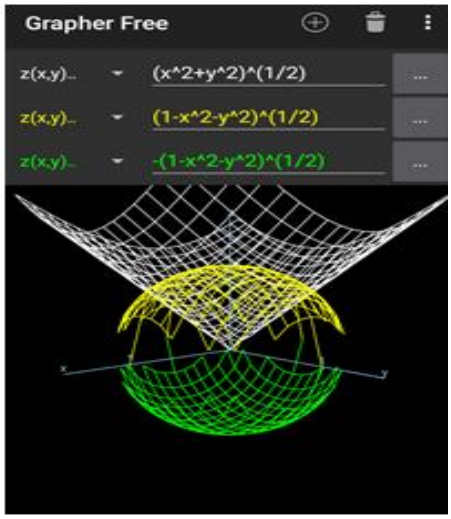
One of the difficulties students face in maths is to visualise graph of a given equation,

There are many graphing apps (free and safe download) available for smartphones; one of the examples is given below:



Grapher Free – Equation Plotter & Solver
This is a mobile app used to plot multiple graphs and show intersections between all plotted functions. This helps learners to visualise 2D (X-Y plane) and 3D (X-Y-Z space) graphs. For example, if the equation of cone $z^2 = x^2 + y^2$ and sphere $x^2 + y^2 + z^2 = 1$ are given and have to find the volume of the solid bounded by the cone and sphere then using multivariable calculus one can find the volume and that technique is called *triple integration*. In this technique, projection of solid on X-Y plane is required. By rotating the three axes, one can see the projection of this solid on X-Y plane which is a circle using this app.





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Limit is a fundamental concept of Calculus which is purely an abstract concept. Definition of limit goes like this: *Suppose f is a one variable, real valued function then a real number l is said to be limit of f as x tends to a (where a is in domain of f) if for every* $\epsilon > 0, \exists\ \delta > 0$ *such that* $0 < |x - a| < \delta$ *implies* $|f(x) - l| < \epsilon$.

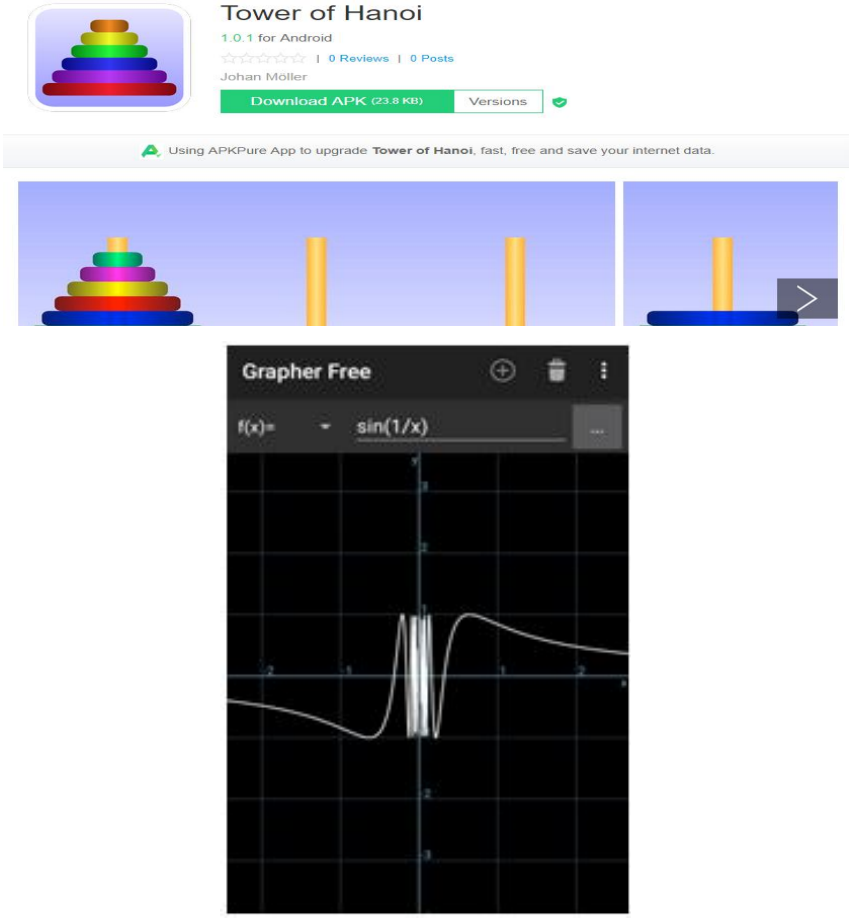
Limit of a function at a point is always unique and if not then limit doesn't exist. For an instance, *f (x)* = $sin(\frac{1}{x})$ has two limits 1 and -1 as *x* tends to *0*. One can easily visualise using the graph.

Tower of Hanoi

There is a mathematical problem called *Tower of Hanoi* which is also referred as a mathematical game or puzzle. It consists of three rods or towers and a number of disks or rings of different sizes which can be moved from one tower to another. The puzzle starts with a neat bunch of rings in ascending order of size on one tower, the smallest at the top and hence they are making a conical shape. The objective of the puzzle is to move the entire bunch to another, obeying the following simple rules:

1. Only one ring can be moved at a given time.
2. Every move consists of taking the upper ring from one of the stacks and placing it on the top of another stack.
3. No large ring may be placed on the top of a small ring.

The aim of the problem is to find the minimum number of moves required to solve a Tower of Hanoi puzzle and answer is $2^n - 1$. In particular, with the three rings, the puzzle can be solved in 7 moves.



This game is available in Play store. Learners can install and actually can perform the steps that make the understanding easier and faster.

Many more apps are available for school level students to understand the simple mathematics and they enjoy the subject by performing and observing such activities.

YouTube is one of the best mobile apps for not only learning maths but many subjects or one can say almost all. Few pure abstract concepts of mathematics like point at Infinity or Stereographic projection, partial derivatives of 3D surfaces can be explained by showing videos on YouTube.

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LIMITATIONS

1. Higher dimensional graphs i.e. more than 3D graphs can't be visualised using any mobile applications. Such concepts remain abstract only.
2. There is limit on number of disks to remove from one rod to another that means in the above referred game, the maximum number of disks with one can solve the puzzle is 10.
3. Showing videos on YouTube may cause unexpected distractions.
4. A mobile device with limited functionality capabilities may not be suitable for mobile learning. The mobile device required for more functions may be relatively expensive.

CONCLUSION

Using mobile learning apps for mathematics, one can make an abstract subject interesting. Showing graphs of complicated functions and then explaining the concepts using these graphs make the understanding easier and faster. Though few concepts are explained, using technology, to some extent, Schools and Educational Institutions should develop their teaching and learning method from classical way, i.e. using only chalk and board, to new innovative and technological way.

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Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology, 2*(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

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Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

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- **Website of any institution:**

Central Bank of India (2005). *Income Recognition Norms Definition of NPA.* Retrieved August 10, 2005, from http://www.centralbankofindia.co.in/ home/index1.htm, viewed on

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